

Easergy MiCOM P532

Line Differential Protection and Control Device

P532/EN M/R-b5-A

Version P532 -305 -413/414/415/416 -661

Technical Manual

Volume 2 of 2

A1**Function Groups**

ARC	<i>Auto-reclosing control</i>
ASC	<i>Automatic synchronism check</i>
CBF	<i>Circuit breaker failure protection</i>
CBM	<i>Circuit breaker condition monitoring</i>
CMD_1	<i>Single-pole commands</i>
COMM1	<i>“Logical” communication interface 1</i>
COMM2	<i>“Logical” communication interface 2</i>
COUNT	<i>Binary counts</i>
CS	<i>Cyber Security</i>
DEV01	<i>External device</i>
DEV02	<i>External device</i>
DEV03	<i>External device</i>
DEV04	<i>External device</i>
DEV05	<i>External device</i>
DEV06	<i>External device</i>
DEV07	<i>External device</i>
DEV08	<i>External device</i>
DEV09	<i>External device</i>
DEV10	<i>External device</i>
DIFF	<i>Differential protection</i>
DTOC	<i>Definite-time overcurrent protection</i>
DVICE	<i>Device</i>
F_KEY	<i>Configurable function keys</i>
f<>	<i>Over-/underfrequency protection</i>
FT_DA	<i>Fault data acquisition</i>
FT_RC	<i>Fault recording</i>
GF_DA	<i>Ground fault data acquisition</i>
GF_RC	<i>Ground fault recording</i>
GFDSS	<i>Ground fault direction determination using steady-state values</i>
GOOSE	<i>Generic Object Orientated Substation Events</i>

I2>	<i>Unbalance protection</i>
IDMT1	<i>Inverse-time overcurrent protection</i>
IDMT2	<i>Inverse-time overcurrent protection</i>
IEC	<i>IEC 61850 Communication</i>
ILOCK	<i>Interlocking logic</i>
INP	<i>Binary input</i>
IRIGB	<i>IRIG-B interface</i>
LED	<i>LED indicators</i>
LIMIT	<i>Limit value monitoring</i>
LOC	<i>Local control panel</i>
LOG_2	<i>Programmable Logic</i>
LOGIC	<i>Programmable Logic</i>
MAIN	<i>Main function</i>
MCMON	<i>Measuring-circuit monitoring</i>
MEASI	<i>Measured data input</i>
MEASO	<i>Measured data output</i>
MP	<i>Motor protection</i>
MT_RC	<i>Monitoring signal recording</i>
OL_DA	<i>Overload data acquisition</i>
OL_RC	<i>Overload recording</i>
OP_RC	<i>Operating data recording</i>
OUTP	<i>Binary and analog output</i>
P<>	<i>Power directional protection</i>
PC	<i>PC link</i>
PCOMM	<i>PCOMM interface</i>
Pf<	<i>Underfrequency load shedding</i>
PSIG	<i>Protective signaling</i>
PSS	<i>Parameter subset selection</i>
QV	<i>Voltage controlled directional reactive power protection</i>
SCDD	<i>Short-circuit direction determination</i>
SFMON	<i>Self-monitoring</i>

SIG_1	<i>Single-pole signals</i>
SOTF	<i>Switch on to fault protection</i>
TGFD	<i>Transient ground fault direction determination</i>
THERM	<i>Thermal overload protection</i>
TIMER	<i>Real Timer</i>
TRMON	<i>Transformer monitoring</i>
V<>	<i>Time-voltage protection</i>
VINP	<i>Virtual Inputs</i>

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Internal Signals

ARC: Block/reset HSR	Vol. 1, Fig. 3-195, (p. 3-256)
ARC: Block/reset TDR	Vol. 1, Fig. 3-195, (p. 3-256)
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DTOC: Block. Start. IN>>>	Vol. 1, Fig. 3-76, (p. 3-115)
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DTOC: Block.Start. I>> Px	Vol. 1, Fig. 3-76, (p. 3-115)
DTOC: Block.Start. I>>> Px	Vol. 1, Fig. 3-76, (p. 3-115)
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DTOC: I>>>> Starting A	Vol. 1, Fig. 3-133, (p. 3-184)
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P<>: P-	Vol. 1, Fig. 3-282, (p. 3-361)
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P<>: Q	Vol. 1, Fig. 3-282, (p. 3-361)
P<>: Q-	Vol. 1, Fig. 3-282, (p. 3-361)
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SCDD: Block. direct. tl>	Vol. 1, Fig. 3-171, (p. 3-227)
SCDD: Block. direct. tl>>	Vol. 1, Fig. 3-171, (p. 3-227)
SCDD: Block. Direct. tl>>>	Vol. 1, Fig. 3-171, (p. 3-227)
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SCDD: Block. direct. tIN>>	Vol. 1, Fig. 3-176, (p. 3-232)
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V<>: <u>V</u> pos	Vol. 1, Fig. 3-265, (p. 3-343)

A3**Glossary****Modules**

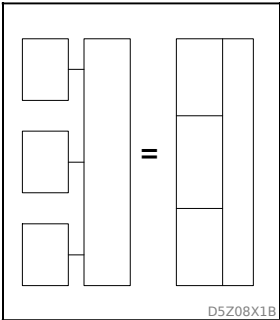
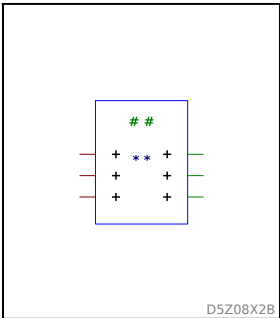
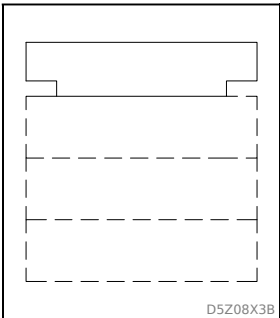
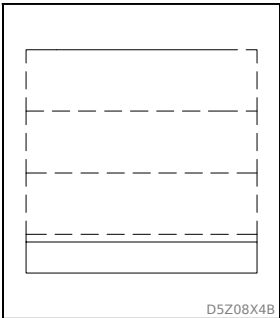
A:	Communication module
B:	Digital bus module
L:	MMI module
N	Transient ground fault evaluation module
P:	Processor module
T:	Transformer module
V:	Power supply module
X:	Binary I/O module
Y:	Analog I/O module

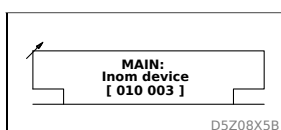
Symbols*Graphic symbols for block diagrams*

Binary elements in compliance with DIN 40900 part 12, September 1992, IEC 617-12: modified 1991

Analog information processing in compliance with DIN 40900 part 13, January 1981. To document the linking of analog and binary signals, additional symbols have been used, taken from several DIN documents.

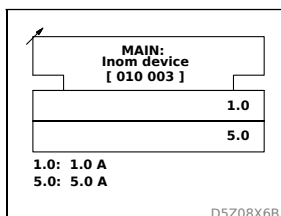
As a rule, direction of the signal flow is from left to right and from top to bottom. Other flow directions are marked by an arrow. Input signals are listed on the left side of the signal flow, output signals on the right side.

Symbol	Description
	<p>To obtain more space for representing a group of related elements, contours of the elements may be joined or cascaded if the following rules are met:</p> <p>There is no functional linkage between elements whose common contour line is oriented in the signal flow direction.</p> <p>Note:</p> <p>This rule does not necessarily apply to configurations with two or more signal flow directions, such as for symbols with a control block and an output block.</p> <p>There exists at least one logical link between elements whose common contour line runs perpendicularly to the signal flow direction.</p>
	<p>Components of a symbol</p> <p>A symbol consists of a contour or contour combination and one or more qualifiers.</p> <p>Description of the example symbol in the left column</p> <ul style="list-style-type: none">● Blue line: Contour● Dark red lines: Inputs● Green lines: Outputs● Green hash characters: Preferred location for the general function qualifying symbol● Dark blue asterisk characters: Alternative location for the general function qualifying symbol
	<p>Control block</p> <p>A control block contains an input function common to several symbols. It is used for the collective setting of several trigger elements, for example.</p>
	<p>Output block</p> <p>An output block contains an output function common to several symbols.</p>



Settable control block

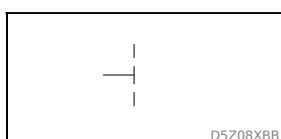
The 6 digits in square brackets represent the address under which the function shown in the text is implemented.



Settable control block with function blocks

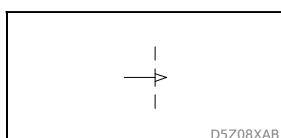
The digits in the function block show the settings that are possible for this function.

The text below the symbol assigns the corresponding unit or meaning to each setting.



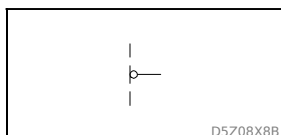
Static input

Only the state of the binary input variable is effective.



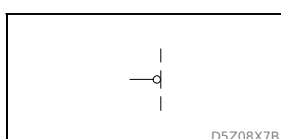
Dynamic input

Only the transition from value 0 to value 1 is effective.



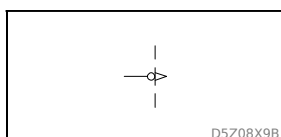
Negation of an output

The value up to the border line is negated at the output.



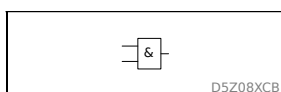
Negation of an input

The input value is negated before the border line.



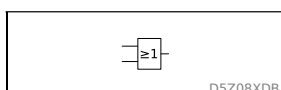
Dynamic input with negation

Only the transition from value 1 to value 0 is effective.



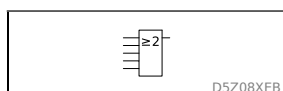
AND element

The output variable will be 1 only if all input variables are 1.



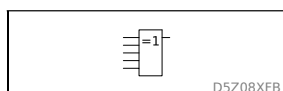
OR element

The output variable will be 1 only if at least one input variable is 1.



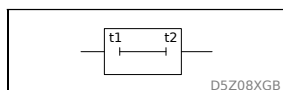
Threshold element

The output variable will be 1 only if at least two input variables are 1. The number in the symbol may be replaced by any other number.



(m out of n) element

The output variable will be 1 only if just one input variable is 1. The number in the symbol may be replaced by any other number if the number of inputs is increased or decreased accordingly.

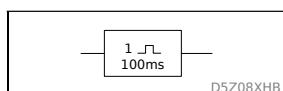


Delay element

The transition from value 0 to 1 at the output occurs after a time delay of t1 relative to the corresponding transition at the input.

The transition from value 1 to 0 at the output occurs after a time delay of t2 relative to the corresponding transition at the input.

t1 and t2 may be replaced by the actual delay values (in seconds or strobe ticks).

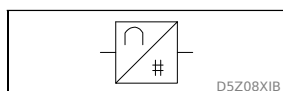


Monostable flip-flop

The output variable will be 1 only if the input variable changes to 1. The output variable will remain 1 for 100 ms, regardless of the duration of the input value 1 (non-retriggerable).

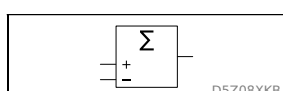
Without a 1 in the function block, the monostable flip-flop is retriggerable.

The time is 100 ms in this example, but it may be changed to any other duration.



Analog-digital converter

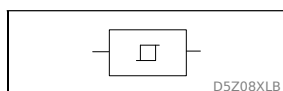
An analog input signal is converted to a binary signal.



Subtractor

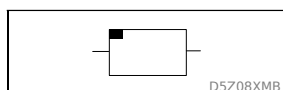
The output variable is the difference between the two input variables.

A **summing element** is obtained by changing the minus sign to a plus sign at the symbol input.



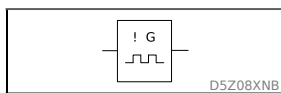
Schmitt Trigger with binary output signal

The binary output variable will be 1 if the input signal exceeds a specific threshold. The output variable remains 1 until the input signal drops below the threshold again.



Memory, general

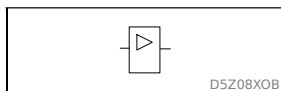
Storage of a binary or analog signal.

**Non-stable flip-flop**

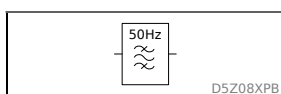
When the input variable changes to 1, a pulse sequence is generated at the output.

The ! to the left of the G indicates that the pulse sequence starts with the input variable transition (synchronized start).

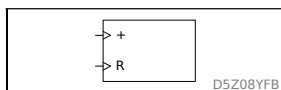
If there is a ! to the right of the G, the pulse sequence ends with the ending of the 1 signal at the input (synchronized stop).

**Amplifier**

The output variable is 1 only if the input variable is also 1.

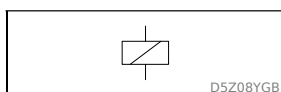
**Band pass filter**

The output only transmits the 50 Hz component of the input signals. All other frequencies (above and below 50 Hz) are attenuated.

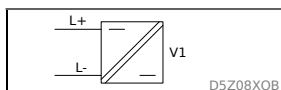
**Counter**

At the + input the input variable transitions from 0 to 1 are counted and stored in the function block.

At the R(eset) input a transition of the input variable from 0 to 1 resets the counter to 0.



Electromechanical drive in general, here a relay, for example.

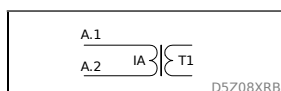
**Signal level converter**

with electrical isolation between input and output.

L+ = pos. voltage input

L- = neg. voltage input

U1 = device identifier



Input transformer with phase and item identifiers (according to DIN EN 60445)

Phase identifiers for current inputs:

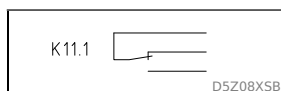
- for A: A1 and A2
- for B: B1 and B2
- for C: C1 and C2
- for N: N1 and N2

Phase identifiers for voltage inputs

- via transformer 1:
 - for A: 1U
 - for B: 1V
 - for C: 1W
 - for N: 1N
- via transformer 2:
 - for A: 2U
 - for B: 2V

Item identifiers

- for current transformers:
 - for A: T1
 - for B: T2
 - for C: T3
 - for N: T4
- for voltage transformer 1:
 - for A: T5
 - for B: T6
 - for C: T7
 - for N: T8
- for V_{G-N} transformer: T90
- for voltage transformer 2:
 - for A: T15



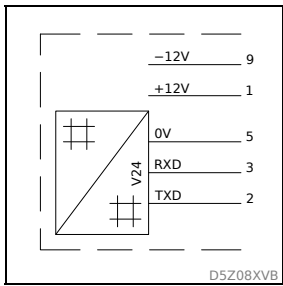
Change-over contact

with item identifier

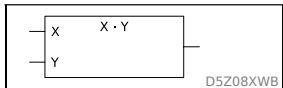


Special symbol

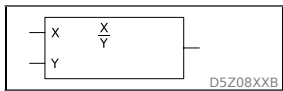
Output relay in normally-energized arrangement ("closed-circuit operation").



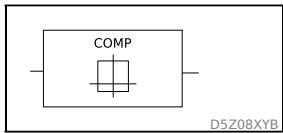
PC interface
with pin connections



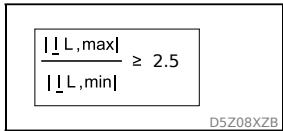
Multiplier
The output variable is the result of the multiplication of the two input variables.



Divider
The output variable is the result of the division of the two input variables.



Comparator
The output variable becomes 1 only if the input variable(s) are equal to the function in the function block.



Formula block
The output variable becomes 1 only if the input variable(s) satisfy the equation in the function block

Examples of Signal Names

All settings and signals relevant for protection are shown in the block diagrams of Chapter “Operation” as follows:

Signal Name	Description
♦ FT_RC: Fault recording n 305 100	Internal signal names are not coded by a data model address. In the block diagrams they are marked with a diamond. The small figure underneath the signal name represents a code that is irrelevant to the user. The internal signal names used and their origins are listed in Appendix.
DIST: VNG>> triggered [036 015]	Signal names coded by a data model address are represented by their address (shown in square brackets). Their origin is given in Chapters “Setting” and “Information and Control Functions”.
MAIN: General reset USER [003 002] ↗1: Execute	A specific setting to be used later on is shown with its signal name, address, and the setting preceded by the setting arrow.

Symbols Used

Symbol	Meaning
t	Time duration
V	Voltage, potential difference
\underline{V}	Complex voltage
I	Electrical current
\underline{I}	Complex current
\underline{Z}	Complex impedance
$ \underline{Z} $	Modulus of complex impedance
f	Frequency
δ	Temperature in °C
Σ	Sum, result
Ω	Unit of electrical resistance
α	Angle
φ, ϕ	Phase angle. With subscripts: specific angle between a defined current and a defined voltage.
τ	Time constant
ΔT	Temperature difference in K

A4

Telecontrol Interfaces

A4.1

Telecontrol Interface per EN 60870-5-101 or IEC 870-5-101 (Companion Standard)

This section incorporates Section 8 of EN 60870-5-101 (1996), which includes a general definition of the telecontrol interface for substation control systems.

A4.1.1

Interoperability

This application-based standard (companion standard) specifies parameter sets and other options from which subsets are to be selected in order to implement specific telecontrol systems. Certain parameters such as the number of bytes (octets) in the COMMON ADDRESS of the ASDU are mutually exclusive. This means that only one value of the defined parameter is allowed per system. Other parameters, such as the listed set of different process information in the command and monitor direction, permit definition of the total number or of subsets that are suitable for the given application. This section combines the parameters given in the previous sections in order to facilitate an appropriate selection for a specific application. If a system is made up of several system components supplied by different manufacturers, then it is necessary for all partners to agree on the selected parameters.

The boxes for the selected parameters should be checked [see *National Preface of EN 60870-5-101*].

The overall definition of a system may also require individual selection of certain parameters for specific parts of a system such as individual selection of scaling factors for individually addressable measured values.

A4.1.1.1

Network Configuration (Network-Specific Parameters)

<input checked="" type="checkbox"/>	Point-to-point configuration	<input checked="" type="checkbox"/>	Multipoint-party line configuration
<input checked="" type="checkbox"/>	Multiple point-to-point configuration	<input type="checkbox"/>	Multipoint-star configuration

A4.1.1.2**Physical Layer (Network-Specific Parameters)**

(See National Preface of EN 60870-5-101.)

Transmission Rate (Control Direction)

(The transmission rates for control direction and monitor direction must be identical.)

Unbalanced interface V.24/V.28, Standardized	Unbalanced interface V.24/V.28, Recommended with > 1 200 bit/s	Balanced interface X.24/X.27
<input type="checkbox"/> 100 bit/s	<input checked="" type="checkbox"/> 2400 bit/s	<input type="checkbox"/> 2400 bit/s
<input type="checkbox"/> 200 bit/s	<input checked="" type="checkbox"/> 4800 bit/s	<input type="checkbox"/> 4800 bit/s
<input type="checkbox"/> 300 bit/s	<input checked="" type="checkbox"/> 9600 bit/s	<input type="checkbox"/> 9600 bit/s
<input checked="" type="checkbox"/> 600 bit/s		<input type="checkbox"/> 19200 bit/s
<input checked="" type="checkbox"/> 1200 bit/s		<input type="checkbox"/> 38400 bit/s
		<input type="checkbox"/> 56000 bit/s
		<input type="checkbox"/> 64000 bit/s

Transmission Rate (Monitor Direction)

(The transmission rates for control direction and monitor direction must be identical.)

Unbalanced interface V.24/V.28, Standardized	Unbalanced interface V.24/V.28, Recommended with > 1 200 bit/s	Balanced interface X.24/X.27
<input type="checkbox"/> 100 bit/s	<input checked="" type="checkbox"/> 2400 bit/s	<input type="checkbox"/> 2400 bit/s
<input type="checkbox"/> 200 bit/s	<input checked="" type="checkbox"/> 4800 bit/s	<input type="checkbox"/> 4800 bit/s
<input type="checkbox"/> 300 bit/s	<input checked="" type="checkbox"/> 9600 bit/s	<input type="checkbox"/> 9600 bit/s
<input checked="" type="checkbox"/> 600 bit/s		<input type="checkbox"/> 19200 bit/s
<input checked="" type="checkbox"/> 1200 bit/s		<input type="checkbox"/> 38400 bit/s
		<input type="checkbox"/> 56000 bit/s
		<input type="checkbox"/> 64000 bit/s

A4.1.1.3**Link Layer (Network-Specific Parameters)**

(See National Preface of EN 60870-5-101.)

Frame format FT 1.2, single character 1, and the fixed time-out interval are used exclusively in this companion standard.

	Link Transmission Procedure
<input checked="" type="checkbox"/>	Balanced transmission
<input checked="" type="checkbox"/>	Unbalanced transmission

	Address Field of the Link
<input checked="" type="checkbox"/>	Not present (balanced transmission only)
<input checked="" type="checkbox"/>	One octet
<input checked="" type="checkbox"/>	Two octets (balanced transmission only)
<input checked="" type="checkbox"/>	Structured
<input checked="" type="checkbox"/>	Unstructured

	Frame Length
[240]	Maximum length L (number of octets)

A4.1.1.4

Application Layer

(See National Preface of EN 60870-5-101.)
Transmission mode for application data
Mode 1 (least significant octet first), as defined in clause 4.10 of IEC 870-5-4, is used exclusively in this companion standard.

Common Address of ASDU (System-Specific Parameter)

<input checked="" type="checkbox"/>	One octet	<input checked="" type="checkbox"/>	Two octets
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Information Object Address (System-Specific Parameter)

<input checked="" type="checkbox"/>	One octet	<input checked="" type="checkbox"/>	Structured
<input checked="" type="checkbox"/>	Two octets	<input checked="" type="checkbox"/>	Unstructured
<input checked="" type="checkbox"/>	Three octets		

Cause of Transmission (System-Specific Parameter)

<input checked="" type="checkbox"/>	One octet	<input checked="" type="checkbox"/>	Two octets (with originator address)
-------------------------------------	-----------	-------------------------------------	--------------------------------------

Selection of Standard ASDUs
Process Information in Monitor Direction (Station-Specific Parameter)

[✓]	<1>	=	Single-point information	M_SP_NA_1
[✓]	<2>	=	Single-point information with time tag	M_SP_TA_1
[✓]	<3>	=	Double-point information	M_DP_NA_1
[✓]	<4>	=	Double-point information with time tag	M_DP_TA_1
[✓]	<5>	=	Step position information	M_ST_NA_1
[✓]	<6>	=	Step position information with time tag	M_ST_TA_1
[✓]	<7>	=	Bit string of 32 bit	M_BO_NA_1
[✓]	<8>	=	Bit string of 32 bit with time tag	M_BO_TA_1
[✓]	<9>	=	Measured value, normalized value	M_ME_NA_1
[✓]	<10>	=	Measured value, normalized value with time tag	M_ME_TA_1
[✓]	<11>	=	Measured value, scaled value	M_ME_NB_1
[✓]	<12>	=	Measured value, scaled value with time tag	M_ME_TB_1
[]	<13>	=	Measured value, short floating point value	M_ME_NC_1
[]	<14>	=	Measured value, short floating point value with time tag	M_ME_TC_1
[✓]	<15>	=	Integrated totals	M_IT_NA_1
[✓]	<16>	=	Integrated totals with time tag	M_IT_TA_1
[✓]	<17>	=	Event of protection equipment with time tag	M_EP_TA_1
[✓]	<18>	=	Packed start events of protection equipment with time tag	ME_EP_TB_1
[✓]	<19>	=	Packed output circuit information of protection equipment with time tag	M_EP_TC_1
[]	<20>	=	Packed single-point information with status change detection	M_PS_NA_1
[]	<21>	=	Measured value, normalized value without quality descriptor	M_ME_ND_1

Process Information in Monitor Direction (Station-Specific Parameter)

(Incorrectly identified with control direction in IEC 870-5-101.)

<input checked="" type="checkbox"/>	<45>	=	Single command	C_SC_NA_1
<input checked="" type="checkbox"/>	<46>	=	Double command	C_DC_NA_1
<input checked="" type="checkbox"/>	<47>	=	Regulating step command	C_IT_NA_1
<input type="checkbox"/>	<48>	=	Set point command, normalized value	C_RC_NA_1
<input type="checkbox"/>	<49>	=	Set point command, scaled value	C_SE_NB_1
<input type="checkbox"/>	<50>	=	Set point command, short floating point value	C_SE_NC_1
<input type="checkbox"/>	<51>	=	Bit string of 32 bit	C_BO_NA_1

System Information in Monitor Direction (Station-Specific Parameter)

<input checked="" type="checkbox"/>	<70>	=	End of initialization	ME_EI_NA_1
-------------------------------------	------	---	-----------------------	------------

System Information in Control Direction (Station-Specific Parameter)

<input checked="" type="checkbox"/>	<100>	=	Interrogation command	C_IC_NA_1
<input checked="" type="checkbox"/>	<101>	=	Counter interrogation command	C_CI_NA_1
<input checked="" type="checkbox"/>	<102>	=	Read command	C_RD_NA_1
<input checked="" type="checkbox"/>	<103>	=	Clock synchronization command	C_CS_NA_1
<input checked="" type="checkbox"/>	<104>	=	Test command	C_TS_NB_1
<input type="checkbox"/>	<105>	=	Reset process command	C_RP_NC_1
<input type="checkbox"/>	<106>	=	Delay acquisition command (See National Preface of EN 60870-5-101.)	C_CD_NA_1

Parameter in Control Direction (Station-Specific Parameter)

<input checked="" type="checkbox"/>	<110>	=	Parameter of measured value, normalized value	P_ME_NA_1
<input checked="" type="checkbox"/>	<111>	=	Parameter of measured value, scaled value	P_ME_NB_1
<input type="checkbox"/>	<112>	=	Parameter of measured value, short floating point value	P_ME_NC_1
<input type="checkbox"/>	<113>	=	Parameter activation	P_AC_NA_1

File Transfer (Station-Specific Parameter)

[]	<120>	=	File ready	F_FR_NA_1
[]	<121>	=	Section ready	F_SR_NA_1
[]	<122>	=	Call directory, select file, call file, call section	F_SC_NA_1
[]	<123>	=	Last section, last segment	F_LS_NA_1
[]	<124>	=	Ack file, ack section	F_AF_NA_1
[]	<125>	=	Segment	F_SG_NA_1
[]	<126>	=	Directory	F_DR_TA_1

A4.1.1.5**Basic Application Functions**

(See National Preface of EN 60870-5-101.)

Station Initialization (Station-Specific Parameter)

<input checked="" type="checkbox"/>	Remote initialization
-------------------------------------	-----------------------

General Interrogation (System- or Station-Specific Parameter)

<input checked="" type="checkbox"/> Global		
<input checked="" type="checkbox"/> Group 1	<input checked="" type="checkbox"/> Group 7	<input checked="" type="checkbox"/> Group 13
<input checked="" type="checkbox"/> Group 2	<input checked="" type="checkbox"/> Group 8	<input checked="" type="checkbox"/> Group 14
<input checked="" type="checkbox"/> Group 3	<input checked="" type="checkbox"/> Group 9	<input checked="" type="checkbox"/> Group 15
<input checked="" type="checkbox"/> Group 4	<input checked="" type="checkbox"/> Group 10	<input checked="" type="checkbox"/> Group 16
<input checked="" type="checkbox"/> Group 5	<input checked="" type="checkbox"/> Group 11	
<input checked="" type="checkbox"/> Group 6	<input checked="" type="checkbox"/> Group 12	

Addresses per group have to be defined.

Clock Synchronization (Station-Specific Parameter)

<input checked="" type="checkbox"/>	Clock synchronization
-------------------------------------	-----------------------

Command Transmission (Object-Specific Parameter)

<input checked="" type="checkbox"/>	Direct command transmission	<input type="checkbox"/>	Select and execute command
<input type="checkbox"/>	Direct set point command transmission	<input type="checkbox"/>	Select and execute set point command
		<input type="checkbox"/>	C_SE ACTTERM used

<input checked="" type="checkbox"/>	No additional definition
<input type="checkbox"/>	Short pulse duration (Execution duration determined by a system parameter in the outstation)
<input type="checkbox"/>	Long pulse duration (Execution duration determined by a system parameter in the outstation)
<input type="checkbox"/>	Persistent output

Transmission of Integrated Totals (Station- or Object-Specific Parameter)

<input type="checkbox"/>	Counter request	<input checked="" type="checkbox"/>	General request counter
<input checked="" type="checkbox"/>	Counter freeze without reset	<input checked="" type="checkbox"/>	Request counter group 1
<input type="checkbox"/>	Counter freeze with reset	<input checked="" type="checkbox"/>	Request counter group 2
<input type="checkbox"/>	Counter reset	<input checked="" type="checkbox"/>	Request counter group 3
		<input checked="" type="checkbox"/>	Request counter group 4

Addresses per group have to be specified

Parameter Loading (Object-Specific Parameter)

<input checked="" type="checkbox"/>	Threshold value
<input type="checkbox"/>	Smoothing value
<input type="checkbox"/>	Low limit for transmission of measured value
<input type="checkbox"/>	High limit for transmission of measured value

Parameter Activation (Object-Specific Parameter)

<input type="checkbox"/>	Act/deact of persistent cyclic or periodic transmission of the addressed object
--------------------------	---

File Transfer (Station-Specific Parameter)

<input type="checkbox"/>	File transfer in monitor direction	F_FR_NA_1
<input type="checkbox"/>	File transfer in control direction	F_FR_NA_1

A4.2

Communication Interface per IEC 60870-5-103

This section incorporates Section 8 of IEC 60870-5-103, including definitions applicable to the P532.

A4.2.1

Interoperability

A4.2.1.1

Physical Layer

A4.2.1.1.1

Electrical Interface

<input checked="" type="checkbox"/>	EIA RS 485
<input checked="" type="checkbox"/>	No. of loads: 32 for one device

Note: EIA RS 485 defines the loads in such a way that 32 of such loads can be operated on one line. For detailed information see EIA RS 485, Section 3.

A4.2.1.1.2 Optical Interface

<input checked="" type="checkbox"/>	Glass fiber
<input checked="" type="checkbox"/>	Plastic fiber
<input checked="" type="checkbox"/>	F-SMA connector
<input type="checkbox"/>	BFOC/2.5 connector

A4.2.1.1.3 Transmission Rate

<input checked="" type="checkbox"/>	9600 bit/s
<input checked="" type="checkbox"/>	19200 bit/s

A4.2.1.2 Link Layer

There are no selection options for the link layer.

A4.2.1.3 Application Layer

A4.2.1.3.1 Transmission Mode for Application Data

Mode 1 (least significant octet first) as defined in clause 4.10 of IEC 60870-5-4 is used exclusively in this companion standard.

A4.2.1.3.2 Common Address of ASDU

<input checked="" type="checkbox"/>	One COMMON ADDRESS of ASDU (identical to the station address)
<input type="checkbox"/>	More than one COMMON ADDRESS of ASDU

A4.2.1.3.3 Selection of Standard Information Numbers in Monitor Direction

System Functions in Monitor Direction

	INF	Description
<input checked="" type="checkbox"/>	<0>	End of general interrogation
<input checked="" type="checkbox"/>	<0>	Time synchronization
<input checked="" type="checkbox"/>	<2>	Reset FCB
<input checked="" type="checkbox"/>	<3>	Reset CU
<input checked="" type="checkbox"/>	<4>	Start / restart
<input type="checkbox"/>	<5>	Power on

Status Indications in Monitor Direction

	INF	Description	P532 Designations (Address) Description
<input checked="" type="checkbox"/>	<16>	Auto-recloser active	(015 064) ARC: Enabled
<input checked="" type="checkbox"/>	<17>	Teleprotection active	(015 008) PSIG: Enabled
<input checked="" type="checkbox"/>	<18>	Protection active	(003 030) MAIN: Device on-line
<input checked="" type="checkbox"/>	<19>	LED reset	(021 010) MAIN: Reset indicat. USER
<input checked="" type="checkbox"/>	<20>	Blocking of monitor direction	(037 075) COMM1: Sig./meas.val.block.
<input checked="" type="checkbox"/>	<21>	Test mode	(037 071) MAIN: Test mode
<input type="checkbox"/>	<22>	Local parameter setting	
<input checked="" type="checkbox"/>	<23>	Characteristic 1	(036 090) PSS: PS 1 active
<input checked="" type="checkbox"/>	<24>	Characteristic 2	(036 091) PSS: PS 2 active
<input checked="" type="checkbox"/>	<25>	Characteristic 3	(036 092) PSS: PS 3 active
<input checked="" type="checkbox"/>	<26>	Characteristic 4	(036 093) PSS: PS 4 active
<input checked="" type="checkbox"/>	<27>	Auxiliary input 1	(034 000) LOGIC: Input 01 EXT
<input checked="" type="checkbox"/>	<28>	Auxiliary input 2	(034 001) LOGIC: Input 02 EXT
<input checked="" type="checkbox"/>	<29>	Auxiliary input 3	(034 002) LOGIC: Input 03 EXT
<input checked="" type="checkbox"/>	<30>	Auxiliary input 4	(034 003) LOGIC: Input 04 EXT

Monitoring Signals (Supervision Indications) in Monitor Direction

	INF	Description	P532 Designations (Address) Description
<input checked="" type="checkbox"/>	<32>	Measurand supervision I	(040 087) MCMON: Meas. circ. I faulty
<input checked="" type="checkbox"/>	<33>	Measurand supervision V	(038 023) MCMON: Meas. circ. V faulty
<input checked="" type="checkbox"/>	<35>	Phase sequence supervision	(038 049) MCMON: Phase sequ. V faulty
<input checked="" type="checkbox"/>	<36>	Trip circuit supervision (The message content is formed from the OR operation of the individual signals.)	(041 200) SFMON: Relay Kxx faulty
<input type="checkbox"/>	<37>	I>> back-up operation	
<input checked="" type="checkbox"/>	<38>	VT fuse failure	(004 061) MAIN: M.c.b. trip V EXT
<input checked="" type="checkbox"/>	<39>	Teleprotection disturbed	(036 060) PSIG: Telecom. faulty
<input checked="" type="checkbox"/>	<46>	Group warning	(036 100) SFMON: Warning (relay)
<input checked="" type="checkbox"/>	<47>	Group alarm	(004 065) MAIN: Blocked/faulty

Earth Fault Indications in Monitor Direction

	INF	Description	P532 Designations (Address) Description
<input checked="" type="checkbox"/>	<48>	Earth fault A	(041 054) MAIN: Ground fault A
<input checked="" type="checkbox"/>	<49>	Earth fault B	(041 055) MAIN: Ground fault B
<input checked="" type="checkbox"/>	<50>	Earth fault C	(041 056) MAIN: Ground fault C
<input checked="" type="checkbox"/>	<51>	Earth fault forward, i.e. line	(041 088) MAIN: Gnd. fault forw./LS
<input checked="" type="checkbox"/>	<52>	Earth fault reverse, i.e. busbar	(041 089) MAIN: Gnd. fault backw./BS

Fault Indications in Monitor Direction

	INF	Description	P532 Designations (Address) Description
<input checked="" type="checkbox"/>	<64>	Start / pick-up A	(040 005) MAIN: Starting A
<input checked="" type="checkbox"/>	<65>	Start / pick-up B	(040 006) MAIN: Starting B
<input checked="" type="checkbox"/>	<66>	Start / pick-up C	(040 007) MAIN: Starting C
<input checked="" type="checkbox"/>	<67>	Start / pick-up N	(040 008) MAIN: Starting GF
<input checked="" type="checkbox"/>	<68>	General trip	(036 071) MAIN: Gen. trip command 1
<input type="checkbox"/>	<69>	Trip A	
<input type="checkbox"/>	<70>	Trip B	
<input type="checkbox"/>	<71>	Trip C	
<input type="checkbox"/>	<72>	Trip I>> (back-up operation)	
<input checked="" type="checkbox"/>	<73>	Fault location X in ohms	(004 029) FT_DA: Fault react., prim.
<input checked="" type="checkbox"/>	<74>	Fault forward/line	(036 018) SCDD: Fault P forward
<input checked="" type="checkbox"/>	<75>	Fault reverse/busbar	(036 019) SCDD: Fault P backward
<input checked="" type="checkbox"/>	<76>	Teleprotection signal transmitted	(036 035) PSIG: Send (signal)
<input checked="" type="checkbox"/>	<77>	Teleprotection signal received	(037 029) PSIG: Receive (signal)
<input type="checkbox"/>	<78>	Zone 1	
<input type="checkbox"/>	<79>	Zone 2	
<input type="checkbox"/>	<80>	Zone 3	
<input type="checkbox"/>	<81>	Zone 4	
<input type="checkbox"/>	<82>	Zone 5	
<input type="checkbox"/>	<83>	Zone 6	
<input checked="" type="checkbox"/>	<84>	General starting	(040 000) MAIN: General starting
<input checked="" type="checkbox"/>	<85>	Breaker failure	(036 017) CBF: CB failure
<input type="checkbox"/>	<86>	Trip measuring system A	
<input type="checkbox"/>	<87>	Trip measuring system B	
<input type="checkbox"/>	<88>	Trip measuring system C	
<input type="checkbox"/>	<89>	Trip measuring system N	
<input checked="" type="checkbox"/>	<90>	Trip I>	(040 042) MAIN: TripSig. tI>/tIrefP>
<input checked="" type="checkbox"/>	<91>	Trip I>>	(040 011) DTOC: Trip signal tI>>

	INF	Description	P532 Designations (Address) Description
[✓]	<92>	Trip IN>	(040 043) MAIN: TripSig tIN>/tlrefN>
[✓]	<93>	Trip IN>>	(040 028) DTOC: Trip signal tIN>>

Auto-Reclosure Indications in Monitor Direction

	INF	Description	P532 Designations (Address) Description
[✓]	<128>	CB 'on' by AR	(037 007) ARC: (Re)close signal HSR
[✓]	<129>	CB 'on' by long-time AR	(037 006) ARC: (Re)close signal TDR
[✓]	<130>	AR blocked	(037 008) ARC: Not ready

Measurands in Monitor Direction

	INF	Description	P532 Designations (Address) Description
[✓]	<144>	Measurand I (only with setting COMM1: Transm.enab.cycl .dat to ASDU 3.1 per IEC)	(006 041) MAIN: Current B p.u.
[✓]	<145>	Measurands I, V (only with setting COMM1: Transm.enab.cycl .dat to ASDU 3.2 per IEC)	(006 041) MAIN: Current B p.u. (005 045) MAIN: Voltage A-B p.u.
[✓]	<146>	Measurands I, V, P, Q (only with setting COMM1: Transm.enab.cycl .dat to ASDU 3.3 per IEC)	(006 041) MAIN: Current B p.u. (005 045) MAIN: Voltage A-B p.u. (004 051) MAIN: Active power P p.u. (004 053) MAIN: Reac. power Q p.u.
[✓]	<147>	Measurands I_N , V_{EN} (only with setting COMM1: Transm.enab.cycl .dat to ASDU 3.4 per IEC)	(005 011) MAIN: Current $\Sigma(IP)$ p.u. (005 013) MAIN: Volt. $\Sigma(VPG)/\sqrt{3}$ p.u.
[✓]	<148>	Measurands $I_{A,B,C}$, $V_{A,B,C}$, P, Q, f (only with setting COMM1: Transm.enab.cycl .dat to ASDU 9 per IEC)	(005 041) MAIN: Current A p.u. (006 041) MAIN: Current B p.u. (007 041) MAIN: Current C p.u. (005 043) MAIN: Voltage A-G p.u. (006 043) MAIN: Voltage B-G p.u. (007 043) MAIN: Voltage C-G p.u. (004 051) MAIN: Active power P p.u. (004 053) MAIN: Reac. power Q p.u. (004 040) MAIN: Frequency f

Generic Functions in Monitor Direction

	INF	Description
[]	<240>	Read headings of all defined groups
[]	<241>	Read values or attributes of all entries of one group
[]	<243>	Read directory of a single entry
[]	<244>	Read value or attribute of a single entry
[]	<245>	General interrogation of generic data
[]	<249>	Write entry with confirmation
[]	<250>	Write entry with execution
[]	<251>	Write entry abort

A4.2.1.3.4 Selection of Standard Information Numbers in Control Direction

System Functions in Control Direction

	INF	Description
[✓]	<0>	Initiation of general interrogation
[✓]	<0>	Time synchronization

General Commands in Control Direction

	INF	Description	P532 Designations (Address) Description
[✓]	<16>	Auto-recloser on/off	(015 064) ARC: Enabled
[✓]	<17>	Teleprotection on/off	(015 004) PSIG: General enable USER
[✓]	<18>	Protection on/off	(003 030) MAIN: Device on-line
[✓]	<19>	LED reset	(021 010) MAIN: Reset indicat. USER
[✓]	<23>	Activate characteristic 1 (Switches PSS: Param.subs.sel. USER to <i>Parameter subset</i> 1.)	(003 060) PSS: Param.subs.sel. USER
[✓]	<24>	Activate characteristic 2 (Switches PSS: Param.subs.sel. USER to <i>Parameter subset</i> 2.)	(003 060) PSS: Param.subs.sel. USER
[✓]	<25>	Activate characteristic 3 (Switches PSS: Param.subs.sel. USER to <i>Parameter subset</i> 3.)	(003 060) PSS: Param.subs.sel. USER
[✓]	<26>	Activate characteristic 4 (Switches PSS: Param.subs.sel. USER to <i>Parameter subset</i> 4.)	(003 060) PSS: Param.subs.sel. USER

Generic Functions in Control Direction

	INF	Description
[]	<240>	Read headings of all defined groups
[]	<241>	Read values or attributes of all entries of one group
[]	<243>	Read directory of a single entry
[]	<244>	Read value or attribute of a single entry
[]	<245>	General interrogation of generic data
[]	<248>	Write entry
[]	<249>	Write entry with confirmation
[]	<250>	Write entry with execution
[]	<251>	Write entry abort

A4.2.1.3.5 Basic Application Functions

<input checked="" type="checkbox"/>	Test mode
<input checked="" type="checkbox"/>	Blocking of monitor direction
<input checked="" type="checkbox"/>	Disturbance data
<input type="checkbox"/>	Generic services
<input checked="" type="checkbox"/>	Private data

A4.2.1.3.6 Miscellaneous

Measured values are transmitted both with ASDU 3 and ASDU 9. As defined in Sec. 7.2.6.8, the maximum MVAL can be either 1.2 or 2.4 times the rated value. In ASDU 3 and ASDU 9, different ratings may not be used; in other words, there is only one choice for each measurand.

Measured value	Max. MVAL = nom. value multiplied by		
	1.2	or	2.4
Current A	<input type="checkbox"/>		<input checked="" type="checkbox"/>
Current B	<input type="checkbox"/>		<input checked="" type="checkbox"/>
Current C	<input type="checkbox"/>		<input checked="" type="checkbox"/>
Voltage A-G	<input type="checkbox"/>		<input checked="" type="checkbox"/>
Voltage B-G	<input type="checkbox"/>		<input checked="" type="checkbox"/>
Voltage C-G	<input type="checkbox"/>		<input checked="" type="checkbox"/>
Enabled power P	<input type="checkbox"/>		<input checked="" type="checkbox"/>
Reactive power Q	<input type="checkbox"/>		<input checked="" type="checkbox"/>
Frequency f	<input type="checkbox"/>		<input checked="" type="checkbox"/>
Voltage A-B	<input type="checkbox"/>		<input checked="" type="checkbox"/>

A5 List of Bay Types

A5.1 Key to the List of Bay Types

Supported Bay Types

In general, the selection of a bay type (via MAIN: Type of bay) is accepted by the P532 only if all of the following requirements are fulfilled:

- The selected ID number is known by the P532, i. e. is either available as a pre-defined standard bay type, or matches a bay type definition that has been loaded as a customized bay type into the P532 memory in file transfer mode. (Customized bay types are not supported for P532 with text display.)
- A binary I/O module has been fitted to slot 6 (40 TE case) or 12 (84 TE case).
- The hardware (in particular the set of all binary I/O modules and power supply) has got a sufficient number of inputs and outputs as required by the selected bay type.
- None of the inputs/outputs required by the selected bay type has been previously assigned to a non-control function.

In case of the setting MAIN: Auto-assignment I/O = Yes, the following two constraints must be noted:

- The activation of a new bay type overwrites all DEVxx / SIG_1 / CMD_1 assignments to I/O elements that have been previously made (for the previous bay type definition).
- If the automatic I/O assignment fails because some required inputs and outputs have been assigned to a non-control function, or because the number of I/O elements available is not sufficient, then the previously selected bay type remains active and an error message "Signal from device: Hardware module not fitted (0x8063)" is reported in the "kommprot.txt" log file.

Some bay types are only applicable if the required hardware order option is fitted:

- If an **HMI with text display** is used, bay types with more than 3 switchgear devices are not supported.
- If an **HMI with graphic display** is used, bay types with more than 3 switchgear devices are supported.

Sorting the Bay Types

The bay types are sorted by the criteria listed below. These criteria are encoded in the first three characters of the bay type code (example: **A11.100.R01**) given in brackets after the Bay Type No. (example: **2**). Sorting is first by "Type of bay" in the order given below, then within each group by the second and third character in ascending order.

- Type of bay
 - A – Feeder bays
 - L – Bus sectionalizer bay
 - Q –Bus coupler bay
 - K – Bus coupler and sectionalizer bay
 - M – Busbar measurement bay
 - E – Busbar grounding bay
 - X – Other bay type
- Number of busbars
 - 1 – Single busbar
 - 2 – Double busbar
 - 9 – Without busbar / other configurations
- Equipment
 - 1 – Bays with switch truck or withdrawable switchgear assembly
 - 2 – Bays with two circuit breakers or switch disconnectors on switch trucks or withdrawable switchgear assembly
 - 3 – Bays with stationary switchgear units
 - 5 – Bays with stationary switchgear units and three-position disconnector
 - 9 – Other bay types

Key

Bay Type No.: This number indicates the value to be set at MAIN: Type of bay (Menu branch *Par/Conf*) in order to configure the unit for the selected bay type.

Special Designations for External Devices:

- *Mot.relay*: Motor relay
- *Shunt wd.:* Shunt winding

Table “Assignment of Binary Inputs and Output Relays”:

Column “*Switchgear unit*”: This column begins with the designation for the external device (switchgear unit). The function group follows in brackets. The function group encompasses all setting options for monitoring the switchgear unit and its signals. “Open” and “Close(d)” indicate the signal message or control direction of the switchgear unit.

Column “*Binary Input*”: The “Open” or “Closed” signal should be connected to the binary input U xxxx. The connection points of the binary input U xxxx are shown in the terminal connection diagrams.

Column “*Output relay*”: The “Open” or “Close” control of the switchgear unit is effected via output relay K xxxx. The connection points of the output relay K xxxx are shown in the terminal connection diagrams.

Table “Bay Interlock Equations for Operation without Station Interlocking”:

The interlock equations are stored at substation control level, not at unit level.

Symbols used in the Boolean interlock equations:

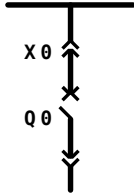
- **/**: Negation
- **0**: Switchgear unit "Open"
- **1**: Switchgear unit "Closed"
- **X**: Switchgear unit in intermediate position
- **FctBI1**: Function block 1, configuration at MAIN: Inp.asg. fct.block.1
(menu branch *Par/Func/Cont*)
- **FctBI2**: Function block 1, configuration at MAIN: Inp.asg. fct.block.2
(menu branch *Par/Func/Cont*)

A5.2 Predefined Bay Types

A5.2.1 Feeder Bays

A5.2.1.1 Bay type No. 2: Feeder bay with circuit breaker, single busbar

A11.100.R01

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
X0 (DEV02)	Open	U A03	/	
	Close(d)	U A04	/	

Tab. A5-1: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(X0=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$

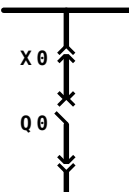
Tab. A5-2: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(X0=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$

Tab. A5-3: Bay Interlock Equations for Operation with Station Interlocking

A5.2.1.2**Bay type No. 3: Feeder bay with circuit breaker, single busbar**

A11.100.R02

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
X0 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	

Tab. A5-4: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(X0=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$
X0	Open	$(Q0=0)$
	Close(d)	$(Q0=0)$

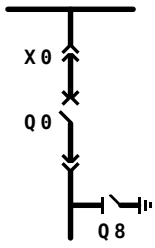
Tab. A5-5: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(X0=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$
X0	Open	$(Q0=0)$
	Close(d)	$(Q0=0)$

Tab. A5-6: Bay Interlock Equations for Operation with Station Interlocking

A5.2.1.3**Bay type No. 546: Feeder bay with circuit breaker, single busbar, direct motor control**

A11.101.M03

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
X0 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
Q8 (DEV03)	Open	U A05	K A05	
	Close(d)	U A06	K A06	
Motor relay (SIG_1: Signal S012 EXT)		U B06	/	
Shunt winding (CMD_1: Command C011)		/	K B05	
Motor relay (CMD_1: Command C012)		/	K B06	

Tab. A5-7: Assignment of Binary Inputs and Output Relays

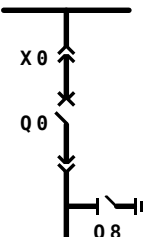
Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(X0=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$
Q8	Close(d)	$(X0=0)$
X0	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q8=0)$

Tab. A5-8: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(X0=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$
Q8	Close(d)	$(X0=0)$
X0	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q8=0)$

Tab. A5-9: Bay Interlock Equations for Operation with Station Interlocking

A5.2.1.4 Bay type No. 4: Feeder bay with circuit breaker, single busbar
A11.101.R01

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
X0 (DEV02)	Open	U A03	/	
	Close(d)	U A04	/	
Q8 (DEV03)	Open	U A05	/	
	Close(d)	U A06	/	

Tab. A5-10: Assignment of Binary Inputs and Output Relays

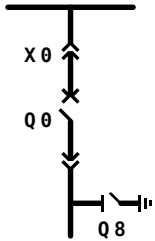
Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(X0=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$

Tab. A5-11: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(X0=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$

Tab. A5-12: Bay Interlock Equations for Operation with Station Interlocking

A5.2.1.5 Bay type No. 5: Feeder bay with circuit breaker, single busbar
A11.101.R02

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
X0 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
Q8 (DEV03)	Open	U A05	/	
	Close(d)	U A06	/	

Tab. A5-13: Assignment of Binary Inputs and Output Relays

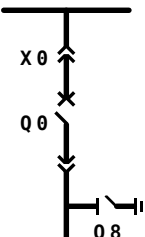
Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(X0=X) \ \& \ \neg(FctBl1=I) \ \& \ \neg(FctBl2=I)$
X0	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q8=0)$

Tab. A5-14: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(X0=X) \ \& \ \neg(FctBl1=I) \ \& \ \neg(FctBl2=I)$
X0	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q8=0)$

Tab. A5-15: Bay Interlock Equations for Operation with Station Interlocking

A5.2.1.6 Bay type No. 6: Feeder bay with circuit breaker, single busbar
A11.101.R03

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
X0 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
Q8 (DEV03)	Open	U A05	K A05	
	Close(d)	U A06	K A06	

Tab. A5-16: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(X0=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$
Q8	Close(d)	$(X0=0)$
X0	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q8=0)$

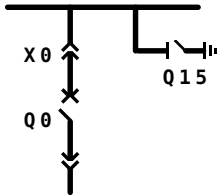
Tab. A5-17: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(X0=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$
Q8	Close(d)	$(X0=0)$
X0	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q8=0)$

Tab. A5-18: Bay Interlock Equations for Operation with Station Interlocking

A5.2.1.7**Bay type No. 523: Feeder bay with circuit breaker, single busbar**

A11.108.R01

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
X0 (DEV02)	Open	U A03	/	
	Close(d)	U A04	/	
Q15 (DEV03)	Open	U A05	/	
	Close(d)	U A06	/	

Tab. A5-19: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(X0=X) \ \& \ (Q15=0) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$

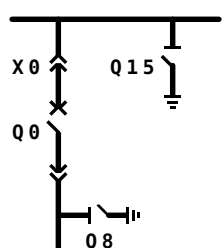
Tab. A5-20: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(X0=X) \ \& \ (Q15=0) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$

Tab. A5-21: Bay Interlock Equations for Operation with Station Interlocking

A5.2.1.8**Bay type No. 549: Feeder bay with circuit breaker, single busbar, direct motor control**

A11.109.M03

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q8 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
X0 (DEV03)	Open	U A05	K A05	
	Close(d)	U A06	K A06	
Q15 (DEV04)	Open	U B01	/	
	Close(d)	U B02	/	
Motor relay (SIG_1: Signal S012 EXT)		U B06	/	
Shunt winding (CMD_1: Command C011)		/	K B05	
Motor relay (CMD_1: Command C012)		/	K B06	

Tab. A5-22: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(X0=X) \ \& \ (Q15=0) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$
Q8	Close(d)	$(X0=0)$
X0	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q8=0) \ \& \ (Q15=0)$

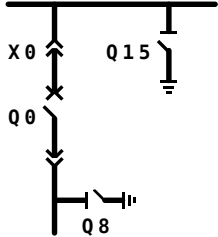
Tab. A5-23: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(X0=X) \ \& \ (Q15=0) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$
Q8	Close(d)	$(X0=0)$
X0	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q8=0) \ \& \ (Q15=0)$

Tab. A5-24: Bay Interlock Equations for Operation with Station Interlocking

A5.2.1.9**Bay type No. 244: Feeder bay with circuit breaker, single busbar**

A11.109.R01

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
X0 (DEV02)	Open	U A03	/	
	Close(d)	U A04	/	
Q8 (DEV03)	Open	U A05	/	
	Close(d)	U A06	/	
Q15 (DEV07)	Open	U C01	/	
	Close(d)	U C02	/	

Tab. A5-25: Assignment of Binary Inputs and Output Relays

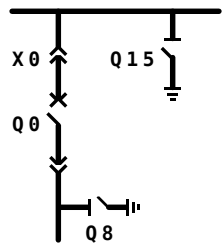
Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(X0=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$

Tab. A5-26: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(X0=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$

Tab. A5-27: Bay Interlock Equations for Operation with Station Interlocking

A5.2.1.10 Bay type No. 544: Feeder bay with circuit breaker, single busbar
A11.109.R03

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
X0 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
Q8 (DEV03)	Open	U A05	K A05	
	Close(d)	U A06	K A06	
Q15 (DEV04)	Open	U B01	/	
	Close(d)	U B02	/	

Tab. A5-28: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(X0=X) \ \& \ (Q15=0) \ \& \ \neg(\text{FctBl1}=1) \ \& \ \neg(\text{FctBl2}=1)$
Q8	Close(d)	$(X0=0)$
X0	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q8=0) \ \& \ (Q15=0)$

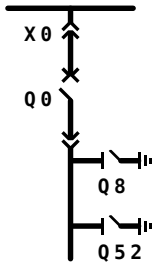
Tab. A5-29: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(X0=X) \ \& \ (Q15=0) \ \& \ \neg(\text{FctBl1}=1) \ \& \ \neg(\text{FctBl2}=1)$
Q8	Close(d)	$(X0=0)$
X0	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q8=0) \ \& \ (Q15=0)$

Tab. A5-30: Bay Interlock Equations for Operation with Station Interlocking

A5.2.1.11**Bay type No. 567: Feeder bay with circuit breaker, single busbar**

A11.132.R01

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
X0 (DEV02)	Open	U A03	/	
	Close(d)	U A04	/	
Q8 (DEV03)	Open	U A05	/	
	Close(d)	U A06	/	
Q52 (DEV05)	Open	U B03	/	
	Close(d)	U B04	/	

Tab. A5-31: Assignment of Binary Inputs and Output Relays

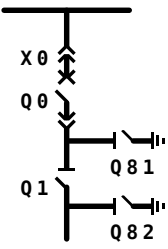
Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(X0=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$

Tab. A5-32: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(X0=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$

Tab. A5-33: Bay Interlock Equations for Operation with Station Interlocking

A5.2.1.12 Bay type No. 521: Feeder bay with circuit breaker, single busbar
A11.134.R02.1

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
X0 (DEV02)	Open	U A03	/	
	Close(d)	U A04	/	
Q1 (DEV03)	Open	U A05	K A05	
	Close(d)	U A06	K A06	
Q81 (DEV04)	Open	U B01	/	
	Close(d)	U B02	/	
Q82 (DEV05)	Open	U B03	/	
	Close(d)	U B04	/	

Tab. A5-34: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(X0=X) \ \& \ \neg(Q1=X) \ \& \ (Q82=0) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$
Q1	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q81=0) \ \& \ (Q82=0)$

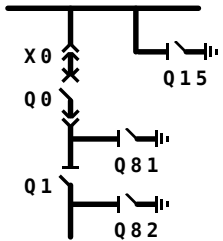
Tab. A5-35: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(X0=X) \ \& \ \neg(Q1=X) \ \& \ (Q82=0) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$
Q1	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q81=0) \ \& \ (Q82=0)$

Tab. A5-36: Bay Interlock Equations for Operation with Station Interlocking

A5.2.1.13**Bay type No. 519: Feeder bay with circuit breaker, single busbar**

A11.135.R02.1

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
X0 (DEV02)	Open	U A03	/	
	Close(d)	U A04	/	
Q1 (DEV03)	Open	U A05	K A05	
	Close(d)	U A06	K A06	
Q81 (DEV04)	Open	U B01	/	
	Close(d)	U B02	/	
Q82 (DEV05)	Open	U B03	/	
	Close(d)	U B04	/	
Q15 (DEV06)	Open	U B05	/	
	Close(d)	U B06	/	

Tab. A5-37: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(X0=X) \ \& \ \neg(Q1=X) \ \& \ (Q15=0) \ \& \ (Q82=0) \ \& \ \neg(\text{FctBI1}=I) \ \& \ \neg(\text{FctBI2}=I)$
Q1	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q81=0) \ \& \ (Q82=0)$

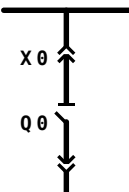
Tab. A5-38: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(X0=X) \ \& \ \neg(Q1=X) \ \& \ (Q15=0) \ \& \ (Q82=0) \ \& \ \neg(\text{FctBI1}=I) \ \& \ \neg(\text{FctBI2}=I)$
Q1	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q81=0) \ \& \ (Q82=0)$

Tab. A5-39: Bay Interlock Equations for Operation with Station Interlocking

A5.2.1.14**Bay type No. 7: Feeder bay with switch disconnecter, single busbar**

A11.200.R01

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
X0 (DEV02)	Open	U A03	/	
	Close(d)	U A04	/	

Tab. A5-40: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(X0=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$

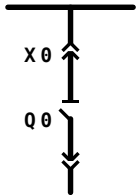
Tab. A5-41: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(X0=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$

Tab. A5-42: Bay Interlock Equations for Operation with Station Interlocking

A5.2.1.15**Bay type No. 8: Feeder bay with switch disconnecter, single busbar**

A11.200.R02

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
X0 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	

Tab. A5-43: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(X0=X) \ \& \ \neg(FctBl1=I) \ \& \ \neg(FctBl2=I)$
X0	Open	$(Q0=0)$
	Close(d)	$(Q0=0)$

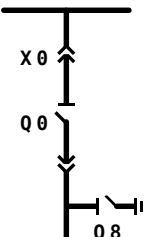
Tab. A5-44: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(X0=X) \ \& \ \neg(FctBl1=I) \ \& \ \neg(FctBl2=I)$
X0	Open	$(Q0=0)$
	Close(d)	$(Q0=0)$

Tab. A5-45: Bay Interlock Equations for Operation with Station Interlocking

A5.2.1.16**Bay type No. 9: Feeder bay with switch disconnecter, single busbar**

A11.201.R01

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
X0 (DEV02)	Open	U A03	/	
	Close(d)	U A04	/	
Q8 (DEV03)	Open	U A05	/	
	Close(d)	U A06	/	

Tab. A5-46: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(X0=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$

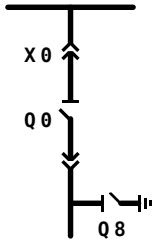
Tab. A5-47: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(X0=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$

Tab. A5-48: Bay Interlock Equations for Operation with Station Interlocking

A5.2.1.17**Bay type No. 10: Feeder bay with switch disconnecter, single busbar**

A11.201.R02

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
X0 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
Q8 (DEV03)	Open	U A05	/	
	Close(d)	U A06	/	

Tab. A5-49: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(X0=X) \ \& \ \neg(FctBl1=I) \ \& \ \neg(FctBl2=I)$
X0	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q8=0)$

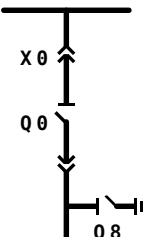
Tab. A5-50: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(X0=X) \ \& \ \neg(FctBl1=I) \ \& \ \neg(FctBl2=I)$
X0	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q8=0)$

Tab. A5-51: Bay Interlock Equations for Operation with Station Interlocking

A5.2.1.18**Bay type No. 11: Feeder bay with switch disconnecter, single busbar**

A11.201.R03

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
X0 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
Q8 (DEV03)	Open	U A05	K A05	
	Close(d)	U A06	K A06	

Tab. A5-52: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(X0=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$
Q8	Close(d)	$(X0=0)$
X0	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q8=0)$

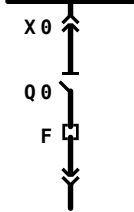
Tab. A5-53: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(X0=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$
Q8	Close(d)	$(X0=0)$
X0	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q8=0)$

Tab. A5-54: Bay Interlock Equations for Operation with Station Interlocking

A5.2.1.19**Bay type No. 12: Feeder bay with switch disconnecter / fuse unit, single busbar**

A11.400.R01

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
X0 (DEV02)	Open	U A03	/	
	Close(d)	U A04	/	
F (SIG_1: Signal S011 EXT)		U B05	/	

Tab. A5-55: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(X0=X) \ \& \ \neg(FctBl1=I) \ \& \ \neg(FctBl2=I)$

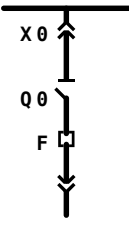
Tab. A5-56: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(X0=X) \ \& \ \neg(FctBl1=I) \ \& \ \neg(FctBl2=I)$

Tab. A5-57: Bay Interlock Equations for Operation with Station Interlocking

A5.2.1.20**Bay type No. 13: Feeder bay with switch disconnecter / fuse unit, single busbar**

A11.400.R02

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
X0 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
F (SIG_1: Signal S011 EXT)		U B05	/	

Tab. A5-58: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(X0=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$
X0	Open	$(Q0=0)$
	Close(d)	$(Q0=0)$

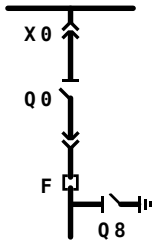
Tab. A5-59: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(X0=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$
X0	Open	$(Q0=0)$
	Close(d)	$(Q0=0)$

Tab. A5-60: Bay Interlock Equations for Operation with Station Interlocking

A5.2.1.21**Bay type No. 14: Feeder bay with switch disconnecter / fuse unit, single busbar**

A11.401.R01

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
X0 (DEV02)	Open	U A03	/	
	Close(d)	U A04	/	
Q8 (DEV03)	Open	U A05	/	
	Close(d)	U A06	/	
F (SIG_1: Signal S011 EXT)		U B05	/	

Tab. A5-61: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(X0=X) \ \& \ \neg(FctBl1=l) \ \& \ \neg(FctBl2=l)$

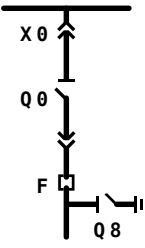
Tab. A5-62: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(X0=X) \ \& \ \neg(FctBl1=l) \ \& \ \neg(FctBl2=l)$

Tab. A5-63: Bay Interlock Equations for Operation with Station Interlocking

A5.2.1.22**Bay type No. 15: Feeder bay with switch disconnecter / fuse unit, single busbar**

A11.401.R02

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
X0 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
Q8 (DEV03)	Open	U A05	/	
	Close(d)	U A06	/	
F (SIG_1: Signal S011 EXT)		U B05	/	

Tab. A5-64: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(X0=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$
X0	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q8=0)$

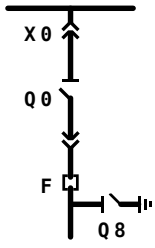
Tab. A5-65: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(X0=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$
X0	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q8=0)$

Tab. A5-66: Bay Interlock Equations for Operation with Station Interlocking

A5.2.1.23**Bay type No. 16: Feeder bay with switch disconnecter / fuse unit, single busbar**

A11.401.R03

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
X0 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
Q8 (DEV03)	Open	U A05	K A05	
	Close(d)	U A06	K A06	
F (SIG_1: Signal S011 EXT)		U B05	/	

Tab. A5-67: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(X0=X) \ \& \ \neg(FctBl1=I) \ \& \ \neg(FctBl2=I)$
Q8	Close(d)	$(X0=0)$
X0	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q8=0)$

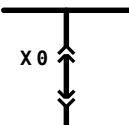
Tab. A5-68: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(X0=X) \ \& \ \neg(FctBl1=I) \ \& \ \neg(FctBl2=I)$
Q8	Close(d)	$(X0=0)$
X0	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q8=0)$

Tab. A5-69: Bay Interlock Equations for Operation with Station Interlocking

A5.2.1.24**Bay type No. 17: Feeder bay with other switchgear unit, single busbar**

A11.900.R01

Switchgear unit		Binary input	Output relay	
X0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	

Tab. A5-70: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
		—

Tab. A5-71: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
		—

Tab. A5-72: Bay Interlock Equations for Operation with Station Interlocking

A5.2.1.25**Bay type No. 504: Feeder bay with other switchgear unit, single busbar**
A11.901.R00

Switchgear unit		Binary input	Output relay	
X0 (DEV02)	Open	U A03	/	
	Close(d)	U A04	/	
Q8 (DEV03)	Open	U A05	/	
	Close(d)	U A06	/	

Tab. A5-73: Assignment of Binary Inputs and Output Relays

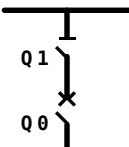
Switchgear unit	Control O/C	Interlock equation
		—

Tab. A5-74: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
		—

Tab. A5-75: Bay Interlock Equations for Operation with Station Interlocking

A5.2.1.26**Bay type No. 541: Feeder bay with circuit breaker, single busbar**
A13.104.R01

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q1 (DEV02)	Open	U A03	/	
	Close(d)	U A04	/	

Tab. A5-76: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(\text{FctBI1}=\text{I}) \ \& \ \neg(\text{FctBI2}=\text{I})$

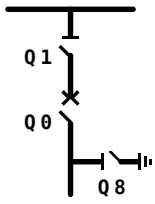
Tab. A5-77: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(\text{FctBI1}=\text{I}) \ \& \ \neg(\text{FctBI2}=\text{I})$

Tab. A5-78: Bay Interlock Equations for Operation with Station Interlocking

A5.2.1.27**Bay type No. 18: Feeder bay with circuit breaker, single busbar, direct motor control**

A13.105.M03

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q1 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
Q8 (DEV03)	Open	U A05	K A05	
	Close(d)	U A06	K A06	
Motor relay (SIG_1: Signal S012 EXT)		U B06	/	
Shunt winding (CMD_1: Command C011)		/	K B05	
Motor relay (CMD_1: Command C012)		/	K B06	

Tab. A5-79: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q1=X) \ \& \ (Q8=0) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$
Q1	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q8=0)$
Q8	Close(d)	$(Q0=0) \ \& \ (Q1=0)$

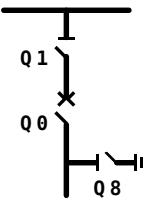
Tab. A5-80: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q1=X) \ \& \ (Q8=0) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$
Q1	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q8=0)$
Q8	Close(d)	$(Q0=0) \ \& \ (Q1=0)$

Tab. A5-81: Bay Interlock Equations for Operation with Station Interlocking

A5.2.1.28**Bay type No. 19: Feeder bay with circuit breaker, single busbar**

A13.105.R01

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q1 (DEV02)	Open	U A03	/	
	Close(d)	U A04	/	
Q8 (DEV03)	Open	U A05	/	
	Close(d)	U A06	/	

Tab. A5-82: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q1=X) \ \& \ (Q8=0) \ \& \ \neg(FctBl1=I) \ \& \ \neg(FctBl2=I)$

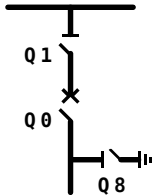
Tab. A5-83: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q1=X) \ \& \ (Q8=0) \ \& \ \neg(FctBl1=I) \ \& \ \neg(FctBl2=I)$

Tab. A5-84: Bay Interlock Equations for Operation with Station Interlocking

A5.2.1.29**Bay type No. 20: Feeder bay with circuit breaker, single busbar**

A13.105.R02

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q1 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
Q8 (DEV03)	Open	U A05	/	
	Close(d)	U A06	/	

Tab. A5-85: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q1=X) \ \& \ (Q8=0) \ \& \ \neg(\text{FctBI1}=I) \ \& \ \neg(\text{FctBI2}=I)$
Q1	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q8=0)$

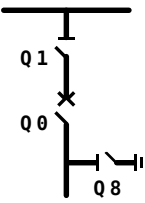
Tab. A5-86: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q1=X) \ \& \ (Q8=0) \ \& \ \neg(\text{FctBI1}=I) \ \& \ \neg(\text{FctBI2}=I)$
Q1	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q8=0)$

Tab. A5-87: Bay Interlock Equations for Operation with Station Interlocking

A5.2.1.30**Bay type No. 21: Feeder bay with circuit breaker, single busbar**

A13.105.R03

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q1 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
Q8 (DEV03)	Open	U A05	K A05	
	Close(d)	U A06	K A06	

Tab. A5-88: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q1=X) \ \& \ (Q8=0) \ \& \ \neg(\text{FctBl1}=I) \ \& \ \neg(\text{FctBl2}=I)$
Q1	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q8=0)$
Q8	Close(d)	$(Q0=0) \ \& \ (Q1=0)$

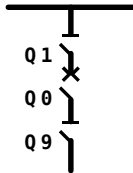
Tab. A5-89: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q1=X) \ \& \ (Q8=0) \ \& \ \neg(\text{FctBl1}=I) \ \& \ \neg(\text{FctBl2}=I)$
Q1	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q8=0)$
Q8	Close(d)	$(Q0=0) \ \& \ (Q1=0)$

Tab. A5-90: Bay Interlock Equations for Operation with Station Interlocking

A5.2.1.31**Bay type No. 557: Feeder bay with circuit breaker, single busbar**

A13.106.R03

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q1 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
Q9 (DEV03)	Open	U A05	K A05	
	Close(d)	U A06	K A06	

Tab. A5-91: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q1=X) \ \& \ \neg(Q9=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$
Q1	Open	$(Q0=0)$
	Close(d)	$(Q0=0)$
Q9	Open	$(Q0=0)$
	Close(d)	$(Q0=0)$

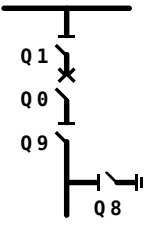
Tab. A5-92: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q1=X) \ \& \ \neg(Q9=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$
Q1	Open	$(Q0=0)$
	Close(d)	$(Q0=0)$
Q9	Open	$(Q0=0)$
	Close(d)	$(Q0=0)$

Tab. A5-93: Bay Interlock Equations for Operation with Station Interlocking

A5.2.1.32**Bay type No. 22: Feeder bay with circuit breaker, single busbar, direct motor control**

A13.107.M04

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q1 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
Q9 (DEV03)	Open	U A05	K A05	
	Close(d)	U A06	K A06	
Q8 (DEV04)	Open	U B01	K B01	
	Close(d)	U B02	K B02	
Motor relay (SIG_1: Signal S012 EXT)		U B06	/	
Shunt winding (CMD_1: Command C011)		/	K B05	
Motor relay (CMD_1: Command C012)		/	K B06	

Tab. A5-94: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q1=X) \ \& \ \neg(Q9=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$
Q1	Open	$(Q0=0)$
	Close(d)	$(Q0=0)$
Q8	Close(d)	$(Q9=0)$
Q9	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q8=0)$

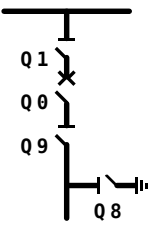
Tab. A5-95: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q1=X) \ \& \ \neg(Q9=X) \ \& \ \neg(\text{FctBI1}=I) \ \& \ \neg(\text{FctBI2}=I)$
Q1	Open	$(Q0=0)$
	Close(d)	$(Q0=0)$
Q8	Close(d)	$(Q9=0)$
Q9	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q8=0)$

Tab. A5-96: Bay Interlock Equations for Operation with Station Interlocking

A5.2.1.33**Bay type No. 23: Feeder bay with circuit breaker, single busbar**

A13.107.R01

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q1 (DEV02)	Open	U A03	/	
	Close(d)	U A04	/	
Q9 (DEV03)	Open	U A05	/	
	Close(d)	U A06	/	
Q8 (DEV04)	Open	U B01	/	
	Close(d)	U B02	/	

Tab. A5-97: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q1=X) \ \& \ \neg(Q9=X) \ \& \ \neg(\text{FctBI1}=I) \ \& \ \neg(\text{FctBI2}=I)$

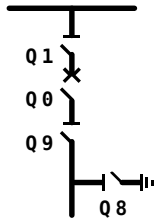
Tab. A5-98: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q1=X) \ \& \ \neg(Q9=X) \ \& \ \neg(\text{FctBI1}=I) \ \& \ \neg(\text{FctBI2}=I)$

Tab. A5-99: Bay Interlock Equations for Operation with Station Interlocking

A5.2.1.34**Bay type No. 24: Feeder bay with circuit breaker, single busbar**

A13.107.R03

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q1 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
Q9 (DEV03)	Open	U A05	K A05	
	Close(d)	U A06	K A06	
Q8 (DEV04)	Open	U B01	/	
	Close(d)	U B02	/	

Tab. A5-100: Assignment of Binary Inputs and Output Relays

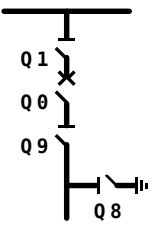
Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q1=X) \ \& \ \neg(Q9=X) \ \& \ \neg(\text{FctBI1}=I) \ \& \ \neg(\text{FctBI2}=I)$
Q1	Open	$(Q0=0)$
	Close(d)	$(Q0=0)$
Q9	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q8=0)$

Tab. A5-101: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q1=X) \ \& \ \neg(Q9=X) \ \& \ \neg(\text{FctBI1}=I) \ \& \ \neg(\text{FctBI2}=I)$
Q1	Open	$(Q0=0)$
	Close(d)	$(Q0=0)$
Q9	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q8=0)$

Tab. A5-102: Bay Interlock Equations for Operation with Station Interlocking

A5.2.1.35 Bay type No. 25: Feeder bay with circuit breaker, single busbar
A13.107.R04

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q1 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
Q9 (DEV03)	Open	U A05	K A05	
	Close(d)	U A06	K A06	
Q8 (DEV04)	Open	U B01	K B01	
	Close(d)	U B02	K B02	

Tab. A5-103: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q1=X) \ \& \ \neg(Q9=X) \ \& \ \neg(\text{FctBI1}=I) \ \& \ \neg(\text{FctBI2}=I)$
Q1	Open	$(Q0=0)$
	Close(d)	$(Q0=0)$
Q8	Close(d)	$(Q9=0)$
Q9	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q8=0)$

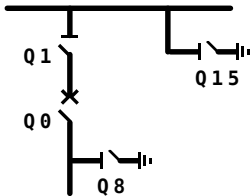
Tab. A5-104: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q1=X) \ \& \ \neg(Q9=X) \ \& \ \neg(\text{FctBI1}=I) \ \& \ \neg(\text{FctBI2}=I)$
Q1	Open	$(Q0=0)$
	Close(d)	$(Q0=0)$
Q8	Close(d)	$(Q9=0)$
Q9	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q8=0)$

Tab. A5-105: Bay Interlock Equations for Operation with Station Interlocking

A5.2.1.36**Bay type No. 508: Feeder bay with circuit breaker, single busbar**

A13.111.R03

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q1 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
Q8 (DEV03)	Open	U A05	K A05	
	Close(d)	U A06	K A06	
Q15 (DEV04)	Open	U B01	/	
	Close(d)	U B02	/	

Tab. A5-106: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q1=X) \ \& \ (Q8=0) \ \& \ (Q15=0) \ \& \ \neg(\text{FctBI1}=I) \ \& \ \neg(\text{FctBI2}=I)$
Q1	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q8=0) \ \& \ (Q15=0)$
Q8	Close(d)	$(Q0=0) \ \& \ (Q1=0)$

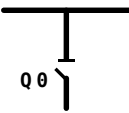
Tab. A5-107: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q1=X) \ \& \ (Q8=0) \ \& \ (Q15=0) \ \& \ \neg(\text{FctBI1}=I) \ \& \ \neg(\text{FctBI2}=I)$
Q1	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q8=0) \ \& \ (Q15=0)$
Q8	Close(d)	$(Q0=0) \ \& \ (Q1=0)$

Tab. A5-108: Bay Interlock Equations for Operation with Station Interlocking

A5.2.1.37**Bay type No. 26: Feeder bay with switch disconnecter, single busbar**

A13.200.R01

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	

Tab. A5-109: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
		—

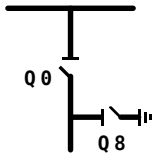
Tab. A5-110: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
		—

Tab. A5-111: Bay Interlock Equations for Operation with Station Interlocking

A5.2.1.38**Bay type No. 27: Feeder bay with switch disconnecter, single busbar, direct motor control**

A13.201.M02

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q8 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
Motor relay (SIG_1: Signal S012 EXT)		U B06	/	
Shunt winding (CMD_1: Command C011)		/	K B05	
Motor relay (CMD_1: Command C012)		/	K B06	

Tab. A5-112: Assignment of Binary Inputs and Output Relays

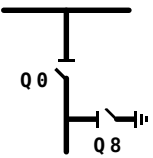
Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$(Q8=0) \ \& \ /(FctBl1=I) \ \& \ /(FctBl2=I)$
Q8	Close(d)	$(Q0=0)$

Tab. A5-113: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$(Q8=0) \ \& \ /(FctBl1=I) \ \& \ /(FctBl2=I)$
Q8	Close(d)	$(Q0=0)$

Tab. A5-114: Bay Interlock Equations for Operation with Station Interlocking

A5.2.1.39 Bay type No. 28: Feeder bay with switch disconnecter, single busbar
A13.201.R01

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q8 (DEV02)	Open	U A03	/	
	Close(d)	U A04	/	

Tab. A5-115: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$(Q8=0) \ \& \ /(FctBI1=I) \ \& \ /(FctBI2=I)$

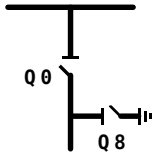
Tab. A5-116: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$(Q8=0) \ \& \ /(FctBI1=I) \ \& \ /(FctBI2=I)$

Tab. A5-117: Bay Interlock Equations for Operation with Station Interlocking

A5.2.1.40**Bay type No. 29: Feeder bay with switch disconnecter, single busbar**

A13.201.R02

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q8 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	

Tab. A5-118: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$(Q8=0) \ \& \ /(FctBl1=I) \ \& \ /(FctBl2=I)$
Q8	Close(d)	$(Q0=0)$

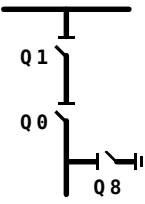
Tab. A5-119: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$(Q8=0) \ \& \ /(FctBl1=I) \ \& \ /(FctBl2=I)$
Q8	Close(d)	$(Q0=0)$

Tab. A5-120: Bay Interlock Equations for Operation with Station Interlocking

A5.2.1.41**Bay type No. 30: Feeder bay with switch disconnecter, single busbar, direct motor control**

A13.205.M03

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q1 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
Q8 (DEV03)	Open	U A05	K A05	
	Close(d)	U A06	K A06	
Motor relay (SIG_1: Signal S012 EXT)		U B06	/	
Shunt winding (CMD_1: Command C011)		/	K B05	
Motor relay (CMD_1: Command C012)		/	K B06	

Tab. A5-121: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q1=X) \ \& \ (Q8=0) \ \& \ \neg(FctBl1=I) \ \& \ \neg(FctBl2=I)$
Q1	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q8=0)$
Q8	Close(d)	$(Q0=0) \ \& \ (Q1=0)$

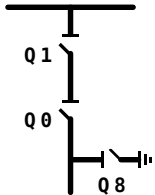
Tab. A5-122: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q1=X) \ \& \ (Q8=0) \ \& \ \neg(FctBl1=I) \ \& \ \neg(FctBl2=I)$
Q1	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q8=0)$
Q8	Close(d)	$(Q0=0) \ \& \ (Q1=0)$

Tab. A5-123: Bay Interlock Equations for Operation with Station Interlocking

A5.2.1.42**Bay type No. 31: Feeder bay with switch disconnecter, single busbar**

A13.205.R01

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q1 (DEV02)	Open	U A03	/	
	Close(d)	U A04	/	
Q8 (DEV03)	Open	U A05	/	
	Close(d)	U A06	/	

Tab. A5-124: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q1=X) \ \& \ (Q8=0) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$

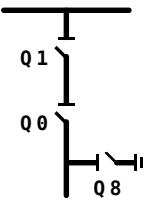
Tab. A5-125: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q1=X) \ \& \ (Q8=0) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$

Tab. A5-126: Bay Interlock Equations for Operation with Station Interlocking

A5.2.1.43**Bay type No. 32: Feeder bay with switch disconnecter, single busbar**

A13.205.R02

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q1 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
Q8 (DEV03)	Open	U A05	/	
	Close(d)	U A06	/	

Tab. A5-127: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q1=X) \ \& \ (Q8=0) \ \& \ \neg(FctBl1=I) \ \& \ \neg(FctBl2=I)$
Q1	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q8=0)$

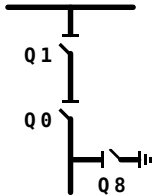
Tab. A5-128: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q1=X) \ \& \ (Q8=0) \ \& \ \neg(FctBl1=I) \ \& \ \neg(FctBl2=I)$
Q1	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q8=0)$

Tab. A5-129: Bay Interlock Equations for Operation with Station Interlocking

A5.2.1.44**Bay type No. 33: Feeder bay with switch disconnecter, single busbar**

A13.205.R03

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q1 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
Q8 (DEV03)	Open	U A05	K A05	
	Close(d)	U A06	K A06	

Tab. A5-130: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q1=X) \ \& \ (Q8=0) \ \& \ \neg(\text{FctBI1}=I) \ \& \ \neg(\text{FctBI2}=I)$
Q1	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q8=0)$
Q8	Close(d)	$(Q0=0) \ \& \ (Q1=0)$

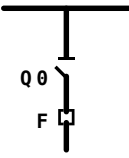
Tab. A5-131: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q1=X) \ \& \ (Q8=0) \ \& \ \neg(\text{FctBI1}=I) \ \& \ \neg(\text{FctBI2}=I)$
Q1	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q8=0)$
Q8	Close(d)	$(Q0=0) \ \& \ (Q1=0)$

Tab. A5-132: Bay Interlock Equations for Operation with Station Interlocking

A5.2.1.45**Bay type No. 34: Feeder bay with switch disconnecter / fuse unit, single busbar**

A13.400.R01

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
F (SIG_1: Signal S011 EXT)		U B05	/	

Tab. A5-133: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
		—

Tab. A5-134: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
		—

Tab. A5-135: Bay Interlock Equations for Operation with Station Interlocking

A5.2.1.46**Bay type No. 35: Feeder bay with switch disconnecter / fuse unit, single busbar, direct motor control**

A13.401.M02

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q8 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
F (SIG_1: Signal S011 EXT)		U B05	/	
Motor relay (SIG_1: Signal S012 EXT)		U B06	/	
Shunt winding (CMD_1: Command C011)		/	K B05	
Motor relay (CMD_1: Command C012)		/	K B06	

Tab. A5-136: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$(Q8=0) \ \& \ /(FctBI1=I) \ \& \ /(FctBI2=I)$
Q8	Close(d)	$(Q0=0)$

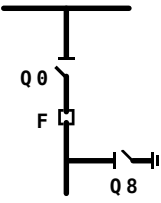
Tab. A5-137: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$(Q8=0) \ \& \ /(FctBI1=I) \ \& \ /(FctBI2=I)$
Q8	Close(d)	$(Q0=0)$

Tab. A5-138: Bay Interlock Equations for Operation with Station Interlocking

A5.2.1.47**Bay type No. 36: Feeder bay with switch disconnecter / fuse unit, single busbar**

A13.401.R01

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q8 (DEV02)	Open	U A03	/	
	Close(d)	U A04	/	
F (SIG_1: Signal S011 EXT)		U B05	/	

Tab. A5-139: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$(Q8=0) \ \& \ /(FctBl1=l) \ \& \ /(FctBl2=l)$

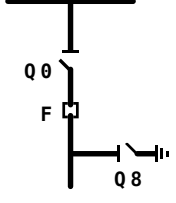
Tab. A5-140: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$(Q8=0) \ \& \ /(FctBl1=l) \ \& \ /(FctBl2=l)$

Tab. A5-141: Bay Interlock Equations for Operation with Station Interlocking

A5.2.1.48**Bay type No. 37: Feeder bay with switch disconnecter / fuse unit, single busbar**

A13.401.R02

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q8 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
F (SIG_1: Signal S011 EXT)		U B05	/	

Tab. A5-142: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$(Q8=0) \ \& \ /(FctBl1=I) \ \& \ /(FctBl2=I)$
Q8	Close(d)	$(Q0=0)$

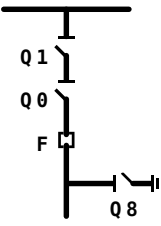
Tab. A5-143: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$(Q8=0) \ \& \ /(FctBl1=I) \ \& \ /(FctBl2=I)$
Q8	Close(d)	$(Q0=0)$

Tab. A5-144: Bay Interlock Equations for Operation with Station Interlocking

A5.2.1.49**Bay type No. 38: Feeder bay with switch disconnecter / fuse unit, single busbar, direct motor control**

A13.405.M03

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q1 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
Q8 (DEV03)	Open	U A05	K A05	
	Close(d)	U A06	K A06	
F (SIG_1: Signal S011 EXT)		U B05	/	
Motor relay (SIG_1: Signal S012 EXT)		U B06	/	
Shunt winding (CMD_1: Command C011)		/	K B05	
Motor relay (CMD_1: Command C012)		/	K B06	

Tab. A5-145: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q1=X) \ \& \ (Q8=0) \ \& \ \neg(FctBl1=I) \ \& \ \neg(FctBl2=I)$
Q1	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q8=0)$
Q8	Close(d)	$(Q0=0) \ \& \ (Q1=0)$

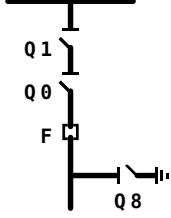
Tab. A5-146: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q1=X) \ \& \ (Q8=0) \ \& \ \neg(FctBl1=I) \ \& \ \neg(FctBl2=I)$
Q1	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q8=0)$
Q8	Close(d)	$(Q0=0) \ \& \ (Q1=0)$

Tab. A5-147: Bay Interlock Equations for Operation with Station Interlocking

A5.2.1.50**Bay type No. 39: Feeder bay with switch disconnecter / fuse unit, single busbar**

A13.405.R01

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q1 (DEV02)	Open	U A03	/	
	Close(d)	U A04	/	
Q8 (DEV03)	Open	U A05	/	
	Close(d)	U A06	/	
F (SIG_1: Signal S011 EXT)		U B05	/	

Tab. A5-148: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q1=X) \ \& \ (Q8=0) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$

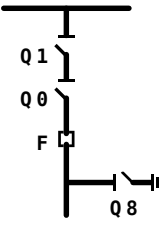
Tab. A5-149: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q1=X) \ \& \ (Q8=0) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$

Tab. A5-150: Bay Interlock Equations for Operation with Station Interlocking

A5.2.1.51**Bay type No. 40: Feeder bay with switch disconnecter / fuse unit, single busbar**

A13.405.R02

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q1 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
Q8 (DEV03)	Open	U A05	/	
	Close(d)	U A06	/	
F (SIG_1: Signal S011 EXT)		U B05	/	

Tab. A5-151: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q1=X) \ \& \ (Q8=0) \ \& \ \neg(FctBl1=I) \ \& \ \neg(FctBl2=I)$
Q1	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q8=0)$

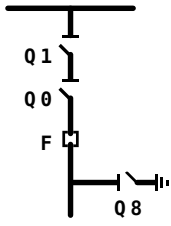
Tab. A5-152: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q1=X) \ \& \ (Q8=0) \ \& \ \neg(FctBl1=I) \ \& \ \neg(FctBl2=I)$
Q1	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q8=0)$

Tab. A5-153: Bay Interlock Equations for Operation with Station Interlocking

A5.2.1.52**Bay type No. 41: Feeder bay with switch disconnecter / fuse unit, single busbar**

A13.405.R03

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q1 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
Q8 (DEV03)	Open	U A05	K A05	
	Close(d)	U A06	K A06	
F (SIG_1: Signal S011 EXT)		U B05	/	

Tab. A5-154: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q1=X) \ \& \ (Q8=0) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$
Q1	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q8=0)$
Q8	Close(d)	$(Q0=0) \ \& \ (Q1=0)$

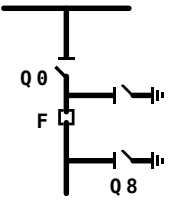
Tab. A5-155: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q1=X) \ \& \ (Q8=0) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$
Q1	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q8=0)$
Q8	Close(d)	$(Q0=0) \ \& \ (Q1=0)$

Tab. A5-156: Bay Interlock Equations for Operation with Station Interlocking

A5.2.1.53**Bay type No. 503: Feeder bay with switch disconnecter / fuse unit, single busbar**

A13.432.R02

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q8 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
F (SIG_1: Signal S011 EXT)		U B05	/	

Tab. A5-157: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$(Q8=0) \ \& \ /(FctBl1=l) \ \& \ /(FctBl2=l)$
Q8	Close(d)	$(Q0=0)$

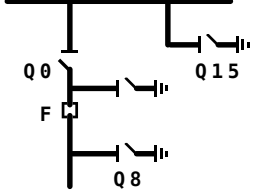
Tab. A5-158: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$(Q8=0) \ \& \ /(FctBl1=l) \ \& \ /(FctBl2=l)$
Q8	Close(d)	$(Q0=0)$

Tab. A5-159: Bay Interlock Equations for Operation with Station Interlocking

A5.2.1.54**Bay type No. 507: Feeder bay with switch disconnecter / fuse unit, single busbar**

A13.433.R02

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q8 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
Q15 (DEV03)	Open	U A05	/	
	Close(d)	U A06	/	
F (SIG_1: Signal S011 EXT)		U B05	/	

Tab. A5-160: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$(Q8=0) \& (Q15=0) \& /(FctBl1=I) \& /(FctBl2=I)$
Q8	Close(d)	$(Q0=0)$

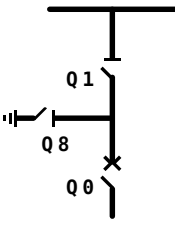
Tab. A5-161: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$(Q8=0) \& (Q15=0) \& /(FctBl1=I) \& /(FctBl2=I)$
Q8	Close(d)	$(Q0=0)$

Tab. A5-162: Bay Interlock Equations for Operation with Station Interlocking

A5.2.1.55**Bay type No. 220: Feeder bay with circuit breaker, single busbar, direct motor control**

A15.105.M02

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q1 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
Q8 (DEV03)	Open	U A05	/	
	Close(d)	U A06	/	
Motor relay (SIG_1: Signal S012 EXT)		U B06	/	
Shunt winding (CMD_1: Command C011)		/	K B05	
Motor relay (CMD_1: Command C012)		/	K B06	

Tab. A5-163: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q0	Open	$(Q8=0)$
	Close(d)	$\neg(Q1=X) \ \& \ (Q8=0) \ \& \ \neg(FctBl1=I) \ \& \ \neg(FctBl2=I)$
Q1	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q8=0)$

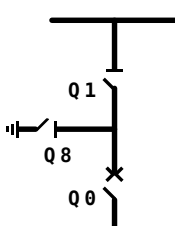
Tab. A5-164: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Open	$(Q8=0)$
	Close(d)	$\neg(Q1=X) \ \& \ (Q8=0) \ \& \ \neg(FctBl1=I) \ \& \ \neg(FctBl2=I)$
Q1	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q8=0)$

Tab. A5-165: Bay Interlock Equations for Operation with Station Interlocking

A5.2.1.56**Bay type No. 42: Feeder bay with circuit breaker, single busbar, direct motor control**

A15.105.M03

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q1 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
Q8 (DEV03)	Open	U A05	K A05	
	Close(d)	U A06	K A06	
Motor relay (SIG_1: Signal S012 EXT)		U B06	/	
Shunt winding (CMD_1: Command C011)		/	K B05	
Motor relay (CMD_1: Command C012)		/	K B06	

Tab. A5-166: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q0	Open	$(Q8=0)$
	Close(d)	$/(Q1=X) \ \& \ (Q8=0) \ \& \ /(FctBI1=I) \ \& \ /(FctBI2=I)$
Q1	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q8=0)$
Q8	Open	$(Q0=I)$
	Close(d)	$(Q0=0) \ \& \ (Q1=0) \ \& \ /(FctBI1=I) \ \& \ /(FctBI2=I)$

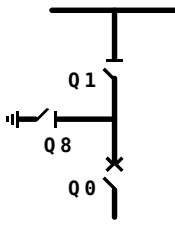
Tab. A5-167: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Open	$(Q8=0)$
	Close(d)	$\neg(Q1=X) \ \& \ (Q8=0) \ \& \ \neg(\text{FctBI1}=I) \ \& \ \neg(\text{FctBI2}=I)$
Q1	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q8=0)$
Q8	Open	$(Q0=I)$
	Close(d)	$(Q0=0) \ \& \ (Q1=0) \ \& \ \neg(\text{FctBI1}=I) \ \& \ \neg(\text{FctBI2}=I)$

Tab. A5-168: Bay Interlock Equations for Operation with Station Interlocking

A5.2.1.57**Bay type No. 43: Feeder bay with circuit breaker, single busbar**

A15.105.R01

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q1 (DEV02)	Open	U A03	/	
	Close(d)	U A04	/	
Q8 (DEV03)	Open	U A05	/	
	Close(d)	U A06	/	

Tab. A5-169: Assignment of Binary Inputs and Output Relays

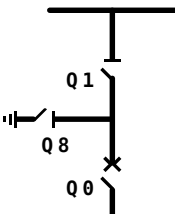
Switchgear unit	Control O/C	Interlock equation
Q0	Open	$(Q8=0)$
	Close(d)	$/(Q1=X) \ \& \ (Q8=0) \ \& \ /(FctBI1=I) \ \& \ /(FctBI2=I)$

Tab. A5-170: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Open	$(Q8=0)$
	Close(d)	$/(Q1=X) \ \& \ (Q8=0) \ \& \ /(FctBI1=I) \ \& \ /(FctBI2=I)$

Tab. A5-171: Bay Interlock Equations for Operation with Station Interlocking

A5.2.1.58 Bay type No. 221: Feeder bay with circuit breaker, single busbar
A15.105.R02

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q1 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
Q8 (DEV03)	Open	U A05	/	
	Close(d)	U A06	/	

Tab. A5-172: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q0	Open	$(Q8=0)$
	Close(d)	$\neg(Q1=X) \ \& \ (Q8=0) \ \& \ \neg(FctBl1=I) \ \& \ \neg(FctBl2=I)$
Q1	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q8=0)$

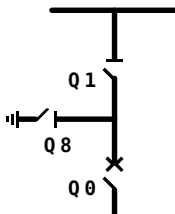
Tab. A5-173: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Open	$(Q8=0)$
	Close(d)	$\neg(Q1=X) \ \& \ (Q8=0) \ \& \ \neg(FctBl1=I) \ \& \ \neg(FctBl2=I)$
Q1	Open	$(Q0=0)$
	Close(d)	$(Q0=0)$

Tab. A5-174: Bay Interlock Equations for Operation with Station Interlocking

A5.2.1.59**Bay type No. 44: Feeder bay with circuit breaker, single busbar**

A15.105.R03

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q1 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
Q8 (DEV03)	Open	U A05	K A05	
	Close(d)	U A06	K A06	

Tab. A5-175: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q0	Open	$(Q8=0)$
	Close(d)	$\neg(Q1=X) \ \& \ (Q8=0) \ \& \ \neg(\text{FctBI1}=1) \ \& \ \neg(\text{FctBI2}=1)$
Q1	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q8=0)$
Q8	Open	$(Q0=1)$
	Close(d)	$(Q0=0) \ \& \ (Q1=0) \ \& \ \neg(\text{FctBI1}=1) \ \& \ \neg(\text{FctBI2}=1)$

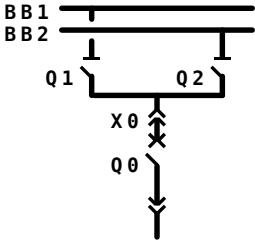
Tab. A5-176: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Open	$(Q8=0)$
	Close(d)	$\neg(Q1=X) \ \& \ (Q8=0) \ \& \ \neg(\text{FctBI1}=1) \ \& \ \neg(\text{FctBI2}=1)$
Q1	Open	$(Q0=0)$
	Close(d)	$(Q0=0)$
Q8	Open	$(Q0=1)$
	Close(d)	$(Q0=0) \ \& \ (Q1=0) \ \& \ \neg(\text{FctBI1}=1) \ \& \ \neg(\text{FctBI2}=1)$

Tab. A5-177: Bay Interlock Equations for Operation with Station Interlocking

A5.2.1.60**Bay type No. 45: Feeder bay with circuit breaker, double busbar, direct motor control**

A21.104.M04

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q1 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
Q2 (DEV03)	Open	U A05	K A05	
	Close(d)	U A06	K A06	
X0 (DEV04)	Open	U B01	K B01	
	Close(d)	U B02	K B02	
Motor relay (SIG_1: Signal S012 EXT)		U B06	/	
Shunt winding (CMD_1: Command C011)		/	K B05	
Motor relay (CMD_1: Command C012)		/	K B06	

Tab. A5-178: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q1=X) \ \& \ \neg(Q2=X) \ \& \ \neg(X0=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$
Q1	Open	$(Q0=0) \ \& \ (Q2=0)$
	Close(d)	$(Q0=0) \ \& \ (Q2=0)$
Q2	Open	$(Q0=0) \ \& \ (Q1=0)$
	Close(d)	$(Q0=0) \ \& \ (Q1=0)$
X0	Open	$(Q0=0) \ \& \ (Q1=0) \ \& \ (Q2=0)$
	Close(d)	$(Q0=0) \ \& \ (Q1=0) \ \& \ (Q2=0)$

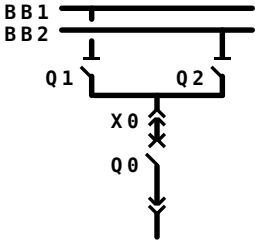
Tab. A5-179: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q1=X) \ \& \ \neg(Q2=X) \ \& \ \neg(X0=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$
X0	Open	$(Q0=0) \ \& \ (Q1=0) \ \& \ (Q2=0)$
	Close(d)	$(Q0=0) \ \& \ (Q1=0) \ \& \ (Q2=0)$

Tab. A5-180: Bay Interlock Equations for Operation with Station Interlocking

A5.2.1.61**Bay type No. 46: Feeder bay with circuit breaker, double busbar**

A21.104.R01

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q1 (DEV02)	Open	U A03	/	
	Close(d)	U A04	/	
Q2 (DEV03)	Open	U A05	/	
	Close(d)	U A06	/	
X0 (DEV04)	Open	U B01	/	
	Close(d)	U B02	/	

Tab. A5-181: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q1=X) \ \& \ \neg(Q2=X) \ \& \ \neg(X0=X) \ \& \ \neg(\text{FctBI1}=I) \ \& \ \neg(\text{FctBI2}=I)$

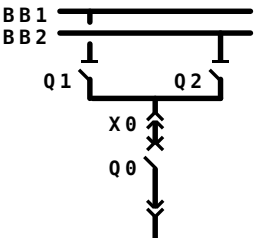
Tab. A5-182: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q1=X) \ \& \ \neg(Q2=X) \ \& \ \neg(X0=X) \ \& \ \neg(\text{FctBI1}=I) \ \& \ \neg(\text{FctBI2}=I)$

Tab. A5-183: Bay Interlock Equations for Operation with Station Interlocking

A5.2.1.62**Bay type No. 47: Feeder bay with circuit breaker, double busbar**

A21.104.R03

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q1 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
Q2 (DEV03)	Open	U A05	K A05	
	Close(d)	U A06	K A06	
X0 (DEV04)	Open	U B01	/	
	Close(d)	U B02	/	

Tab. A5-184: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q1=X) \ \& \ \neg(Q2=X) \ \& \ \neg(X0=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$
Q1	Open	$(Q0=0) \ \& \ (Q2=0)$
	Close(d)	$(Q0=0) \ \& \ (Q2=0)$
Q2	Open	$(Q0=0) \ \& \ (Q1=0)$
	Close(d)	$(Q0=0) \ \& \ (Q1=0)$

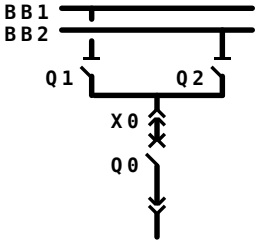
Tab. A5-185: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q1=X) \ \& \ \neg(Q2=X) \ \& \ \neg(X0=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$

Tab. A5-186: Bay Interlock Equations for Operation with Station Interlocking

A5.2.1.63**Bay type No. 48: Feeder bay with circuit breaker, double busbar**

A21.104.R04

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q1 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
Q2 (DEV03)	Open	U A05	K A05	
	Close(d)	U A06	K A06	
X0 (DEV04)	Open	U B01	K B01	
	Close(d)	U B02	K B02	

Tab. A5-187: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q1=X) \ \& \ \neg(Q2=X) \ \& \ \neg(X0=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$
Q1	Open	$(Q0=0) \ \& \ (Q2=0)$
	Close(d)	$(Q0=0) \ \& \ (Q2=0)$
Q2	Open	$(Q0=0) \ \& \ (Q1=0)$
	Close(d)	$(Q0=0) \ \& \ (Q1=0)$
X0	Open	$(Q0=0) \ \& \ (Q1=0) \ \& \ (Q2=0)$
	Close(d)	$(Q0=0) \ \& \ (Q1=0) \ \& \ (Q2=0)$

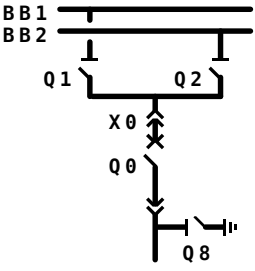
Tab. A5-188: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q1=X) \ \& \ \neg(Q2=X) \ \& \ \neg(X0=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$
X0	Open	$(Q0=0) \ \& \ (Q1=0) \ \& \ (Q2=0)$
	Close(d)	$(Q0=0) \ \& \ (Q1=0) \ \& \ (Q2=0)$

Tab. A5-189: Bay Interlock Equations for Operation with Station Interlocking

A5.2.1.64**Bay type No. 49: Feeder bay with circuit breaker, double busbar, direct motor control**

A21.105.M05

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q1 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
Q2 (DEV03)	Open	U A05	K A05	
	Close(d)	U A06	K A06	
X0 (DEV04)	Open	U B01	K B01	
	Close(d)	U B02	K B02	
Q8 (DEV05)	Open	U B03	K B03	
	Close(d)	U B04	K B04	
Motor relay (SIG_1: Signal S012 EXT)		U B06	/	
Shunt winding (CMD_1: Command C011)		/	K B05	
Motor relay (CMD_1: Command C012)		/	K B06	

Tab. A5-190: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q1=X) \ \& \ \neg(Q2=X) \ \& \ \neg(X0=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$
Q1	Open	$(Q0=0) \ \& \ (Q2=0)$
	Close(d)	$(Q0=0) \ \& \ (Q2=0)$
Q2	Open	$(Q0=0) \ \& \ (Q1=0)$
	Close(d)	$(Q0=0) \ \& \ (Q1=0)$
Q8	Close(d)	$(X0=0)$
X0	Open	$(Q0=0) \ \& \ (Q1=0) \ \& \ (Q2=0)$
	Close(d)	$(Q0=0) \ \& \ (Q1=0) \ \& \ (Q2=0) \ \& \ (Q8=0)$

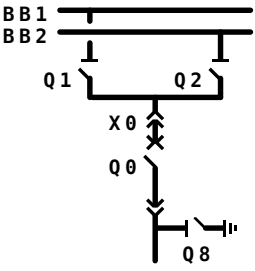
Tab. A5-191: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q1=X) \ \& \ \neg(Q2=X) \ \& \ \neg(X0=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$
Q8	Close(d)	$(X0=0)$
X0	Open	$(Q0=0) \ \& \ (Q1=0) \ \& \ (Q2=0)$
	Close(d)	$(Q0=0) \ \& \ (Q1=0) \ \& \ (Q2=0) \ \& \ (Q8=0)$

Tab. A5-192: Bay Interlock Equations for Operation with Station Interlocking

A5.2.1.65**Bay type No. 50: Feeder bay with circuit breaker, double busbar**

A21.105.R01

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q1 (DEV02)	Open	U A03	/	
	Close(d)	U A04	/	
Q2 (DEV03)	Open	U A05	/	
	Close(d)	U A06	/	
X0 (DEV04)	Open	U B01	/	
	Close(d)	U B02	/	
Q8 (DEV05)	Open	U B03	/	
	Close(d)	U B04	/	

Tab. A5-193: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q1=X) \ \& \ \neg(Q2=X) \ \& \ \neg(X0=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$

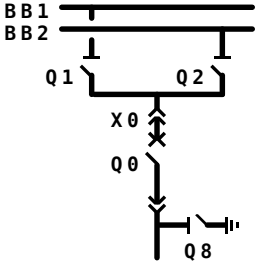
Tab. A5-194: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q1=X) \ \& \ \neg(Q2=X) \ \& \ \neg(X0=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$

Tab. A5-195: Bay Interlock Equations for Operation with Station Interlocking

A5.2.1.66**Bay type No. 51: Feeder bay with circuit breaker, double busbar**

A21.105.R03

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q1 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
Q2 (DEV03)	Open	U A05	K A05	
	Close(d)	U A06	K A06	
X0 (DEV04)	Open	U B01	/	
	Close(d)	U B02	/	
Q8 (DEV05)	Open	U B03	/	
	Close(d)	U B04	/	

Tab. A5-196: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q1=X) \ \& \ \neg(Q2=X) \ \& \ \neg(X0=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$
Q1	Open	$(Q0=0) \ \& \ (Q2=0)$
	Close(d)	$(Q0=0) \ \& \ (Q2=0)$
Q2	Open	$(Q0=0) \ \& \ (Q1=0)$
	Close(d)	$(Q0=0) \ \& \ (Q1=0)$

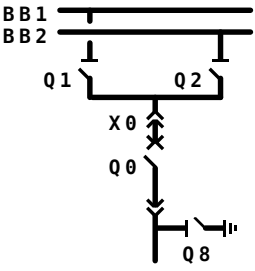
Tab. A5-197: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q1=X) \ \& \ \neg(Q2=X) \ \& \ \neg(X0=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$

Tab. A5-198: Bay Interlock Equations for Operation with Station Interlocking

A5.2.1.67**Bay type No. 52: Feeder bay with circuit breaker, double busbar**

A21.105.R04

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q1 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
Q2 (DEV03)	Open	U A05	K A05	
	Close(d)	U A06	K A06	
X0 (DEV04)	Open	U B01	K B01	
	Close(d)	U B02	K B02	
Q8 (DEV05)	Open	U B03	/	
	Close(d)	U B04	/	

Tab. A5-199: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q1=X) \ \& \ \neg(Q2=X) \ \& \ \neg(X0=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$
Q1	Open	$(Q0=0) \ \& \ (Q2=0)$
	Close(d)	$(Q0=0) \ \& \ (Q2=0)$
Q2	Open	$(Q0=0) \ \& \ (Q1=0)$
	Close(d)	$(Q0=0) \ \& \ (Q1=0)$
X0	Open	$(Q0=0) \ \& \ (Q1=0) \ \& \ (Q2=0)$
	Close(d)	$(Q0=0) \ \& \ (Q1=0) \ \& \ (Q2=0) \ \& \ (Q8=0)$

Tab. A5-200: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q1=X) \ \& \ \neg(Q2=X) \ \& \ \neg(X0=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$
X0	Open	$(Q0=0) \ \& \ (Q1=0) \ \& \ (Q2=0)$
	Close(d)	$(Q0=0) \ \& \ (Q1=0) \ \& \ (Q2=0) \ \& \ (Q8=0)$

Tab. A5-201: Bay Interlock Equations for Operation with Station Interlocking

A5.2.1.68**Bay type No. 53: Feeder bay with circuit breaker, double busbar**

A21.105.R05

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q1 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
Q2 (DEV03)	Open	U A05	K A05	
	Close(d)	U A06	K A06	
X0 (DEV04)	Open	U B01	K B01	
	Close(d)	U B02	K B02	
Q8 (DEV05)	Open	U B03	K B03	
	Close(d)	U B04	K B04	

Tab. A5-202: Assignment of Binary Inputs and Output Relays

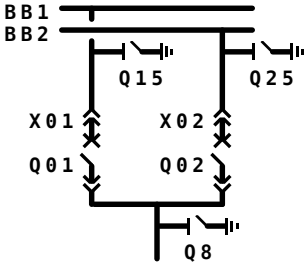
Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q1=X) \ \& \ \neg(Q2=X) \ \& \ \neg(X0=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$
Q1	Open	$(Q0=0) \ \& \ (Q2=0)$
	Close(d)	$(Q0=0) \ \& \ (Q2=0)$
Q2	Open	$(Q0=0) \ \& \ (Q1=0)$
	Close(d)	$(Q0=0) \ \& \ (Q1=0)$
Q8	Close(d)	$(X0=0)$
X0	Open	$(Q0=0) \ \& \ (Q1=0) \ \& \ (Q2=0)$
	Close(d)	$(Q0=0) \ \& \ (Q1=0) \ \& \ (Q2=0) \ \& \ (Q8=0)$

Tab. A5-203: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q1=X) \ \& \ \neg(Q2=X) \ \& \ \neg(X0=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$
Q8	Close(d)	$(X0=0)$
X0	Open	$(Q0=0) \ \& \ (Q1=0) \ \& \ (Q2=0)$
	Close(d)	$(Q0=0) \ \& \ (Q1=0) \ \& \ (Q2=0) \ \& \ (Q8=0)$

Tab. A5-204: Bay Interlock Equations for Operation with Station Interlocking

A5.2.1.69 Bay type No. 526: Feeder bay with circuit breaker, double busbar
A21.125.R02

Switchgear unit		Binary input	Output relay	
Q01 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q02 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
X01 (DEV03)	Open	U A05	/	
	Close(d)	U A06	/	
X02 (DEV04)	Open	U B01	/	
	Close(d)	U B02	/	
Q8 (DEV05)	Open	U B03	/	
	Close(d)	U B04	/	
Q15 (DEV06)	Open	U B05	/	
	Close(d)	U B06	/	
Q25 (DEV07)	Open	U C01	/	
	Close(d)	U C02	/	

Tab. A5-205: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q01	Close(d)	$\neg(X01=X) \ \& \ \neg(X02=X) \ \& \ (Q15=0) \ \& \ (Q25=0) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$
Q02	Close(d)	$\neg(X01=X) \ \& \ \neg(X02=X) \ \& \ (Q15=0) \ \& \ (Q25=0) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$

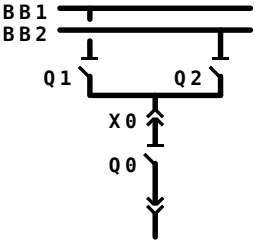
Tab. A5-206: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q01	Close(d)	$\neg(X01=X) \ \& \ \neg(X02=X) \ \& \ (Q15=0) \ \& \ (Q25=0) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$
Q02	Close(d)	$\neg(X01=X) \ \& \ \neg(X02=X) \ \& \ (Q15=0) \ \& \ (Q25=0) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$

Tab. A5-207: Bay Interlock Equations for Operation with Station Interlocking

A5.2.1.70**Bay type No. 54: Feeder bay with switch disconnecter, double busbar, direct motor control**

A21.204.M04

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q1 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
Q2 (DEV03)	Open	U A05	K A05	
	Close(d)	U A06	K A06	
X0 (DEV04)	Open	U B01	K B01	
	Close(d)	U B02	K B02	
Motor relay (SIG_1: Signal S012 EXT)		U B06	/	
Shunt winding (CMD_1: Command C011)		/	K B05	
Motor relay (CMD_1: Command C012)		/	K B06	

Tab. A5-208: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q1=X) \ \& \ \neg(Q2=X) \ \& \ \neg(X0=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$
Q1	Open	$(Q0=0) \ \& \ (Q2=0)$
	Close(d)	$(Q0=0) \ \& \ (Q2=0)$
Q2	Open	$(Q0=0) \ \& \ (Q1=0)$
	Close(d)	$(Q0=0) \ \& \ (Q1=0)$
X0	Open	$(Q0=0) \ \& \ (Q1=0) \ \& \ (Q2=0)$
	Close(d)	$(Q0=0) \ \& \ (Q1=0) \ \& \ (Q2=0)$

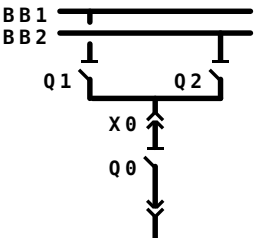
Tab. A5-209: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q1=X) \ \& \ \neg(Q2=X) \ \& \ \neg(X0=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$
X0	Open	$(Q0=0) \ \& \ (Q1=0) \ \& \ (Q2=0)$
	Close(d)	$(Q0=0) \ \& \ (Q1=0) \ \& \ (Q2=0)$

Tab. A5-210: Bay Interlock Equations for Operation with Station Interlocking

A5.2.1.71**Bay type No. 55: Feeder bay with switch disconnecter, double busbar**

A21.204.R01

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q1 (DEV02)	Open	U A03	/	
	Close(d)	U A04	/	
Q2 (DEV03)	Open	U A05	/	
	Close(d)	U A06	/	
X0 (DEV04)	Open	U B01	/	
	Close(d)	U B02	/	

Tab. A5-211: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q1=X) \wedge \neg(Q2=X) \wedge \neg(X0=X) \wedge \neg(FctBI1=I) \wedge \neg(FctBI2=I)$

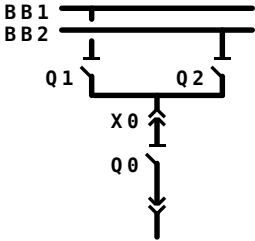
Tab. A5-212: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q1=X) \wedge \neg(Q2=X) \wedge \neg(X0=X) \wedge \neg(FctBI1=I) \wedge \neg(FctBI2=I)$

Tab. A5-213: Bay Interlock Equations for Operation with Station Interlocking

A5.2.1.72**Bay type No. 56: Feeder bay with switch disconnecter, double busbar**

A21.204.R03

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q1 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
Q2 (DEV03)	Open	U A05	K A05	
	Close(d)	U A06	K A06	
X0 (DEV04)	Open	U B01	/	
	Close(d)	U B02	/	

Tab. A5-214: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q1=X) \ \& \ \neg(Q2=X) \ \& \ \neg(X0=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$
Q1	Open	$(Q0=0) \ \& \ (Q2=0)$
	Close(d)	$(Q0=0) \ \& \ (Q2=0)$
Q2	Open	$(Q0=0) \ \& \ (Q1=0)$
	Close(d)	$(Q0=0) \ \& \ (Q1=0)$

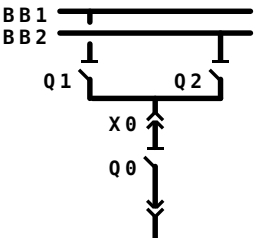
Tab. A5-215: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q1=X) \ \& \ \neg(Q2=X) \ \& \ \neg(X0=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$

Tab. A5-216: Bay Interlock Equations for Operation with Station Interlocking

A5.2.1.73**Bay type No. 57: Feeder bay with switch disconnecter, double busbar**

A21.204.R04

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q1 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
Q2 (DEV03)	Open	U A05	K A05	
	Close(d)	U A06	K A06	
X0 (DEV04)	Open	U B01	K B01	
	Close(d)	U B02	K B02	

Tab. A5-217: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q1=X) \ \& \ \neg(Q2=X) \ \& \ \neg(X0=X) \ \& \ \neg(\text{FctBI1}=I) \ \& \ \neg(\text{FctBI2}=I)$
Q1	Open	$(Q0=0) \ \& \ (Q2=0)$
	Close(d)	$(Q0=0) \ \& \ (Q2=0)$
Q2	Open	$(Q0=0) \ \& \ (Q1=0)$
	Close(d)	$(Q0=0) \ \& \ (Q1=0)$
X0	Open	$(Q0=0) \ \& \ (Q1=0) \ \& \ (Q2=0)$
	Close(d)	$(Q0=0) \ \& \ (Q1=0) \ \& \ (Q2=0)$

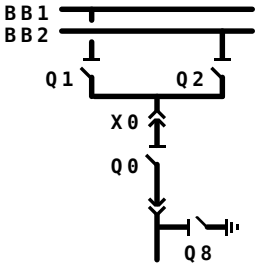
Tab. A5-218: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q1=X) \ \& \ \neg(Q2=X) \ \& \ \neg(X0=X) \ \& \ \neg(\text{FctBI1}=I) \ \& \ \neg(\text{FctBI2}=I)$
X0	Open	$(Q0=0) \ \& \ (Q1=0) \ \& \ (Q2=0)$
	Close(d)	$(Q0=0) \ \& \ (Q1=0) \ \& \ (Q2=0)$

Tab. A5-219: Bay Interlock Equations for Operation with Station Interlocking

A5.2.1.74**Bay type No. 58: Feeder bay with switch disconnecter, double busbar, direct motor control**

A21.205.M05

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q1 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
Q2 (DEV03)	Open	U A05	K A05	
	Close(d)	U A06	K A06	
X0 (DEV04)	Open	U B01	K B01	
	Close(d)	U B02	K B02	
Q8 (DEV05)	Open	U B03	K B03	
	Close(d)	U B04	K B04	
Motor relay (SIG_1: Signal S012 EXT)		U B06	/	
Shunt winding (CMD_1: Command C011)		/	K B05	
Motor relay (CMD_1: Command C012)		/	K B06	

Tab. A5-220: Assignment of Binary Inputs and Output Relays

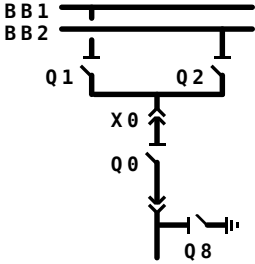
Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q1=X) \ \& \ \neg(Q2=X) \ \& \ \neg(X0=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$
Q1	Open	$(Q0=0) \ \& \ (Q2=0)$
	Close(d)	$(Q0=0) \ \& \ (Q2=0)$
Q2	Open	$(Q0=0) \ \& \ (Q1=0)$
	Close(d)	$(Q0=0) \ \& \ (Q1=0)$
Q8	Close(d)	$(X0=0)$
X0	Open	$(Q0=0) \ \& \ (Q1=0) \ \& \ (Q2=0)$
	Close(d)	$(Q0=0) \ \& \ (Q1=0) \ \& \ (Q2=0) \ \& \ (Q8=0)$

Tab. A5-221: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q1=X) \ \& \ \neg(Q2=X) \ \& \ \neg(X0=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$
Q8	Close(d)	$(X0=0)$
X0	Open	$(Q0=0) \ \& \ (Q1=0) \ \& \ (Q2=0)$
	Close(d)	$(Q0=0) \ \& \ (Q1=0) \ \& \ (Q2=0) \ \& \ (Q8=0)$

Tab. A5-222: Bay Interlock Equations for Operation with Station Interlocking

A5.2.1.75 Bay type No. 59: Feeder bay with switch disconnecter, double busbar
A21.205.R01

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q1 (DEV02)	Open	U A03	/	
	Close(d)	U A04	/	
Q2 (DEV03)	Open	U A05	/	
	Close(d)	U A06	/	
X0 (DEV04)	Open	U B01	/	
	Close(d)	U B02	/	
Q8 (DEV05)	Open	U B03	/	
	Close(d)	U B04	/	

Tab. A5-223: Assignment of Binary Inputs and Output Relays

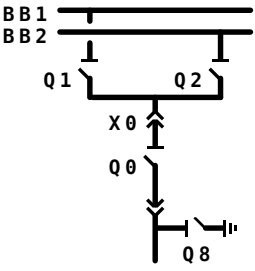
Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q1=X) \ \& \ \neg(Q2=X) \ \& \ \neg(X0=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$

Tab. A5-224: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q1=X) \ \& \ \neg(Q2=X) \ \& \ \neg(X0=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$

Tab. A5-225: Bay Interlock Equations for Operation with Station Interlocking

A5.2.1.76**Bay type No. 60: Feeder bay with switch disconnecter, double busbar**
A21.205.R03

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q1 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
Q2 (DEV03)	Open	U A05	K A05	
	Close(d)	U A06	K A06	
X0 (DEV04)	Open	U B01	/	
	Close(d)	U B02	/	
Q8 (DEV05)	Open	U B03	/	
	Close(d)	U B04	/	

Tab. A5-226: Assignment of Binary Inputs and Output Relays

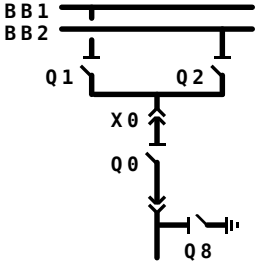
Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q1=X) \ \& \ \neg(Q2=X) \ \& \ \neg(X0=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$
Q1	Open	$(Q0=0) \ \& \ (Q2=0)$
	Close(d)	$(Q0=0) \ \& \ (Q2=0)$
Q2	Open	$(Q0=0) \ \& \ (Q1=0)$
	Close(d)	$(Q0=0) \ \& \ (Q1=0)$

Tab. A5-227: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q1=X) \ \& \ \neg(Q2=X) \ \& \ \neg(X0=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$

Tab. A5-228: Bay Interlock Equations for Operation with Station Interlocking

A5.2.1.77 Bay type No. 61: Feeder bay with switch disconnecter, double busbar
A21.205.R04

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q1 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
Q2 (DEV03)	Open	U A05	K A05	
	Close(d)	U A06	K A06	
X0 (DEV04)	Open	U B01	K B01	
	Close(d)	U B02	K B02	
Q8 (DEV05)	Open	U B03	/	
	Close(d)	U B04	/	

Tab. A5-229: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q1=X) \ \& \ \neg(Q2=X) \ \& \ \neg(X0=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$
Q1	Open	$(Q0=0) \ \& \ (Q2=0)$
	Close(d)	$(Q0=0) \ \& \ (Q2=0)$
Q2	Open	$(Q0=0) \ \& \ (Q1=0)$
	Close(d)	$(Q0=0) \ \& \ (Q1=0)$
X0	Open	$(Q0=0) \ \& \ (Q1=0) \ \& \ (Q2=0)$
	Close(d)	$(Q0=0) \ \& \ (Q1=0) \ \& \ (Q2=0) \ \& \ (Q8=0)$

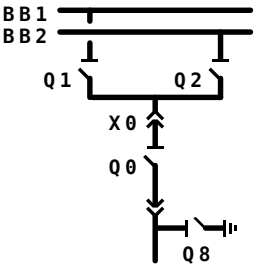
Tab. A5-230: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q1=X) \ \& \ \neg(Q2=X) \ \& \ \neg(X0=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$
X0	Open	$(Q0=0) \ \& \ (Q1=0) \ \& \ (Q2=0)$
	Close(d)	$(Q0=0) \ \& \ (Q1=0) \ \& \ (Q2=0) \ \& \ (Q8=0)$

Tab. A5-231: Bay Interlock Equations for Operation with Station Interlocking

A5.2.1.78**Bay type No. 62: Feeder bay with switch disconnecter, double busbar**

A21.205.R05

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q1 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
Q2 (DEV03)	Open	U A05	K A05	
	Close(d)	U A06	K A06	
X0 (DEV04)	Open	U B01	K B01	
	Close(d)	U B02	K B02	
Q8 (DEV05)	Open	U B03	K B03	
	Close(d)	U B04	K B04	

Tab. A5-232: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q1=X) \ \& \ \neg(Q2=X) \ \& \ \neg(X0=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$
Q1	Open	$(Q0=0) \ \& \ (Q2=0)$
	Close(d)	$(Q0=0) \ \& \ (Q2=0)$
Q2	Open	$(Q0=0) \ \& \ (Q1=0)$
	Close(d)	$(Q0=0) \ \& \ (Q1=0)$
Q8	Close(d)	$(X0=0)$
X0	Open	$(Q0=0) \ \& \ (Q1=0) \ \& \ (Q2=0)$
	Close(d)	$(Q0=0) \ \& \ (Q1=0) \ \& \ (Q2=0) \ \& \ (Q8=0)$

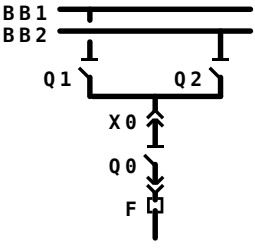
Tab. A5-233: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q1=X) \ \& \ \neg(Q2=X) \ \& \ \neg(X0=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$
Q8	Close(d)	$(X0=0)$
X0	Open	$(Q0=0) \ \& \ (Q1=0) \ \& \ (Q2=0)$
	Close(d)	$(Q0=0) \ \& \ (Q1=0) \ \& \ (Q2=0) \ \& \ (Q8=0)$

Tab. A5-234: Bay Interlock Equations for Operation with Station Interlocking

A5.2.1.79**Bay type No. 63: Feeder bay with switch disconnecter / fuse unit, double busbar, direct motor control**

A21.404.M04

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q1 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
Q2 (DEV03)	Open	U A05	K A05	
	Close(d)	U A06	K A06	
X0 (DEV04)	Open	U B01	K B01	
	Close(d)	U B02	K B02	
F (SIG_1: Signal S011 EXT)		U B05	/	
Motor relay (SIG_1: Signal S012 EXT)		U B06	/	
Shunt winding (CMD_1: Command C011)		/	K B05	
Motor relay (CMD_1: Command C012)		/	K B06	

Tab. A5-235: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q1=X) \ \& \ \neg(Q2=X) \ \& \ \neg(X0=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$
Q1	Open	$(Q0=0) \ \& \ (Q2=0)$
	Close(d)	$(Q0=0) \ \& \ (Q2=0)$
Q2	Open	$(Q0=0) \ \& \ (Q1=0)$
	Close(d)	$(Q0=0) \ \& \ (Q1=0)$
X0	Open	$(Q0=0) \ \& \ (Q1=0) \ \& \ (Q2=0)$
	Close(d)	$(Q0=0) \ \& \ (Q1=0) \ \& \ (Q2=0)$

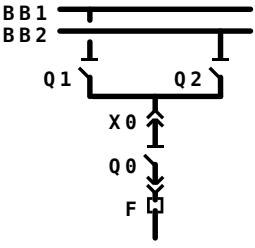
Tab. A5-236: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q1=X) \ \& \ \neg(Q2=X) \ \& \ \neg(X0=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$
X0	Open	$(Q0=0) \ \& \ (Q1=0) \ \& \ (Q2=0)$
	Close(d)	$(Q0=0) \ \& \ (Q1=0) \ \& \ (Q2=0)$

Tab. A5-237: Bay Interlock Equations for Operation with Station Interlocking

A5.2.1.80**Bay type No. 64: Feeder bay with switch disconnecter / fuse unit, double busbar**

A21.404.R01

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q1 (DEV02)	Open	U A03	/	
	Close(d)	U A04	/	
Q2 (DEV03)	Open	U A05	/	
	Close(d)	U A06	/	
X0 (DEV04)	Open	U B01	/	
	Close(d)	U B02	/	
F (SIG_1: Signal S011 EXT)		U B05	/	

Tab. A5-238: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q1=X) \ \& \ \neg(Q2=X) \ \& \ \neg(X0=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$

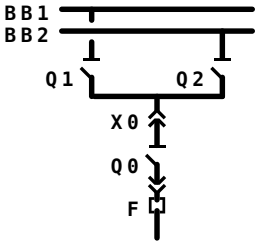
Tab. A5-239: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q1=X) \ \& \ \neg(Q2=X) \ \& \ \neg(X0=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$

Tab. A5-240: Bay Interlock Equations for Operation with Station Interlocking

A5.2.1.81**Bay type No. 65: Feeder bay with switch disconnecter / fuse unit, double busbar**

A21.404.R03

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q1 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
Q2 (DEV03)	Open	U A05	K A05	
	Close(d)	U A06	K A06	
X0 (DEV04)	Open	U B01	/	
	Close(d)	U B02	/	
F (SIG_1: Signal S011 EXT)		U B05	/	

Tab. A5-241: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q1=X) \ \& \ \neg(Q2=X) \ \& \ \neg(X0=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$
Q1	Open	$(Q0=0) \ \& \ (Q2=0)$
	Close(d)	$(Q0=0) \ \& \ (Q2=0)$
Q2	Open	$(Q0=0) \ \& \ (Q1=0)$
	Close(d)	$(Q0=0) \ \& \ (Q1=0)$

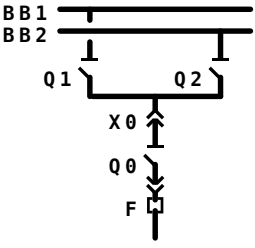
Tab. A5-242: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q1=X) \ \& \ \neg(Q2=X) \ \& \ \neg(X0=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$

Tab. A5-243: Bay Interlock Equations for Operation with Station Interlocking

A5.2.1.82**Bay type No. 66: Feeder bay with switch disconnecter / fuse unit, double busbar**

A21.404.R04

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q1 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
Q2 (DEV03)	Open	U A05	K A05	
	Close(d)	U A06	K A06	
X0 (DEV04)	Open	U B01	K B01	
	Close(d)	U B02	K B02	
F (SIG_1: Signal S011 EXT)		U B05	/	

Tab. A5-244: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q1=X) \ \& \ \neg(Q2=X) \ \& \ \neg(X0=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$
Q1	Open	$(Q0=0) \ \& \ (Q2=0)$
	Close(d)	$(Q0=0) \ \& \ (Q2=0)$
Q2	Open	$(Q0=0) \ \& \ (Q1=0)$
	Close(d)	$(Q0=0) \ \& \ (Q1=0)$
X0	Open	$(Q0=0) \ \& \ (Q1=0) \ \& \ (Q2=0)$
	Close(d)	$(Q0=0) \ \& \ (Q1=0) \ \& \ (Q2=0)$

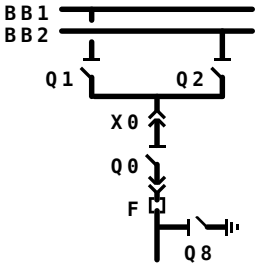
Tab. A5-245: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q1=X) \ \& \ \neg(Q2=X) \ \& \ \neg(X0=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$
X0	Open	$(Q0=0) \ \& \ (Q1=0) \ \& \ (Q2=0)$
	Close(d)	$(Q0=0) \ \& \ (Q1=0) \ \& \ (Q2=0)$

Tab. A5-246: Bay Interlock Equations for Operation with Station Interlocking

A5.2.1.83**Bay type No. 67: Feeder bay with switch disconnecter / fuse unit, double busbar, direct motor control**

A21.405.M05

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q1 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
Q2 (DEV03)	Open	U A05	K A05	
	Close(d)	U A06	K A06	
X0 (DEV04)	Open	U B01	K B01	
	Close(d)	U B02	K B02	
Q8 (DEV05)	Open	U B03	K B03	
	Close(d)	U B04	K B04	
F (SIG_1: Signal S011 EXT)		U B05	/	
Motor relay (SIG_1: Signal S012 EXT)		U B06	/	
Shunt winding (CMD_1: Command C011)		/	K B05	
Motor relay (CMD_1: Command C012)		/	K B06	

Tab. A5-247: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q1=X) \ \& \ \neg(Q2=X) \ \& \ \neg(X0=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$
Q1	Open	$(Q0=0) \ \& \ (Q2=0)$
	Close(d)	$(Q0=0) \ \& \ (Q2=0)$
Q2	Open	$(Q0=0) \ \& \ (Q1=0)$
	Close(d)	$(Q0=0) \ \& \ (Q1=0)$
Q8	Close(d)	$(X0=0)$
X0	Open	$(Q0=0) \ \& \ (Q1=0) \ \& \ (Q2=0)$
	Close(d)	$(Q0=0) \ \& \ (Q1=0) \ \& \ (Q2=0) \ \& \ (Q8=0)$

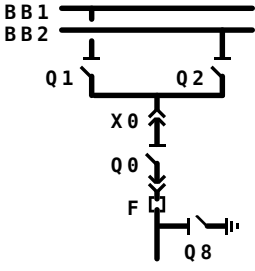
Tab. A5-248: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q1=X) \ \& \ \neg(Q2=X) \ \& \ \neg(X0=X) \ \& \ \neg(\text{FctBI1}=I) \ \& \ \neg(\text{FctBI2}=I)$
Q8	Close(d)	$(X0=0)$
X0	Open	$(Q0=0) \ \& \ (Q1=0) \ \& \ (Q2=0)$
	Close(d)	$(Q0=0) \ \& \ (Q1=0) \ \& \ (Q2=0) \ \& \ (Q8=0)$

Tab. A5-249: Bay Interlock Equations for Operation with Station Interlocking

A5.2.1.84**Bay type No. 68: Feeder bay with switch disconnecter / fuse unit, double busbar**

A21.405.R01

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q1 (DEV02)	Open	U A03	/	
	Close(d)	U A04	/	
Q2 (DEV03)	Open	U A05	/	
	Close(d)	U A06	/	
X0 (DEV04)	Open	U B01	/	
	Close(d)	U B02	/	
Q8 (DEV05)	Open	U B03	/	
	Close(d)	U B04	/	
F (SIG_1: Signal S011 EXT)		U B05	/	

Tab. A5-250: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q1=X) \ \& \ \neg(Q2=X) \ \& \ \neg(X0=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$

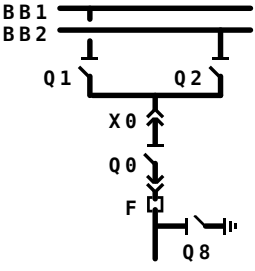
Tab. A5-251: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q1=X) \ \& \ \neg(Q2=X) \ \& \ \neg(X0=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$

Tab. A5-252: Bay Interlock Equations for Operation with Station Interlocking

A5.2.1.85**Bay type No. 69: Feeder bay with switch disconnecter / fuse unit, double busbar**

A21.405.R03

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q1 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
Q2 (DEV03)	Open	U A05	K A05	
	Close(d)	U A06	K A06	
X0 (DEV04)	Open	U B01	/	
	Close(d)	U B02	/	
Q8 (DEV05)	Open	U B03	/	
	Close(d)	U B04	/	
F (SIG_1: Signal S011 EXT)		U B05	/	

Tab. A5-253: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q1=X) \ \& \ \neg(Q2=X) \ \& \ \neg(X0=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$
Q1	Open	$(Q0=0) \ \& \ (Q2=0)$
	Close(d)	$(Q0=0) \ \& \ (Q2=0)$
Q2	Open	$(Q0=0) \ \& \ (Q1=0)$
	Close(d)	$(Q0=0) \ \& \ (Q1=0)$

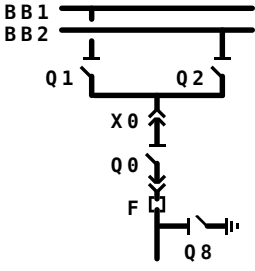
Tab. A5-254: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q1=X) \ \& \ \neg(Q2=X) \ \& \ \neg(X0=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$

Tab. A5-255: Bay Interlock Equations for Operation with Station Interlocking

A5.2.1.86**Bay type No. 70: Feeder bay with switch disconnecter / fuse unit, double busbar**

A21.405.R04

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q1 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
Q2 (DEV03)	Open	U A05	K A05	
	Close(d)	U A06	K A06	
X0 (DEV04)	Open	U B01	K B01	
	Close(d)	U B02	K B02	
Q8 (DEV05)	Open	U B03	/	
	Close(d)	U B04	/	
F (SIG_1: Signal S011 EXT)		U B05	/	

Tab. A5-256: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q1=X) \ \& \ \neg(Q2=X) \ \& \ \neg(X0=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$
Q1	Open	$(Q0=0) \ \& \ (Q2=0)$
	Close(d)	$(Q0=0) \ \& \ (Q2=0)$
Q2	Open	$(Q0=0) \ \& \ (Q1=0)$
	Close(d)	$(Q0=0) \ \& \ (Q1=0)$
X0	Open	$(Q0=0) \ \& \ (Q1=0) \ \& \ (Q2=0)$
	Close(d)	$(Q0=0) \ \& \ (Q1=0) \ \& \ (Q2=0) \ \& \ (Q8=0)$

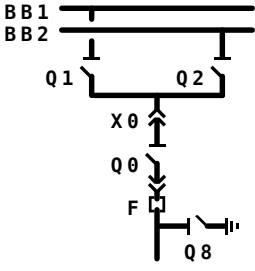
Tab. A5-257: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q1=X) \ \& \ \neg(Q2=X) \ \& \ \neg(X0=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$
X0	Open	$(Q0=0) \ \& \ (Q1=0) \ \& \ (Q2=0)$
	Close(d)	$(Q0=0) \ \& \ (Q1=0) \ \& \ (Q2=0) \ \& \ (Q8=0)$

Tab. A5-258: Bay Interlock Equations for Operation with Station Interlocking

A5.2.1.87**Bay type No. 71: Feeder bay with switch disconnecter / fuse unit, double busbar**

A21.405.R05

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q1 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
Q2 (DEV03)	Open	U A05	K A05	
	Close(d)	U A06	K A06	
X0 (DEV04)	Open	U B01	K B01	
	Close(d)	U B02	K B02	
Q8 (DEV05)	Open	U B03	K B03	
	Close(d)	U B04	K B04	
F (SIG_1: Signal S011 EXT)		U B05	/	

Tab. A5-259: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q1=X) \ \& \ \neg(Q2=X) \ \& \ \neg(X0=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$
Q1	Open	$(Q0=0) \ \& \ (Q2=0)$
	Close(d)	$(Q0=0) \ \& \ (Q2=0)$
Q2	Open	$(Q0=0) \ \& \ (Q1=0)$
	Close(d)	$(Q0=0) \ \& \ (Q1=0)$
Q8	Close(d)	$(X0=0)$
X0	Open	$(Q0=0) \ \& \ (Q1=0) \ \& \ (Q2=0)$
	Close(d)	$(Q0=0) \ \& \ (Q1=0) \ \& \ (Q2=0) \ \& \ (Q8=0)$

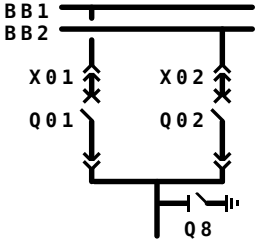
Tab. A5-260: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q1=X) \ \& \ \neg(Q2=X) \ \& \ \neg(X0=X) \ \& \ \neg(\text{FctBI1}=I) \ \& \ \neg(\text{FctBI2}=I)$
Q8	Close(d)	$(X0=0)$
X0	Open	$(Q0=0) \ \& \ (Q1=0) \ \& \ (Q2=0)$
	Close(d)	$(Q0=0) \ \& \ (Q1=0) \ \& \ (Q2=0) \ \& \ (Q8=0)$

Tab. A5-261: Bay Interlock Equations for Operation with Station Interlocking

A5.2.1.88**Bay type No. 72: Feeder bay with circuit breaker, double busbar**

A22.101.R02

Switchgear unit		Binary input	Output relay	
Q01 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q02 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
X01 (DEV03)	Open	U A05	/	
	Close(d)	U A06	/	
X02 (DEV04)	Open	U B01	/	
	Close(d)	U B02	/	
Q8 (DEV05)	Open	U B03	/	
	Close(d)	U B04	/	

Tab. A5-262: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q01	Close(d)	$(Q02=0) \ \& \ /(X01=X) \ \& \ /(X02=X) \ \& \ /(FctBI1=I) \ \& \ /(FctBI2=I)$
Q02	Close(d)	$(Q01=0) \ \& \ /(X01=X) \ \& \ /(X02=X) \ \& \ /(FctBI1=I) \ \& \ /(FctBI2=I)$

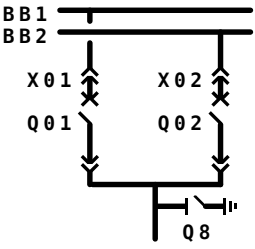
Tab. A5-263: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q01	Close(d)	$/(X01=X) \ \& \ /(X02=X) \ \& \ /(FctBI1=I) \ \& \ /(FctBI2=I)$
Q02	Close(d)	$/(X01=X) \ \& \ /(X02=X) \ \& \ /(FctBI1=I) \ \& \ /(FctBI2=I)$

Tab. A5-264: Bay Interlock Equations for Operation with Station Interlocking

A5.2.1.89**Bay type No. 73: Feeder bay with circuit breaker, double busbar**

A22.101.R04

Switchgear unit		Binary input	Output relay	
Q01 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q02 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
X01 (DEV03)	Open	U A05	K A05	
	Close(d)	U A06	K A06	
X02 (DEV04)	Open	U B01	K B01	
	Close(d)	U B02	K B02	
Q8 (DEV05)	Open	U B03	/	
	Close(d)	U B04	/	

Tab. A5-265: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q01	Close(d)	$(Q02=0) \ \& \ /(X01=X) \ \& \ /(X02=X) \ \& \ /(FctBI1=I) \ \& \ /(FctBI2=I)$
Q02	Close(d)	$(Q01=0) \ \& \ /(X01=X) \ \& \ /(X02=X) \ \& \ /(FctBI1=I) \ \& \ /(FctBI2=I)$
X01	Open	$(Q01=0)$
	Close(d)	$(Q01=0) \ \& \ (Q8=0)$
X02	Open	$(Q02=0)$
	Close(d)	$(Q02=0) \ \& \ (Q8=0)$

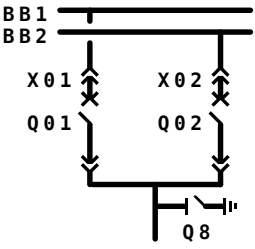
Tab. A5-266: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q01	Close(d)	$\neg(X01=X) \ \& \ \neg(X02=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$
Q02	Close(d)	$\neg(X01=X) \ \& \ \neg(X02=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$
X01	Open	$(Q01=0)$
	Close(d)	$(Q01=0) \ \& \ (Q8=0)$
X02	Open	$(Q02=0)$
	Close(d)	$(Q02=0) \ \& \ (Q8=0)$

Tab. A5-267: Bay Interlock Equations for Operation with Station Interlocking

A5.2.1.90**Bay type No. 74: Feeder bay with circuit breaker, double busbar**

A22.101.R05

Switchgear unit		Binary input	Output relay	
Q01 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q02 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
X01 (DEV03)	Open	U A05	K A05	
	Close(d)	U A06	K A06	
X02 (DEV04)	Open	U B01	K B01	
	Close(d)	U B02	K B02	
Q8 (DEV05)	Open	U B03	K B03	
	Close(d)	U B04	K B04	

Tab. A5-268: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q01	Close(d)	$(Q02=0) \ \& \ /(X01=X) \ \& \ /(X02=X) \ \& \ /(FctBI1=I) \ \& \ /(FctBI2=I)$
Q02	Close(d)	$(Q01=0) \ \& \ /(X01=X) \ \& \ /(X02=X) \ \& \ /(FctBI1=I) \ \& \ /(FctBI2=I)$
Q8	Close(d)	$(X01=0) \ \& \ (X02=0)$
X01	Open	$(Q01=0)$
	Close(d)	$(Q01=0) \ \& \ (Q8=0)$
X02	Open	$(Q02=0)$
	Close(d)	$(Q02=0) \ \& \ (Q8=0)$

Tab. A5-269: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q01	Close(d)	$\neg(X01=X) \ \& \ \neg(X02=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$
Q02	Close(d)	$\neg(X01=X) \ \& \ \neg(X02=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$
Q8	Close(d)	$(X01=0) \ \& \ (X02=0)$
X01	Open	$(Q01=0)$
	Close(d)	$(Q01=0) \ \& \ (Q8=0)$
X02	Open	$(Q02=0)$
	Close(d)	$(Q02=0) \ \& \ (Q8=0)$

Tab. A5-270: Bay Interlock Equations for Operation with Station Interlocking

A5.2.1.91**Bay type No. 75: Feeder bay with circuit breaker, double busbar**

A22.103.R02

Switchgear unit		Binary input	Output relay	
Q01 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q02 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
X01 (DEV03)	Open	U A05	/	
	Close(d)	U A06	/	
X02 (DEV04)	Open	U B01	/	
	Close(d)	U B02	/	
Q9 (DEV05)	Open	U B03	/	
	Close(d)	U B04	/	
Q8 (DEV06)	Open	U B05	/	
	Close(d)	U B06	/	

Tab. A5-271: Assignment of Binary Inputs and Output Relays

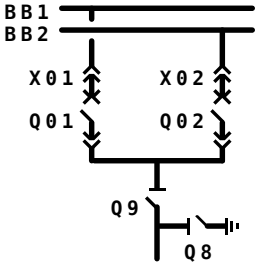
Switchgear unit	Control O/C	Interlock equation
Q01	Close(d)	$(Q02=0) \ \& \ /(Q9=X) \ \& \ /(X01=X) \ \& \ /(X02=X) \ \& \ /(FctBI1=I) \ \& \ /(FctBI2=I)$
Q02	Close(d)	$(Q01=0) \ \& \ /(Q9=X) \ \& \ /(X01=X) \ \& \ /(X02=X) \ \& \ /(FctBI1=I) \ \& \ /(FctBI2=I)$

Tab. A5-272: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q01	Close(d)	$/(Q9=X) \ \& \ /(X01=X) \ \& \ /(X02=X) \ \& \ /(FctBI1=I) \ \& \ /(FctBI2=I)$
Q02	Close(d)	$/(Q9=X) \ \& \ /(X01=X) \ \& \ /(X02=X) \ \& \ /(FctBI1=I) \ \& \ /(FctBI2=I)$

Tab. A5-273: Bay Interlock Equations for Operation with Station Interlocking

A5.2.1.92 Bay type No. 76: Feeder bay with circuit breaker, double busbar
A22.103.R03

Switchgear unit		Binary input	Output relay	
Q01 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q02 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
X01 (DEV03)	Open	U A05	/	
	Close(d)	U A06	/	
X02 (DEV04)	Open	U B01	/	
	Close(d)	U B02	/	
Q9 (DEV05)	Open	U B03	K B03	
	Close(d)	U B04	K B04	
Q8 (DEV06)	Open	U B05	/	
	Close(d)	U B06	/	

Tab. A5-274: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q01	Close(d)	$(Q02=0) \ \& \ /(Q9=X) \ \& \ /(X01=X) \ \& \ /(X02=X) \ \& \ /(FctBI1=I) \ \& \ /(FctBI2=I)$
Q02	Close(d)	$(Q01=0) \ \& \ /(Q9=X) \ \& \ /(X01=X) \ \& \ /(X02=X) \ \& \ /(FctBI1=I) \ \& \ /(FctBI2=I)$
Q9	Open	$(Q01=0) \ \& \ (Q02=0)$
	Close(d)	$(Q01=0) \ \& \ (Q02=0) \ \& \ (Q8=0)$

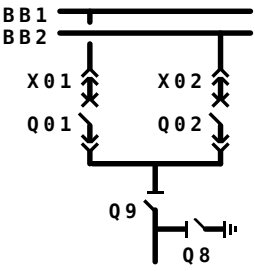
Tab. A5-275: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q01	Close(d)	$/(Q9=X) \ \& \ /(X01=X) \ \& \ /(X02=X) \ \& \ /(FctBI1=I) \ \& \ /(FctBI2=I)$
Q02	Close(d)	$/(Q9=X) \ \& \ /(X01=X) \ \& \ /(X02=X) \ \& \ /(FctBI1=I) \ \& \ /(FctBI2=I)$
Q9	Open	$(Q01=0) \ \& \ (Q02=0)$
	Close(d)	$(Q01=0) \ \& \ (Q02=0) \ \& \ (Q8=0)$

Tab. A5-276: Bay Interlock Equations for Operation with Station Interlocking

A5.2.1.93**Bay type No. 77: Feeder bay with circuit breaker, double busbar**

A22.103.R05

Switchgear unit		Binary input	Output relay	
Q01 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q02 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
X01 (DEV03)	Open	U A05	K A05	
	Close(d)	U A06	K A06	
X02 (DEV04)	Open	U B01	K B01	
	Close(d)	U B02	K B02	
Q9 (DEV05)	Open	U B03	K B03	
	Close(d)	U B04	K B04	
Q8 (DEV06)	Open	U B05	/	
	Close(d)	U B06	/	

Tab. A5-277: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q01	Close(d)	$(Q02=0) \ \& \ /(Q9=X) \ \& \ /(X01=X) \ \& \ /(X02=X) \ \& \ /(FctBI1=I) \ \& \ /(FctBI2=I)$
Q02	Close(d)	$(Q01=0) \ \& \ /(Q9=X) \ \& \ /(X01=X) \ \& \ /(X02=X) \ \& \ /(FctBI1=I) \ \& \ /(FctBI2=I)$
Q9	Open	$(Q01=0) \ \& \ (Q02=0)$
	Close(d)	$(Q01=0) \ \& \ (Q02=0) \ \& \ (Q8=0)$
X01	Open	$(Q01=0)$
	Close(d)	$(Q01=0)$
X02	Open	$(Q02=0)$
	Close(d)	$(Q02=0)$

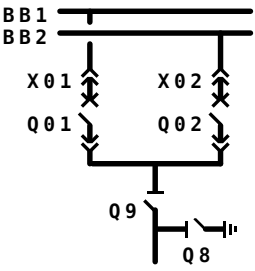
Tab. A5-278: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q01	Close(d)	$\neg(Q9=X) \ \& \ \neg(X01=X) \ \& \ \neg(X02=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$
Q02	Close(d)	$\neg(Q9=X) \ \& \ \neg(X01=X) \ \& \ \neg(X02=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$
Q9	Open	$(Q01=0) \ \& \ (Q02=0)$
	Close(d)	$(Q01=0) \ \& \ (Q02=0) \ \& \ (Q8=0)$
X01	Open	$(Q01=0)$
	Close(d)	$(Q01=0)$
X02	Open	$(Q02=0)$
	Close(d)	$(Q02=0)$

Tab. A5-279: Bay Interlock Equations for Operation with Station Interlocking

A5.2.1.94**Bay type No. 78: Feeder bay with circuit breaker, double busbar**

A22.103.R06

Switchgear unit		Binary input	Output relay	
Q01 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q02 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
X01 (DEV03)	Open	U A05	K A05	
	Close(d)	U A06	K A06	
X02 (DEV04)	Open	U B01	K B01	
	Close(d)	U B02	K B02	
Q9 (DEV05)	Open	U B03	K B03	
	Close(d)	U B04	K B04	
Q8 (DEV06)	Open	U B05	K B05	
	Close(d)	U B06	K B06	

Tab. A5-280: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q01	Close(d)	$(Q02=0) \ \& \ /(Q9=X) \ \& \ /(X01=X) \ \& \ /(X02=X) \ \& \ /(FctBI1=I) \ \& \ /(FctBI2=I)$
Q02	Close(d)	$(Q01=0) \ \& \ /(Q9=X) \ \& \ /(X01=X) \ \& \ /(X02=X) \ \& \ /(FctBI1=I) \ \& \ /(FctBI2=I)$
Q8	Close(d)	$(Q9=0)$
Q9	Open	$(Q01=0) \ \& \ (Q02=0)$
	Close(d)	$(Q01=0) \ \& \ (Q02=0) \ \& \ (Q8=0)$
X01	Open	$(Q01=0)$
	Close(d)	$(Q01=0)$
X02	Open	$(Q02=0)$
	Close(d)	$(Q02=0)$

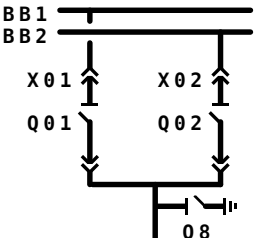
Tab. A5-281: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q01	Close(d)	$\neg(Q9=X) \ \& \ \neg(X01=X) \ \& \ \neg(X02=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$
Q02	Close(d)	$\neg(Q9=X) \ \& \ \neg(X01=X) \ \& \ \neg(X02=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$
Q8	Close(d)	$(Q9=0)$
Q9	Open	$(Q01=0) \ \& \ (Q02=0)$
	Close(d)	$(Q01=0) \ \& \ (Q02=0) \ \& \ (Q8=0)$
X01	Open	$(Q01=0)$
	Close(d)	$(Q01=0)$
X02	Open	$(Q02=0)$
	Close(d)	$(Q02=0)$

Tab. A5-282: Bay Interlock Equations for Operation with Station Interlocking

A5.2.1.95**Bay type No. 79: Feeder bay with switch disconnecter, double busbar**

A22.201.R02

Switchgear unit		Binary input	Output relay	
Q01 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q02 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
X01 (DEV03)	Open	U A05	/	
	Close(d)	U A06	/	
X02 (DEV04)	Open	U B01	/	
	Close(d)	U B02	/	
Q8 (DEV05)	Open	U B03	/	
	Close(d)	U B04	/	

Tab. A5-283: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q01	Close(d)	$(Q02=0) \ \& \ /(X01=X) \ \& \ /(X02=X) \ \& \ /(FctBI1=I) \ \& \ /(FctBI2=I)$
Q02	Close(d)	$(Q01=0) \ \& \ /(X01=X) \ \& \ /(X02=X) \ \& \ /(FctBI1=I) \ \& \ /(FctBI2=I)$

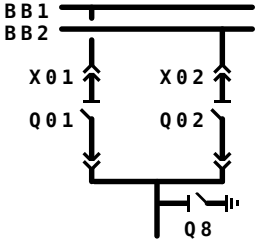
Tab. A5-284: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q01	Close(d)	$/(X01=X) \ \& \ /(X02=X) \ \& \ /(FctBI1=I) \ \& \ /(FctBI2=I)$
Q02	Close(d)	$/(X01=X) \ \& \ /(X02=X) \ \& \ /(FctBI1=I) \ \& \ /(FctBI2=I)$

Tab. A5-285: Bay Interlock Equations for Operation with Station Interlocking

A5.2.1.96**Bay type No. 80: Feeder bay with switch disconnecter, double busbar**

A22.201.R04

Switchgear unit		Binary input	Output relay	
Q01 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q02 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
X01 (DEV03)	Open	U A05	K A05	
	Close(d)	U A06	K A06	
X02 (DEV04)	Open	U B01	K B01	
	Close(d)	U B02	K B02	
Q8 (DEV05)	Open	U B03	/	
	Close(d)	U B04	/	

Tab. A5-286: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q01	Close(d)	$(Q02=0) \ \& \ /(X01=X) \ \& \ /(X02=X) \ \& \ /(FctBI1=I) \ \& \ /(FctBI2=I)$
Q02	Close(d)	$(Q01=0) \ \& \ /(X01=X) \ \& \ /(X02=X) \ \& \ /(FctBI1=I) \ \& \ /(FctBI2=I)$
X01	Open	$(Q01=0)$
	Close(d)	$(Q01=0) \ \& \ (Q8=0)$
X02	Open	$(Q02=0)$
	Close(d)	$(Q02=0) \ \& \ (Q8=0)$

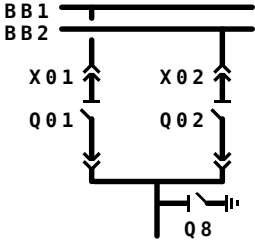
Tab. A5-287: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q01	Close(d)	$\neg(X01=X) \ \& \ \neg(X02=X) \ \& \ \neg(FctBl1=I) \ \& \ \neg(FctBl2=I)$
Q02	Close(d)	$\neg(X01=X) \ \& \ \neg(X02=X) \ \& \ \neg(FctBl1=I) \ \& \ \neg(FctBl2=I)$
X01	Open	$(Q01=0)$
	Close(d)	$(Q01=0) \ \& \ (Q8=0)$
X02	Open	$(Q02=0)$
	Close(d)	$(Q02=0) \ \& \ (Q8=0)$

Tab. A5-288: Bay Interlock Equations for Operation with Station Interlocking

A5.2.1.97**Bay type No. 81: Feeder bay with switch disconnecter, double busbar**

A22.201.R05

Switchgear unit		Binary input	Output relay	
Q01 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q02 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
X01 (DEV03)	Open	U A05	K A05	
	Close(d)	U A06	K A06	
X02 (DEV04)	Open	U B01	K B01	
	Close(d)	U B02	K B02	
Q8 (DEV05)	Open	U B03	K B03	
	Close(d)	U B04	K B04	

Tab. A5-289: Assignment of Binary Inputs and Output Relays

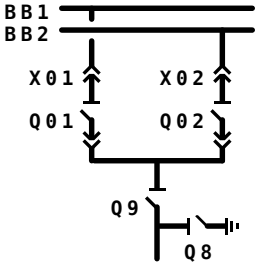
Switchgear unit	Control O/C	Interlock equation
Q01	Close(d)	$(Q02=0) \ \& \ /(X01=X) \ \& \ /(X02=X) \ \& \ /(FctBI1=I) \ \& \ /(FctBI2=I)$
Q02	Close(d)	$(Q01=0) \ \& \ /(X01=X) \ \& \ /(X02=X) \ \& \ /(FctBI1=I) \ \& \ /(FctBI2=I)$
Q8	Close(d)	$(X01=0) \ \& \ (X02=0)$
X01	Open	$(Q01=0)$
	Close(d)	$(Q01=0) \ \& \ (Q8=0)$
X02	Open	$(Q02=0)$
	Close(d)	$(Q02=0) \ \& \ (Q8=0)$

Tab. A5-290: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q01	Close(d)	$\neg(X01=X) \ \& \ \neg(X02=X) \ \& \ \neg(FctBl1=l) \ \& \ \neg(FctBl2=l)$
Q02	Close(d)	$\neg(X01=X) \ \& \ \neg(X02=X) \ \& \ \neg(FctBl1=l) \ \& \ \neg(FctBl2=l)$
Q8	Close(d)	$(X01=0) \ \& \ (X02=0)$
X01	Open	$(Q01=0)$
	Close(d)	$(Q01=0) \ \& \ (Q8=0)$
X02	Open	$(Q02=0)$
	Close(d)	$(Q02=0) \ \& \ (Q8=0)$

Tab. A5-291: Bay Interlock Equations for Operation with Station Interlocking

A5.2.1.98 Bay type No. 82: Feeder bay with switch disconnecter, double busbar
A22.203.R02

Switchgear unit		Binary input	Output relay	
Q01 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q02 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
X01 (DEV03)	Open	U A05	/	
	Close(d)	U A06	/	
X02 (DEV04)	Open	U B01	/	
	Close(d)	U B02	/	
Q9 (DEV05)	Open	U B03	/	
	Close(d)	U B04	/	
Q8 (DEV06)	Open	U B05	/	
	Close(d)	U B06	/	

Tab. A5-292: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q01	Close(d)	$(Q02=0) \ \& \ /(Q9=X) \ \& \ /(X01=X) \ \& \ /(X02=X) \ \& \ /(FctBI1=I) \ \& \ /(FctBI2=I)$
Q02	Close(d)	$(Q01=0) \ \& \ /(Q9=X) \ \& \ /(X01=X) \ \& \ /(X02=X) \ \& \ /(FctBI1=I) \ \& \ /(FctBI2=I)$

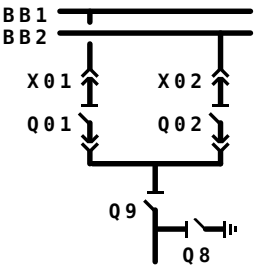
Tab. A5-293: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q01	Close(d)	$/(Q9=X) \ \& \ /(X01=X) \ \& \ /(X02=X) \ \& \ /(FctBI1=I) \ \& \ /(FctBI2=I)$
Q02	Close(d)	$/(Q9=X) \ \& \ /(X01=X) \ \& \ /(X02=X) \ \& \ /(FctBI1=I) \ \& \ /(FctBI2=I)$

Tab. A5-294: Bay Interlock Equations for Operation with Station Interlocking

A5.2.1.99**Bay type No. 83: Feeder bay with switch disconnecter, double busbar**

A22.203.R03

Switchgear unit		Binary input	Output relay	
Q01 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q02 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
X01 (DEV03)	Open	U A05	/	
	Close(d)	U A06	/	
X02 (DEV04)	Open	U B01	/	
	Close(d)	U B02	/	
Q9 (DEV05)	Open	U B03	K B03	
	Close(d)	U B04	K B04	
Q8 (DEV06)	Open	U B05	/	
	Close(d)	U B06	/	

Tab. A5-295: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q01	Close(d)	$(Q02=0) \ \& \ /(Q9=X) \ \& \ /(X01=X) \ \& \ /(X02=X) \ \& \ /(FctBI1=I) \ \& \ /(FctBI2=I)$
Q02	Close(d)	$(Q01=0) \ \& \ /(Q9=X) \ \& \ /(X01=X) \ \& \ /(X02=X) \ \& \ /(FctBI1=I) \ \& \ /(FctBI2=I)$
Q9	Open	$(Q01=0) \ \& \ (Q02=0)$
	Close(d)	$(Q01=0) \ \& \ (Q02=0) \ \& \ (Q8=0)$

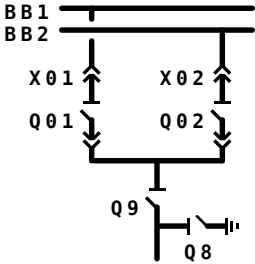
Tab. A5-296: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q01	Close(d)	$/(Q9=X) \ \& \ /(X01=X) \ \& \ /(X02=X) \ \& \ /(FctBI1=I) \ \& \ /(FctBI2=I)$
Q02	Close(d)	$/(Q9=X) \ \& \ /(X01=X) \ \& \ /(X02=X) \ \& \ /(FctBI1=I) \ \& \ /(FctBI2=I)$
Q9	Open	$(Q01=0) \ \& \ (Q02=0)$
	Close(d)	$(Q01=0) \ \& \ (Q02=0) \ \& \ (Q8=0)$

Tab. A5-297: Bay Interlock Equations for Operation with Station Interlocking

A5.2.1.100**Bay type No. 84: Feeder bay with switch disconnecter, double busbar**

A22.203.R05

Switchgear unit		Binary input	Output relay	
Q01 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q02 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
X01 (DEV03)	Open	U A05	K A05	
	Close(d)	U A06	K A06	
X02 (DEV04)	Open	U B01	K B01	
	Close(d)	U B02	K B02	
Q9 (DEV05)	Open	U B03	K B03	
	Close(d)	U B04	K B04	
Q8 (DEV06)	Open	U B05	/	
	Close(d)	U B06	/	

Tab. A5-298: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q01	Close(d)	$(Q02=0) \ \& \ /(Q9=X) \ \& \ /(X01=X) \ \& \ /(X02=X) \ \& \ /(FctBI1=I) \ \& \ /(FctBI2=I)$
Q02	Close(d)	$(Q01=0) \ \& \ /(Q9=X) \ \& \ /(X01=X) \ \& \ /(X02=X) \ \& \ /(FctBI1=I) \ \& \ /(FctBI2=I)$
Q9	Open	$(Q01=0) \ \& \ (Q02=0)$
	Close(d)	$(Q01=0) \ \& \ (Q02=0) \ \& \ (Q8=0)$
X01	Open	$(Q01=0)$
	Close(d)	$(Q01=0)$
X02	Open	$(Q02=0)$
	Close(d)	$(Q02=0)$

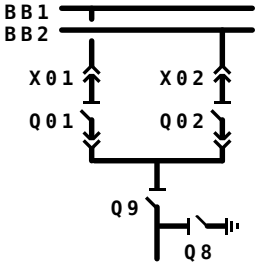
Tab. A5-299: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q01	Close(d)	$\neg(Q9=X) \ \& \ \neg(X01=X) \ \& \ \neg(X02=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$
Q02	Close(d)	$\neg(Q9=X) \ \& \ \neg(X01=X) \ \& \ \neg(X02=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$
Q9	Open	$(Q01=0) \ \& \ (Q02=0)$
	Close(d)	$(Q01=0) \ \& \ (Q02=0) \ \& \ (Q8=0)$
X01	Open	$(Q01=0)$
	Close(d)	$(Q01=0)$
X02	Open	$(Q02=0)$
	Close(d)	$(Q02=0)$

Tab. A5-300: Bay Interlock Equations for Operation with Station Interlocking

A5.2.1.101**Bay type No. 85: Feeder bay with switch disconnecter, double busbar**

A22.203.R06

Switchgear unit		Binary input	Output relay	
Q01 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q02 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
X01 (DEV03)	Open	U A05	K A05	
	Close(d)	U A06	K A06	
X02 (DEV04)	Open	U B01	K B01	
	Close(d)	U B02	K B02	
Q9 (DEV05)	Open	U B03	K B03	
	Close(d)	U B04	K B04	
Q8 (DEV06)	Open	U B05	K B05	
	Close(d)	U B06	K B06	

Tab. A5-301: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q01	Close(d)	$(Q02=0) \ \& \ /(Q9=X) \ \& \ /(X01=X) \ \& \ /(X02=X) \ \& \ /(FctBI1=I) \ \& \ /(FctBI2=I)$
Q02	Close(d)	$(Q01=0) \ \& \ /(Q9=X) \ \& \ /(X01=X) \ \& \ /(X02=X) \ \& \ /(FctBI1=I) \ \& \ /(FctBI2=I)$
Q8	Close(d)	$(Q9=0)$
Q9	Open	$(Q01=0) \ \& \ (Q02=0)$
	Close(d)	$(Q01=0) \ \& \ (Q02=0) \ \& \ (Q8=0)$
X01	Open	$(Q01=0)$
	Close(d)	$(Q01=0)$
X02	Open	$(Q02=0)$
	Close(d)	$(Q02=0)$

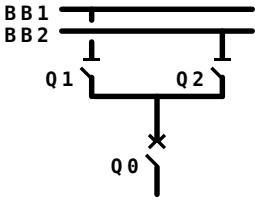
Tab. A5-302: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q01	Close(d)	$\neg(Q9=X) \ \& \ \neg(X01=X) \ \& \ \neg(X02=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$
Q02	Close(d)	$\neg(Q9=X) \ \& \ \neg(X01=X) \ \& \ \neg(X02=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$
Q8	Close(d)	$(Q9=0)$
Q9	Open	$(Q01=0) \ \& \ (Q02=0)$
	Close(d)	$(Q01=0) \ \& \ (Q02=0) \ \& \ (Q8=0)$
X01	Open	$(Q01=0)$
	Close(d)	$(Q01=0)$
X02	Open	$(Q02=0)$
	Close(d)	$(Q02=0)$

Tab. A5-303: Bay Interlock Equations for Operation with Station Interlocking

A5.2.1.102**Bay type No. 86: Feeder bay with circuit breaker, double busbar, direct motor control**

A23.104.M03

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q1 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
Q2 (DEV03)	Open	U A05	K A05	
	Close(d)	U A06	K A06	
Motor relay (SIG_1: Signal S012 EXT)		U B06	/	
Shunt winding (CMD_1: Command C011)		/	K B05	
Motor relay (CMD_1: Command C012)		/	K B06	

Tab. A5-304: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q1=X) \ \& \ \neg(Q2=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$
Q1	Open	$(Q0=0) \ \& \ (Q2=0)$
	Close(d)	$(Q0=0) \ \& \ (Q2=0)$
Q2	Open	$(Q0=0) \ \& \ (Q1=0)$
	Close(d)	$(Q0=0) \ \& \ (Q1=0)$

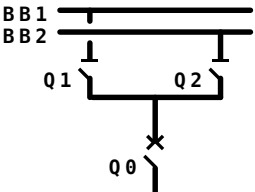
Tab. A5-305: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q1=X) \ \& \ \neg(Q2=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$

Tab. A5-306: Bay Interlock Equations for Operation with Station Interlocking

A5.2.1.103**Bay type No. 87: Feeder bay with circuit breaker, double busbar**

A23.104.R01

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q1 (DEV02)	Open	U A03	/	
	Close(d)	U A04	/	
Q2 (DEV03)	Open	U A05	/	
	Close(d)	U A06	/	

Tab. A5-307: Assignment of Binary Inputs and Output Relays

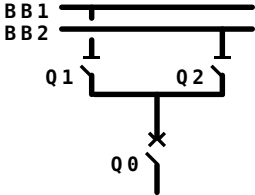
Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q1=X) \ \& \ \neg(Q2=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$

Tab. A5-308: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q1=X) \ \& \ \neg(Q2=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$

Tab. A5-309: Bay Interlock Equations for Operation with Station Interlocking

A5.2.1.104 Bay type No. 88: Feeder bay with circuit breaker, double busbar
A23.104.R03

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q1 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
Q2 (DEV03)	Open	U A05	K A05	
	Close(d)	U A06	K A06	

Tab. A5-310: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q1=X) \ \& \ \neg(Q2=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$
Q1	Open	$(Q0=0) \ \& \ (Q2=0)$
	Close(d)	$(Q0=0) \ \& \ (Q2=0)$
Q2	Open	$(Q0=0) \ \& \ (Q1=0)$
	Close(d)	$(Q0=0) \ \& \ (Q1=0)$

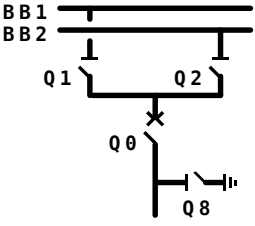
Tab. A5-311: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q1=X) \ \& \ \neg(Q2=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$

Tab. A5-312: Bay Interlock Equations for Operation with Station Interlocking

A5.2.1.105**Bay type No. 89: Feeder bay with circuit breaker, double busbar, direct motor control**

A23.105.M04

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q1 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
Q2 (DEV03)	Open	U A05	K A05	
	Close(d)	U A06	K A06	
Q8 (DEV04)	Open	U B01	K B01	
	Close(d)	U B02	K B02	
Motor relay (SIG_1: Signal S012 EXT)		U B06	/	
Shunt winding (CMD_1: Command C011)		/	K B05	
Motor relay (CMD_1: Command C012)		/	K B06	

Tab. A5-313: Assignment of Binary Inputs and Output Relays

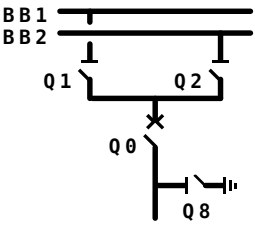
Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q1=X) \ \& \ \neg(Q2=X) \ \& \ (Q8=0) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$
Q1	Open	$(Q0=0) \ \& \ (Q2=0)$
	Close(d)	$(Q0=0) \ \& \ (Q2=0) \ \& \ (Q8=0)$
Q2	Open	$(Q0=0) \ \& \ (Q1=0)$
	Close(d)	$(Q0=0) \ \& \ (Q1=0) \ \& \ (Q8=0)$
Q8	Close(d)	$(Q0=0) \ \& \ (Q1=0) \ \& \ (Q2=0)$

Tab. A5-314: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q1=X) \ \& \ \neg(Q2=X) \ \& \ (Q8=0) \ \& \ \neg(\text{FctBI1}=I) \ \& \ \neg(\text{FctBI2}=I)$
Q1	Close(d)	$(Q8=0)$
Q2	Close(d)	$(Q8=0)$
Q8	Close(d)	$(Q0=0) \ \& \ (Q1=0) \ \& \ (Q2=0)$

Tab. A5-315: Bay Interlock Equations for Operation with Station Interlocking

A5.2.1.106 Bay type No. 90: Feeder bay with circuit breaker, double busbar
A23.105.R01

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q1 (DEV02)	Open	U A03	/	
	Close(d)	U A04	/	
Q2 (DEV03)	Open	U A05	/	
	Close(d)	U A06	/	
Q8 (DEV04)	Open	U B01	/	
	Close(d)	U B02	/	

Tab. A5-316: Assignment of Binary Inputs and Output Relays

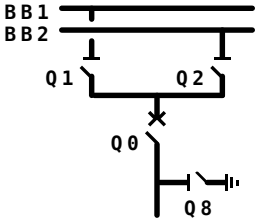
Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q1=X) \wedge \neg(Q2=X) \wedge (Q8=0) \wedge \neg(\text{FctBI1}=I) \wedge \neg(\text{FctBI2}=I)$

Tab. A5-317: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q1=X) \wedge \neg(Q2=X) \wedge (Q8=0) \wedge \neg(\text{FctBI1}=I) \wedge \neg(\text{FctBI2}=I)$

Tab. A5-318: Bay Interlock Equations for Operation with Station Interlocking

A5.2.1.107 Bay type No. 91: Feeder bay with circuit breaker, double busbar
A23.105.R03

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q1 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
Q2 (DEV03)	Open	U A05	K A05	
	Close(d)	U A06	K A06	
Q8 (DEV04)	Open	U B01	/	
	Close(d)	U B02	/	

Tab. A5-319: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q1=X) \ \& \ \neg(Q2=X) \ \& \ (Q8=0) \ \& \ \neg(\text{FctBI1}=I) \ \& \ \neg(\text{FctBI2}=I)$
Q1	Open	$(Q0=0) \ \& \ (Q2=0)$
	Close(d)	$(Q0=0) \ \& \ (Q2=0) \ \& \ (Q8=0)$
Q2	Open	$(Q0=0) \ \& \ (Q1=0)$
	Close(d)	$(Q0=0) \ \& \ (Q1=0) \ \& \ (Q8=0)$

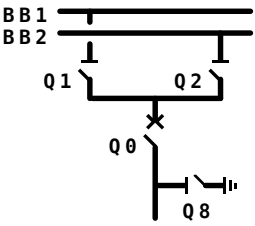
Tab. A5-320: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q1=X) \ \& \ \neg(Q2=X) \ \& \ (Q8=0) \ \& \ \neg(\text{FctBI1}=I) \ \& \ \neg(\text{FctBI2}=I)$
Q1	Close(d)	$(Q8=0)$
Q2	Close(d)	$(Q8=0)$

Tab. A5-321: Bay Interlock Equations for Operation with Station Interlocking

A5.2.1.108**Bay type No. 92: Feeder bay with circuit breaker, double busbar**

A23.105.R04

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q1 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
Q2 (DEV03)	Open	U A05	K A05	
	Close(d)	U A06	K A06	
Q8 (DEV04)	Open	U B01	K B01	
	Close(d)	U B02	K B02	

Tab. A5-322: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q1=X) \wedge \neg(Q2=X) \wedge (Q8=0) \wedge \neg(\text{FctBI1}=I) \wedge \neg(\text{FctBI2}=I)$
Q1	Open	$(Q0=0) \wedge (Q2=0)$
	Close(d)	$(Q0=0) \wedge (Q2=0) \wedge (Q8=0)$
Q2	Open	$(Q0=0) \wedge (Q1=0)$
	Close(d)	$(Q0=0) \wedge (Q1=0) \wedge (Q8=0)$
Q8	Close(d)	$(Q0=0) \wedge (Q1=0) \wedge (Q2=0)$

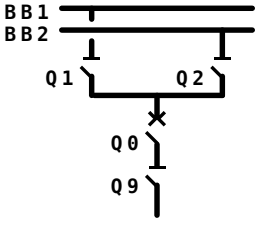
Tab. A5-323: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q1=X) \wedge \neg(Q2=X) \wedge (Q8=0) \wedge \neg(\text{FctBI1}=I) \wedge \neg(\text{FctBI2}=I)$
Q1	Close(d)	$(Q8=0)$
Q2	Close(d)	$(Q8=0)$
Q8	Close(d)	$(Q0=0) \wedge (Q1=0) \wedge (Q2=0)$

Tab. A5-324: Bay Interlock Equations for Operation with Station Interlocking

A5.2.1.109**Bay type No. 93: Feeder bay with circuit breaker, double busbar, direct motor control**

A23.106.M04

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q1 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
Q2 (DEV03)	Open	U A05	K A05	
	Close(d)	U A06	K A06	
Q9 (DEV04)	Open	U B01	K B01	
	Close(d)	U B02	K B02	
Motor relay (SIG_1: Signal S012 EXT)		U B06	/	
Shunt winding (CMD_1: Command C011)		/	K B05	
Motor relay (CMD_1: Command C012)		/	K B06	

Tab. A5-325: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q1=X) \ \& \ \neg(Q2=X) \ \& \ \neg(Q9=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$
Q1	Open	$(Q0=0) \ \& \ (Q2=0)$
	Close(d)	$(Q0=0) \ \& \ (Q2=0)$
Q2	Open	$(Q0=0) \ \& \ (Q1=0)$
	Close(d)	$(Q0=0) \ \& \ (Q1=0)$
Q9	Open	$(Q0=0)$
	Close(d)	$(Q0=0)$

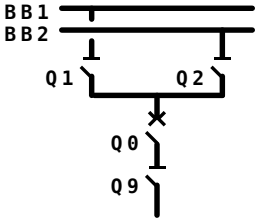
Tab. A5-326: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q1=X) \ \& \ \neg(Q2=X) \ \& \ \neg(Q9=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$
Q9	Open	$(Q0=0)$
	Close(d)	$(Q0=0)$

Tab. A5-327: Bay Interlock Equations for Operation with Station Interlocking

A5.2.1.110**Bay type No. 94: Feeder bay with circuit breaker, double busbar**

A23.106.R01

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q1 (DEV02)	Open	U A03	/	
	Close(d)	U A04	/	
Q2 (DEV03)	Open	U A05	/	
	Close(d)	U A06	/	
Q9 (DEV04)	Open	U B01	/	
	Close(d)	U B02	/	

Tab. A5-328: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q1=X) \ \& \ \neg(Q2=X) \ \& \ \neg(Q9=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$

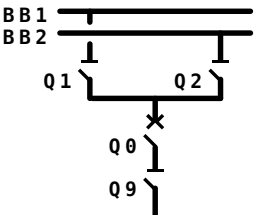
Tab. A5-329: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q1=X) \ \& \ \neg(Q2=X) \ \& \ \neg(Q9=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$

Tab. A5-330: Bay Interlock Equations for Operation with Station Interlocking

A5.2.1.111**Bay type No. 95: Feeder bay with circuit breaker, double busbar**

A23.106.R04

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q1 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
Q2 (DEV03)	Open	U A05	K A05	
	Close(d)	U A06	K A06	
Q9 (DEV04)	Open	U B01	K B01	
	Close(d)	U B02	K B02	

Tab. A5-331: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q1=X) \ \& \ \neg(Q2=X) \ \& \ \neg(Q9=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$
Q1	Open	$(Q0=0) \ \& \ (Q2=0)$
	Close(d)	$(Q0=0) \ \& \ (Q2=0)$
Q2	Open	$(Q0=0) \ \& \ (Q1=0)$
	Close(d)	$(Q0=0) \ \& \ (Q1=0)$
Q9	Open	$(Q0=0)$
	Close(d)	$(Q0=0)$

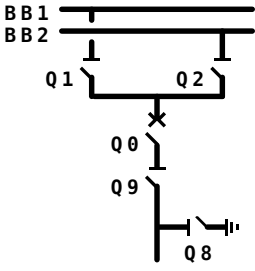
Tab. A5-332: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q1=X) \ \& \ \neg(Q2=X) \ \& \ \neg(Q9=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$
Q9	Open	$(Q0=0)$
	Close(d)	$(Q0=0)$

Tab. A5-333: Bay Interlock Equations for Operation with Station Interlocking

A5.2.1.112**Bay type No. 96: Feeder bay with circuit breaker, double busbar, direct motor control**

A23.107.M05

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q1 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
Q2 (DEV03)	Open	U A05	K A05	
	Close(d)	U A06	K A06	
Q9 (DEV04)	Open	U B01	K B01	
	Close(d)	U B02	K B02	
Q8 (DEV05)	Open	U B03	K B03	
	Close(d)	U B04	K B04	
Motor relay (SIG_1: Signal S012 EXT)		U B06	/	
Shunt winding (CMD_1: Command C011)		/	K B05	
Motor relay (CMD_1: Command C012)		/	K B06	

Tab. A5-334: Assignment of Binary Inputs and Output Relays

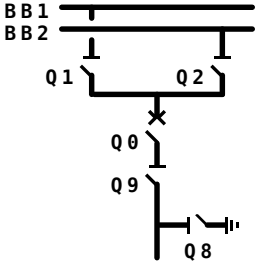
Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q1=X) \ \& \ \neg(Q2=X) \ \& \ \neg(Q9=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$
Q1	Open	$(Q0=0) \ \& \ (Q2=0)$
	Close(d)	$(Q0=0) \ \& \ (Q2=0)$
Q2	Open	$(Q0=0) \ \& \ (Q1=0)$
	Close(d)	$(Q0=0) \ \& \ (Q1=0)$
Q8	Close(d)	$(Q9=0)$
Q9	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q8=0)$

Tab. A5-335: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q1=X) \wedge \neg(Q2=X) \wedge \neg(Q9=X) \wedge \neg(FctBI1=I) \wedge \neg(FctBI2=I)$
Q8	Close(d)	$(Q9=0)$
Q9	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \wedge (Q8=0)$

Tab. A5-336: Bay Interlock Equations for Operation with Station Interlocking

A5.2.1.113 Bay type No. 97: Feeder bay with circuit breaker, double busbar
A23.107.R01

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q1 (DEV02)	Open	U A03	/	
	Close(d)	U A04	/	
Q2 (DEV03)	Open	U A05	/	
	Close(d)	U A06	/	
Q9 (DEV04)	Open	U B01	/	
	Close(d)	U B02	/	
Q8 (DEV05)	Open	U B03	/	
	Close(d)	U B04	/	

Tab. A5-337: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q1=X) \ \& \ \neg(Q2=X) \ \& \ \neg(Q9=X) \ \& \ \neg(\text{FctBI1}=I) \ \& \ \neg(\text{FctBI2}=I)$

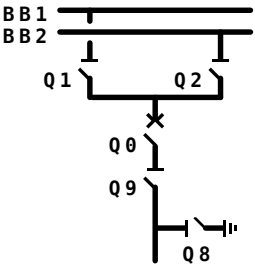
Tab. A5-338: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q1=X) \ \& \ \neg(Q2=X) \ \& \ \neg(Q9=X) \ \& \ \neg(\text{FctBI1}=I) \ \& \ \neg(\text{FctBI2}=I)$

Tab. A5-339: Bay Interlock Equations for Operation with Station Interlocking

A5.2.1.114**Bay type No. 98: Feeder bay with circuit breaker, double busbar**

A23.107.R04

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q1 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
Q2 (DEV03)	Open	U A05	K A05	
	Close(d)	U A06	K A06	
Q9 (DEV04)	Open	U B01	K B01	
	Close(d)	U B02	K B02	
Q8 (DEV05)	Open	U B03	/	
	Close(d)	U B04	/	

Tab. A5-340: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q1=X) \ \& \ \neg(Q2=X) \ \& \ \neg(Q9=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$
Q1	Open	$(Q0=0) \ \& \ (Q2=0)$
	Close(d)	$(Q0=0) \ \& \ (Q2=0)$
Q2	Open	$(Q0=0) \ \& \ (Q1=0)$
	Close(d)	$(Q0=0) \ \& \ (Q1=0)$
Q9	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q8=0)$

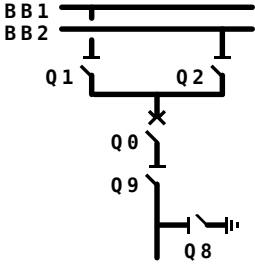
Tab. A5-341: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q1=X) \ \& \ \neg(Q2=X) \ \& \ \neg(Q9=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$
Q9	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q8=0)$

Tab. A5-342: Bay Interlock Equations for Operation with Station Interlocking

A5.2.1.115**Bay type No. 99: Feeder bay with circuit breaker, double busbar**

A23.107.R05

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q1 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
Q2 (DEV03)	Open	U A05	K A05	
	Close(d)	U A06	K A06	
Q9 (DEV04)	Open	U B01	K B01	
	Close(d)	U B02	K B02	
Q8 (DEV05)	Open	U B03	K B03	
	Close(d)	U B04	K B04	

Tab. A5-343: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q1=X) \ \& \ \neg(Q2=X) \ \& \ \neg(Q9=X) \ \& \ \neg(\text{FctBI1}=I) \ \& \ \neg(\text{FctBI2}=I)$
Q1	Open	$(Q0=0) \ \& \ (Q2=0)$
	Close(d)	$(Q0=0) \ \& \ (Q2=0)$
Q2	Open	$(Q0=0) \ \& \ (Q1=0)$
	Close(d)	$(Q0=0) \ \& \ (Q1=0)$
Q8	Close(d)	$(Q9=0)$
Q9	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q8=0)$

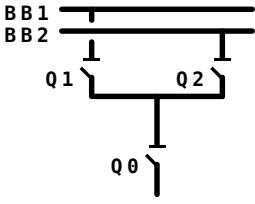
Tab. A5-344: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q1=X) \wedge \neg(Q2=X) \wedge \neg(Q9=X) \wedge \neg(FctBI1=I) \wedge \neg(FctBI2=I)$
Q8	Close(d)	$(Q9=0)$
Q9	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \wedge (Q8=0)$

Tab. A5-345: Bay Interlock Equations for Operation with Station Interlocking

A5.2.1.116**Bay type No. 100: Feeder bay with switch disconnecter, double busbar, direct motor control**

A23.204.M03

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q1 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
Q2 (DEV03)	Open	U A05	K A05	
	Close(d)	U A06	K A06	
Motor relay (SIG_1: Signal S012 EXT)		U B06	/	
Shunt winding (CMD_1: Command C011)		/	K B05	
Motor relay (CMD_1: Command C012)		/	K B06	

Tab. A5-346: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q1=X) \ \& \ \neg(Q2=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$
Q1	Open	$(Q0=0) \ \& \ (Q2=0)$
	Close(d)	$(Q0=0) \ \& \ (Q2=0)$
Q2	Open	$(Q0=0) \ \& \ (Q1=0)$
	Close(d)	$(Q0=0) \ \& \ (Q1=0)$

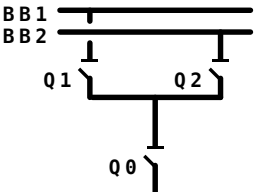
Tab. A5-347: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q1=X) \ \& \ \neg(Q2=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$

Tab. A5-348: Bay Interlock Equations for Operation with Station Interlocking

A5.2.1.117**Bay type No. 101: Feeder bay with switch disconnecter, double busbar**

A23.204.R01

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q1 (DEV02)	Open	U A03	/	
	Close(d)	U A04	/	
Q2 (DEV03)	Open	U A05	/	
	Close(d)	U A06	/	

Tab. A5-349: Assignment of Binary Inputs and Output Relays

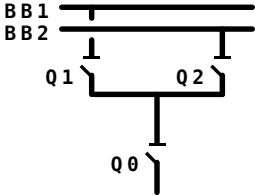
Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q1=X) \ \& \ \neg(Q2=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$

Tab. A5-350: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q1=X) \ \& \ \neg(Q2=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$

Tab. A5-351: Bay Interlock Equations for Operation with Station Interlocking

A5.2.1.118 Bay type No. 102: Feeder bay with switch disconnecter, double busbar
A23.204.R03

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q1 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
Q2 (DEV03)	Open	U A05	K A05	
	Close(d)	U A06	K A06	

Tab. A5-352: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q1=X) \ \& \ \neg(Q2=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$
Q1	Open	$(Q0=0) \ \& \ (Q2=0)$
	Close(d)	$(Q0=0) \ \& \ (Q2=0)$
Q2	Open	$(Q0=0) \ \& \ (Q1=0)$
	Close(d)	$(Q0=0) \ \& \ (Q1=0)$

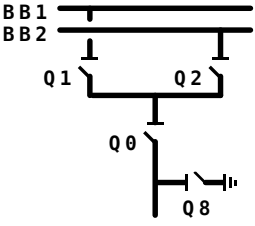
Tab. A5-353: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q1=X) \ \& \ \neg(Q2=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$

Tab. A5-354: Bay Interlock Equations for Operation with Station Interlocking

A5.2.1.119**Bay type No. 103: Feeder bay with switch disconnecter, double busbar, direct motor control**

A23.205.M04

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q1 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
Q2 (DEV03)	Open	U A05	K A05	
	Close(d)	U A06	K A06	
Q8 (DEV04)	Open	U B01	K B01	
	Close(d)	U B02	K B02	
Motor relay (SIG_1: Signal S012 EXT)		U B06	/	
Shunt winding (CMD_1: Command C011)		/	K B05	
Motor relay (CMD_1: Command C012)		/	K B06	

Tab. A5-355: Assignment of Binary Inputs and Output Relays

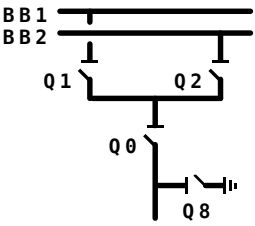
Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q1=X) \ \& \ \neg(Q2=X) \ \& \ (Q8=0) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$
Q1	Open	$(Q0=0) \ \& \ (Q2=0)$
	Close(d)	$(Q0=0) \ \& \ (Q2=0) \ \& \ (Q8=0)$
Q2	Open	$(Q0=0) \ \& \ (Q1=0)$
	Close(d)	$(Q0=0) \ \& \ (Q1=0) \ \& \ (Q8=0)$
Q8	Close(d)	$(Q0=0) \ \& \ (Q1=0) \ \& \ (Q2=0)$

Tab. A5-356: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q1=X) \ \& \ \neg(Q2=X) \ \& \ (Q8=0) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$
Q1	Close(d)	$(Q8=0)$
Q2	Close(d)	$(Q8=0)$
Q8	Close(d)	$(Q0=0) \ \& \ (Q1=0) \ \& \ (Q2=0)$

Tab. A5-357: Bay Interlock Equations for Operation with Station Interlocking

A5.2.1.120**Bay type No. 104: Feeder bay with switch disconnecter, double busbar**
A23.205.R01

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q1 (DEV02)	Open	U A03	/	
	Close(d)	U A04	/	
Q2 (DEV03)	Open	U A05	/	
	Close(d)	U A06	/	
Q8 (DEV04)	Open	U B01	/	
	Close(d)	U B02	/	

Tab. A5-358: Assignment of Binary Inputs and Output Relays

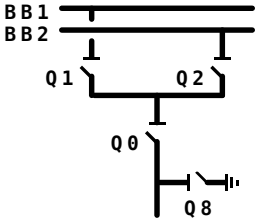
Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q1=X) \wedge \neg(Q2=X) \wedge (Q8=0) \wedge \neg(\text{FctBI1}=I) \wedge \neg(\text{FctBI2}=I)$

Tab. A5-359: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q1=X) \wedge \neg(Q2=X) \wedge (Q8=0) \wedge \neg(\text{FctBI1}=I) \wedge \neg(\text{FctBI2}=I)$

Tab. A5-360: Bay Interlock Equations for Operation with Station Interlocking

A5.2.1.121 Bay type No. 105: Feeder bay with switch disconnecter, double busbar
A23.205.R03

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q1 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
Q2 (DEV03)	Open	U A05	K A05	
	Close(d)	U A06	K A06	
Q8 (DEV04)	Open	U B01	/	
	Close(d)	U B02	/	

Tab. A5-361: Assignment of Binary Inputs and Output Relays

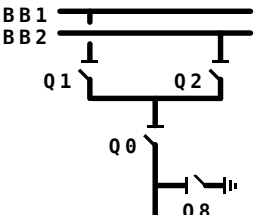
Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q1=X) \ \& \ \neg(Q2=X) \ \& \ (Q8=0) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$
Q1	Open	$(Q0=0) \ \& \ (Q2=0)$
	Close(d)	$(Q0=0) \ \& \ (Q2=0) \ \& \ (Q8=0)$
Q2	Open	$(Q0=0) \ \& \ (Q1=0)$
	Close(d)	$(Q0=0) \ \& \ (Q1=0) \ \& \ (Q8=0)$

Tab. A5-362: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q1=X) \ \& \ \neg(Q2=X) \ \& \ (Q8=0) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$
Q1	Close(d)	$(Q8=0)$
Q2	Close(d)	$(Q8=0)$

Tab. A5-363: Bay Interlock Equations for Operation with Station Interlocking

A5.2.1.122**Bay type No. 106: Feeder bay with switch disconnecter, double busbar**
A23.205.R04

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q1 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
Q2 (DEV03)	Open	U A05	K A05	
	Close(d)	U A06	K A06	
Q8 (DEV04)	Open	U B01	K B01	
	Close(d)	U B02	K B02	

Tab. A5-364: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q1=X) \ \& \ \neg(Q2=X) \ \& \ (Q8=0) \ \& \ \neg(\text{FctBI1}=I) \ \& \ \neg(\text{FctBI2}=I)$
Q1	Open	$(Q0=0) \ \& \ (Q2=0)$
	Close(d)	$(Q0=0) \ \& \ (Q2=0) \ \& \ (Q8=0)$
Q2	Open	$(Q0=0) \ \& \ (Q1=0)$
	Close(d)	$(Q0=0) \ \& \ (Q1=0) \ \& \ (Q8=0)$
Q8	Close(d)	$(Q0=0) \ \& \ (Q1=0) \ \& \ (Q2=0)$

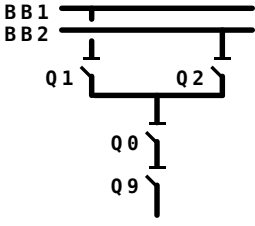
Tab. A5-365: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q1=X) \ \& \ \neg(Q2=X) \ \& \ (Q8=0) \ \& \ \neg(\text{FctBI1}=I) \ \& \ \neg(\text{FctBI2}=I)$
Q1	Close(d)	$(Q8=0)$
Q2	Close(d)	$(Q8=0)$
Q8	Close(d)	$(Q0=0) \ \& \ (Q1=0) \ \& \ (Q2=0)$

Tab. A5-366: Bay Interlock Equations for Operation with Station Interlocking

A5.2.1.123**Bay type No. 107: Feeder bay with switch disconnecter, double busbar, direct motor control**

A23.206.M04

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q1 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
Q2 (DEV03)	Open	U A05	K A05	
	Close(d)	U A06	K A06	
Q9 (DEV04)	Open	U B01	K B01	
	Close(d)	U B02	K B02	
Motor relay (SIG_1: Signal S012 EXT)		U B06	/	
Shunt winding (CMD_1: Command C011)		/	K B05	
Motor relay (CMD_1: Command C012)		/	K B06	

Tab. A5-367: Assignment of Binary Inputs and Output Relays

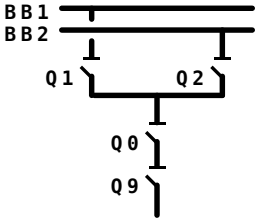
Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q1=X) \ \& \ \neg(Q2=X) \ \& \ \neg(Q9=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$
Q1	Open	$(Q0=0) \ \& \ (Q2=0)$
	Close(d)	$(Q0=0) \ \& \ (Q2=0)$
Q2	Open	$(Q0=0) \ \& \ (Q1=0)$
	Close(d)	$(Q0=0) \ \& \ (Q1=0)$
Q9	Open	$(Q0=0)$
	Close(d)	$(Q0=0)$

Tab. A5-368: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q1=X) \ \& \ \neg(Q2=X) \ \& \ \neg(Q9=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$
Q9	Open	$(Q0=0)$
	Close(d)	$(Q0=0)$

Tab. A5-369: Bay Interlock Equations for Operation with Station Interlocking

A5.2.1.124 Bay type No. 108: Feeder bay with switch disconnecter, double busbar
A23.206.R01

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q1 (DEV02)	Open	U A03	/	
	Close(d)	U A04	/	
Q2 (DEV03)	Open	U A05	/	
	Close(d)	U A06	/	
Q9 (DEV04)	Open	U B01	/	
	Close(d)	U B02	/	

Tab. A5-370: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q1=X) \ \& \ \neg(Q2=X) \ \& \ \neg(Q9=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$

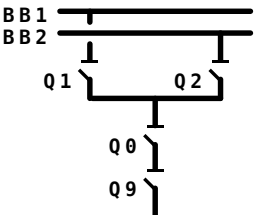
Tab. A5-371: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q1=X) \ \& \ \neg(Q2=X) \ \& \ \neg(Q9=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$

Tab. A5-372: Bay Interlock Equations for Operation with Station Interlocking

A5.2.1.125

Bay type No. 109: Feeder bay with switch disconnecter, double busbar
 A23.206.R04

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q1 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
Q2 (DEV03)	Open	U A05	K A05	
	Close(d)	U A06	K A06	
Q9 (DEV04)	Open	U B01	K B01	
	Close(d)	U B02	K B02	

Tab. A5-373: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q1=X) \ \& \ \neg(Q2=X) \ \& \ \neg(Q9=X) \ \& \ \neg(\text{FctBI1}=I) \ \& \ \neg(\text{FctBI2}=I)$
Q1	Open	$(Q0=0) \ \& \ (Q2=0)$
	Close(d)	$(Q0=0) \ \& \ (Q2=0)$
Q2	Open	$(Q0=0) \ \& \ (Q1=0)$
	Close(d)	$(Q0=0) \ \& \ (Q1=0)$
Q9	Open	$(Q0=0)$
	Close(d)	$(Q0=0)$

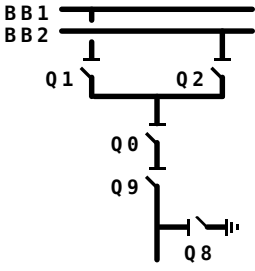
Tab. A5-374: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q1=X) \ \& \ \neg(Q2=X) \ \& \ \neg(Q9=X) \ \& \ \neg(\text{FctBI1}=I) \ \& \ \neg(\text{FctBI2}=I)$
Q9	Open	$(Q0=0)$
	Close(d)	$(Q0=0)$

Tab. A5-375: Bay Interlock Equations for Operation with Station Interlocking

A5.2.1.126**Bay type No. 110: Feeder bay with switch disconnecter, double busbar, direct motor control**

A23.207.M05

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q1 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
Q2 (DEV03)	Open	U A05	K A05	
	Close(d)	U A06	K A06	
Q9 (DEV04)	Open	U B01	K B01	
	Close(d)	U B02	K B02	
Q8 (DEV05)	Open	U B03	K B03	
	Close(d)	U B04	K B04	
Motor relay (SIG_1: Signal S012 EXT)		U B06	/	
Shunt winding (CMD_1: Command C011)		/	K B05	
Motor relay (CMD_1: Command C012)		/	K B06	

Tab. A5-376: Assignment of Binary Inputs and Output Relays

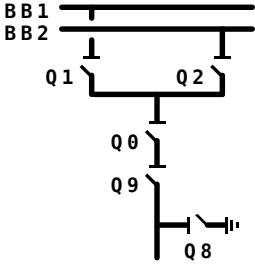
Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q1=X) \ \& \ \neg(Q2=X) \ \& \ \neg(Q9=X) \ \& \ \neg(FctBl1=I) \ \& \ \neg(FctBl2=I)$
Q1	Open	$(Q0=0) \ \& \ (Q2=0)$
	Close(d)	$(Q0=0) \ \& \ (Q2=0)$
Q2	Open	$(Q0=0) \ \& \ (Q1=0)$
	Close(d)	$(Q0=0) \ \& \ (Q1=0)$
Q8	Close(d)	$(Q9=0)$
Q9	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q8=0)$

Tab. A5-377: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q1=X) \ \& \ \neg(Q2=X) \ \& \ \neg(Q9=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$
Q8	Close(d)	$(Q9=0)$
Q9	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q8=0)$

Tab. A5-378: Bay Interlock Equations for Operation with Station Interlocking

A5.2.1.127 Bay type No. 111: Feeder bay with switch disconnecter, double busbar
A23.207.R01

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q1 (DEV02)	Open	U A03	/	
	Close(d)	U A04	/	
Q2 (DEV03)	Open	U A05	/	
	Close(d)	U A06	/	
Q9 (DEV04)	Open	U B01	/	
	Close(d)	U B02	/	
Q8 (DEV05)	Open	U B03	/	
	Close(d)	U B04	/	

Tab. A5-379: Assignment of Binary Inputs and Output Relays

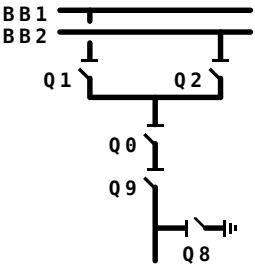
Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q1=X) \ \& \ \neg(Q2=X) \ \& \ \neg(Q9=X) \ \& \ \neg(\text{FctBI1}=I) \ \& \ \neg(\text{FctBI2}=I)$

Tab. A5-380: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q1=X) \ \& \ \neg(Q2=X) \ \& \ \neg(Q9=X) \ \& \ \neg(\text{FctBI1}=I) \ \& \ \neg(\text{FctBI2}=I)$

Tab. A5-381: Bay Interlock Equations for Operation with Station Interlocking

A5.2.1.128**Bay type No. 112: Feeder bay with switch disconnecter, double busbar**
A23.207.R04

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q1 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
Q2 (DEV03)	Open	U A05	K A05	
	Close(d)	U A06	K A06	
Q9 (DEV04)	Open	U B01	K B01	
	Close(d)	U B02	K B02	
Q8 (DEV05)	Open	U B03	/	
	Close(d)	U B04	/	

Tab. A5-382: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q1=X) \ \& \ \neg(Q2=X) \ \& \ \neg(Q9=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$
Q1	Open	$(Q0=0) \ \& \ (Q2=0)$
	Close(d)	$(Q0=0) \ \& \ (Q2=0)$
Q2	Open	$(Q0=0) \ \& \ (Q1=0)$
	Close(d)	$(Q0=0) \ \& \ (Q1=0)$
Q9	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q8=0)$

Tab. A5-383: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q1=X) \ \& \ \neg(Q2=X) \ \& \ \neg(Q9=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$
Q9	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q8=0)$

Tab. A5-384: Bay Interlock Equations for Operation with Station Interlocking

A5.2.1.129 Bay type No. 113: Feeder bay with switch disconnecter, double busbar
A23.207.R05

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q1 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
Q2 (DEV03)	Open	U A05	K A05	
	Close(d)	U A06	K A06	
Q9 (DEV04)	Open	U B01	K B01	
	Close(d)	U B02	K B02	
Q8 (DEV05)	Open	U B03	K B03	
	Close(d)	U B04	K B04	

Tab. A5-385: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q1=X) \ \& \ \neg(Q2=X) \ \& \ \neg(Q9=X) \ \& \ \neg(\text{FctBI1}=I) \ \& \ \neg(\text{FctBI2}=I)$
Q1	Open	$(Q0=0) \ \& \ (Q2=0)$
	Close(d)	$(Q0=0) \ \& \ (Q2=0)$
Q2	Open	$(Q0=0) \ \& \ (Q1=0)$
	Close(d)	$(Q0=0) \ \& \ (Q1=0)$
Q8	Close(d)	$(Q9=0)$
Q9	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q8=0)$

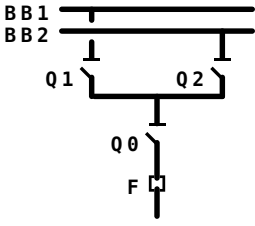
Tab. A5-386: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q1=X) \wedge \neg(Q2=X) \wedge \neg(Q9=X) \wedge \neg(FctBI1=I) \wedge \neg(FctBI2=I)$
Q8	Close(d)	$(Q9=0)$
Q9	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \wedge (Q8=0)$

Tab. A5-387: Bay Interlock Equations for Operation with Station Interlocking

A5.2.1.130**Bay type No. 114: Feeder bay with switch disconnecter / fuse unit, double busbar, direct motor control**

A23.404.M03

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q1 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
Q2 (DEV03)	Open	U A05	K A05	
	Close(d)	U A06	K A06	
F (SIG_1: Signal S011 EXT)		U B05	/	
Motor relay (SIG_1: Signal S012 EXT)		U B06	/	
Shunt winding (CMD_1: Command C011)		/	K B05	
Motor relay (CMD_1: Command C012)		/	K B06	

Tab. A5-388: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q1=X) \ \& \ \neg(Q2=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$
Q1	Open	$(Q0=0) \ \& \ (Q2=0)$
	Close(d)	$(Q0=0) \ \& \ (Q2=0)$
Q2	Open	$(Q0=0) \ \& \ (Q1=0)$
	Close(d)	$(Q0=0) \ \& \ (Q1=0)$

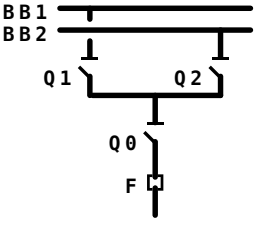
Tab. A5-389: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q1=X) \ \& \ \neg(Q2=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$

Tab. A5-390: Bay Interlock Equations for Operation with Station Interlocking

A5.2.1.131**Bay type No. 115: Feeder bay with switch disconnecter / fuse unit, double busbar**

A23.404.R01

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q1 (DEV02)	Open	U A03	/	
	Close(d)	U A04	/	
Q2 (DEV03)	Open	U A05	/	
	Close(d)	U A06	/	
F (SIG_1: Signal S011 EXT)		U B05	/	

Tab. A5-391: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q1=X) \ \& \ \neg(Q2=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$

Tab. A5-392: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q1=X) \ \& \ \neg(Q2=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$

Tab. A5-393: Bay Interlock Equations for Operation with Station Interlocking

A5.2.1.132**Bay type No. 116: Feeder bay with switch disconnecter / fuse unit, double busbar**

A23.404.R03

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q1 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
Q2 (DEV03)	Open	U A05	K A05	
	Close(d)	U A06	K A06	
F (SIG_1: Signal S011 EXT)		U B05	/	

Tab. A5-394: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q1=X) \ \& \ \neg(Q2=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$
Q1	Open	$(Q0=0) \ \& \ (Q2=0)$
	Close(d)	$(Q0=0) \ \& \ (Q2=0)$
Q2	Open	$(Q0=0) \ \& \ (Q1=0)$
	Close(d)	$(Q0=0) \ \& \ (Q1=0)$

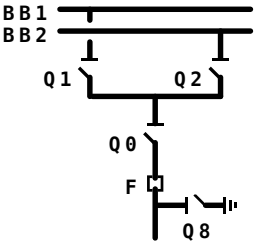
Tab. A5-395: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q1=X) \ \& \ \neg(Q2=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$

Tab. A5-396: Bay Interlock Equations for Operation with Station Interlocking

A5.2.1.133**Bay type No. 117: Feeder bay with switch disconnecter / fuse unit, double busbar, direct motor control**

A23.405.M04

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q1 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
Q2 (DEV03)	Open	U A05	K A05	
	Close(d)	U A06	K A06	
Q8 (DEV04)	Open	U B01	K B01	
	Close(d)	U B02	K B02	
F (SIG_1: Signal S011 EXT)		U B05	/	
Motor relay (SIG_1: Signal S012 EXT)		U B06	/	
Shunt winding (CMD_1: Command C011)		/	K B05	
Motor relay (CMD_1: Command C012)		/	K B06	

Tab. A5-397: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q1=X) \ \& \ \neg(Q2=X) \ \& \ (Q8=0) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$
Q1	Open	$(Q0=0) \ \& \ (Q2=0)$
	Close(d)	$(Q0=0) \ \& \ (Q2=0) \ \& \ (Q8=0)$
Q2	Open	$(Q0=0) \ \& \ (Q1=0)$
	Close(d)	$(Q0=0) \ \& \ (Q1=0) \ \& \ (Q8=0)$
Q8	Close(d)	$(Q0=0) \ \& \ (Q1=0) \ \& \ (Q2=0)$

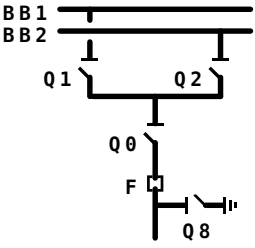
Tab. A5-398: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q1=X) \ \& \ \neg(Q2=X) \ \& \ (Q8=0) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$
Q1	Close(d)	$(Q8=0)$
Q2	Close(d)	$(Q8=0)$
Q8	Close(d)	$(Q0=0) \ \& \ (Q1=0) \ \& \ (Q2=0)$

Tab. A5-399: Bay Interlock Equations for Operation with Station Interlocking

A5.2.1.134**Bay type No. 118: Feeder bay with switch disconnecter / fuse unit, double busbar**

A23.405.R01

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q1 (DEV02)	Open	U A03	/	
	Close(d)	U A04	/	
Q2 (DEV03)	Open	U A05	/	
	Close(d)	U A06	/	
Q8 (DEV04)	Open	U B01	/	
	Close(d)	U B02	/	
F (SIG_1: Signal S011 EXT)		U B05	/	

Tab. A5-400: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q1=X) \ \& \ \neg(Q2=X) \ \& \ (Q8=0) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$

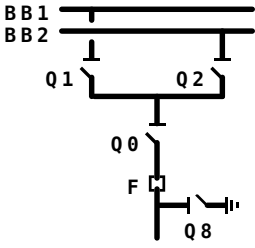
Tab. A5-401: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q1=X) \ \& \ \neg(Q2=X) \ \& \ (Q8=0) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$

Tab. A5-402: Bay Interlock Equations for Operation with Station Interlocking

A5.2.1.135**Bay type No. 119: Feeder bay with switch disconnecter / fuse unit, double busbar**

A23.405.R03

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q1 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
Q2 (DEV03)	Open	U A05	K A05	
	Close(d)	U A06	K A06	
Q8 (DEV04)	Open	U B01	/	
	Close(d)	U B02	/	
F (SIG_1: Signal S011 EXT)		U B05	/	

Tab. A5-403: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q1=X) \ \& \ \neg(Q2=X) \ \& \ (Q8=0) \ \& \ \neg(\text{FctBI1}=I) \ \& \ \neg(\text{FctBI2}=I)$
Q1	Open	$(Q0=0) \ \& \ (Q2=0)$
	Close(d)	$(Q0=0) \ \& \ (Q2=0) \ \& \ (Q8=0)$
Q2	Open	$(Q0=0) \ \& \ (Q1=0)$
	Close(d)	$(Q0=0) \ \& \ (Q1=0) \ \& \ (Q8=0)$

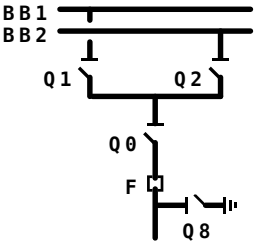
Tab. A5-404: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q1=X) \ \& \ \neg(Q2=X) \ \& \ (Q8=0) \ \& \ \neg(\text{FctBI1}=I) \ \& \ \neg(\text{FctBI2}=I)$
Q1	Close(d)	$(Q8=0)$
Q2	Close(d)	$(Q8=0)$

Tab. A5-405: Bay Interlock Equations for Operation with Station Interlocking

A5.2.1.136**Bay type No. 120: Feeder bay with switch disconnecter / fuse unit, double busbar**

A23.405.R04

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q1 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
Q2 (DEV03)	Open	U A05	K A05	
	Close(d)	U A06	K A06	
Q8 (DEV04)	Open	U B01	K B01	
	Close(d)	U B02	K B02	
F (SIG_1: Signal S011 EXT)		U B05	/	

Tab. A5-406: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q1=X) \wedge \neg(Q2=X) \wedge (Q8=0) \wedge \neg(FctBI1=I) \wedge \neg(FctBI2=I)$
Q1	Open	$(Q0=0) \wedge (Q2=0)$
	Close(d)	$(Q0=0) \wedge (Q2=0) \wedge (Q8=0)$
Q2	Open	$(Q0=0) \wedge (Q1=0)$
	Close(d)	$(Q0=0) \wedge (Q1=0) \wedge (Q8=0)$
Q8	Close(d)	$(Q0=0) \wedge (Q1=0) \wedge (Q2=0)$

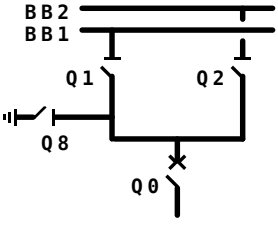
Tab. A5-407: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q1=X) \wedge \neg(Q2=X) \wedge (Q8=0) \wedge \neg(FctBI1=I) \wedge \neg(FctBI2=I)$
Q1	Close(d)	$(Q8=0)$
Q2	Close(d)	$(Q8=0)$
Q8	Close(d)	$(Q0=0) \wedge (Q1=0) \wedge (Q2=0)$

Tab. A5-408: Bay Interlock Equations for Operation with Station Interlocking

A5.2.1.137**Bay type No. 222: Feeder bay with circuit breaker, double busbar, direct motor control**

A25.105.M03.1

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q1 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
Q2 (DEV03)	Open	U A05	K A05	
	Close(d)	U A06	K A06	
Q8 (DEV04)	Open	U B01	/	
	Close(d)	U B02	/	
Motor relay (SIG_1: Signal S012 EXT)		U B06	/	
Shunt winding (CMD_1: Command C011)		/	K B05	
Motor relay (CMD_1: Command C012)		/	K B06	

Tab. A5-409: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q0	Open	$(Q8=0)$
	Close(d)	$\neg(Q1=X) \ \& \ \neg(Q2=X) \ \& \ (Q8=0) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$
Q1	Open	$(Q0=0) \ \& \ (Q2=0)$
	Close(d)	$(Q0=0) \ \& \ (Q2=0) \ \& \ (Q8=0)$
Q2	Open	$(Q0=0) \ \& \ (Q1=0)$
	Close(d)	$(Q0=0) \ \& \ (Q1=0) \ \& \ (Q8=0)$

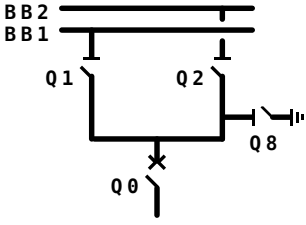
Tab. A5-410: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Open	$(Q8=0)$
	Close(d)	$/(Q1=X) \ \& \ /(Q2=X) \ \& \ (Q8=0) \ \& \ /(FctBI1=I) \ \& \ /(FctBI2=I)$
Q1	Close(d)	$(Q8=0)$
Q2	Close(d)	$(Q8=0)$

Tab. A5-411: Bay Interlock Equations for Operation with Station Interlocking

A5.2.1.138**Bay type No. 223: Feeder bay with circuit breaker, double busbar, direct motor control**

A25.105.M03.2

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q1 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
Q2 (DEV03)	Open	U A05	K A05	
	Close(d)	U A06	K A06	
Q8 (DEV04)	Open	U B01	/	
	Close(d)	U B02	/	
Motor relay (SIG_1: Signal S012 EXT)		U B06	/	
Shunt winding (CMD_1: Command C011)		/	K B05	
Motor relay (CMD_1: Command C012)		/	K B06	

Tab. A5-412: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q0	Open	$(Q8=0)$
	Close(d)	$\neg(Q1=X) \ \& \ \neg(Q2=X) \ \& \ (Q8=0) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$
Q1	Open	$(Q0=0) \ \& \ (Q2=0)$
	Close(d)	$(Q0=0) \ \& \ (Q2=0) \ \& \ (Q8=0)$
Q2	Open	$(Q0=0) \ \& \ (Q1=0)$
	Close(d)	$(Q0=0) \ \& \ (Q1=0) \ \& \ (Q8=0)$

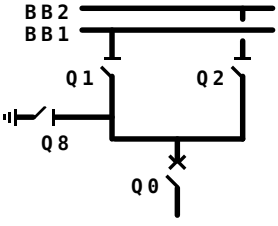
Tab. A5-413: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Open	$(Q8=0)$
	Close(d)	$/(Q1=X) \ \& \ /(Q2=X) \ \& \ (Q8=0) \ \& \ /(FctBI1=I) \ \& \ /(FctBI2=I)$
Q1	Close(d)	$(Q8=0)$
Q2	Close(d)	$(Q8=0)$

Tab. A5-414: Bay Interlock Equations for Operation with Station Interlocking

A5.2.1.139**Bay type No. 121: Feeder bay with circuit breaker, double busbar, direct motor control**

A25.105.M04.1

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q1 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
Q2 (DEV03)	Open	U A05	K A05	
	Close(d)	U A06	K A06	
Q8 (DEV04)	Open	U B01	K B01	
	Close(d)	U B02	K B02	
Motor relay (SIG_1: Signal S012 EXT)		U B06	/	
Shunt winding (CMD_1: Command C011)		/	K B05	
Motor relay (CMD_1: Command C012)		/	K B06	

Tab. A5-415: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q0	Open	$(Q8=0)$
	Close(d)	$\neg(Q1=X) \ \& \ \neg(Q2=X) \ \& \ (Q8=0) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$
Q1	Open	$(Q0=0) \ \& \ (Q2=0)$
	Close(d)	$(Q0=0) \ \& \ (Q2=0) \ \& \ (Q8=0)$
Q2	Open	$(Q0=0) \ \& \ (Q1=0)$
	Close(d)	$(Q0=0) \ \& \ (Q1=0) \ \& \ (Q8=0)$
Q8	Open	$(Q0=I) \ \& \ (Q1=0) \ \& \ (Q2=0)$
	Close(d)	$(Q0=0) \ \& \ (Q1=0) \ \& \ (Q2=0) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$

Tab. A5-416: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Open	$(Q8=0)$
	Close(d)	$/(Q1=X) \ \& \ /(Q2=X) \ \& \ (Q8=0) \ \& \ /(FctBl1=I) \ \& \ /(FctBl2=I)$
Q1	Close(d)	$(Q8=0)$
Q2	Close(d)	$(Q8=0)$
Q8	Open	$(Q0=I) \ \& \ (Q1=0) \ \& \ (Q2=0)$
	Close(d)	$(Q0=0) \ \& \ (Q1=0) \ \& \ (Q2=0) \ \& \ /(FctBl1=I) \ \& \ /(FctBl2=I)$

Tab. A5-417: Bay Interlock Equations for Operation with Station Interlocking

A5.2.1.140**Bay type No. 122: Feeder bay with circuit breaker, double busbar, direct motor control**

A25.105.M04.2

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q1 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
Q2 (DEV03)	Open	U A05	K A05	
	Close(d)	U A06	K A06	
Q8 (DEV04)	Open	U B01	K B01	
	Close(d)	U B02	K B02	
Motor relay (SIG_1: Signal S012 EXT)		U B06	/	
Shunt winding (CMD_1: Command C011)		/	K B05	
Motor relay (CMD_1: Command C012)		/	K B06	

Tab. A5-418: Assignment of Binary Inputs and Output Relays

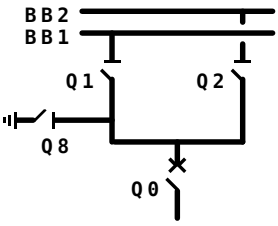
Switchgear unit	Control O/C	Interlock equation
Q0	Open	$(Q8=0)$
	Close(d)	$\neg(Q1=X) \ \& \ \neg(Q2=X) \ \& \ (Q8=0) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$
Q1	Open	$(Q0=0) \ \& \ (Q2=0)$
	Close(d)	$(Q0=0) \ \& \ (Q2=0) \ \& \ (Q8=0)$
Q2	Open	$(Q0=0) \ \& \ (Q1=0)$
	Close(d)	$(Q0=0) \ \& \ (Q1=0) \ \& \ (Q8=0)$
Q8	Open	$(Q0=I) \ \& \ (Q1=0) \ \& \ (Q2=0)$
	Close(d)	$(Q0=0) \ \& \ (Q1=0) \ \& \ (Q2=0) \ \& \ \neg(FctBI1=I) \ \& \ (FctBI2=I)$

Tab. A5-419: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Open	$(Q8=0)$
	Close(d)	$/(Q1=X) \ \& \ /(Q2=X) \ \& \ (Q8=0) \ \& \ /(FctBI1=I) \ \& \ /(FctBI2=I)$
Q1	Close(d)	$(Q8=0)$
Q2	Close(d)	$(Q8=0)$
Q8	Open	$(Q0=I) \ \& \ (Q1=0) \ \& \ (Q2=0)$
	Close(d)	$(Q0=0) \ \& \ (Q1=0) \ \& \ (Q2=0) \ \& \ /(FctBI1=I) \ \& \ /(FctBI2=I)$

Tab. A5-420: Bay Interlock Equations for Operation with Station Interlocking

A5.2.1.141 Bay type No. 123: Feeder bay with circuit breaker, double busbar
A25.105.R01.1

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q1 (DEV02)	Open	U A03	/	
	Close(d)	U A04	/	
Q2 (DEV03)	Open	U A05	/	
	Close(d)	U A06	/	
Q8 (DEV04)	Open	U B01	/	
	Close(d)	U B02	/	

Tab. A5-421: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q0	Open	$(Q8=0)$
	Close(d)	$\neg(Q1=X) \ \& \ \neg(Q2=X) \ \& \ (Q8=0) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$

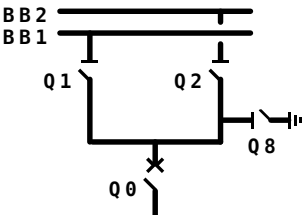
Tab. A5-422: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Open	$(Q8=0)$
	Close(d)	$\neg(Q1=X) \ \& \ \neg(Q2=X) \ \& \ (Q8=0) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$

Tab. A5-423: Bay Interlock Equations for Operation with Station Interlocking

A5.2.1.142**Bay type No. 124: Feeder bay with circuit breaker, double busbar**

A25.105.R01.2

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q1 (DEV02)	Open	U A03	/	
	Close(d)	U A04	/	
Q2 (DEV03)	Open	U A05	/	
	Close(d)	U A06	/	
Q8 (DEV04)	Open	U B01	/	
	Close(d)	U B02	/	

Tab. A5-424: Assignment of Binary Inputs and Output Relays

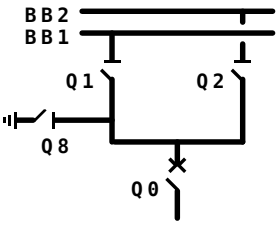
Switchgear unit	Control O/C	Interlock equation
Q0	Open	$(Q8=0)$
	Close(d)	$\neg(Q1=X) \ \& \ \neg(Q2=X) \ \& \ (Q8=0) \ \& \ \neg(\text{FctBI1}=I) \ \& \ \neg(\text{FctBI2}=I)$

Tab. A5-425: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Open	$(Q8=0)$
	Close(d)	$\neg(Q1=X) \ \& \ \neg(Q2=X) \ \& \ (Q8=0) \ \& \ \neg(\text{FctBI1}=I) \ \& \ \neg(\text{FctBI2}=I)$

Tab. A5-426: Bay Interlock Equations for Operation with Station Interlocking

A5.2.1.143 Bay type No. 224: Feeder bay with circuit breaker, double busbar
A25.105.R03.1

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q1 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
Q2 (DEV03)	Open	U A05	K A05	
	Close(d)	U A06	K A06	
Q8 (DEV04)	Open	U B01	/	
	Close(d)	U B02	/	

Tab. A5-427: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q0	Open	$(Q8=0)$
	Close(d)	$/(Q1=X) \ \& \ /(Q2=X) \ \& \ (Q8=0) \ \& \ /(FctBI1=I) \ \& \ /(FctBI2=I)$
Q1	Open	$(Q0=0) \ \& \ (Q2=0)$
	Close(d)	$(Q0=0) \ \& \ (Q2=0) \ \& \ (Q8=0)$
Q2	Open	$(Q0=0) \ \& \ (Q1=0)$
	Close(d)	$(Q0=0) \ \& \ (Q1=0) \ \& \ (Q8=0)$

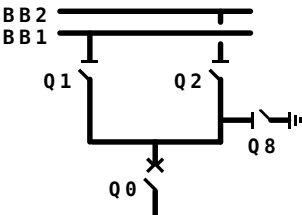
Tab. A5-428: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Open	$(Q8=0)$
	Close(d)	$/(Q1=X) \ \& \ /(Q2=X) \ \& \ (Q8=0) \ \& \ /(FctBI1=I) \ \& \ /(FctBI2=I)$
Q1	Close(d)	$(Q8=0)$
Q2	Close(d)	$(Q8=0)$

Tab. A5-429: Bay Interlock Equations for Operation with Station Interlocking

A5.2.1.144**Bay type No. 225: Feeder bay with circuit breaker, double busbar**

A25.105.R03.2

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q1 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
Q2 (DEV03)	Open	U A05	K A05	
	Close(d)	U A06	K A06	
Q8 (DEV04)	Open	U B01	/	
	Close(d)	U B02	/	

Tab. A5-430: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q0	Open	$(Q8=0)$
	Close(d)	$\neg(Q1=X) \wedge \neg(Q2=X) \wedge (Q8=0) \wedge \neg(FctBI1=I) \wedge \neg(FctBI2=I)$
Q1	Open	$(Q0=0) \wedge (Q2=0)$
	Close(d)	$(Q0=0) \wedge (Q2=0) \wedge (Q8=0)$
Q2	Open	$(Q0=0) \wedge (Q1=0)$
	Close(d)	$(Q0=0) \wedge (Q1=0) \wedge (Q8=0)$

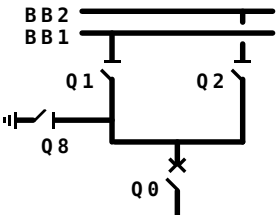
Tab. A5-431: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Open	$(Q8=0)$
	Close(d)	$\neg(Q1=X) \wedge \neg(Q2=X) \wedge (Q8=0) \wedge \neg(FctBI1=I) \wedge \neg(FctBI2=I)$
Q1	Close(d)	$(Q8=0)$
Q2	Close(d)	$(Q8=0)$

Tab. A5-432: Bay Interlock Equations for Operation with Station Interlocking

A5.2.1.145**Bay type No. 125: Feeder bay with circuit breaker, double busbar**

A25.105.R04.1

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q1 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
Q2 (DEV03)	Open	U A05	K A05	
	Close(d)	U A06	K A06	
Q8 (DEV04)	Open	U B01	K B01	
	Close(d)	U B02	K B02	

Tab. A5-433: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q0	Open	$(Q8=0)$
	Close(d)	$\neg(Q1=X) \ \& \ \neg(Q2=X) \ \& \ (Q8=0) \ \& \ \neg(\text{FctBI1}=I) \ \& \ \neg(\text{FctBI2}=I)$
Q1	Open	$(Q0=0) \ \& \ (Q2=0)$
	Close(d)	$(Q0=0) \ \& \ (Q2=0) \ \& \ (Q8=0)$
Q2	Open	$(Q0=0) \ \& \ (Q1=0)$
	Close(d)	$(Q0=0) \ \& \ (Q1=0) \ \& \ (Q8=0)$
Q8	Open	$(Q0=I) \ \& \ (Q1=0) \ \& \ (Q2=0)$
	Close(d)	$(Q0=0) \ \& \ (Q1=0) \ \& \ (Q2=0) \ \& \ \neg(\text{FctBI1}=I) \ \& \ \neg(\text{FctBI2}=I)$

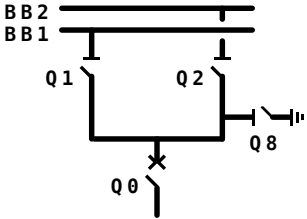
Tab. A5-434: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Open	$(Q8=0)$
	Close(d)	$/(Q1=X) \ \& \ /(Q2=X) \ \& \ (Q8=0) \ \& \ /(FctBl1=I) \ \& \ /(FctBl2=I)$
Q1	Close(d)	$(Q8=0)$
Q2	Close(d)	$(Q8=0)$
Q8	Open	$(Q0=I) \ \& \ (Q1=0) \ \& \ (Q2=0)$
	Close(d)	$(Q0=0) \ \& \ (Q1=0) \ \& \ (Q2=0) \ \& \ /(FctBl1=I) \ \& \ /(FctBl2=I)$

Tab. A5-435: Bay Interlock Equations for Operation with Station Interlocking

A5.2.1.146**Bay type No. 126: Feeder bay with circuit breaker, double busbar**

A25.105.R04.2

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q1 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
Q2 (DEV03)	Open	U A05	K A05	
	Close(d)	U A06	K A06	
Q8 (DEV04)	Open	U B01	K B01	
	Close(d)	U B02	K B02	

Tab. A5-436: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q0	Open	$(Q8=0)$
	Close(d)	$\neg(Q1=X) \ \& \ \neg(Q2=X) \ \& \ (Q8=0) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$
Q1	Open	$(Q0=0) \ \& \ (Q2=0)$
	Close(d)	$(Q0=0) \ \& \ (Q2=0) \ \& \ (Q8=0)$
Q2	Open	$(Q0=0) \ \& \ (Q1=0)$
	Close(d)	$(Q0=0) \ \& \ (Q1=0) \ \& \ (Q8=0)$
Q8	Open	$(Q0=I) \ \& \ (Q1=0) \ \& \ (Q2=0)$
	Close(d)	$(Q0=0) \ \& \ (Q1=0) \ \& \ (Q2=0) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$

Tab. A5-437: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Open	$(Q8=0)$
	Close(d)	$/(Q1=X) \ \& \ /(Q2=X) \ \& \ (Q8=0) \ \& \ /(FctBl1=I) \ \& \ /(FctBl2=I)$
Q1	Close(d)	$(Q8=0)$
Q2	Close(d)	$(Q8=0)$
Q8	Open	$(Q0=I) \ \& \ (Q1=0) \ \& \ (Q2=0)$
	Close(d)	$(Q0=0) \ \& \ (Q1=0) \ \& \ (Q2=0) \ \& \ /(FctBl1=I) \ \& \ /(FctBl2=I)$

Tab. A5-438: Bay Interlock Equations for Operation with Station Interlocking

A5.2.1.147 Bay type No. 127: Feeder bay with circuit breaker, double busbar
A25.128.R01

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q1 (DEV02)	Open	U A03	/	
	Close(d)	U A04	/	
Q2 (DEV03)	Open	U A05	/	
	Close(d)	U A06	/	
Q81 (DEV04)	Open	U B01	/	
	Close(d)	U B02	/	
Q82 (DEV05)	Open	U B03	/	
	Close(d)	U B04	/	

Tab. A5-439: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q0	Open	$(Q81=0) \ \& \ (Q82=0)$
	Close(d)	$\neg(Q1=X) \ \& \ \neg(Q2=X) \ \& \ (Q81=0) \ \& \ (Q82=0) \ \& \ \neg(FctBl1=I) \ \& \ \neg(FctBl2=I)$

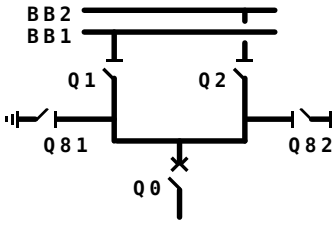
Tab. A5-440: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Open	$(Q81=0) \ \& \ (Q82=0)$
	Close(d)	$\neg(Q1=X) \ \& \ \neg(Q2=X) \ \& \ (Q81=0) \ \& \ (Q82=0) \ \& \ \neg(FctBl1=I) \ \& \ \neg(FctBl2=I)$

Tab. A5-441: Bay Interlock Equations for Operation with Station Interlocking

A5.2.1.148**Bay type No. 128: Feeder bay with circuit breaker, double busbar**

A25.128.R05

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q1 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
Q2 (DEV03)	Open	U A05	K A05	
	Close(d)	U A06	K A06	
Q81 (DEV04)	Open	U B01	K B01	
	Close(d)	U B02	K B02	
Q82 (DEV05)	Open	U B03	K B03	
	Close(d)	U B04	K B04	

Tab. A5-442: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q0	Open	$(Q81=0) \ \& \ (Q82=0)$
	Close(d)	$\neg(Q1=X) \ \& \ \neg(Q2=X) \ \& \ (Q81=0) \ \& \ (Q82=0) \ \& \ \neg(\text{FctBI1}=1) \ \& \ \neg(\text{FctBI2}=1)$
Q1	Open	$(Q0=0) \ \& \ (Q2=0)$
	Close(d)	$(Q0=0) \ \& \ (Q2=0) \ \& \ (Q81=0) \ \& \ (Q82=0)$
Q2	Open	$(Q0=0) \ \& \ (Q1=0)$
	Close(d)	$(Q0=0) \ \& \ (Q1=0) \ \& \ (Q81=0) \ \& \ (Q82=0)$
Q81	Open	$(Q0=1) \ \& \ (Q1=0) \ \& \ (Q2=0)$
	Close(d)	$(Q0=0) \ \& \ (Q1=0) \ \& \ (Q2=0) \ \& \ \neg(\text{FctBI1}=1) \ \& \ \neg(\text{FctBI2}=1)$
Q82	Open	$(Q0=1) \ \& \ (Q1=0) \ \& \ (Q2=0)$
	Close(d)	$(Q0=0) \ \& \ (Q1=0) \ \& \ (Q2=0) \ \& \ \neg(\text{FctBI1}=1) \ \& \ \neg(\text{FctBI2}=1)$

Tab. A5-443: Bay Interlock Equations for Operation without Station Interlocking

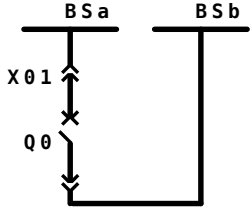
Switchgear unit	Control O/C	Interlock equation
Q0	Open	$(Q81=0) \ \& \ (Q82=0)$
	Close(d)	$\neg(Q1=X) \ \& \ \neg(Q2=X) \ \& \ (Q81=0) \ \& \ (Q82=0) \ \& \ \neg(\text{FctBl1}=I) \ \& \ \neg(\text{FctBl2}=I)$
Q1	Close(d)	$(Q81=0) \ \& \ (Q82=0)$
Q2	Close(d)	$(Q81=0) \ \& \ (Q82=0)$
Q81	Open	$(Q0=I) \ \& \ (Q1=0) \ \& \ (Q2=0)$
	Close(d)	$(Q0=0) \ \& \ (Q1=0) \ \& \ (Q2=0) \ \& \ \neg(\text{FctBl1}=I) \ \& \ \neg(\text{FctBl2}=I)$
Q82	Open	$(Q0=I) \ \& \ (Q1=0) \ \& \ (Q2=0)$
	Close(d)	$(Q0=0) \ \& \ (Q1=0) \ \& \ (Q2=0) \ \& \ \neg(\text{FctBl1}=I) \ \& \ \neg(\text{FctBl2}=I)$

Tab. A5-444: Bay Interlock Equations for Operation with Station Interlocking

A5.2.2 Bus Sectionalizer Bays

A5.2.2.1 Bay type No. 133: Bus sectionalizer bay with circuit breaker, single busbar

L11.100.R01

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
X01 (DEV02)	Open	U A03	/	
	Close(d)	U A04	/	

Tab. A5-445: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(X01=X) \ \& \ \neg(FctBl1=I) \ \& \ \neg(FctBl2=I)$

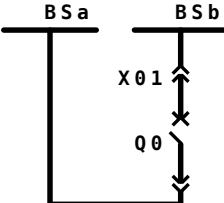
Tab. A5-446: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(X01=X) \ \& \ \neg(FctBl1=I) \ \& \ \neg(FctBl2=I)$

Tab. A5-447: Bay Interlock Equations for Operation with Station Interlocking

A5.2.2.2**Bay type No. 553: Bus sectionalizer bay with circuit breaker, single busbar**

L11.100.R01.2

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
X01 (DEV02)	Open	U A03	/	
	Close(d)	U A04	/	

Tab. A5-448: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(X01=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$

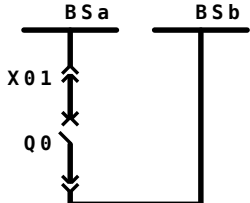
Tab. A5-449: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(X01=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$

Tab. A5-450: Bay Interlock Equations for Operation with Station Interlocking

A5.2.2.3**Bay type No. 134: Bus sectionalizer bay with circuit breaker, single busbar**

L11.100.R02

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
X01 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	

Tab. A5-451: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(X01=X) \ \& \ \neg(FctBl1=I) \ \& \ \neg(FctBl2=I)$
X01	Open	$(Q0=0)$
	Close(d)	$(Q0=0)$

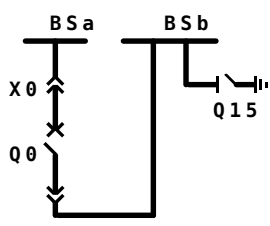
Tab. A5-452: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(X01=X) \ \& \ \neg(FctBl1=I) \ \& \ \neg(FctBl2=I)$
X01	Open	$(Q0=0)$
	Close(d)	$(Q0=0)$

Tab. A5-453: Bay Interlock Equations for Operation with Station Interlocking

A5.2.2.4**Bay type No. 528: Bus sectionalizer bay with circuit breaker, single busbar**

L11.102.R01

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
X0 (DEV02)	Open	U A03	/	
	Close(d)	U A04	/	
Q15 (DEV03)	Open	U A05	/	
	Close(d)	U A06	/	

Tab. A5-454: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(X0=X) \ \& \ (Q15=0) \ \& \ \neg(FctBl1=I) \ \& \ \neg(FctBl2=I)$

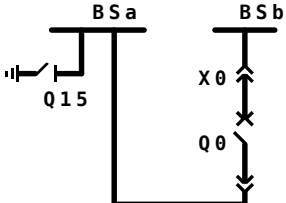
Tab. A5-455: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(X0=X) \ \& \ (Q15=0) \ \& \ \neg(FctBl1=I) \ \& \ \neg(FctBl2=I)$

Tab. A5-456: Bay Interlock Equations for Operation with Station Interlocking

A5.2.2.5**Bay type No. 542: Bus sectionalizer bay with circuit breaker, single busbar**

L11.102.R01.2

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
X0 (DEV02)	Open	U A03	/	
	Close(d)	U A04	/	
Q15 (DEV03)	Open	U A05	/	
	Close(d)	U A06	/	

Tab. A5-457: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$/(X0=X) \ \& \ (Q15=0) \ \& \ /(FctBI1=I) \ \& \ /(FctBI2=I)$

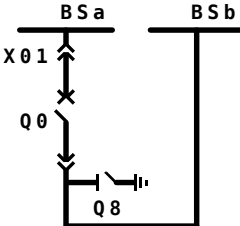
Tab. A5-458: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$/(X0=X) \ \& \ (Q15=0) \ \& \ /(FctBI1=I) \ \& \ /(FctBI2=I)$

Tab. A5-459: Bay Interlock Equations for Operation with Station Interlocking

A5.2.2.6 Bay type No. 135: Bus sectionalizer bay with circuit breaker, single busbar

L11.104.R01

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
X01 (DEV02)	Open	U A03	/	
	Close(d)	U A04	/	
Q8 (DEV03)	Open	U A05	/	
	Close(d)	U A06	/	

Tab. A5-460: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(X01=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$

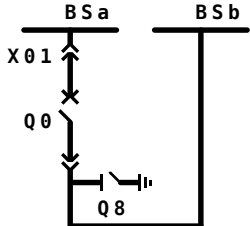
Tab. A5-461: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(X01=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$

Tab. A5-462: Bay Interlock Equations for Operation with Station Interlocking

A5.2.2.7**Bay type No. 136: Bus sectionalizer bay with circuit breaker, single busbar**

L11.104.R02

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
X01 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
Q8 (DEV03)	Open	U A05	/	
	Close(d)	U A06	/	

Tab. A5-463: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(X01=X) \ \& \ \neg(FctBl1=l) \ \& \ \neg(FctBl2=l)$
X01	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q8=0)$

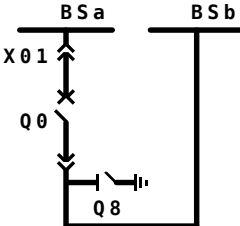
Tab. A5-464: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(X01=X) \ \& \ \neg(FctBl1=l) \ \& \ \neg(FctBl2=l)$
X01	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q8=0)$

Tab. A5-465: Bay Interlock Equations for Operation with Station Interlocking

A5.2.2.8**Bay type No. 137: Bus sectionalizer bay with circuit breaker, single busbar**

L11.104.R03

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
X01 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
Q8 (DEV03)	Open	U A05	K A05	
	Close(d)	U A06	K A06	

Tab. A5-466: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(X01=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$
Q8	Close(d)	$(X01=0) \ \& \ (Q8=I)$
X01	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q8=0)$

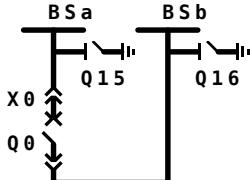
Tab. A5-467: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(X01=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$
Q8	Close(d)	$(X01=0)$
X01	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q8=0)$

Tab. A5-468: Bay Interlock Equations for Operation with Station Interlocking

A5.2.2.9**Bay type No. 547: Bus sectionalizer bay with circuit breaker, single busbar, direct motor control**

L11.112.M04

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
X0 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
Q15 (DEV03)	Open	U A05	K A05	
	Close(d)	U A06	K A06	
Q16 (DEV04)	Open	U B01	K B01	
	Close(d)	U B02	K B02	
Motor relay (SIG_1: Signal S012 EXT)		U B06	/	
Shunt winding (CMD_1: Command C011)		/	K B05	
Motor relay (CMD_1: Command C012)		/	K B06	

Tab. A5-469: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(X0=X) \ \& \ (Q15=0) \ \& \ (Q16=0) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$
Q15	Close(d)	$(Q15=I)$
Q16	Close(d)	$(Q16=I)$
X0	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q15=0) \ \& \ (Q16=0)$

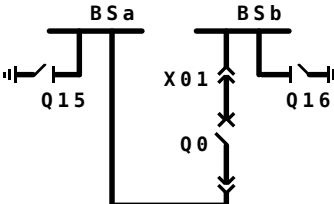
Tab. A5-470: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(X0=X) \ \& \ (Q15=0) \ \& \ (Q16=0) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$
X0	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q15=0) \ \& \ (Q16=0)$

Tab. A5-471: Bay Interlock Equations for Operation with Station Interlocking

A5.2.2.10**Bay type No. 564: Bus sectionalizer bay with circuit breaker, single busbar**

L11.112.R01.2

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
X01 (DEV02)	Open	U A03	/	
	Close(d)	U A04	/	
Q15 (DEV03)	Open	U A05	/	
	Close(d)	U A06	/	
Q16 (DEV04)	Open	U B01	/	
	Close(d)	U B02	/	

Tab. A5-472: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$/(X01=X) \& (Q15=0) \& (Q16=0) \& /(FctBI1=I) \& /(FctBI2=I)$

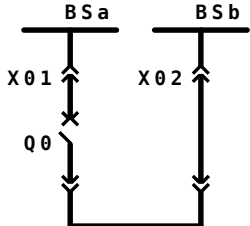
Tab. A5-473: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$/(X01=X) \& /(FctBI1=I) \& /(FctBI2=I)$

Tab. A5-474: Bay Interlock Equations for Operation with Station Interlocking

A5.2.2.11**Bay type No. 138: Bus sectionalizer bay with circuit breaker, single busbar**

L11.116.R01

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
X01 (DEV02)	Open	U A03	/	
	Close(d)	U A04	/	
X02 (DEV03)	Open	U A05	/	
	Close(d)	U A06	/	

Tab. A5-475: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(X01=X) \ \& \ \neg(X02=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$

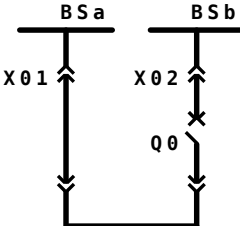
Tab. A5-476: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(X01=X) \ \& \ \neg(X02=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$

Tab. A5-477: Bay Interlock Equations for Operation with Station Interlocking

A5.2.2.12**Bay type No. 545: Bus sectionalizer bay with circuit breaker, single busbar**

L11.116.R01.2

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
X01 (DEV02)	Open	U A03	/	
	Close(d)	U A04	/	
X02 (DEV03)	Open	U A05	/	
	Close(d)	U A06	/	

Tab. A5-478: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(X01=X) \ \& \ \neg(X02=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$

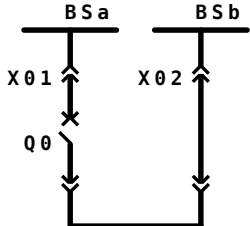
Tab. A5-479: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(X01=X) \ \& \ \neg(X02=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$

Tab. A5-480: Bay Interlock Equations for Operation with Station Interlocking

A5.2.2.13**Bay type No. 139: Bus sectionalizer bay with circuit breaker, single busbar**

L11.116.R03

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
X01 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
X02 (DEV03)	Open	U A05	K A05	
	Close(d)	U A06	K A06	

Tab. A5-481: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(X01=X) \ \& \ \neg(X02=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$
X01	Open	$(Q0=0)$
	Close(d)	$(Q0=0)$
X02	Open	$(Q0=0)$
	Close(d)	$(Q0=0)$

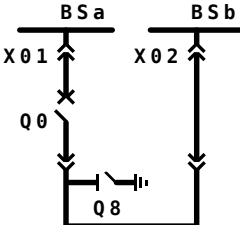
Tab. A5-482: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(X01=X) \ \& \ \neg(X02=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$
X01	Open	$(Q0=0)$
	Close(d)	$(Q0=0)$
X02	Open	$(Q0=0)$
	Close(d)	$(Q0=0)$

Tab. A5-483: Bay Interlock Equations for Operation with Station Interlocking

A5.2.2.14**Bay type No. 548: Bus sectionalizer bay with circuit breaker, single busbar, direct motor control**

L11.120.M03

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q8 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
X01 (DEV03)	Open	U A05	K A05	
	Close(d)	U A06	K A06	
X02 (DEV04)	Open	U B01	/	
	Close(d)	U B02	/	
Motor relay (SIG_1: Signal S012 EXT)		U B06	/	
Shunt winding (CMD_1: Command C011)		/	K B05	
Motor relay (CMD_1: Command C012)		/	K B06	

Tab. A5-484: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(X01=X) \ \& \ \neg(X02=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$
Q8	Close(d)	$(X01=0) \ \& \ (X02=0)$
X01	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q8=0)$

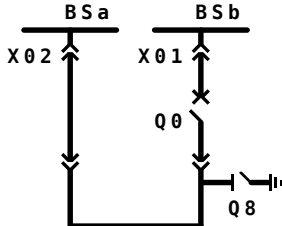
Tab. A5-485: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(X01=X) \ \& \ \neg(X02=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$
Q8	Close(d)	$(X01=0) \ \& \ (X02=0)$
X01	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q8=0)$

Tab. A5-486: Bay Interlock Equations for Operation with Station Interlocking

A5.2.2.15**Bay type No. 552: Bus sectionalizer bay with circuit breaker, single busbar, direct motor control**

L11.120.M03.2

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q8 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
X01 (DEV03)	Open	U A05	K A05	
	Close(d)	U A06	K A06	
X02 (DEV04)	Open	U B01	/	
	Close(d)	U B02	/	
Motor relay (SIG_1: Signal S012 EXT)		U B06	/	
Shunt winding (CMD_1: Command C011)		/	K B05	
Motor relay (CMD_1: Command C012)		/	K B06	

Tab. A5-487: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(X01=X) \ \& \ \neg(X02=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$
Q8	Close(d)	$(X01=0) \ \& \ (X02=0)$
X01	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q8=0)$

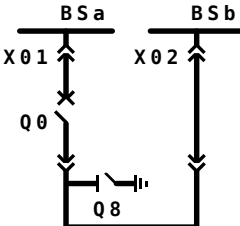
Tab. A5-488: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(X01=X) \ \& \ \neg(X02=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$
Q8	Close(d)	$(X01=0) \ \& \ (X02=0)$
X01	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q8=0)$

Tab. A5-489: Bay Interlock Equations for Operation with Station Interlocking

A5.2.2.16**Bay type No. 140: Bus sectionalizer bay with circuit breaker, single busbar**

L11.120.R01

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
X01 (DEV02)	Open	U A03	/	
	Close(d)	U A04	/	
X02 (DEV03)	Open	U A05	/	
	Close(d)	U A06	/	
Q8 (DEV04)	Open	U B01	/	
	Close(d)	U B02	/	

Tab. A5-490: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(X01=X) \ \& \ \neg(X02=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$

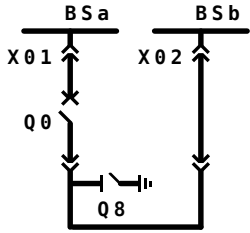
Tab. A5-491: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(X01=X) \ \& \ \neg(X02=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$

Tab. A5-492: Bay Interlock Equations for Operation with Station Interlocking

A5.2.2.17**Bay type No. 141: Bus sectionalizer bay with circuit breaker, single busbar**

L11.120.R03

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
X01 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
X02 (DEV03)	Open	U A05	K A05	
	Close(d)	U A06	K A06	
Q8 (DEV04)	Open	U B01	/	
	Close(d)	U B02	/	

Tab. A5-493: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(X01=X) \ \& \ \neg(X02=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$
X01	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q8=0)$
X02	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q8=0)$

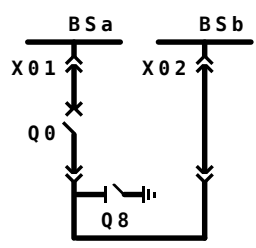
Tab. A5-494: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(X01=X) \ \& \ \neg(X02=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$
X01	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q8=0)$
X02	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q8=0)$

Tab. A5-495: Bay Interlock Equations for Operation with Station Interlocking

A5.2.2.18**Bay type No. 543: Bus sectionalizer bay with circuit breaker, single busbar**

L11.120.R03

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
X01 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
X02 (DEV03)	Open	U A05	/	
	Close(d)	U A06	/	
Q8 (DEV04)	Open	U B01	K B01	
	Close(d)	U B02	K B02	

Tab. A5-496: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(X01=X) \ \& \ \neg(X02=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$
Q8	Close(d)	$(X01=0) \ \& \ (X02=0)$
X01	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q8=0)$

Tab. A5-497: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(X01=X) \ \& \ \neg(X02=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$
Q8	Close(d)	$(X01=0) \ \& \ (X02=0)$
X01	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q8=0)$

Tab. A5-498: Bay Interlock Equations for Operation with Station Interlocking

A5.2.2.19**Bay type No. 142: Bus sectionalizer bay with circuit breaker, single busbar**

L11.120.R04

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
X01 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
X02 (DEV03)	Open	U A05	K A05	
	Close(d)	U A06	K A06	
Q8 (DEV04)	Open	U B01	K B01	
	Close(d)	U B02	K B02	

Tab. A5-499: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(X01=X) \ \& \ \neg(X02=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$
Q8	Close(d)	$(X01=0) \ \& \ (X02=0)$
X01	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q8=0)$
X02	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q8=0)$

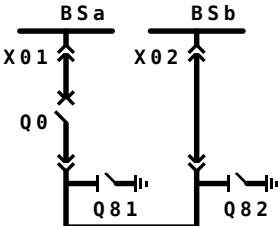
Tab. A5-500: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(X01=X) \ \& \ \neg(X02=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$
Q8	Close(d)	$(X01=0) \ \& \ (X02=0)$
X01	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q8=0)$
X02	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q8=0)$

Tab. A5-501: Bay Interlock Equations for Operation with Station Interlocking

A5.2.2.20**Bay type No. 558: Bus sectionalizer bay with circuit breaker, single busbar**

L11.128.R01

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
X01 (DEV02)	Open	U A03	/	
	Close(d)	U A04	/	
X02 (DEV03)	Open	U A05	/	
	Close(d)	U A06	/	
Q81 (DEV04)	Open	U B01	/	
	Close(d)	U B02	/	
Q82 (DEV05)	Open	U B03	/	
	Close(d)	U B04	/	

Tab. A5-502: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(X01=X) \ \& \ \neg(X02=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$

Tab. A5-503: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(X01=X) \ \& \ \neg(X02=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$

Tab. A5-504: Bay Interlock Equations for Operation with Station Interlocking

A5.2.2.21**Bay type No. 143: Bus sectionalizer bay with circuit breaker, single busbar, direct motor control**

L13.113.M03

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q11 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
Q12 (DEV03)	Open	U A05	K A05	
	Close(d)	U A06	K A06	
Q81 (DEV04)	Open	U B01	/	
	Close(d)	U B02	/	
Q82 (DEV05)	Open	U B03	/	
	Close(d)	U B04	/	
Motor relay (SIG_1: Signal S012 EXT)		U B06	/	
Shunt winding (CMD_1: Command C011)		/	K B05	
Motor relay (CMD_1: Command C012)		/	K B06	

Tab. A5-505: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q11=X) \ \& \ \neg(Q12=X) \ \& \ (Q81=0) \ \& \ (Q82=0) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$
Q11	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q81=0) \ \& \ (Q82=0)$
Q12	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q81=0) \ \& \ (Q82=0)$

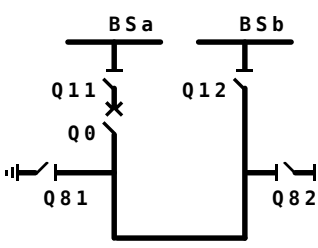
Tab. A5-506: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q11=X) \ \& \ \neg(Q12=X) \ \& \ (Q81=0) \ \& \ (Q82=0) \ \& \ \neg(FctBl1=I) \ \& \ \neg(FctBl2=I)$
Q11	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q81=0) \ \& \ (Q82=0)$
Q12	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q81=0) \ \& \ (Q82=0)$

Tab. A5-507: Bay Interlock Equations for Operation with Station Interlocking

A5.2.2.22**Bay type No. 144: Bus sectionalizer bay with circuit breaker, single busbar, direct motor control**

L13.113.M05

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q11 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
Q12 (DEV03)	Open	U A05	K A05	
	Close(d)	U A06	K A06	
Q81 (DEV04)	Open	U B01	K B01	
	Close(d)	U B02	K B02	
Q82 (DEV05)	Open	U B03	K B03	
	Close(d)	U B04	K B04	
Motor relay (SIG_1: Signal S012 EXT)		U B06	/	
Shunt winding (CMD_1: Command C011)		/	K B05	
Motor relay (CMD_1: Command C012)		/	K B06	

Tab. A5-508: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q11=X) \ \& \ \neg(Q12=X) \ \& \ (Q81=0) \ \& \ (Q82=0) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$
Q11	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q81=0) \ \& \ (Q82=0)$
Q12	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q81=0) \ \& \ (Q82=0)$
Q81	Close(d)	$(Q0=0) \ \& \ (Q11=0) \ \& \ (Q12=0)$
Q82	Close(d)	$(Q0=0) \ \& \ (Q11=0) \ \& \ (Q12=0)$

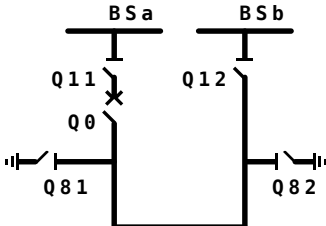
Tab. A5-509: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q11=X) \ \& \ \neg(Q12=X) \ \& \ (Q81=0) \ \& \ (Q82=0) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$
Q11	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q81=0) \ \& \ (Q82=0)$
Q12	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q81=0) \ \& \ (Q82=0)$
Q81	Close(d)	$(Q0=0) \ \& \ (Q11=0) \ \& \ (Q12=0)$
Q82	Close(d)	$(Q0=0) \ \& \ (Q11=0) \ \& \ (Q12=0)$

Tab. A5-510: Bay Interlock Equations for Operation with Station Interlocking

A5.2.2.23**Bay type No. 145: Bus sectionalizer bay with circuit breaker, single busbar**

L13.113.R01

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q11 (DEV02)	Open	U A03	/	
	Close(d)	U A04	/	
Q12 (DEV03)	Open	U A05	/	
	Close(d)	U A06	/	
Q81 (DEV04)	Open	U B01	/	
	Close(d)	U B02	/	
Q82 (DEV05)	Open	U B03	/	
	Close(d)	U B04	/	

Tab. A5-511: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q11=X) \ \& \ \neg(Q12=X) \ \& \ (Q81=0) \ \& \ (Q82=0) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$

Tab. A5-512: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q11=X) \ \& \ \neg(Q12=X) \ \& \ (Q81=0) \ \& \ (Q82=0) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$

Tab. A5-513: Bay Interlock Equations for Operation with Station Interlocking

A5.2.2.24

Bay type No. 146: Bus sectionalizer bay with circuit breaker, single busbar

L13.113.R03

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q11 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
Q12 (DEV03)	Open	U A05	K A05	
	Close(d)	U A06	K A06	
Q81 (DEV04)	Open	U B01	/	
	Close(d)	U B02	/	
Q82 (DEV05)	Open	U B03	/	
	Close(d)	U B04	/	

Tab. A5-514: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q11=X) \wedge \neg(Q12=X) \wedge (Q81=0) \wedge (Q82=0) \wedge \neg(FctBl1=I) \wedge \neg(FctBl2=I)$
Q11	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \wedge (Q81=0) \wedge (Q82=0)$
Q12	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \wedge (Q81=0) \wedge (Q82=0)$

Tab. A5-515: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q11=X) \wedge \neg(Q12=X) \wedge (Q81=0) \wedge (Q82=0) \wedge \neg(FctBl1=I) \wedge \neg(FctBl2=I)$
Q11	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \wedge (Q81=0) \wedge (Q82=0)$
Q12	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \wedge (Q81=0) \wedge (Q82=0)$

Tab. A5-516: Bay Interlock Equations for Operation with Station Interlocking

A5.2.2.25

Bay type No. 517: Bus sectionalizer bay with circuit breaker, single busbar

L13.113.R03.2

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q11 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
Q12 (DEV03)	Open	U A05	/	
	Close(d)	U A06	/	
Q81 (DEV04)	Open	U B01	K B01	
	Close(d)	U B02	K B02	
Q82 (DEV05)	Open	U B03	/	
	Close(d)	U B04	/	

Tab. A5-517: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q11=X) \ \& \ \neg(Q12=X) \ \& \ (Q81=0) \ \& \ (Q82=0) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$
Q11	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q81=0) \ \& \ (Q82=0)$
Q81	Close(d)	$(Q0=0) \ \& \ (Q11=0) \ \& \ (Q12=0)$

Tab. A5-518: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q11=X) \ \& \ \neg(Q12=X) \ \& \ (Q81=0) \ \& \ (Q82=0) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$
Q11	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q81=0) \ \& \ (Q82=0)$
Q81	Close(d)	$(Q0=0) \ \& \ (Q11=0) \ \& \ (Q12=0)$

Tab. A5-519: Bay Interlock Equations for Operation with Station Interlocking

A5.2.2.26**Bay type No. 147: Bus sectionalizer bay with circuit breaker, single busbar**

L13.113.R05

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q11 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
Q12 (DEV03)	Open	U A05	K A05	
	Close(d)	U A06	K A06	
Q81 (DEV04)	Open	U B01	K B01	
	Close(d)	U B02	K B02	
Q82 (DEV05)	Open	U B03	K B03	
	Close(d)	U B04	K B04	

Tab. A5-520: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q11=X) \ \& \ \neg(Q12=X) \ \& \ (Q81=0) \ \& \ (Q82=0) \ \& \ \neg(FctBl1=I) \ \& \ \neg(FctBl2=I)$
Q11	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q81=0) \ \& \ (Q82=0)$
Q12	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q81=0) \ \& \ (Q82=0)$
Q81	Close(d)	$(Q0=0) \ \& \ (Q11=0) \ \& \ (Q12=0)$
Q82	Close(d)	$(Q0=0) \ \& \ (Q11=0) \ \& \ (Q12=0)$

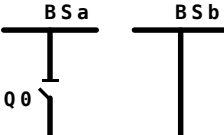
Tab. A5-521: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q11=X) \ \& \ \neg(Q12=X) \ \& \ (Q81=0) \ \& \ (Q82=0) \ \& \ \neg(\text{FctBl1}=I) \ \& \ \neg(\text{FctBl2}=I)$
Q11	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q81=0) \ \& \ (Q82=0)$
Q12	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q81=0) \ \& \ (Q82=0)$
Q81	Close(d)	$(Q0=0) \ \& \ (Q11=0) \ \& \ (Q12=0)$
Q82	Close(d)	$(Q0=0) \ \& \ (Q11=0) \ \& \ (Q12=0)$

Tab. A5-522: Bay Interlock Equations for Operation with Station Interlocking

A5.2.2.27**Bay type No. 148: Bus sectionalizer bay with switch disconnecter, single busbar**

L13.200.R01

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	

Tab. A5-523: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
		—

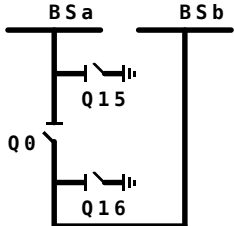
Tab. A5-524: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
		—

Tab. A5-525: Bay Interlock Equations for Operation with Station Interlocking

A5.2.2.28**Bay type No. 149: Bus sectionalizer bay with switch disconnecter, single busbar**

L13.202.R01

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q15 (DEV02)	Open	U A03	/	
	Close(d)	U A04	/	
Q16 (DEV03)	Open	U A05	/	
	Close(d)	U A06	/	

Tab. A5-526: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$(Q15=0) \& (Q16=0) \& /(FctBI1=I) \& /(FctBI2=I)$

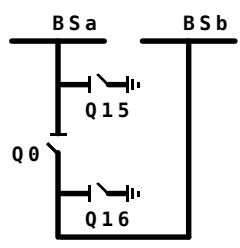
Tab. A5-527: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$(Q15=0) \& (Q16=0) \& /(FctBI1=I) \& /(FctBI2=I)$

Tab. A5-528: Bay Interlock Equations for Operation with Station Interlocking

A5.2.2.29**Bay type No. 150: Bus sectionalizer bay with switch disconnecter, single busbar**

L13.202.R03

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q15 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
Q16 (DEV03)	Open	U A05	K A05	
	Close(d)	U A06	K A06	

Tab. A5-529: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$(Q15=0) \& (Q16=0) \& /(FctBI1=I) \& /(FctBI2=I)$
Q15	Close(d)	$(Q0=0) \& (Q15=I)$
Q16	Close(d)	$(Q0=0) \& (Q16=I)$

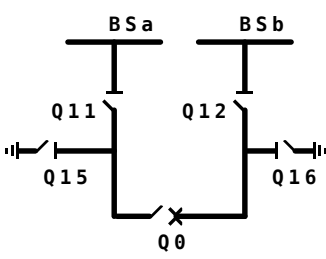
Tab. A5-530: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$(Q15=0) \& (Q16=0) \& /(FctBI1=I) \& /(FctBI2=I)$
Q15	Close(d)	$(Q0=0)$
Q16	Close(d)	$(Q0=0)$

Tab. A5-531: Bay Interlock Equations for Operation with Station Interlocking

A5.2.2.30**Bay type No. 226: Bus sectionalizer bay with circuit breaker, single busbar, direct motor control**

L15.113.M03

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q11 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
Q12 (DEV03)	Open	U A05	K A05	
	Close(d)	U A06	K A06	
Q15 (DEV04)	Open	U B01	/	
	Close(d)	U B02	/	
Q16 (DEV05)	Open	U B03	/	
	Close(d)	U B04	/	
Motor relay (SIG_1: Signal S012 EXT)		U B06	/	
Shunt winding (CMD_1: Command C011)		/	K B05	
Motor relay (CMD_1: Command C012)		/	K B06	

Tab. A5-532: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q0	Open	$(Q15=0) \& (Q16=0)$
	Close(d)	$/(Q11=X) \& /(Q12=X) \& (Q15=0) \& (Q16=0) \& /(FctBl1=I) \& /(FctBl2=I)$
Q11	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \& (Q15=0)$
Q12	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \& (Q16=0)$

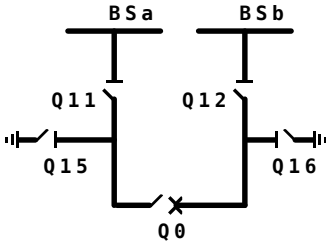
Tab. A5-533: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Open	$(Q15=0) \ \& \ (Q16=0)$
	Close(d)	$\neg(Q11=X) \ \& \ \neg(Q12=X) \ \& \ (Q15=0) \ \& \ (Q16=0) \ \& \ \neg(FctBl1=l) \ \& \ \neg(FctBl2=l)$
Q11	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q15=0)$
Q12	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q16=0)$

Tab. A5-534: Bay Interlock Equations for Operation with Station Interlocking

A5.2.2.31**Bay type No. 151: Bus sectionalizer bay with circuit breaker, single busbar, direct motor control**

L15.113.M05

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q11 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
Q12 (DEV03)	Open	U A05	K A05	
	Close(d)	U A06	K A06	
Q15 (DEV04)	Open	U B01	K B01	
	Close(d)	U B02	K B02	
Q16 (DEV05)	Open	U B03	K B03	
	Close(d)	U B04	K B04	
Motor relay (SIG_1: Signal S012 EXT)		U B06	/	
Shunt winding (CMD_1: Command C011)		/	K B05	
Motor relay (CMD_1: Command C012)		/	K B06	

Tab. A5-535: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q0	Open	$(Q15=0) \ \& \ (Q16=0)$
	Close(d)	$/(Q11=X) \ \& \ /(Q12=X) \ \& \ (Q15=0) \ \& \ (Q16=0) \ \& \ /(FctBl1=I) \ \& \ /(FctBl2=I)$
Q11	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q15=0)$
Q12	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q16=0)$
Q15	Open	$(Q0=I) \ \& \ (Q12=I)$
	Close(d)	$(Q0=0) \ \& \ (Q11=0) \ \& \ (Q12=I) \ \& \ /(FctBl1=I) \ \& \ /(FctBl2=I) \ \& \ (Q15=I)$
Q16	Open	$(Q0=I) \ \& \ (Q11=I)$
	Close(d)	$(Q0=0) \ \& \ (Q12=0) \ \& \ (Q11=I) \ \& \ /(FctBl1=I) \ \& \ /(FctBl2=I) \ \& \ (Q16=I)$

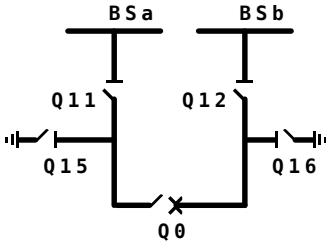
Tab. A5-536: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Open	$(Q15=0) \ \& \ (Q16=0)$
	Close(d)	$\neg(Q11=X) \ \& \ \neg(Q12=X) \ \& \ (Q15=0) \ \& \ (Q16=0) \ \& \ \neg(\text{FctBI1}=1) \ \& \ \neg(\text{FctBI2}=1)$
Q11	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q15=0)$
Q12	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q16=0)$
Q15	Open	$(Q0=1) \ \& \ (Q12=1)$
	Close(d)	$(Q0=0) \ \& \ (Q11=0) \ \& \ (Q12=1) \ \& \ \neg(\text{FctBI1}=1) \ \& \ \neg(\text{FctBI2}=1)$
Q16	Open	$(Q0=1) \ \& \ (Q11=1)$
	Close(d)	$(Q0=0) \ \& \ (Q12=0) \ \& \ (Q11=1) \ \& \ \neg(\text{FctBI1}=1) \ \& \ \neg(\text{FctBI2}=1)$

Tab. A5-537: Bay Interlock Equations for Operation with Station Interlocking

A5.2.2.32**Bay type No. 152: Bus sectionalizer bay with circuit breaker, single busbar**

L15.113.R01

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q11 (DEV02)	Open	U A03	/	
	Close(d)	U A04	/	
Q12 (DEV03)	Open	U A05	/	
	Close(d)	U A06	/	
Q15 (DEV04)	Open	U B01	/	
	Close(d)	U B02	/	
Q16 (DEV05)	Open	U B03	/	
	Close(d)	U B04	/	

Tab. A5-538: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q0	Open	$(Q15=0) \ \& \ (Q16=0)$
	Close(d)	$/(Q11=X) \ \& \ /(Q12=X) \ \& \ (Q15=0) \ \& \ (Q16=0) \ \& \ /(FctBI1=I) \ \& \ /(FctBI2=I)$

Tab. A5-539: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Open	$(Q15=0) \ \& \ (Q16=0)$
	Close(d)	$/(Q11=X) \ \& \ /(Q12=X) \ \& \ (Q15=0) \ \& \ (Q16=0) \ \& \ /(FctBI1=I) \ \& \ /(FctBI2=I)$

Tab. A5-540: Bay Interlock Equations for Operation with Station Interlocking

A5.2.2.33**Bay type No. 227: Bus sectionalizer bay with circuit breaker, single busbar**

L15.113.R03

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q11 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
Q12 (DEV03)	Open	U A05	K A05	
	Close(d)	U A06	K A06	
Q15 (DEV04)	Open	U B01	/	
	Close(d)	U B02	/	
Q16 (DEV05)	Open	U B03	/	
	Close(d)	U B04	/	

Tab. A5-541: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q0	Open	$(Q15=0) \ \& \ (Q16=0)$
	Close(d)	$\neg(Q11=X) \ \& \ \neg(Q12=X) \ \& \ (Q15=0) \ \& \ (Q16=0) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$
Q11	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q15=0)$
Q12	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q16=0)$

Tab. A5-542: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Open	$(Q15=0) \ \& \ (Q16=0)$
	Close(d)	$/(Q11=X) \ \& \ /(Q12=X) \ \& \ (Q15=0) \ \& \ (Q16=0) \ \& \ /(FctBI1=I) \ \& \ /(FctBI2=I)$
Q11	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q15=0)$
Q12	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q16=0)$

Tab. A5-543: Bay Interlock Equations for Operation with Station Interlocking

A5.2.2.34**Bay type No. 153: Bus sectionalizer bay with circuit breaker, single busbar**

L15.113.R05

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q11 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
Q12 (DEV03)	Open	U A05	K A05	
	Close(d)	U A06	K A06	
Q15 (DEV04)	Open	U B01	K B01	
	Close(d)	U B02	K B02	
Q16 (DEV05)	Open	U B03	K B03	
	Close(d)	U B04	K B04	

Tab. A5-544: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q0	Open	$(Q15=0) \ \& \ (Q16=0)$
	Close(d)	$\neg(Q11=X) \ \& \ \neg(Q12=X) \ \& \ (Q15=0) \ \& \ (Q16=0) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$
Q11	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q15=0)$
Q12	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q16=0)$
Q15	Open	$(Q0=I) \ \& \ (Q12=I)$
	Close(d)	$(Q0=0) \ \& \ (Q11=0) \ \& \ (Q12=I) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I) \ \& \ (Q15=I)$
Q16	Open	$(Q0=I) \ \& \ (Q11=I)$
	Close(d)	$(Q0=0) \ \& \ (Q12=0) \ \& \ (Q11=I) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I) \ \& \ (Q16=I)$

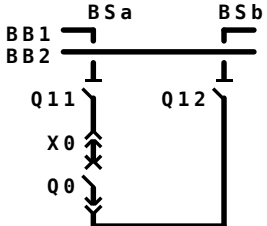
Tab. A5-545: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Open	$(Q15=0) \ \& \ (Q16=0)$
	Close(d)	$\neg(Q11=X) \ \& \ \neg(Q12=X) \ \& \ (Q15=0) \ \& \ (Q16=0) \ \& \ \neg(\text{FctBI1}=I) \ \& \ \neg(\text{FctBI2}=I)$
Q11	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q15=0)$
Q12	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q16=0)$
Q15	Open	$(Q0=I) \ \& \ (Q12=I)$
	Close(d)	$(Q0=0) \ \& \ (Q11=0) \ \& \ (Q12=I) \ \& \ \neg(\text{FctBI1}=I) \ \& \ \neg(\text{FctBI2}=I)$
Q16	Open	$(Q0=I) \ \& \ (Q11=I)$
	Close(d)	$(Q0=0) \ \& \ (Q12=0) \ \& \ (Q11=I) \ \& \ \neg(\text{FctBI1}=I) \ \& \ \neg(\text{FctBI2}=I)$

Tab. A5-546: Bay Interlock Equations for Operation with Station Interlocking

A5.2.2.35**Bay type No. 154: Bus sectionalizer bay with circuit breaker, double busbar, direct motor control**

L21.101.M04.1

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q11 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
Q12 (DEV03)	Open	U A05	K A05	
	Close(d)	U A06	K A06	
X0 (DEV04)	Open	U B01	K B01	
	Close(d)	U B02	K B02	
Motor relay (SIG_1: Signal S012 EXT)		U B06	/	
Shunt winding (CMD_1: Command C011)		/	K B05	
Motor relay (CMD_1: Command C012)		/	K B06	

Tab. A5-547: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q11=X) \ \& \ \neg(Q12=X) \ \& \ \neg(X0=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$
Q11	Open	$(Q0=0)$
	Close(d)	$(Q0=0)$
Q12	Open	$(Q0=0)$
	Close(d)	$(Q0=0)$
X0	Open	$(Q0=0) \ \& \ (Q11=0) \ \& \ (Q12=0)$
	Close(d)	$(Q0=0) \ \& \ (Q11=0) \ \& \ (Q12=0)$

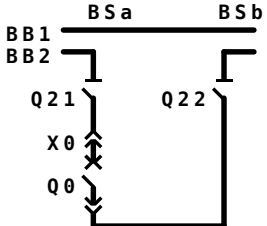
Tab. A5-548: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q11=X) \ \& \ \neg(Q12=X) \ \& \ \neg(X0=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$
Q11	Open	$(Q0=0)$
	Close(d)	$(Q0=0)$
Q12	Open	$(Q0=0)$
	Close(d)	$(Q0=0)$
X0	Open	$(Q0=0) \ \& \ (Q11=0) \ \& \ (Q12=0)$
	Close(d)	$(Q0=0) \ \& \ (Q11=0) \ \& \ (Q12=0)$

Tab. A5-549: Bay Interlock Equations for Operation with Station Interlocking

A5.2.2.36**Bay type No. 155: Bus sectionalizer bay with circuit breaker, double busbar, direct motor control**

L21.101.M04.2

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q21 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
Q22 (DEV03)	Open	U A05	K A05	
	Close(d)	U A06	K A06	
X0 (DEV04)	Open	U B01	K B01	
	Close(d)	U B02	K B02	
Motor relay (SIG_1: Signal S012 EXT)		U B06	/	
Shunt winding (CMD_1: Command C011)		/	K B05	
Motor relay (CMD_1: Command C012)		/	K B06	

Tab. A5-550: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q21=X) \ \& \ \neg(Q22=X) \ \& \ \neg(X0=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$
Q21	Open	$(Q0=0)$
	Close(d)	$(Q0=0)$
Q22	Open	$(Q0=0)$
	Close(d)	$(Q0=0)$
X0	Open	$(Q0=0) \ \& \ (Q21=0) \ \& \ (Q22=0)$
	Close(d)	$(Q0=0) \ \& \ (Q21=0) \ \& \ (Q22=0)$

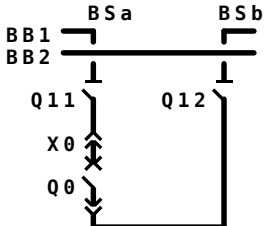
Tab. A5-551: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q21=X) \ \& \ \neg(Q22=X) \ \& \ \neg(X0=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$
Q21	Open	$(Q0=0)$
	Close(d)	$(Q0=0)$
Q22	Open	$(Q0=0)$
	Close(d)	$(Q0=0)$
X0	Open	$(Q0=0) \ \& \ (Q21=0) \ \& \ (Q22=0)$
	Close(d)	$(Q0=0) \ \& \ (Q21=0) \ \& \ (Q22=0)$

Tab. A5-552: Bay Interlock Equations for Operation with Station Interlocking

A5.2.2.37**Bay type No. 156: Bus sectionalizer bay with circuit breaker, double busbar**

L21.101.R01.1

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q11 (DEV02)	Open	U A03	/	
	Close(d)	U A04	/	
Q12 (DEV03)	Open	U A05	/	
	Close(d)	U A06	/	
X0 (DEV04)	Open	U B01	/	
	Close(d)	U B02	/	

Tab. A5-553: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q11=X) \ \& \ \neg(Q12=X) \ \& \ \neg(X0=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$

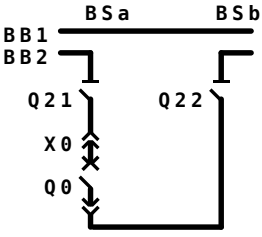
Tab. A5-554: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q11=X) \ \& \ \neg(Q12=X) \ \& \ \neg(X0=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$

Tab. A5-555: Bay Interlock Equations for Operation with Station Interlocking

A5.2.2.38**Bay type No. 157: Bus sectionalizer bay with circuit breaker, double busbar**

L21.101.R01.2

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q21 (DEV02)	Open	U A03	/	
	Close(d)	U A04	/	
Q22 (DEV03)	Open	U A05	/	
	Close(d)	U A06	/	
X0 (DEV04)	Open	U B01	/	
	Close(d)	U B02	/	

Tab. A5-556: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q21=X) \ \& \ \neg(Q22=X) \ \& \ \neg(X0=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$

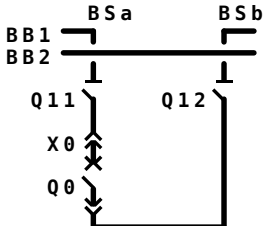
Tab. A5-557: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q21=X) \ \& \ \neg(Q22=X) \ \& \ \neg(X0=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$

Tab. A5-558: Bay Interlock Equations for Operation with Station Interlocking

A5.2.2.39**Bay type No. 158: Bus sectionalizer bay with circuit breaker, double busbar**

L21.101.R03.1

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q11 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
Q12 (DEV03)	Open	U A05	K A05	
	Close(d)	U A06	K A06	
X0 (DEV04)	Open	U B01	/	
	Close(d)	U B02	/	

Tab. A5-559: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q11=X) \ \& \ \neg(Q12=X) \ \& \ \neg(X0=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$
Q11	Open	$(Q0=0)$
	Close(d)	$(Q0=0)$
Q12	Open	$(Q0=0)$
	Close(d)	$(Q0=0)$

Tab. A5-560: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q11=X) \ \& \ \neg(Q12=X) \ \& \ \neg(X0=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$
Q11	Open	$(Q0=0)$
	Close(d)	$(Q0=0)$
Q12	Open	$(Q0=0)$
	Close(d)	$(Q0=0)$

Tab. A5-561: Bay Interlock Equations for Operation with Station Interlocking

A5.2.2.40

Bay type No. 159: Bus sectionalizer bay with circuit breaker, double busbar

L21.101.R03.2

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q21 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
Q22 (DEV03)	Open	U A05	K A05	
	Close(d)	U A06	K A06	
X0 (DEV04)	Open	U B01	/	
	Close(d)	U B02	/	

Tab. A5-562: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q21=X) \ \& \ \neg(Q22=X) \ \& \ \neg(X0=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$
Q21	Open	$(Q0=0)$
	Close(d)	$(Q0=0)$
Q22	Open	$(Q0=0)$
	Close(d)	$(Q0=0)$

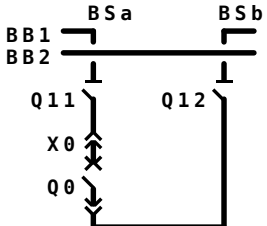
Tab. A5-563: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q21=X) \ \& \ \neg(Q22=X) \ \& \ \neg(X0=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$
Q21	Open	$(Q0=0)$
	Close(d)	$(Q0=0)$
Q22	Open	$(Q0=0)$
	Close(d)	$(Q0=0)$

Tab. A5-564: Bay Interlock Equations for Operation with Station Interlocking

A5.2.2.41**Bay type No. 160: Bus sectionalizer bay with circuit breaker, double busbar**

L21.101.R04.1

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q11 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
Q12 (DEV03)	Open	U A05	K A05	
	Close(d)	U A06	K A06	
X0 (DEV04)	Open	U B01	K B01	
	Close(d)	U B02	K B02	

Tab. A5-565: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q11=X) \ \& \ \neg(Q12=X) \ \& \ \neg(X0=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$
Q11	Open	$(Q0=0)$
	Close(d)	$(Q0=0)$
Q12	Open	$(Q0=0)$
	Close(d)	$(Q0=0)$
X0	Open	$(Q0=0) \ \& \ (Q11=0) \ \& \ (Q12=0)$
	Close(d)	$(Q0=0) \ \& \ (Q11=0) \ \& \ (Q12=0)$

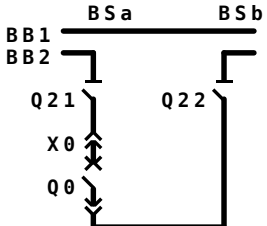
Tab. A5-566: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q11=X) \ \& \ \neg(Q12=X) \ \& \ \neg(X0=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$
Q11	Open	$(Q0=0)$
	Close(d)	$(Q0=0)$
Q12	Open	$(Q0=0)$
	Close(d)	$(Q0=0)$
X0	Open	$(Q0=0) \ \& \ (Q11=0) \ \& \ (Q12=0)$
	Close(d)	$(Q0=0) \ \& \ (Q11=0) \ \& \ (Q12=0)$

Tab. A5-567: Bay Interlock Equations for Operation with Station Interlocking

A5.2.2.42**Bay type No. 161: Bus sectionalizer bay with circuit breaker, double busbar**

L21.101.R04.2

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q21 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
Q22 (DEV03)	Open	U A05	K A05	
	Close(d)	U A06	K A06	
X0 (DEV04)	Open	U B01	K B01	
	Close(d)	U B02	K B02	

Tab. A5-568: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q21=X) \ \& \ \neg(Q22=X) \ \& \ \neg(X0=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$
Q21	Open	$(Q0=0)$
	Close(d)	$(Q0=0)$
Q22	Open	$(Q0=0)$
	Close(d)	$(Q0=0)$
X0	Open	$(Q0=0) \ \& \ (Q21=0) \ \& \ (Q22=0)$
	Close(d)	$(Q0=0) \ \& \ (Q21=0) \ \& \ (Q22=0)$

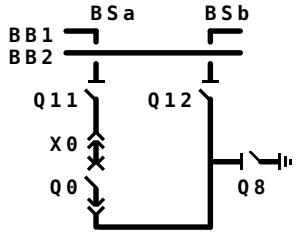
Tab. A5-569: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q21=X) \ \& \ \neg(Q22=X) \ \& \ \neg(X0=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$
Q21	Open	$(Q0=0)$
	Close(d)	$(Q0=0)$
Q22	Open	$(Q0=0)$
	Close(d)	$(Q0=0)$
X0	Open	$(Q0=0) \ \& \ (Q21=0) \ \& \ (Q22=0)$
	Close(d)	$(Q0=0) \ \& \ (Q21=0) \ \& \ (Q22=0)$

Tab. A5-570: Bay Interlock Equations for Operation with Station Interlocking

A5.2.2.43**Bay type No. 513: Bus sectionalizer bay with circuit breaker, double busbar**

L21.109.R03.1

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q11 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
Q12 (DEV03)	Open	U A05	K A05	
	Close(d)	U A06	K A06	
X0 (DEV04)	Open	U B01	/	
	Close(d)	U B02	/	
Q8 (DEV05)	Open	U B03	/	
	Close(d)	U B04	/	

Tab. A5-571: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q11=X) \wedge \neg(Q12=X) \wedge \neg(X0=X) \wedge (Q8=0) \wedge \neg(\text{FctBI1}=I) \wedge \neg(\text{FctBI2}=I)$
Q11	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \wedge (Q8=0)$
Q12	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \wedge (Q8=0)$

Tab. A5-572: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q11=X) \wedge \neg(Q12=X) \wedge \neg(X0=X) \wedge (Q8=0) \wedge \neg(\text{FctBI1}=I) \wedge \neg(\text{FctBI2}=I)$
Q11	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \wedge (Q8=0)$
Q12	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \wedge (Q8=0)$

Tab. A5-573: Bay Interlock Equations for Operation with Station Interlocking

A5.2.2.44**Bay type No. 514: Bus sectionalizer bay with circuit breaker, double busbar**

L21.109.R03.2

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q21 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
Q22 (DEV03)	Open	U A05	K A05	
	Close(d)	U A06	K A06	
X0 (DEV04)	Open	U B01	/	
	Close(d)	U B02	/	
Q8 (DEV05)	Open	U B03	/	
	Close(d)	U B04	/	

Tab. A5-574: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q21=X) \ \& \ \neg(Q22=X) \ \& \ \neg(X0=X) \ \& \ (Q8=0) \ \& \ \neg(FctBl1=l) \ \& \ \neg(FctBl2=l)$
Q21	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q8=0)$
Q22	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q8=0)$

Tab. A5-575: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q21=X) \ \& \ \neg(Q22=X) \ \& \ \neg(X0=X) \ \& \ (Q8=0) \ \& \ \neg(FctBl1=l) \ \& \ \neg(FctBl2=l)$
Q21	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q8=0)$
Q22	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q8=0)$

Tab. A5-576: Bay Interlock Equations for Operation with Station Interlocking

A5.2.2.45**Bay type No. 162: Bus sectionalizer bay with circuit breaker, double busbar**

L23.101.R02

Switchgear unit		Binary input	Output relay	
Q01 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q02 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
Q11 (DEV03)	Open	U A05	/	
	Close(d)	U A06	/	
Q12 (DEV04)	Open	U B01	/	
	Close(d)	U B02	/	
Q21 (DEV05)	Open	U B03	/	
	Close(d)	U B04	/	
Q22 (DEV06)	Open	U B05	/	
	Close(d)	U B06	/	

Tab. A5-577: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q01	Close(d)	$\neg(Q11=X) \ \& \ \neg(Q12=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$
Q02	Close(d)	$\neg(Q21=X) \ \& \ \neg(Q22=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$

Tab. A5-578: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q01	Close(d)	$\neg(Q11=X) \ \& \ \neg(Q12=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$
Q02	Close(d)	$\neg(Q21=X) \ \& \ \neg(Q22=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$

Tab. A5-579: Bay Interlock Equations for Operation with Station Interlocking

A5.2.2.46**Bay type No. 163: Bus sectionalizer bay with circuit breaker, double busbar**

L23.101.R06

Switchgear unit		Binary input	Output relay	
Q01 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q02 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
Q11 (DEV03)	Open	U A05	K A05	
	Close(d)	U A06	K A06	
Q12 (DEV04)	Open	U B01	K B01	
	Close(d)	U B02	K B02	
Q21 (DEV05)	Open	U B03	K B03	
	Close(d)	U B04	K B04	
Q22 (DEV06)	Open	U B05	K B05	
	Close(d)	U B06	K B06	

Tab. A5-580: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q01	Close(d)	$\neg(Q11=X) \ \& \ \neg(Q12=X) \ \& \ \neg(FctBl1=I) \ \& \ \neg(FctBl2=I)$
Q02	Close(d)	$\neg(Q21=X) \ \& \ \neg(Q22=X) \ \& \ \neg(FctBl1=I) \ \& \ \neg(FctBl2=I)$
Q11	Open	$(Q01=0)$
	Close(d)	$(Q01=0)$
Q12	Open	$(Q01=0)$
	Close(d)	$(Q01=0)$
Q21	Open	$(Q02=0)$
	Close(d)	$(Q02=0)$
Q22	Open	$(Q02=0)$
	Close(d)	$(Q02=0)$

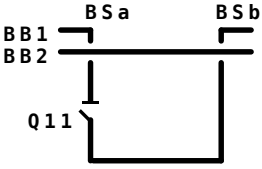
Tab. A5-581: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q01	Close(d)	$\neg(Q11=X) \ \& \ \neg(Q12=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$
Q02	Close(d)	$\neg(Q21=X) \ \& \ \neg(Q22=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$
Q11	Open	$(Q01=0)$
	Close(d)	$(Q01=0)$
Q12	Open	$(Q01=0)$
	Close(d)	$(Q01=0)$
Q21	Open	$(Q02=0)$
	Close(d)	$(Q02=0)$
Q22	Open	$(Q02=0)$
	Close(d)	$(Q02=0)$

Tab. A5-582: Bay Interlock Equations for Operation with Station Interlocking

A5.2.2.47**Bay type No. 554: Bus sectionalizer bay with other switchgear unit, double busbar, direct motor control**

L23.901.M01.1

Switchgear unit		Binary input	Output relay	
Q11 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Motor relay (SIG_1: Signal S012 EXT)		U B06	/	
Shunt winding (CMD_1: Command C011)		/	K B05	
Motor relay (CMD_1: Command C012)		/	K B06	

Tab. A5-583: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
		—

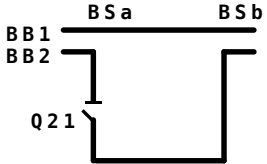
Tab. A5-584: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
		—

Tab. A5-585: Bay Interlock Equations for Operation with Station Interlocking

A5.2.2.48**Bay type No. 555: Bus sectionalizer bay with other switchgear unit, double busbar, direct motor control**

L23.901.M01.2

Switchgear unit		Binary input	Output relay	
Q21 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Motor relay (SIG_1: Signal S012 EXT)		U B06	/	
Shunt winding (CMD_1: Command C011)		/	K B05	
Motor relay (CMD_1: Command C012)		/	K B06	

Tab. A5-586: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
		—

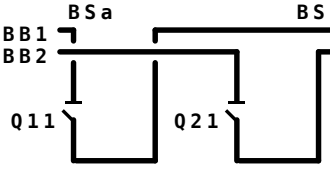
Tab. A5-587: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
		—

Tab. A5-588: Bay Interlock Equations for Operation with Station Interlocking

A5.2.2.49**Bay type No. 164: Bus sectionalizer bay with other switchgear unit, double busbar**

L23.901.R02

Switchgear unit		Binary input	Output relay	
Q11 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q21 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	

Tab. A5-589: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q11	Open	$(Q11=0)$
	Close(d)	$(Q11=1)$
Q21	Open	$(Q21=0)$
	Close(d)	$(Q21=1)$

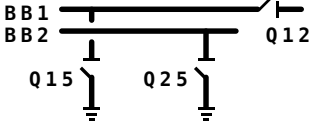
Tab. A5-590: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
		—

Tab. A5-591: Bay Interlock Equations for Operation with Station Interlocking

A5.2.2.50**Bay type No. 242: Bus sectionalizer bay with other switchgear unit, double busbar, direct motor control**

L23.903.M01.3

Switchgear unit		Binary input	Output relay	
Q12 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q15 (DEV02)	Open	U A03	/	
	Close(d)	U A04	/	
Q25 (DEV03)	Open	U A05	/	
	Close(d)	U A06	/	
Motor relay (SIG_1: Signal S012 EXT)		U B06	/	
Shunt winding (CMD_1: Command C011)		/	K B05	
Motor relay (CMD_1: Command C012)		/	K B06	

Tab. A5-592: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q12	Open	$(Q12=0)$
	Close(d)	$(Q12=1)$

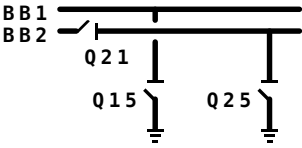
Tab. A5-593: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
		—

Tab. A5-594: Bay Interlock Equations for Operation with Station Interlocking

A5.2.2.51**Bay type No. 243: Bus sectionalizer bay with other switchgear unit, double busbar, direct motor control**

L23.903.M01.4

Switchgear unit		Binary input	Output relay	
Q21 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q15 (DEV02)	Open	U A03	/	
	Close(d)	U A04	/	
Q25 (DEV03)	Open	U A05	/	
	Close(d)	U A06	/	
Motor relay (SIG_1: Signal S012 EXT)		U B06	/	
Shunt winding (CMD_1: Command C011)		/	K B05	
Motor relay (CMD_1: Command C012)		/	K B06	

Tab. A5-595: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q21	Open	$(Q21=0)$
	Close(d)	$(Q21=1)$

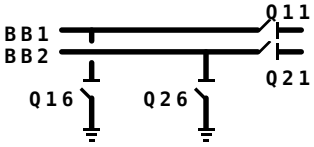
Tab. A5-596: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
		—

Tab. A5-597: Bay Interlock Equations for Operation with Station Interlocking

A5.2.2.52**Bay type No. 511: Bus sectionalizer bay with other switchgear unit, double busbar, direct motor control**

L23.903.M02

Switchgear unit		Binary input	Output relay	
Q11 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q21 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
Q16 (DEV03)	Open	U A05	/	
	Close(d)	U A06	/	
Q26 (DEV04)	Open	U B01	/	
	Close(d)	U B02	/	
Motor relay (SIG_1: Signal S012 EXT)		U B06	/	
Shunt winding (CMD_1: Command C011)		/	K B05	
Motor relay (CMD_1: Command C012)		/	K B06	

Tab. A5-598: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q11	Open	$(Q11=0)$
	Close(d)	$(Q11=1)$
Q21	Open	$(Q21=0)$
	Close(d)	$(Q21=1)$

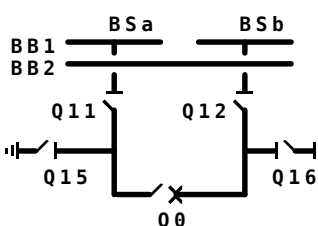
Tab. A5-599: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
		—

Tab. A5-600: Bay Interlock Equations for Operation with Station Interlocking

A5.2.2.53**Bay type No. 228: Bus sectionalizer bay with circuit breaker, double busbar, direct motor control**

L25.113.M03.1

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q11 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
Q12 (DEV03)	Open	U A05	K A05	
	Close(d)	U A06	K A06	
Q15 (DEV04)	Open	U B01	/	
	Close(d)	U B02	/	
Q16 (DEV05)	Open	U B03	/	
	Close(d)	U B04	/	
Motor relay (SIG_1: Signal S012 EXT)		U B06	/	
Shunt winding (CMD_1: Command C011)		/	K B05	
Motor relay (CMD_1: Command C012)		/	K B06	

Tab. A5-601: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q0	Open	$(Q15=0) \& (Q16=0)$
	Close(d)	$/(Q11=X) \& /(Q12=X) \& (Q15=0) \& (Q16=0) \& /(FctBI1=I) \& /(FctBI2=I)$
Q11	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \& (Q15=0)$
Q12	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \& (Q16=0)$

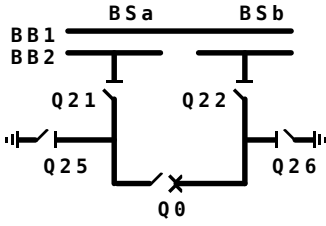
Tab. A5-602: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Open	$(Q15=0) \ \& \ (Q16=0)$
	Close(d)	$\neg(Q11=X) \ \& \ \neg(Q12=X) \ \& \ (Q15=0) \ \& \ (Q16=0) \ \& \ \neg(FctBl1=I) \ \& \ \neg(FctBl2=I)$
Q11	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q15=0)$
Q12	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q16=0)$

Tab. A5-603: Bay Interlock Equations for Operation with Station Interlocking

A5.2.2.54**Bay type No. 229: Bus sectionalizer bay with circuit breaker, double busbar, direct motor control**

L25.113.M03.2

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q21 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
Q22 (DEV03)	Open	U A05	K A05	
	Close(d)	U A06	K A06	
Q25 (DEV04)	Open	U B01	/	
	Close(d)	U B02	/	
Q26 (DEV05)	Open	U B03	/	
	Close(d)	U B04	/	
Motor relay (SIG_1: Signal S012 EXT)		U B06	/	
Shunt winding (CMD_1: Command C011)		/	K B05	
Motor relay (CMD_1: Command C012)		/	K B06	

Tab. A5-604: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q0	Open	$(Q25=0) \ \& \ (Q26=0)$
	Close(d)	$/(Q21=X) \ \& \ /(Q22=X) \ \& \ (Q25=0) \ \& \ (Q26=0) \ \& \ /(FctBI1=I) \ \& \ /(FctBI2=I)$
Q21	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q25=0)$
Q22	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q26=0)$

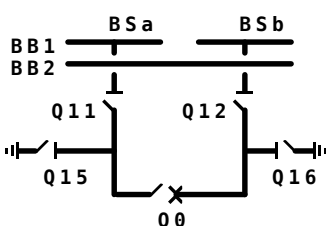
Tab. A5-605: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Open	$(Q25=0) \ \& \ (Q26=0)$
	Close(d)	$\neg(Q21=X) \ \& \ \neg(Q22=X) \ \& \ (Q25=0) \ \& \ (Q26=0) \ \& \ \neg(FctBl1=I) \ \& \ \neg(FctBl2=I)$
Q21	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q25=0)$
Q22	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q26=0)$

Tab. A5-606: Bay Interlock Equations for Operation with Station Interlocking

A5.2.2.55**Bay type No. 165: Bus sectionalizer bay with circuit breaker, double busbar, direct motor control**

L25.113.M05.1

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q11 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
Q12 (DEV03)	Open	U A05	K A05	
	Close(d)	U A06	K A06	
Q15 (DEV04)	Open	U B01	K B01	
	Close(d)	U B02	K B02	
Q16 (DEV05)	Open	U B03	K B03	
	Close(d)	U B04	K B04	
Motor relay (SIG_1: Signal S012 EXT)		U B06	/	
Shunt winding (CMD_1: Command C011)		/	K B05	
Motor relay (CMD_1: Command C012)		/	K B06	

Tab. A5-607: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q0	Open	$(Q15=0) \& (Q16=0)$
	Close(d)	$/(Q11=X) \& /(Q12=X) \& (Q15=0) \& (Q16=0) \& /(FctBl1=I) \& /(FctBl2=I)$
Q11	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \& (Q15=0)$
Q12	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \& (Q16=0)$
Q15	Open	$(Q0=I) \& (Q12=I)$
	Close(d)	$(Q0=0) \& (Q11=0) \& (Q12=I) \& /(FctBl1=I) \& /(FctBl2=I) \& (Q15=I)$
Q16	Open	$(Q0=I) \& (Q11=I)$
	Close(d)	$(Q0=0) \& (Q12=0) \& (Q11=I) \& /(FctBl1=I) \& /(FctBl2=I) \& (Q16=I)$

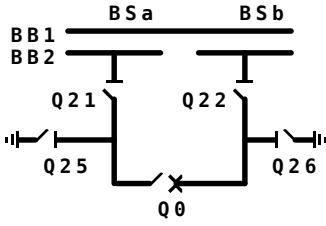
Tab. A5-608: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Open	$(Q15=0) \ \& \ (Q16=0)$
	Close(d)	$\neg(Q11=X) \ \& \ \neg(Q12=X) \ \& \ (Q15=0) \ \& \ (Q16=0) \ \& \ \neg(\text{FctBI1}=1) \ \& \ \neg(\text{FctBI2}=1)$
Q11	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q15=0)$
Q12	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q16=0)$
Q15	Open	$(Q0=1) \ \& \ (Q12=1)$
	Close(d)	$(Q0=0) \ \& \ (Q11=0) \ \& \ (Q12=1) \ \& \ \neg(\text{FctBI1}=1) \ \& \ \neg(\text{FctBI2}=1)$
Q16	Open	$(Q0=1) \ \& \ (Q11=1)$
	Close(d)	$(Q0=0) \ \& \ (Q12=0) \ \& \ (Q11=1) \ \& \ \neg(\text{FctBI1}=1) \ \& \ \neg(\text{FctBI2}=1)$

Tab. A5-609: Bay Interlock Equations for Operation with Station Interlocking

A5.2.2.56**Bay type No. 166: Bus sectionalizer bay with circuit breaker, double busbar, direct motor control**

L25.113.M05.2

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q21 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
Q22 (DEV03)	Open	U A05	K A05	
	Close(d)	U A06	K A06	
Q25 (DEV04)	Open	U B01	K B01	
	Close(d)	U B02	K B02	
Q26 (DEV05)	Open	U B03	K B03	
	Close(d)	U B04	K B04	
Motor relay (SIG_1: Signal S012 EXT)		U B06	/	
Shunt winding (CMD_1: Command C011)		/	K B05	
Motor relay (CMD_1: Command C012)		/	K B06	

Tab. A5-610: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q0	Open	$(Q25=0) \ \& \ (Q26=0)$
	Close(d)	$/(Q21=X) \ \& \ /(Q22=X) \ \& \ (Q25=0) \ \& \ (Q26=0) \ \& \ /(FctBl1=I) \ \& \ /(FctBl2=I)$
Q21	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q25=0)$
Q22	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q26=0)$
Q25	Open	$(Q0=I) \ \& \ (Q22=I)$
	Close(d)	$(Q0=0) \ \& \ (Q21=0) \ \& \ (Q22=I) \ \& \ /(FctBl1=I) \ \& \ /(FctBl2=I) \ \& \ (Q25=I)$
Q26	Open	$(Q0=I) \ \& \ (Q21=I)$
	Close(d)	$(Q0=0) \ \& \ (Q22=0) \ \& \ (Q21=I) \ \& \ /(FctBl1=I) \ \& \ /(FctBl2=I) \ \& \ (Q26=I)$

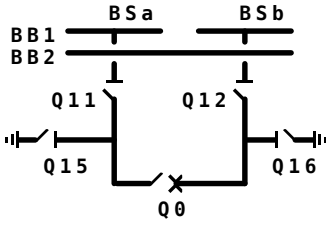
Tab. A5-611: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Open	$(Q25=0) \ \& \ (Q26=0)$
	Close(d)	$\neg(Q21=X) \ \& \ \neg(Q22=X) \ \& \ (Q25=0) \ \& \ (Q26=0) \ \& \ \neg(\text{FctBI1}=1) \ \& \ \neg(\text{FctBI2}=1)$
Q21	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q25=0)$
Q22	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q26=0)$
Q25	Open	$(Q0=1) \ \& \ (Q22=1)$
	Close(d)	$(Q0=0) \ \& \ (Q21=0) \ \& \ (Q22=1) \ \& \ \neg(\text{FctBI1}=1) \ \& \ \neg(\text{FctBI2}=1)$
Q26	Open	$(Q0=1) \ \& \ (Q21=1)$
	Close(d)	$(Q0=0) \ \& \ (Q22=0) \ \& \ (Q21=1) \ \& \ \neg(\text{FctBI1}=1) \ \& \ \neg(\text{FctBI2}=1)$

Tab. A5-612: Bay Interlock Equations for Operation with Station Interlocking

A5.2.2.57**Bay type No. 167: Bus sectionalizer bay with circuit breaker, double busbar**

L25.113.R01.1

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q11 (DEV02)	Open	U A03	/	
	Close(d)	U A04	/	
Q12 (DEV03)	Open	U A05	/	
	Close(d)	U A06	/	
Q15 (DEV04)	Open	U B01	/	
	Close(d)	U B02	/	
Q16 (DEV05)	Open	U B03	/	
	Close(d)	U B04	/	

Tab. A5-613: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q0	Open	$(Q15=0) \& (Q16=0)$
	Close(d)	$/(Q11=X) \& /(Q12=X) \& (Q15=0) \& (Q16=0) \& /(FctBI1=I) \& /(FctBI2=I)$

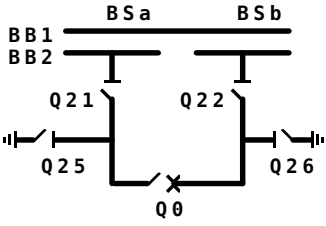
Tab. A5-614: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Open	$(Q15=0) \& (Q16=0)$
	Close(d)	$/(Q11=X) \& /(Q12=X) \& (Q15=0) \& (Q16=0) \& /(FctBI1=I) \& /(FctBI2=I)$

Tab. A5-615: Bay Interlock Equations for Operation with Station Interlocking

A5.2.2.58**Bay type No. 168: Bus sectionalizer bay with circuit breaker, double busbar**

L25.113.R01.2

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q21 (DEV02)	Open	U A03	/	
	Close(d)	U A04	/	
Q22 (DEV03)	Open	U A05	/	
	Close(d)	U A06	/	
Q25 (DEV04)	Open	U B01	/	
	Close(d)	U B02	/	
Q26 (DEV05)	Open	U B03	/	
	Close(d)	U B04	/	

Tab. A5-616: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q0	Open	$(Q25=0) \ \& \ (Q26=0)$
	Close(d)	$/(Q21=X) \ \& \ /(Q22=X) \ \& \ (Q25=0) \ \& \ (Q26=0) \ \& \ /(FctBI1=I) \ \& \ /(FctBI2=I)$

Tab. A5-617: Bay Interlock Equations for Operation without Station Interlocking

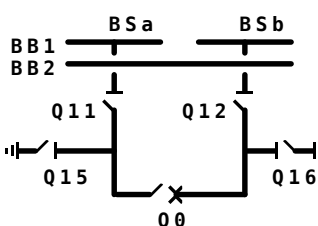
Switchgear unit	Control O/C	Interlock equation
Q0	Open	$(Q25=0) \ \& \ (Q26=0)$
	Close(d)	$/(Q21=X) \ \& \ /(Q22=X) \ \& \ (Q25=0) \ \& \ (Q26=0) \ \& \ /(FctBI1=I) \ \& \ /(FctBI2=I)$

Tab. A5-618: Bay Interlock Equations for Operation with Station Interlocking

A5.2.2.59

Bay type No. 230: Bus sectionalizer bay with circuit breaker, double busbar

L25.113.R03.1

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q11 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
Q12 (DEV03)	Open	U A05	K A05	
	Close(d)	U A06	K A06	
Q15 (DEV04)	Open	U B01	/	
	Close(d)	U B02	/	
Q16 (DEV05)	Open	U B03	/	
	Close(d)	U B04	/	

Tab. A5-619: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q0	Open	$(Q15=0) \ \& \ (Q16=0)$
	Close(d)	$/(Q11=X) \ \& \ /(Q12=X) \ \& \ (Q15=0) \ \& \ (Q16=0) \ \& \ /(FctBI1=I) \ \& \ /(FctBI2=I)$
Q11	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q15=0)$
Q12	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q16=0)$

Tab. A5-620: Bay Interlock Equations for Operation without Station Interlocking

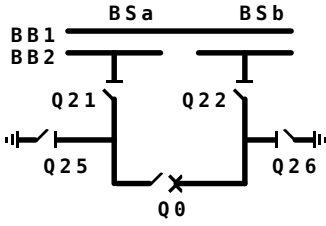
Switchgear unit	Control O/C	Interlock equation
Q0	Open	$(Q15=0) \ \& \ (Q16=0)$
	Close(d)	$\neg(Q11=X) \ \& \ \neg(Q12=X) \ \& \ (Q15=0) \ \& \ (Q16=0) \ \& \ \neg(FctBl1=I) \ \& \ \neg(FctBl2=I)$
Q11	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q15=0)$
Q12	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q16=0)$

Tab. A5-621: Bay Interlock Equations for Operation with Station Interlocking

A5.2.2.60

Bay type No. 231: Bus sectionalizer bay with circuit breaker, double busbar

L25.113.R03.2

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q21 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
Q22 (DEV03)	Open	U A05	K A05	
	Close(d)	U A06	K A06	
Q25 (DEV04)	Open	U B01	/	
	Close(d)	U B02	/	
Q26 (DEV05)	Open	U B03	/	
	Close(d)	U B04	/	

Tab. A5-622: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q0	Open	$(Q25=0) \ \& \ (Q26=0)$
	Close(d)	$/(Q21=X) \ \& \ /(Q22=X) \ \& \ (Q25=0) \ \& \ (Q26=0) \ \& \ /(FctBI1=I) \ \& \ /(FctBI2=I)$
Q21	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q25=0)$
Q22	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q26=0)$

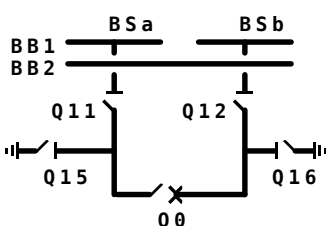
Tab. A5-623: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Open	$(Q25=0) \ \& \ (Q26=0)$
	Close(d)	$\neg(Q21=X) \ \& \ \neg(Q22=X) \ \& \ (Q25=0) \ \& \ (Q26=0) \ \& \ \neg(FctBl1=I) \ \& \ \neg(FctBl2=I)$
Q21	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q25=0)$
Q22	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q26=0)$

Tab. A5-624: Bay Interlock Equations for Operation with Station Interlocking

A5.2.2.61**Bay type No. 169: Bus sectionalizer bay with circuit breaker, double busbar**

L25.113.R05.1

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q11 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
Q12 (DEV03)	Open	U A05	K A05	
	Close(d)	U A06	K A06	
Q15 (DEV04)	Open	U B01	K B01	
	Close(d)	U B02	K B02	
Q16 (DEV05)	Open	U B03	K B03	
	Close(d)	U B04	K B04	

Tab. A5-625: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q0	Open	$(Q15=0) \ \& \ (Q16=0)$
	Close(d)	$/(Q11=X) \ \& \ /(Q12=X) \ \& \ (Q15=0) \ \& \ (Q16=0) \ \& \ /(FctBI1=I) \ \& \ /(FctBI2=I)$
Q11	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q15=0)$
Q12	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q16=0)$
Q15	Open	$(Q0=I) \ \& \ (Q12=I)$
	Close(d)	$(Q0=0) \ \& \ (Q11=0) \ \& \ (Q12=I) \ \& \ /(FctBI1=I) \ \& \ /(FctBI2=I) \ \& \ (Q15=I)$
Q16	Open	$(Q0=I) \ \& \ (Q11=I)$
	Close(d)	$(Q0=0) \ \& \ (Q12=0) \ \& \ (Q11=I) \ \& \ /(FctBI1=I) \ \& \ /(FctBI2=I) \ \& \ (Q16=I)$

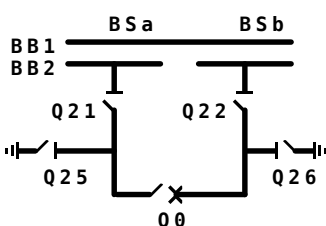
Tab. A5-626: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Open	$(Q15=0) \ \& \ (Q16=0)$
	Close(d)	$\neg(Q11=X) \ \& \ \neg(Q12=X) \ \& \ (Q15=0) \ \& \ (Q16=0) \ \& \ \neg(\text{FctBI1}=1) \ \& \ \neg(\text{FctBI2}=1)$
Q11	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q15=0)$
Q12	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q16=0)$
Q15	Open	$(Q0=1) \ \& \ (Q12=1)$
	Close(d)	$(Q0=0) \ \& \ (Q11=0) \ \& \ (Q12=1) \ \& \ \neg(\text{FctBI1}=1) \ \& \ \neg(\text{FctBI2}=1)$
Q16	Open	$(Q0=1) \ \& \ (Q11=1)$
	Close(d)	$(Q0=0) \ \& \ (Q12=0) \ \& \ (Q11=1) \ \& \ \neg(\text{FctBI1}=1) \ \& \ \neg(\text{FctBI2}=1)$

Tab. A5-627: Bay Interlock Equations for Operation with Station Interlocking

A5.2.2.62**Bay type No. 170: Bus sectionalizer bay with circuit breaker, double busbar**

L25.113.R05.2

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q21 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
Q22 (DEV03)	Open	U A05	K A05	
	Close(d)	U A06	K A06	
Q25 (DEV04)	Open	U B01	K B01	
	Close(d)	U B02	K B02	
Q26 (DEV05)	Open	U B03	K B03	
	Close(d)	U B04	K B04	

Tab. A5-628: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q0	Open	$(Q25=0) \ \& \ (Q26=0)$
	Close(d)	$/(Q21=X) \ \& \ /(Q22=X) \ \& \ (Q25=0) \ \& \ (Q26=0) \ \& \ /(FctBI1=I) \ \& \ /(FctBI2=I)$
Q21	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q25=0)$
Q22	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q26=0)$
Q25	Open	$(Q0=I) \ \& \ (Q22=I)$
	Close(d)	$(Q0=0) \ \& \ (Q21=0) \ \& \ (Q22=I) \ \& \ /(FctBI1=I) \ \& \ /(FctBI2=I) \ \& \ (Q25=I)$
Q26	Open	$(Q0=I) \ \& \ (Q21=I)$
	Close(d)	$(Q0=0) \ \& \ (Q22=0) \ \& \ (Q21=I) \ \& \ /(FctBI1=I) \ \& \ /(FctBI2=I) \ \& \ (Q26=I)$

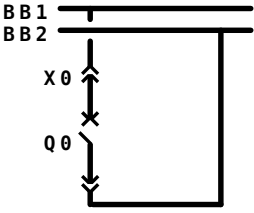
Tab. A5-629: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Open	$(Q25=0) \ \& \ (Q26=0)$
	Close(d)	$\neg(Q21=X) \ \& \ \neg(Q22=X) \ \& \ (Q25=0) \ \& \ (Q26=0) \ \& \ \neg(\text{FctBI1}=I) \ \& \ \neg(\text{FctBI2}=I)$
Q21	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q25=0)$
Q22	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q26=0)$
Q25	Open	$(Q0=I) \ \& \ (Q22=I)$
	Close(d)	$(Q0=0) \ \& \ (Q21=0) \ \& \ (Q22=I) \ \& \ \neg(\text{FctBI1}=I) \ \& \ \neg(\text{FctBI2}=I)$
Q26	Open	$(Q0=I) \ \& \ (Q21=I)$
	Close(d)	$(Q0=0) \ \& \ (Q22=0) \ \& \ (Q21=I) \ \& \ \neg(\text{FctBI1}=I) \ \& \ \neg(\text{FctBI2}=I)$

Tab. A5-630: Bay Interlock Equations for Operation with Station Interlocking

A5.2.3 Bus Coupler Bays

A5.2.3.1 Bay type No. 505: Bus coupler bay with circuit breaker, double busbar Q21.100.R01

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
X0 (DEV02)	Open	U A03	/	
	Close(d)	U A04	/	

Tab. A5-631: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$/(X0=X) \ \& \ /(FctBI1=I) \ \& \ /(FctBI2=I)$

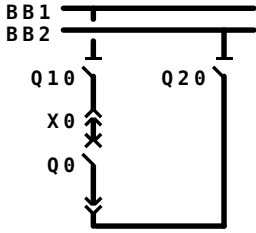
Tab. A5-632: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$/(X0=X) \ \& \ /(FctBI1=I) \ \& \ /(FctBI2=I)$

Tab. A5-633: Bay Interlock Equations for Operation with Station Interlocking

A5.2.3.2**Bay type No. 197: Bus coupler bay with circuit breaker, double busbar, direct motor control**

Q21.101.M04

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q10 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
Q20 (DEV03)	Open	U A05	K A05	
	Close(d)	U A06	K A06	
X0 (DEV04)	Open	U B01	K B01	
	Close(d)	U B02	K B02	
Motor relay (SIG_1: Signal S012 EXT)		U B06	/	
Shunt winding (CMD_1: Command C011)		/	K B05	
Motor relay (CMD_1: Command C012)		/	K B06	

Tab. A5-634: Assignment of Binary Inputs and Output Relays

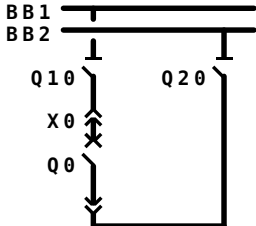
Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q10=X) \ \& \ \neg(Q20=X) \ \& \ \neg(X0=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$
Q10	Open	$(Q0=0)$
	Close(d)	$(Q0=0)$
Q20	Open	$(Q0=0)$
	Close(d)	$(Q0=0)$
X0	Open	$(Q0=0) \ \& \ (Q10=0) \ \& \ (Q20=0)$
	Close(d)	$(Q0=0) \ \& \ (Q10=0) \ \& \ (Q20=0)$

Tab. A5-635: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q10=X) \ \& \ \neg(Q20=X) \ \& \ \neg(X0=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$
Q10	Open	$(Q0=0)$
	Close(d)	$(Q0=0)$
Q20	Open	$(Q0=0)$
	Close(d)	$(Q0=0)$
X0	Open	$(Q0=0) \ \& \ (Q10=0) \ \& \ (Q20=0)$
	Close(d)	$(Q0=0) \ \& \ (Q10=0) \ \& \ (Q20=0)$

Tab. A5-636: Bay Interlock Equations for Operation with Station Interlocking

A5.2.3.3 Bay type No. 198: Bus coupler bay with circuit breaker, double busbar Q21.101.R01

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q10 (DEV02)	Open	U A03	/	
	Close(d)	U A04	/	
Q20 (DEV03)	Open	U A05	/	
	Close(d)	U A06	/	
X0 (DEV04)	Open	U B01	/	
	Close(d)	U B02	/	

Tab. A5-637: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q10=X) \ \& \ \neg(Q20=X) \ \& \ \neg(X0=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$

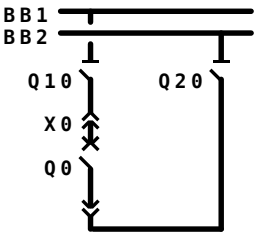
Tab. A5-638: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q10=X) \ \& \ \neg(Q20=X) \ \& \ \neg(X0=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$

Tab. A5-639: Bay Interlock Equations for Operation with Station Interlocking

A5.2.3.4

Bay type No. 199: Bus coupler bay with circuit breaker, double busbar
 Q21.101.R03

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q10 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
Q20 (DEV03)	Open	U A05	K A05	
	Close(d)	U A06	K A06	
X0 (DEV04)	Open	U B01	/	
	Close(d)	U B02	/	

Tab. A5-640: Assignment of Binary Inputs and Output Relays

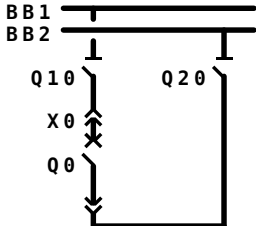
Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q10=X) \ \& \ \neg(Q20=X) \ \& \ \neg(X0=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$
Q10	Open	$(Q0=0)$
	Close(d)	$(Q0=0)$
Q20	Open	$(Q0=0)$
	Close(d)	$(Q0=0)$

Tab. A5-641: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q10=X) \ \& \ \neg(Q20=X) \ \& \ \neg(X0=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$
Q10	Open	$(Q0=0)$
	Close(d)	$(Q0=0)$
Q20	Open	$(Q0=0)$
	Close(d)	$(Q0=0)$

Tab. A5-642: Bay Interlock Equations for Operation with Station Interlocking

A5.2.3.5**Bay type No. 200: Bus coupler bay with circuit breaker, double busbar**
Q21.101.R04

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q10 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
Q20 (DEV03)	Open	U A05	K A05	
	Close(d)	U A06	K A06	
X0 (DEV04)	Open	U B01	K B01	
	Close(d)	U B02	K B02	

Tab. A5-643: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q10=X) \ \& \ \neg(Q20=X) \ \& \ \neg(X0=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$
Q10	Open	$(Q0=0)$
	Close(d)	$(Q0=0)$
Q20	Open	$(Q0=0)$
	Close(d)	$(Q0=0)$
X0	Open	$(Q0=0) \ \& \ (Q10=0) \ \& \ (Q20=0)$
	Close(d)	$(Q0=0) \ \& \ (Q10=0) \ \& \ (Q20=0)$

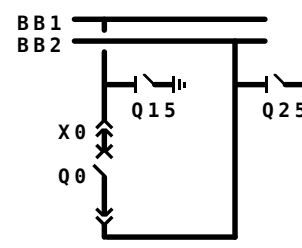
Tab. A5-644: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q10=X) \ \& \ \neg(Q20=X) \ \& \ \neg(X0=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$
Q10	Open	$(Q0=0)$
	Close(d)	$(Q0=0)$
Q20	Open	$(Q0=0)$
	Close(d)	$(Q0=0)$
X0	Open	$(Q0=0) \ \& \ (Q10=0) \ \& \ (Q20=0)$
	Close(d)	$(Q0=0) \ \& \ (Q10=0) \ \& \ (Q20=0)$

Tab. A5-645: Bay Interlock Equations for Operation with Station Interlocking

A5.2.3.6**Bay type No. 556: Bus coupler bay with circuit breaker, double busbar, direct motor control**

Q21.112.M04

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q15 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
Q25 (DEV03)	Open	U A05	K A05	
	Close(d)	U A06	K A06	
X0 (DEV04)	Open	U B01	K B01	
	Close(d)	U B02	K B02	
Motor relay (SIG_1: Signal S012 EXT)		U B06	/	
Shunt winding (CMD_1: Command C011)		/	K B05	
Motor relay (CMD_1: Command C012)		/	K B06	

Tab. A5-646: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(X0=X) \& (Q15=0) \& (Q25=0) \& \neg(FctBI1=I) \& \neg(FctBI2=I)$
Q15	Close(d)	$(Q15=I)$
Q25	Close(d)	$(Q25=I)$
X0	Open	$(Q0=0)$
	Close(d)	$(Q0=0)$

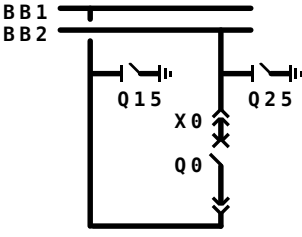
Tab. A5-647: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(X0=X) \& (Q15=0) \& (Q25=0) \& \neg(FctBI1=I) \& \neg(FctBI2=I)$
X0	Open	$(Q0=0)$
	Close(d)	$(Q0=0)$

Tab. A5-648: Bay Interlock Equations for Operation with Station Interlocking

A5.2.3.7**Bay type No. 565: Bus coupler bay with circuit breaker, double busbar, direct motor control**

Q21.112.M04.2

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q15 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
Q25 (DEV03)	Open	U A05	K A05	
	Close(d)	U A06	K A06	
X0 (DEV04)	Open	U B01	K B01	
	Close(d)	U B02	K B02	
Motor relay (SIG_1: Signal S012 EXT)		U B06	/	
Shunt winding (CMD_1: Command C011)		/	K B05	
Motor relay (CMD_1: Command C012)		/	K B06	

Tab. A5-649: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(X0=X) \ \& \ (Q15=0) \ \& \ (Q25=0) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$
Q15	Close(d)	$(Q15=I)$
Q25	Close(d)	$(Q25=I)$
X0	Open	$(Q0=0)$
	Close(d)	$(Q0=0)$

Tab. A5-650: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(X0=X) \ \& \ (Q15=0) \ \& \ (Q25=0) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$
X0	Open	$(Q0=0)$
	Close(d)	$(Q0=0)$

Tab. A5-651: Bay Interlock Equations for Operation with Station Interlocking

A5.2.3.8 Bay type No. 201: Bus coupler bay with circuit breaker, double busbar Q21.117.R01

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q10 (DEV02)	Open	U A03	/	
	Close(d)	U A04	/	
Q20 (DEV03)	Open	U A05	/	
	Close(d)	U A06	/	
Q11 (DEV04)	Open	U B01	/	
	Close(d)	U B02	/	
Q21 (DEV05)	Open	U B03	/	
	Close(d)	U B04	/	
X0 (DEV06)	Open	U B05	/	
	Close(d)	U B06	/	

Tab. A5-652: Assignment of Binary Inputs and Output Relays

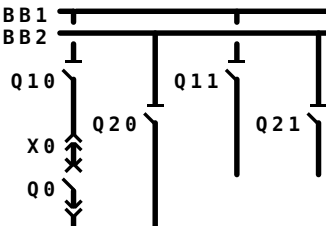
Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q10=X) \wedge \neg(Q20=X) \wedge \neg(X0=X) \wedge \neg(FctBI1=I) \wedge \neg(FctBI2=I)$

Tab. A5-653: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q10=X) \wedge \neg(Q20=X) \wedge \neg(X0=X) \wedge \neg(FctBI1=I) \wedge \neg(FctBI2=I)$

Tab. A5-654: Bay Interlock Equations for Operation with Station Interlocking

A5.2.3.9**Bay type No. 202: Bus coupler bay with circuit breaker, double busbar**
Q21.117.R05

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q10 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
Q20 (DEV03)	Open	U A05	K A05	
	Close(d)	U A06	K A06	
Q11 (DEV04)	Open	U B01	K B01	
	Close(d)	U B02	K B02	
Q21 (DEV05)	Open	U B03	K B03	
	Close(d)	U B04	K B04	
X0 (DEV06)	Open	U B05	/	
	Close(d)	U B06	/	

Tab. A5-655: Assignment of Binary Inputs and Output Relays

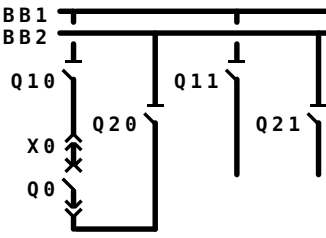
Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q10=X) \ \& \ \neg(Q20=X) \ \& \ \neg(X0=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$
Q10	Open	$(Q0=0)$
	Close(d)	$(Q0=0)$
Q20	Open	$(Q0=0)$
	Close(d)	$(Q0=0)$

Tab. A5-656: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q10=X) \ \& \ \neg(Q20=X) \ \& \ \neg(X0=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$
Q10	Open	$(Q0=0)$
	Close(d)	$(Q0=0)$
Q20	Open	$(Q0=0)$
	Close(d)	$(Q0=0)$

Tab. A5-657: Bay Interlock Equations for Operation with Station Interlocking

A5.2.3.10**Bay type No. 203: Bus coupler bay with circuit breaker, double busbar**
Q21.117.R06

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q10 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
Q20 (DEV03)	Open	U A05	K A05	
	Close(d)	U A06	K A06	
Q11 (DEV04)	Open	U B01	K B01	
	Close(d)	U B02	K B02	
Q21 (DEV05)	Open	U B03	K B03	
	Close(d)	U B04	K B04	
X0 (DEV06)	Open	U B05	K B05	
	Close(d)	U B06	K B06	

Tab. A5-658: Assignment of Binary Inputs and Output Relays

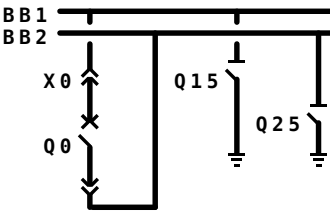
Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q10=X) \ \& \ \neg(Q20=X) \ \& \ \neg(X0=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$
Q10	Open	$(Q0=0)$
	Close(d)	$(Q0=0)$
Q20	Open	$(Q0=0)$
	Close(d)	$(Q0=0)$
X0	Open	$(Q0=0) \ \& \ (Q10=0) \ \& \ (Q20=0)$
	Close(d)	$(Q0=0) \ \& \ (Q10=0) \ \& \ (Q20=0)$

Tab. A5-659: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q10=X) \ \& \ \neg(Q20=X) \ \& \ \neg(X0=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$
Q10	Open	$(Q0=0)$
	Close(d)	$(Q0=0)$
Q20	Open	$(Q0=0)$
	Close(d)	$(Q0=0)$
X0	Open	$(Q0=0) \ \& \ (Q10=0) \ \& \ (Q20=0)$
	Close(d)	$(Q0=0) \ \& \ (Q10=0) \ \& \ (Q20=0)$

Tab. A5-660: Bay Interlock Equations for Operation with Station Interlocking

A5.2.3.11**Bay type No. 245: Bus coupler bay with circuit breaker, double busbar**
Q21.132.R01

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
X0 (DEV02)	Open	U A03	/	
	Close(d)	U A04	/	
Q15 (DEV03)	Open	U A05	/	
	Close(d)	U A06	/	
Q25 (DEV04)	Open	U B01	/	
	Close(d)	U B02	/	

Tab. A5-661: Assignment of Binary Inputs and Output Relays

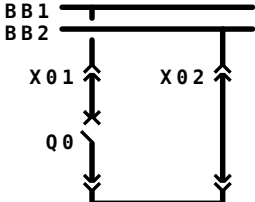
Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(X0=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$

Tab. A5-662: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(X0=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$

Tab. A5-663: Bay Interlock Equations for Operation with Station Interlocking

A5.2.3.12**Bay type No. 563: Bus coupler bay with circuit breaker, double busbar**
Q21.133.R01

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
X01 (DEV02)	Open	U A03	/	
	Close(d)	U A04	/	
X02 (DEV03)	Open	U A05	/	
	Close(d)	U A06	/	

Tab. A5-664: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(X01=X) \ \& \ \neg(X02=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$

Tab. A5-665: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(X01=X) \ \& \ \neg(X02=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$

Tab. A5-666: Bay Interlock Equations for Operation with Station Interlocking

A5.2.3.13**Bay type No. 204: Bus coupler bay with circuit breaker, double busbar, direct motor control**

Q23.101.M03

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q10 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
Q20 (DEV03)	Open	U A05	K A05	
	Close(d)	U A06	K A06	
Motor relay (SIG_1: Signal S012 EXT)		U B06	/	
Shunt winding (CMD_1: Command C011)		/	K B05	
Motor relay (CMD_1: Command C012)		/	K B06	

Tab. A5-667: Assignment of Binary Inputs and Output Relays

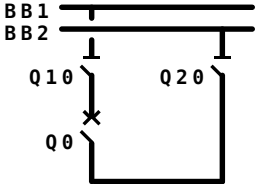
Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q10=X) \ \& \ \neg(Q20=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$
Q10	Open	$(Q0=0)$
	Close(d)	$(Q0=0)$
Q20	Open	$(Q0=0)$
	Close(d)	$(Q0=0)$

Tab. A5-668: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q10=X) \ \& \ \neg(Q20=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$
Q10	Open	$(Q0=0)$
	Close(d)	$(Q0=0)$
Q20	Open	$(Q0=0)$
	Close(d)	$(Q0=0)$

Tab. A5-669: Bay Interlock Equations for Operation with Station Interlocking

A5.2.3.14 Bay type No. 205: Bus coupler bay with circuit breaker, double busbar
Q23.101.R01

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q10 (DEV02)	Open	U A03	/	
	Close(d)	U A04	/	
Q20 (DEV03)	Open	U A05	/	
	Close(d)	U A06	/	

Tab. A5-670: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$/(Q10=X) \ \& \ /(Q20=X) \ \& \ /(FctBI1=I) \ \& \ /(FctBI2=I)$

Tab. A5-671: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$/(Q10=X) \ \& \ /(Q20=X) \ \& \ /(FctBI1=I) \ \& \ /(FctBI2=I)$

Tab. A5-672: Bay Interlock Equations for Operation with Station Interlocking

A5.2.3.15**Bay type No. 206: Bus coupler bay with circuit breaker, double busbar**
Q23.101.R03

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q10 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
Q20 (DEV03)	Open	U A05	K A05	
	Close(d)	U A06	K A06	

Tab. A5-673: Assignment of Binary Inputs and Output Relays

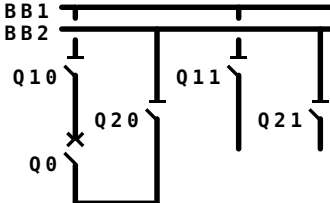
Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q10=X) \ \& \ \neg(Q20=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$
Q10	Open	$(Q0=0)$
	Close(d)	$(Q0=0)$
Q20	Open	$(Q0=0)$
	Close(d)	$(Q0=0)$

Tab. A5-674: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q10=X) \ \& \ \neg(Q20=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$
Q10	Open	$(Q0=0)$
	Close(d)	$(Q0=0)$
Q20	Open	$(Q0=0)$
	Close(d)	$(Q0=0)$

Tab. A5-675: Bay Interlock Equations for Operation with Station Interlocking

A5.2.3.16 Bay type No. 207: Bus coupler bay with circuit breaker, double busbar
Q23.117.R01

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q10 (DEV02)	Open	U A03	/	
	Close(d)	U A04	/	
Q20 (DEV03)	Open	U A05	/	
	Close(d)	U A06	/	
Q11 (DEV04)	Open	U B01	/	
	Close(d)	U B02	/	
Q21 (DEV05)	Open	U B03	/	
	Close(d)	U B04	/	

Tab. A5-676: Assignment of Binary Inputs and Output Relays

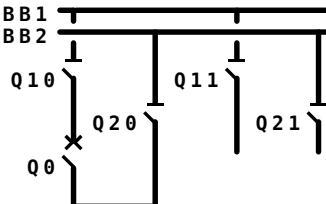
Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q10=X) \ \& \ \neg(Q20=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$

Tab. A5-677: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q10=X) \ \& \ \neg(Q20=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$

Tab. A5-678: Bay Interlock Equations for Operation with Station Interlocking

A5.2.3.17**Bay type No. 208: Bus coupler bay with circuit breaker, double busbar**
Q23.117.R05

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q10 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
Q20 (DEV03)	Open	U A05	K A05	
	Close(d)	U A06	K A06	
Q11 (DEV04)	Open	U B01	K B01	
	Close(d)	U B02	K B02	
Q21 (DEV05)	Open	U B03	K B03	
	Close(d)	U B04	K B04	

Tab. A5-679: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q10=X) \ \& \ \neg(Q20=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$
Q10	Open	$(Q0=0)$
	Close(d)	$(Q0=0)$
Q20	Open	$(Q0=0)$
	Close(d)	$(Q0=0)$

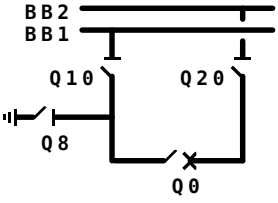
Tab. A5-680: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q10=X) \ \& \ \neg(Q20=X) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$
Q10	Open	$(Q0=0)$
	Close(d)	$(Q0=0)$
Q20	Open	$(Q0=0)$
	Close(d)	$(Q0=0)$

Tab. A5-681: Bay Interlock Equations for Operation with Station Interlocking

A5.2.3.18**Bay type No. 236: Bus coupler bay with circuit breaker, double busbar, direct motor control**

Q25.105.M03

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q10 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
Q20 (DEV03)	Open	U A05	K A05	
	Close(d)	U A06	K A06	
Q8 (DEV04)	Open	U B01	/	
	Close(d)	U B02	/	
Motor relay (SIG_1: Signal S012 EXT)		U B06	/	
Shunt winding (CMD_1: Command C011)		/	K B05	
Motor relay (CMD_1: Command C012)		/	K B06	

Tab. A5-682: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q0	Open	$(Q8=0)$
	Close(d)	$\neg(Q10=X) \ \& \ \neg(Q20=X) \ \& \ (Q8=0) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$
Q10	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q8=0)$
Q20	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q8=0)$

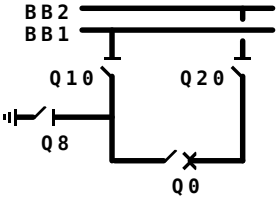
Tab. A5-683: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Open	$(Q8=0)$
	Close(d)	$/(Q10=X) \ \& \ /(Q20=X) \ \& \ (Q8=0) \ \& \ /(FctBl1=I) \ \& \ /(FctBl2=I)$
Q10	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q8=0)$
Q20	Open	$(Q0=0) \ \& \ (Q8=0)$
	Close(d)	$(Q0=0) \ \& \ (Q8=0)$

Tab. A5-684: Bay Interlock Equations for Operation with Station Interlocking

A5.2.3.19**Bay type No. 209: Bus coupler bay with circuit breaker, double busbar, direct motor control**

Q25.105.M04

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q10 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
Q20 (DEV03)	Open	U A05	K A05	
	Close(d)	U A06	K A06	
Q8 (DEV04)	Open	U B01	K B01	
	Close(d)	U B02	K B02	
Motor relay (SIG_1: Signal S012 EXT)		U B06	/	
Shunt winding (CMD_1: Command C011)		/	K B05	
Motor relay (CMD_1: Command C012)		/	K B06	

Tab. A5-685: Assignment of Binary Inputs and Output Relays

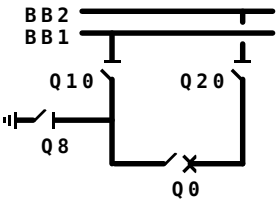
Switchgear unit	Control O/C	Interlock equation
Q0	Open	$(Q8=0)$
	Close(d)	$\neg(Q10=X) \ \& \ \neg(Q20=X) \ \& \ (Q8=0) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$
Q10	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q8=0)$
Q20	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q8=0)$
Q8	Open	$(Q0=I) \ \& \ (Q20=I)$
	Close(d)	$(Q0=0) \ \& \ (Q10=0) \ \& \ (Q20=I) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I) \ \& \ (Q8=I)$

Tab. A5-686: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Open	$(Q8=0)$
	Close(d)	$\neg(Q10=X) \ \& \ \neg(Q20=X) \ \& \ (Q8=0) \ \& \ \neg(\text{FctBI1}=I) \ \& \ \neg(\text{FctBI2}=I)$
Q10	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q8=0)$
Q20	Open	$(Q0=0) \ \& \ (Q8=0)$
	Close(d)	$(Q0=0) \ \& \ (Q8=0)$
Q8	Open	$(Q0=I) \ \& \ (Q20=I)$
	Close(d)	$(Q0=0) \ \& \ (Q10=0) \ \& \ (Q20=I) \ \& \ \neg(\text{FctBI1}=I) \ \& \ \neg(\text{FctBI2}=I)$

Tab. A5-687: Bay Interlock Equations for Operation with Station Interlocking

A5.2.3.20**Bay type No. 210: Bus coupler bay with circuit breaker, double busbar**
Q25.105.R01

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q10 (DEV02)	Open	U A03	/	
	Close(d)	U A04	/	
Q20 (DEV03)	Open	U A05	/	
	Close(d)	U A06	/	
Q8 (DEV04)	Open	U B01	/	
	Close(d)	U B02	/	

Tab. A5-688: Assignment of Binary Inputs and Output Relays

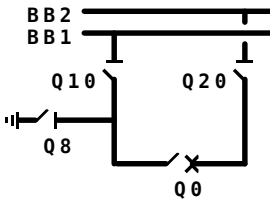
Switchgear unit	Control O/C	Interlock equation
Q0	Open	$(Q8=0)$
	Close(d)	$\neg(Q10=X) \wedge \neg(Q20=X) \wedge (Q8=0) \wedge \neg(FctBI1=I) \wedge \neg(FctBI2=I)$

Tab. A5-689: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Open	$(Q8=0)$
	Close(d)	$\neg(Q10=X) \wedge \neg(Q20=X) \wedge (Q8=0) \wedge \neg(FctBI1=I) \wedge \neg(FctBI2=I)$

Tab. A5-690: Bay Interlock Equations for Operation with Station Interlocking

A5.2.3.21**Bay type No. 237: Bus coupler bay with circuit breaker, double busbar**
Q25.105.R03

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q10 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
Q20 (DEV03)	Open	U A05	K A05	
	Close(d)	U A06	K A06	
Q8 (DEV04)	Open	U B01	/	
	Close(d)	U B02	/	

Tab. A5-691: Assignment of Binary Inputs and Output Relays

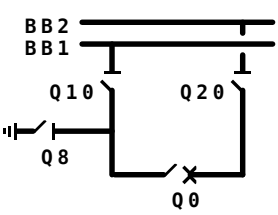
Switchgear unit	Control O/C	Interlock equation
Q0	Open	$(Q8=0)$
	Close(d)	$\neg(Q10=X) \ \& \ \neg(Q20=X) \ \& \ (Q8=0) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$
Q10	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q8=0)$
Q20	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q8=0)$

Tab. A5-692: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Open	$(Q8=0)$
	Close(d)	$\neg(Q10=X) \ \& \ \neg(Q20=X) \ \& \ (Q8=0) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$
Q10	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q8=0)$
Q20	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q8=0)$

Tab. A5-693: Bay Interlock Equations for Operation with Station Interlocking

A5.2.3.22 Bay type No. 211: Bus coupler bay with circuit breaker, double busbar
Q25.105.R04

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q10 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
Q20 (DEV03)	Open	U A05	K A05	
	Close(d)	U A06	K A06	
Q8 (DEV04)	Open	U B01	K B01	
	Close(d)	U B02	K B02	

Tab. A5-694: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q0	Open	$(Q8=0)$
	Close(d)	$/(Q10=X) \ \& \ /(Q20=X) \ \& \ (Q8=0) \ \& \ /(FctBI1=I) \ \& \ /(FctBI2=I)$
Q10	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q8=0)$
Q20	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q8=0)$
Q8	Open	$(Q0=I) \ \& \ (Q20=I)$
	Close(d)	$(Q0=0) \ \& \ (Q10=0) \ \& \ (Q20=I) \ \& \ /(FctBI1=I) \ \& \ /(FctBI2=I) \ \& \ (Q8=I)$

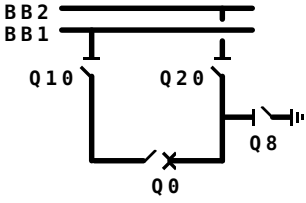
Tab. A5-695: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Open	$(Q8=0)$
	Close(d)	$/(Q10=X) \ \& \ /(Q20=X) \ \& \ (Q8=0) \ \& \ /(FctBI1=I) \ \& \ /(FctBI2=I)$
Q10	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q8=0)$
Q20	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q8=0)$
Q8	Open	$(Q0=I) \ \& \ (Q20=I)$
	Close(d)	$(Q0=0) \ \& \ (Q10=0) \ \& \ (Q20=I) \ \& \ /(FctBI1=I) \ \& \ /(FctBI2=I)$

Tab. A5-696: Bay Interlock Equations for Operation with Station Interlocking

A5.2.3.23**Bay type No. 238: Bus coupler bay with circuit breaker, double busbar, direct motor control**

Q25.109.M03

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q10 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
Q20 (DEV03)	Open	U A05	K A05	
	Close(d)	U A06	K A06	
Q8 (DEV04)	Open	U B01	/	
	Close(d)	U B02	/	
Motor relay (SIG_1: Signal S012 EXT)		U B06	/	
Shunt winding (CMD_1: Command C011)		/	K B05	
Motor relay (CMD_1: Command C012)		/	K B06	

Tab. A5-697: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q0	Open	$(Q8=0)$
	Close(d)	$\neg(Q10=X) \ \& \ \neg(Q20=X) \ \& \ (Q8=0) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$
Q10	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q8=0)$
Q20	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q8=0)$

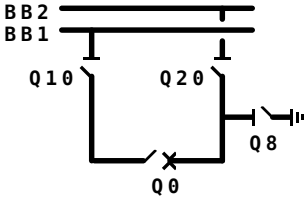
Tab. A5-698: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Open	$(Q8=0)$
	Close(d)	$/(Q10=X) \ \& \ /(Q20=X) \ \& \ (Q8=0) \ \& \ /(FctBl1=I) \ \& \ /(FctBl2=I)$
Q10	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q8=0)$
Q20	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q8=0)$

Tab. A5-699: Bay Interlock Equations for Operation with Station Interlocking

A5.2.3.24**Bay type No. 212: Bus coupler bay with circuit breaker, double busbar, direct motor control**

Q25.109.M04

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q10 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
Q20 (DEV03)	Open	U A05	K A05	
	Close(d)	U A06	K A06	
Q8 (DEV04)	Open	U B01	K B01	
	Close(d)	U B02	K B02	
Motor relay (SIG_1: Signal S012 EXT)		U B06	/	
Shunt winding (CMD_1: Command C011)		/	K B05	
Motor relay (CMD_1: Command C012)		/	K B06	

Tab. A5-700: Assignment of Binary Inputs and Output Relays

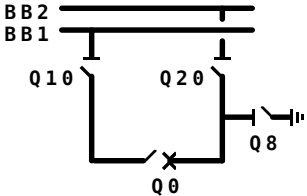
Switchgear unit	Control O/C	Interlock equation
Q0	Open	$(Q8=0)$
	Close(d)	$\neg(Q10=X) \ \& \ \neg(Q20=X) \ \& \ (Q8=0) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I)$
Q10	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q8=0)$
Q20	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q8=0)$
Q8	Open	$(Q0=I) \ \& \ (Q10=I)$
	Close(d)	$(Q0=0) \ \& \ (Q20=0) \ \& \ (Q10=I) \ \& \ \neg(FctBI1=I) \ \& \ \neg(FctBI2=I) \ \& \ (Q8=I)$

Tab. A5-701: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Open	$(Q8=0)$
	Close(d)	$/(Q10=X) \ \& \ /(Q20=X) \ \& \ (Q8=0) \ \& \ /(FctBI1=I) \ \& \ /(FctBI2=I)$
Q10	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q8=0)$
Q20	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q8=0)$
Q8	Open	$(Q0=I) \ \& \ (Q10=I)$
	Close(d)	$(Q0=0) \ \& \ (Q20=0) \ \& \ (Q10=I) \ \& \ /(FctBI1=I) \ \& \ /(FctBI2=I)$

Tab. A5-702: Bay Interlock Equations for Operation with Station Interlocking

A5.2.3.25 Bay type No. 213: Bus coupler bay with circuit breaker, double busbar
Q25.109.R01

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q10 (DEV02)	Open	U A03	/	
	Close(d)	U A04	/	
Q20 (DEV03)	Open	U A05	/	
	Close(d)	U A06	/	
Q8 (DEV04)	Open	U B01	/	
	Close(d)	U B02	/	

Tab. A5-703: Assignment of Binary Inputs and Output Relays

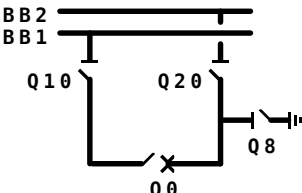
Switchgear unit	Control O/C	Interlock equation
Q0	Open	$(Q8=0)$
	Close(d)	$/(Q10=X) \ \& \ /(Q20=X) \ \& \ (Q8=0) \ \& \ /(FctBI1=I) \ \& \ /(FctBI2=I)$

Tab. A5-704: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Open	$(Q8=0)$
	Close(d)	$/(Q10=X) \ \& \ /(Q20=X) \ \& \ (Q8=0) \ \& \ /(FctBI1=I) \ \& \ /(FctBI2=I)$

Tab. A5-705: Bay Interlock Equations for Operation with Station Interlocking

A5.2.3.26**Bay type No. 239: Bus coupler bay with circuit breaker, double busbar**
Q25.109.R03

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q10 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
Q20 (DEV03)	Open	U A05	K A05	
	Close(d)	U A06	K A06	
Q8 (DEV04)	Open	U B01	/	
	Close(d)	U B02	/	

Tab. A5-706: Assignment of Binary Inputs and Output Relays

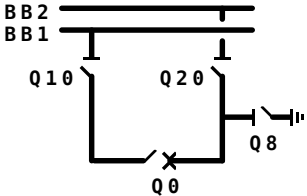
Switchgear unit	Control O/C	Interlock equation
Q0	Open	$(Q8=0)$
	Close(d)	$\neg(Q10=X) \ \& \ \neg(Q20=X) \ \& \ (Q8=0) \ \& \ \neg(FctBl1=I) \ \& \ \neg(FctBl2=I)$
Q10	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q8=0)$
Q20	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q8=0)$

Tab. A5-707: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Open	$(Q8=0)$
	Close(d)	$\neg(Q10=X) \ \& \ \neg(Q20=X) \ \& \ (Q8=0) \ \& \ \neg(FctBl1=I) \ \& \ \neg(FctBl2=I)$
Q10	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q8=0)$
Q20	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q8=0)$

Tab. A5-708: Bay Interlock Equations for Operation with Station Interlocking

A5.2.3.27**Bay type No. 214: Bus coupler bay with circuit breaker, double busbar**
Q25.109.R04

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q10 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
Q20 (DEV03)	Open	U A05	K A05	
	Close(d)	U A06	K A06	
Q8 (DEV04)	Open	U B01	K B01	
	Close(d)	U B02	K B02	

Tab. A5-709: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q0	Open	$(Q8=0)$
	Close(d)	$/(Q10=X) \ \& \ /(Q20=X) \ \& \ (Q8=0) \ \& \ /(FctBI1=I) \ \& \ /(FctBI2=I)$
Q10	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q8=0)$
Q20	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q8=0)$
Q8	Open	$(Q0=I) \ \& \ (Q10=I)$
	Close(d)	$(Q0=0) \ \& \ (Q20=0) \ \& \ (Q10=I) \ \& \ /(FctBI1=I) \ \& \ /(FctBI2=I) \ \& \ (Q8=I)$

Tab. A5-710: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Open	$(Q8=0)$
	Close(d)	$/(Q10=X) \ \& \ /(Q20=X) \ \& \ (Q8=0) \ \& \ /(FctBI1=I) \ \& \ /(FctBI2=I)$
Q10	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q8=0)$
Q20	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q8=0)$
Q8	Open	$(Q0=I) \ \& \ (Q10=I)$
	Close(d)	$(Q0=0) \ \& \ (Q20=0) \ \& \ (Q10=I) \ \& \ /(FctBI1=I) \ \& \ /(FctBI2=I)$

Tab. A5-711: Bay Interlock Equations for Operation with Station Interlocking

A5.2.3.28**Bay type No. 240: Bus coupler bay with circuit breaker, double busbar, direct motor control**

Q25.113.M03

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q10 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
Q20 (DEV03)	Open	U A05	K A05	
	Close(d)	U A06	K A06	
Q15 (DEV04)	Open	U B01	/	
	Close(d)	U B02	/	
Q25 (DEV05)	Open	U B03	/	
	Close(d)	U B04	/	
Motor relay (SIG_1: Signal S012 EXT)		U B06	/	
Shunt winding (CMD_1: Command C011)		/	K B05	
Motor relay (CMD_1: Command C012)		/	K B06	

Tab. A5-712: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q0	Open	$(Q15=0) \ \& \ (Q25=0)$
	Close(d)	$/(Q10=X) \ \& \ /(Q20=X) \ \& \ (Q15=0) \ \& \ (Q25=0) \ \& \ /(FctBI1=I) \ \& \ /(FctBI2=I)$
Q10	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q15=0)$
Q20	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q25=0)$

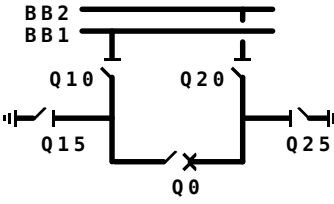
Tab. A5-713: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Open	$(Q15=0) \ \& \ (Q25=0)$
	Close(d)	$/(Q10=X) \ \& \ /(Q20=X) \ \& \ (Q15=0) \ \& \ (Q25=0) \ \& \ /(FctBI1=I) \ \& \ /(FctBI2=I)$
Q10	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q15=0)$
Q20	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q25=0)$

Tab. A5-714: Bay Interlock Equations for Operation with Station Interlocking

A5.2.3.29**Bay type No. 215: Bus coupler bay with circuit breaker, double busbar, direct motor control**

Q25.113.M05

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q10 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
Q20 (DEV03)	Open	U A05	K A05	
	Close(d)	U A06	K A06	
Q15 (DEV04)	Open	U B01	K B01	
	Close(d)	U B02	K B02	
Q25 (DEV05)	Open	U B03	K B03	
	Close(d)	U B04	K B04	
Motor relay (SIG_1: Signal S012 EXT)		U B06	/	
Shunt winding (CMD_1: Command C011)		/	K B05	
Motor relay (CMD_1: Command C012)		/	K B06	

Tab. A5-715: Assignment of Binary Inputs and Output Relays

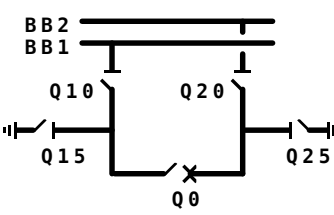
Switchgear unit	Control O/C	Interlock equation
Q0	Open	$(Q15=0) \ \& \ (Q25=0)$
	Close(d)	$/(Q10=X) \ \& \ /(Q20=X) \ \& \ (Q15=0) \ \& \ (Q25=0) \ \& \ /(FctBI1=I) \ \& \ /(FctBI2=I)$
Q10	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q15=0)$
Q15	Open	$(Q0=I) \ \& \ (Q20=I)$
	Close(d)	$(Q0=0) \ \& \ (Q10=0) \ \& \ (Q20=I) \ \& \ /(FctBI1=I) \ \& \ /(FctBI2=I) \ \& \ (Q15=I)$
Q20	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q25=0)$
Q25	Open	$(Q0=I) \ \& \ (Q10=I)$
	Close(d)	$(Q0=0) \ \& \ (Q20=0) \ \& \ (Q10=I) \ \& \ /(FctBI1=I) \ \& \ /(FctBI2=I) \ \& \ (Q25=I)$

Tab. A5-716: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Open	$(Q15=0) \& (Q25=0)$
	Close(d)	$/(Q10=X) \& /(Q20=X) \& (Q15=0) \& (Q25=0) \& /(FctBI1=I) \& /(FctBI2=I)$
Q10	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \& (Q15=0)$
Q15	Open	$(Q0=I) \& (Q20=I)$
	Close(d)	$(Q0=0) \& (Q10=0) \& (Q20=I) \& /(FctBI1=I) \& /(FctBI2=I)$
Q20	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \& (Q25=0)$
Q25	Open	$(Q0=I) \& (Q10=I)$
	Close(d)	$(Q0=0) \& (Q20=0) \& (Q10=I) \& /(FctBI1=I) \& /(FctBI2=I)$

Tab. A5-717: Bay Interlock Equations for Operation with Station Interlocking

A5.2.3.30**Bay type No. 216: Bus coupler bay with circuit breaker, double busbar**
Q25.113.R01

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q10 (DEV02)	Open	U A03	/	
	Close(d)	U A04	/	
Q20 (DEV03)	Open	U A05	/	
	Close(d)	U A06	/	
Q15 (DEV04)	Open	U B01	/	
	Close(d)	U B02	/	
Q25 (DEV05)	Open	U B03	/	
	Close(d)	U B04	/	

Tab. A5-718: Assignment of Binary Inputs and Output Relays

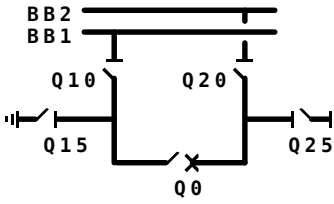
Switchgear unit	Control O/C	Interlock equation
Q0	Open	$(Q15=0) \ \& \ (Q25=0)$
	Close(d)	$\neg(Q10=X) \ \& \ \neg(Q20=X) \ \& \ (Q15=0) \ \& \ (Q25=0) \ \& \ \neg(\text{FctBI1}=I) \ \& \ \neg(\text{FctBI2}=I)$

Tab. A5-719: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Open	$(Q15=0) \ \& \ (Q25=0)$
	Close(d)	$\neg(Q10=X) \ \& \ \neg(Q20=X) \ \& \ (Q15=0) \ \& \ (Q25=0) \ \& \ \neg(\text{FctBI1}=I) \ \& \ \neg(\text{FctBI2}=I)$

Tab. A5-720: Bay Interlock Equations for Operation with Station Interlocking

A5.2.3.31**Bay type No. 241: Bus coupler bay with circuit breaker, double busbar**
Q25.113.R03

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q10 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
Q20 (DEV03)	Open	U A05	K A05	
	Close(d)	U A06	K A06	
Q15 (DEV04)	Open	U B01	/	
	Close(d)	U B02	/	
Q25 (DEV05)	Open	U B03	/	
	Close(d)	U B04	/	

Tab. A5-721: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q0	Open	$(Q15=0) \ \& \ (Q25=0)$
	Close(d)	$/(Q10=X) \ \& \ /(Q20=X) \ \& \ (Q15=0) \ \& \ (Q25=0) \ \& \ /(FctBI1=I) \ \& \ /(FctBI2=I)$
Q10	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q15=0)$
Q20	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q25=0)$

Tab. A5-722: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q0	Open	$(Q15=0) \ \& \ (Q25=0)$
	Close(d)	$\neg(Q10=X) \ \& \ \neg(Q20=X) \ \& \ (Q15=0) \ \& \ (Q25=0) \ \& \ \neg(FctBl1=l) \ \& \ \neg(FctBl2=l)$
Q10	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q15=0)$
Q20	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q25=0)$

Tab. A5-723: Bay Interlock Equations for Operation with Station Interlocking

A5.2.3.32**Bay type No. 217: Bus coupler bay with circuit breaker, double busbar**
Q25.113.R05

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q10 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
Q20 (DEV03)	Open	U A05	K A05	
	Close(d)	U A06	K A06	
Q15 (DEV04)	Open	U B01	K B01	
	Close(d)	U B02	K B02	
Q25 (DEV05)	Open	U B03	K B03	
	Close(d)	U B04	K B04	

Tab. A5-724: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q0	Open	$(Q15=0) \ \& \ (Q25=0)$
	Close(d)	$\neg(Q10=X) \ \& \ \neg(Q20=X) \ \& \ (Q15=0) \ \& \ (Q25=0) \ \& \ \neg(\text{FctBI1}=1) \ \& \ \neg(\text{FctBI2}=1)$
Q10	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q15=0)$
Q15	Open	$(Q0=1) \ \& \ (Q20=1)$
	Close(d)	$(Q0=0) \ \& \ (Q10=0) \ \& \ (Q20=1) \ \& \ \neg(\text{FctBI1}=1) \ \& \ \neg(\text{FctBI2}=1) \ \& \ (Q15=1)$
Q20	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q25=0)$
Q25	Open	$(Q0=1) \ \& \ (Q10=1)$
	Close(d)	$(Q0=0) \ \& \ (Q20=0) \ \& \ (Q10=1) \ \& \ \neg(\text{FctBI1}=1) \ \& \ \neg(\text{FctBI2}=1) \ \& \ (Q25=1)$

Tab. A5-725: Bay Interlock Equations for Operation without Station Interlocking

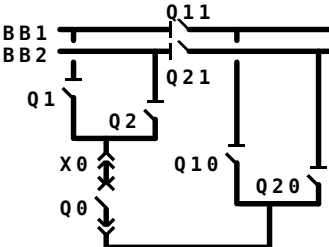
Switchgear unit	Control O/C	Interlock equation
Q0	Open	$(Q15=0) \ \& \ (Q25=0)$
	Close(d)	$\neg(Q10=X) \ \& \ \neg(Q20=X) \ \& \ (Q15=0) \ \& \ (Q25=0) \ \& \ \neg(\text{FctBI1}=I) \ \& \ \neg(\text{FctBI2}=I)$
Q10	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q15=0)$
Q15	Open	$(Q0=I) \ \& \ (Q20=I)$
	Close(d)	$(Q0=0) \ \& \ (Q10=0) \ \& \ (Q20=I) \ \& \ \neg(\text{FctBI1}=I) \ \& \ \neg(\text{FctBI2}=I)$
Q20	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q25=0)$
Q25	Open	$(Q0=I) \ \& \ (Q10=I)$
	Close(d)	$(Q0=0) \ \& \ (Q20=0) \ \& \ (Q10=I) \ \& \ \neg(\text{FctBI1}=I) \ \& \ \neg(\text{FctBI2}=I)$

Tab. A5-726: Bay Interlock Equations for Operation with Station Interlocking

A5.2.4 Bus Coupler and Sectionalizer Bays

A5.2.4.1 Bay type No. 218: Bus coupler and sectionalizer bay with circuit breaker, double busbar

K29.101.R02

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	/	
	Close(d)	U A02	/	
Q10 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
Q20 (DEV03)	Open	U A05	K A05	
	Close(d)	U A06	K A06	
Q11 (DEV04)	Open	U B01	/	
	Close(d)	U B02	/	
Q21 (DEV05)	Open	U B03	/	
	Close(d)	U B04	/	
X0 (DEV06)	Open	U B05	/	
	Close(d)	U B06	/	
Q1 (DEV07)	Open	U C01	/	
	Close(d)	U C02	/	
Q2 (DEV08)	Open	U C03	/	
	Close(d)	U C04	/	

Tab. A5-727: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q10	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q20=0)$
Q20	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q10=0)$

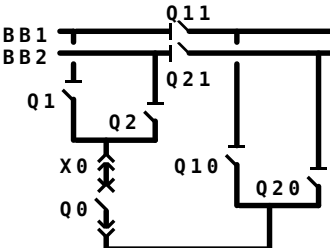
Tab. A5-728: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q10	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q20=0)$
Q20	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \ \& \ (Q10=0)$

Tab. A5-729: Bay Interlock Equations for Operation with Station Interlocking

A5.2.4.2**Bay type No. 219: Bus coupler and sectionalizer bay with circuit breaker, double busbar**

K29.101.R06

Switchgear unit		Binary input	Output relay	
Q0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q1 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
Q2 (DEV03)	Open	U A05	K A05	
	Close(d)	U A06	K A06	
Q11 (DEV04)	Open	U B01	K B01	
	Close(d)	U B02	K B02	
Q21 (DEV05)	Open	U B03	K B03	
	Close(d)	U B04	K B04	
X0 (DEV06)	Open	U B05	K B05	
	Close(d)	U B06	K B06	
Q10 (DEV07)	Open	U C01	/	
	Close(d)	U C02	/	
Q20 (DEV08)	Open	U C03	/	
	Close(d)	U C04	/	

Tab. A5-730: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q1=X) \wedge \neg(Q2=X) \wedge \neg(X0=X) \wedge \neg(Q10=X) \wedge \neg(Q20=X) \wedge \neg(\text{FctBI1}=I) \wedge \neg(\text{FctBI2}=I)$
Q1	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \wedge (Q2=0)$
Q11	Open	$(Q0=I) \wedge (Q1=I) \wedge (Q10=I) \wedge (X0=I)$
	Close(d)	$(Q0=I) \wedge (Q1=I) \wedge (Q10=I) \wedge (X0=I)$
Q2	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \wedge (Q1=0)$
Q21	Open	$(Q0=I) \wedge (Q2=I) \wedge (Q20=I) \wedge (X0=I)$
	Close(d)	$(Q0=I) \wedge (Q2=I) \wedge (Q20=I) \wedge (X0=I)$
X0	Open	$(Q0=0) \wedge (Q1=0) \wedge (Q2=0) \wedge (Q10=0) \wedge (Q20=0)$
	Close(d)	$(Q0=0) \wedge (Q1=0) \wedge (Q2=0) \wedge (Q10=0) \wedge (Q20=0)$

Tab. A5-731: Bay Interlock Equations for Operation without Station Interlocking

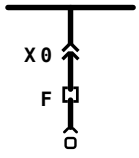
Switchgear unit	Control O/C	Interlock equation
Q0	Close(d)	$\neg(Q1=X) \wedge \neg(Q2=X) \wedge \neg(X0=X) \wedge \neg(Q10=X) \wedge \neg(Q20=X) \wedge \neg(\text{FctBI1}=I) \wedge \neg(\text{FctBI2}=I)$
Q1	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \wedge (Q2=0)$
Q11	Open	$(Q0=I) \wedge (Q1=I) \wedge (Q10=I) \wedge (X0=I)$
	Close(d)	$(Q0=I) \wedge (Q1=I) \wedge (Q10=I) \wedge (X0=I)$
Q2	Open	$(Q0=0)$
	Close(d)	$(Q0=0) \wedge (Q1=0)$
Q21	Open	$(Q0=I) \wedge (Q2=I) \wedge (Q20=I) \wedge (X0=I)$
	Close(d)	$(Q0=I) \wedge (Q2=I) \wedge (Q20=I) \wedge (X0=I)$
X0	Open	$(Q0=0) \wedge (Q1=0) \wedge (Q2=0) \wedge (Q10=0) \wedge (Q20=0)$
	Close(d)	$(Q0=0) \wedge (Q1=0) \wedge (Q2=0) \wedge (Q10=0) \wedge (Q20=0)$

Tab. A5-732: Bay Interlock Equations for Operation with Station Interlocking

A5.2.5 Busbar Measurement Bays

A5.2.5.1 Bay type No. 171: Busbar measurement bay with fuse unit, single busbar

M11.300.R00

Switchgear unit		Binary input	Output relay	
X0 (DEV01)	Open	U A01	/	
	Close(d)	U A02	/	
F (SIG_1: Signal S011 EXT)		U B05	/	

Tab. A5-733: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
		—

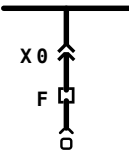
Tab. A5-734: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
		—

Tab. A5-735: Bay Interlock Equations for Operation with Station Interlocking

A5.2.5.2**Bay type No. 172: Busbar measurement bay with fuse unit, single busbar**

M11.300.R01

Switchgear unit		Binary input	Output relay	
X0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
F (SIG_1: Signal S011 EXT)		U B05	/	

Tab. A5-736: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
		—

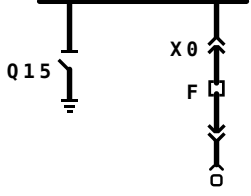
Tab. A5-737: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
		—

Tab. A5-738: Bay Interlock Equations for Operation with Station Interlocking

A5.2.5.3**Bay type No. 540: Busbar measurement bay with fuse unit, single busbar**

M11.304.R02

Switchgear unit		Binary input	Output relay	
Q15 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
X0 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
F (SIG_1: Signal S011 EXT)		U B05	/	

Tab. A5-739: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q15	Close(d)	(Q15=I)

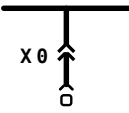
Tab. A5-740: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
		—

Tab. A5-741: Bay Interlock Equations for Operation with Station Interlocking

A5.2.5.4**Bay type No. 173: Busbar measurement bay with other switchgear unit, single busbar**

M11.900.R00

Switchgear unit		Binary input	Output relay	
X0 (DEV01)	Open	U A01	/	
	Close(d)	U A02	/	

Tab. A5-742: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
		—

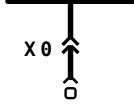
Tab. A5-743: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
		—

Tab. A5-744: Bay Interlock Equations for Operation with Station Interlocking

A5.2.5.5**Bay type No. 174: Busbar measurement bay with other switchgear unit, single busbar**

M11.900.R01

Switchgear unit		Binary input	Output relay	
X0 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	

Tab. A5-745: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
		—

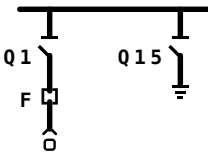
Tab. A5-746: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
		—

Tab. A5-747: Bay Interlock Equations for Operation with Station Interlocking

A5.2.5.6 Bay type No. 175: Busbar measurement bay with fuse unit, single busbar, direct motor control

M13.312.M02

Switchgear unit		Binary input	Output relay	
Q1 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q15 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
F (SIG_1: Signal S011 EXT)		U B05	/	
Motor relay (SIG_1: Signal S012 EXT)		U B06	/	
Shunt winding (CMD_1: Command C011)		/	K B05	
Motor relay (CMD_1: Command C012)		/	K B06	

Tab. A5-748: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q15	Close(d)	(Q15=I)

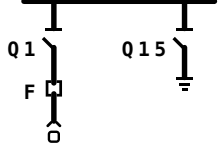
Tab. A5-749: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
		—

Tab. A5-750: Bay Interlock Equations for Operation with Station Interlocking

A5.2.5.7**Bay type No. 176: Busbar measurement bay with fuse unit, single busbar**

M13.312.R01

Switchgear unit		Binary input	Output relay	
Q1 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q15 (DEV02)	Open	U A03	/	
	Close(d)	U A04	/	
F (SIG_1: Signal S011 EXT)		U B05	/	

Tab. A5-751: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
		—

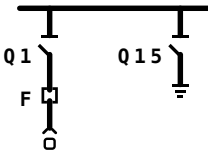
Tab. A5-752: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
		—

Tab. A5-753: Bay Interlock Equations for Operation with Station Interlocking

A5.2.5.8 Bay type No. 177: Busbar measurement bay with fuse unit, single busbar

M13.312.R02

Switchgear unit		Binary input	Output relay	
Q1 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q15 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
F (SIG_1: Signal S011 EXT)		U B05	/	

Tab. A5-754: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q15	Close(d)	$(Q15=I)$

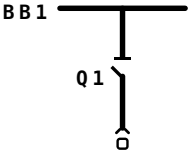
Tab. A5-755: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
		—

Tab. A5-756: Bay Interlock Equations for Operation with Station Interlocking

A5.2.5.9**Bay type No. 506: Busbar measurement bay with other switchgear unit, single busbar**

M13.902.R00

Switchgear unit		Binary input	Output relay	
Q1 (DEV01)	Open	U A01	/	
	Close(d)	U A02	/	

Tab. A5-757: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
		—

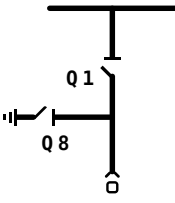
Tab. A5-758: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
		—

Tab. A5-759: Bay Interlock Equations for Operation with Station Interlocking

A5.2.5.10**Bay type No. 232: Busbar measurement bay with other switchgear unit, single busbar, direct motor control**

M15.903.M01

Switchgear unit		Binary input	Output relay	
Q1 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q8 (DEV02)	Open	U A03	/	
	Close(d)	U A04	/	
Motor relay (SIG_1: Signal S012 EXT)		U B06	/	
Shunt winding (CMD_1: Command C011)		/	K B05	
Motor relay (CMD_1: Command C012)		/	K B06	

Tab. A5-760: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q1	Close(d)	(Q8=0)

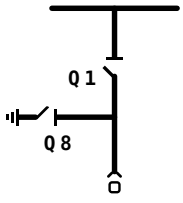
Tab. A5-761: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q1	Close(d)	(Q8=0)

Tab. A5-762: Bay Interlock Equations for Operation with Station Interlocking

A5.2.5.11**Bay type No. 178: Busbar measurement bay with other switchgear unit, single busbar, direct motor control**

M15.903.M02

Switchgear unit		Binary input	Output relay	
Q1 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q8 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
Motor relay (SIG_1: Signal S012 EXT)		U B06	/	
Shunt winding (CMD_1: Command C011)		/	K B05	
Motor relay (CMD_1: Command C012)		/	K B06	

Tab. A5-763: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q1	Close(d)	$(Q8=0)$
Q8	Close(d)	$(Q1=0)$

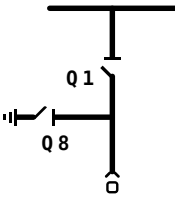
Tab. A5-764: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q1	Close(d)	$(Q8=0)$
Q8	Close(d)	$(Q1=0)$

Tab. A5-765: Bay Interlock Equations for Operation with Station Interlocking

A5.2.5.12**Bay type No. 233: Busbar measurement bay with other switchgear unit, single busbar**

M15.903.R01

Switchgear unit		Binary input	Output relay	
Q1 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q8 (DEV02)	Open	U A03	/	
	Close(d)	U A04	/	

Tab. A5-766: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q1	Close(d)	(Q8=0)

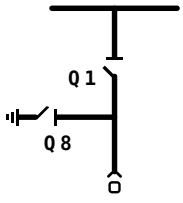
Tab. A5-767: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q1	Close(d)	(Q8=0)

Tab. A5-768: Bay Interlock Equations for Operation with Station Interlocking

A5.2.5.13**Bay type No. 179: Busbar measurement bay with other switchgear unit, single busbar**

M15.903.R02

Switchgear unit		Binary input	Output relay	
Q1 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q8 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	

Tab. A5-769: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q1	Close(d)	$(Q8=0)$
Q8	Close(d)	$(Q1=0)$

Tab. A5-770: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q1	Close(d)	$(Q8=0)$
Q8	Close(d)	$(Q1=0)$

Tab. A5-771: Bay Interlock Equations for Operation with Station Interlocking

A5.2.5.14**Bay type No. 180: Busbar measurement bay with fuse unit, double busbar**

M21.302.R02

Switchgear unit		Binary input	Output relay	
Q1 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q2 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
X01 (DEV03)	Open	U A05	/	
	Close(d)	U A06	/	
X02 (DEV04)	Open	U B01	/	
	Close(d)	U B02	/	
F1 (SIG_1: Signal S011 EXT)		U B05	/	
F2 (SIG_1: Signal S012 EXT)		U B06	/	

Tab. A5-772: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
		—

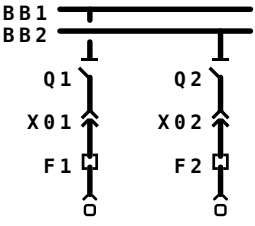
Tab. A5-773: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
		—

Tab. A5-774: Bay Interlock Equations for Operation with Station Interlocking

A5.2.5.15**Bay type No. 181: Busbar measurement bay with fuse unit, double busbar**

M21.302.R04

Switchgear unit		Binary input	Output relay	
Q1 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q2 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
X01 (DEV03)	Open	U A05	K A05	
	Close(d)	U A06	K A06	
X02 (DEV04)	Open	U B01	K B01	
	Close(d)	U B02	K B02	
F1 (SIG_1: Signal S011 EXT)		U B05	/	
F2 (SIG_1: Signal S012 EXT)		U B06	/	

Tab. A5-775: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
X01	Open	$(Q1=0)$
	Close(d)	$(Q1=0)$
X02	Open	$(Q2=0)$
	Close(d)	$(Q2=0)$

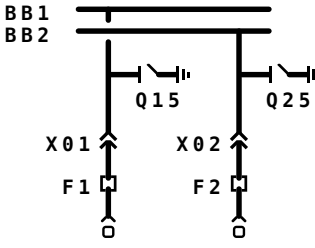
Tab. A5-776: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
X01	Open	$(Q1=0)$
	Close(d)	$(Q1=0)$
X02	Open	$(Q2=0)$
	Close(d)	$(Q2=0)$

Tab. A5-777: Bay Interlock Equations for Operation with Station Interlocking

A5.2.5.16**Bay type No. 182: Busbar measurement bay with fuse unit, double busbar**

M21.312.R02

Switchgear unit		Binary input	Output relay	
Q15 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q25 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
X01 (DEV03)	Open	U A05	/	
	Close(d)	U A06	/	
X02 (DEV04)	Open	U B01	/	
	Close(d)	U B02	/	
F1 (SIG_1: Signal S011 EXT)		U B05	/	
F2 (SIG_1: Signal S012 EXT)		U B06	/	

Tab. A5-778: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q15	Close(d)	(Q15=I)
Q25	Close(d)	(Q25=I)

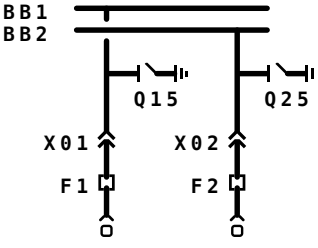
Tab. A5-779: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
		—

Tab. A5-780: Bay Interlock Equations for Operation with Station Interlocking

A5.2.5.17**Bay type No. 183: Busbar measurement bay with fuse unit, double busbar**

M21.312.R04

Switchgear unit		Binary input	Output relay	
Q15 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q25 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
X01 (DEV03)	Open	U A05	K A05	
	Close(d)	U A06	K A06	
X02 (DEV04)	Open	U B01	K B01	
	Close(d)	U B02	K B02	
F1 (SIG_1: Signal S011 EXT)		U B05	/	
F2 (SIG_1: Signal S012 EXT)		U B06	/	

Tab. A5-781: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q15	Close(d)	(Q15=I)
Q25	Close(d)	(Q25=I)

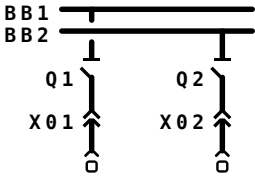
Tab. A5-782: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
		—

Tab. A5-783: Bay Interlock Equations for Operation with Station Interlocking

A5.2.5.18**Bay type No. 184: Busbar measurement bay with other switchgear unit, double busbar**

M21.902.R02

Switchgear unit		Binary input	Output relay	
Q1 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q2 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
X01 (DEV03)	Open	U A05	/	
	Close(d)	U A06	/	
X02 (DEV04)	Open	U B01	/	
	Close(d)	U B02	/	

Tab. A5-784: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
		—

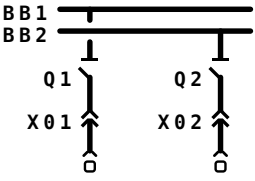
Tab. A5-785: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
		—

Tab. A5-786: Bay Interlock Equations for Operation with Station Interlocking

A5.2.5.19**Bay type No. 185: Busbar measurement bay with other switchgear unit, double busbar**

M21.902.R04

Switchgear unit		Binary input	Output relay	
Q1 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q2 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
X01 (DEV03)	Open	U A05	K A05	
	Close(d)	U A06	K A06	
X02 (DEV04)	Open	U B01	K B01	
	Close(d)	U B02	K B02	

Tab. A5-787: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
X01	Open	$(Q1=0)$
	Close(d)	$(Q1=0)$
X02	Open	$(Q2=0)$
	Close(d)	$(Q2=0)$

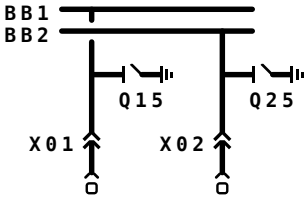
Tab. A5-788: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
X01	Open	$(Q1=0)$
	Close(d)	$(Q1=0)$
X02	Open	$(Q2=0)$
	Close(d)	$(Q2=0)$

Tab. A5-789: Bay Interlock Equations for Operation with Station Interlocking

A5.2.5.20**Bay type No. 186: Busbar measurement bay with other switchgear unit, double busbar**

M21.912.R02

Switchgear unit		Binary input	Output relay	
Q15 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q25 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
X01 (DEV03)	Open	U A05	/	
	Close(d)	U A06	/	
X02 (DEV04)	Open	U B01	/	
	Close(d)	U B02	/	

Tab. A5-790: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q15	Close(d)	$(Q15=l)$
Q25	Close(d)	$(Q25=l)$

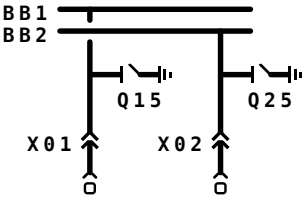
Tab. A5-791: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
		—

Tab. A5-792: Bay Interlock Equations for Operation with Station Interlocking

A5.2.5.21**Bay type No. 187: Busbar measurement bay with other switchgear unit, double busbar**

M21.912.R04

Switchgear unit		Binary input	Output relay	
Q15 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q25 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
X01 (DEV03)	Open	U A05	K A05	
	Close(d)	U A06	K A06	
X02 (DEV04)	Open	U B01	K B01	
	Close(d)	U B02	K B02	

Tab. A5-793: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q15	Close(d)	$(Q15=I)$
Q25	Close(d)	$(Q25=I)$

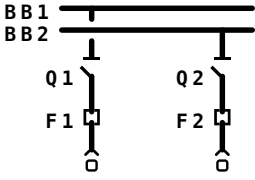
Tab. A5-794: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
		—

Tab. A5-795: Bay Interlock Equations for Operation with Station Interlocking

A5.2.5.22**Bay type No. 188: Busbar measurement bay with fuse unit, double busbar**

M23.302.R02

Switchgear unit		Binary input	Output relay	
Q1 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q2 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
F1 (SIG_1: Signal S011 EXT)		U B05	/	
F2 (SIG_1: Signal S012 EXT)		U B06	/	

Tab. A5-796: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
		—

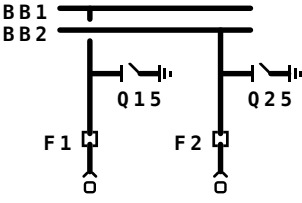
Tab. A5-797: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
		—

Tab. A5-798: Bay Interlock Equations for Operation with Station Interlocking

A5.2.5.23**Bay type No. 189: Busbar measurement bay with fuse unit, double busbar**

M23.312.R02

Switchgear unit		Binary input	Output relay	
Q15 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q25 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
F1 (SIG_1: Signal S011 EXT)		U B05	/	
F2 (SIG_1: Signal S012 EXT)		U B06	/	

Tab. A5-799: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q15	Close(d)	(Q15=I)
Q25	Close(d)	(Q25=I)

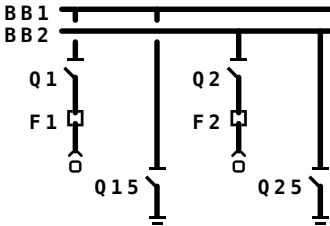
Tab. A5-800: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
		—

Tab. A5-801: Bay Interlock Equations for Operation with Station Interlocking

A5.2.5.24**Bay type No. 190: Busbar measurement bay with fuse unit, double busbar, direct motor control**

M23.328.M04

Switchgear unit		Binary input	Output relay	
Q1 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q2 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
Q15 (DEV03)	Open	U A05	K A05	
	Close(d)	U A06	K A06	
Q25 (DEV04)	Open	U B01	K B01	
	Close(d)	U B02	K B02	
F2 (SIG_1: Signal S010 EXT)		U B04	/	
F1 (SIG_1: Signal S011 EXT)		U B05	/	
Motor relay (SIG_1: Signal S012 EXT)		U B06	/	
Shunt winding (CMD_1: Command C011)		/	K B05	
Motor relay (CMD_1: Command C012)		/	K B06	

Tab. A5-802: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q15	Close(d)	(Q15=I)
Q25	Close(d)	(Q25=I)

Tab. A5-803: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
		—

Tab. A5-804: Bay Interlock Equations for Operation with Station Interlocking

A5.2.5.25**Bay type No. 191: Busbar measurement bay with fuse unit, double busbar**

M23.328.R02

Switchgear unit		Binary input	Output relay	
Q1 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q2 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
Q15 (DEV03)	Open	U A05	/	
	Close(d)	U A06	/	
Q25 (DEV04)	Open	U B01	/	
	Close(d)	U B02	/	
F1 (SIG_1: Signal S011 EXT)		U B05	/	
F2 (SIG_1: Signal S012 EXT)		U B06	/	

Tab. A5-805: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
		—

Tab. A5-806: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
		—

Tab. A5-807: Bay Interlock Equations for Operation with Station Interlocking

A5.2.5.26**Bay type No. 192: Busbar measurement bay with fuse unit, double busbar**

M23.328.R04

Switchgear unit		Binary input	Output relay	
Q1 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q2 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
Q15 (DEV03)	Open	U A05	K A05	
	Close(d)	U A06	K A06	
Q25 (DEV04)	Open	U B01	K B01	
	Close(d)	U B02	K B02	
F1 (SIG_1: Signal S011 EXT)		U B05	/	
F2 (SIG_1: Signal S012 EXT)		U B06	/	

Tab. A5-808: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q15	Close(d)	$(Q15=l)$
Q25	Close(d)	$(Q25=l)$

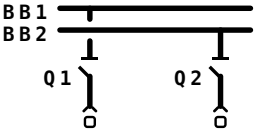
Tab. A5-809: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
		—

Tab. A5-810: Bay Interlock Equations for Operation with Station Interlocking

A5.2.5.27**Bay type No. 193: Busbar measurement bay with other switchgear unit, double busbar**

M23.902.R02

Switchgear unit		Binary input	Output relay	
Q1 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q2 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	

Tab. A5-811: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
		—

Tab. A5-812: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
		—

Tab. A5-813: Bay Interlock Equations for Operation with Station Interlocking

A5.2.5.28**Bay type No. 559: Busbar measurement bay with other switchgear unit, double busbar**

M23.904.R00

Switchgear unit		Binary input	Output relay	
Q15 (DEV01)	Open	U A01	/	
	Close(d)	U A02	/	

Tab. A5-814: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
		—

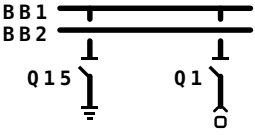
Tab. A5-815: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
		—

Tab. A5-816: Bay Interlock Equations for Operation with Station Interlocking

A5.2.5.29**Bay type No. 509: Busbar measurement bay with other switchgear unit, double busbar, direct motor control**

M23.906.M01

Switchgear unit		Binary input	Output relay	
Q1 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q15 (DEV02)	Open	U A03	/	
	Close(d)	U A04	/	
Motor relay (SIG_1: Signal S012 EXT)		U B06	/	
Shunt winding (CMD_1: Command C011)		/	K B05	
Motor relay (CMD_1: Command C012)		/	K B06	

Tab. A5-817: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
		—

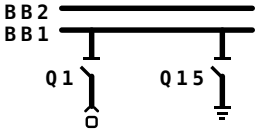
Tab. A5-818: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
		—

Tab. A5-819: Bay Interlock Equations for Operation with Station Interlocking

A5.2.5.30**Bay type No. 529: Busbar measurement bay with other switchgear unit, double busbar, direct motor control**

M23.906.M02

Switchgear unit		Binary input	Output relay	
Q1 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q15 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
Motor relay (SIG_1: Signal S012 EXT)		U B06	/	
Shunt winding (CMD_1: Command C011)		/	K B05	
Motor relay (CMD_1: Command C012)		/	K B06	

Tab. A5-820: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q15	Close(d)	(Q15=I)

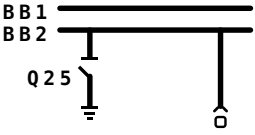
Tab. A5-821: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
		—

Tab. A5-822: Bay Interlock Equations for Operation with Station Interlocking

A5.2.5.31**Bay type No. 560: Busbar measurement bay with other switchgear unit, double busbar**

M23.908.R00

Switchgear unit		Binary input	Output relay	
Q25 (DEV01)	Open	U A01	/	
	Close(d)	U A02	/	

Tab. A5-823: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
		—

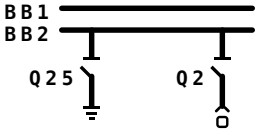
Tab. A5-824: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
		—

Tab. A5-825: Bay Interlock Equations for Operation with Station Interlocking

A5.2.5.32**Bay type No. 510: Busbar measurement bay with other switchgear unit, double busbar, direct motor control**

M23.910.M01

Switchgear unit		Binary input	Output relay	
Q2 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q25 (DEV02)	Open	U A03	/	
	Close(d)	U A04	/	
Motor relay (SIG_1: Signal S012 EXT)		U B06	/	
Shunt winding (CMD_1: Command C011)		/	K B05	
Motor relay (CMD_1: Command C012)		/	K B06	

Tab. A5-826: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
		—

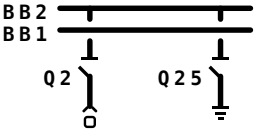
Tab. A5-827: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
		—

Tab. A5-828: Bay Interlock Equations for Operation with Station Interlocking

A5.2.5.33**Bay type No. 530: Busbar measurement bay with other switchgear unit, double busbar, direct motor control**

M23.910.M02

Switchgear unit		Binary input	Output relay	
Q2 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q25 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
Motor relay (SIG_1: Signal S012 EXT)		U B06	/	
Shunt winding (CMD_1: Command C011)		/	K B05	
Motor relay (CMD_1: Command C012)		/	K B06	

Tab. A5-829: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q25	Close(d)	(Q25=I)

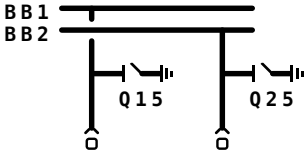
Tab. A5-830: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
		—

Tab. A5-831: Bay Interlock Equations for Operation with Station Interlocking

A5.2.5.34**Bay type No. 194: Busbar measurement bay with other switchgear unit, double busbar**

M23.912.R02

Switchgear unit		Binary input	Output relay	
Q15 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q25 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	

Tab. A5-832: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q15	Close(d)	(Q15=I)
Q25	Close(d)	(Q25=I)

Tab. A5-833: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
		—

Tab. A5-834: Bay Interlock Equations for Operation with Station Interlocking

A5.2.5.35**Bay type No. 234: Busbar measurement bay with other switchgear unit, double busbar, direct motor control**

M25.903.M02

Switchgear unit		Binary input	Output relay	
Q1 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q2 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
Q81 (DEV03)	Open	U A05	/	
	Close(d)	U A06	/	
Q82 (DEV04)	Open	U B01	/	
	Close(d)	U B02	/	
Motor relay (SIG_1: Signal S012 EXT)		U B06	/	
Shunt winding (CMD_1: Command C011)		/	K B05	
Motor relay (CMD_1: Command C012)		/	K B06	

Tab. A5-835: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q1	Close(d)	$(Q81=0)$
Q2	Close(d)	$(Q82=0)$

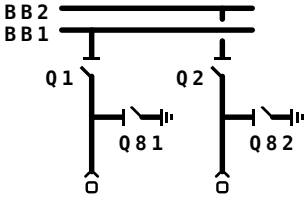
Tab. A5-836: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q1	Close(d)	$(Q81=0)$
Q2	Close(d)	$(Q82=0)$

Tab. A5-837: Bay Interlock Equations for Operation with Station Interlocking

A5.2.5.36**Bay type No. 195: Busbar measurement bay with other switchgear unit, double busbar, direct motor control**

M25.903.M04

Switchgear unit		Binary input	Output relay	
Q1 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q2 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
Q81 (DEV03)	Open	U A05	K A05	
	Close(d)	U A06	K A06	
Q82 (DEV04)	Open	U B01	K B01	
	Close(d)	U B02	K B02	
Motor relay (SIG_1: Signal S012 EXT)		U B06	/	
Shunt winding (CMD_1: Command C011)		/	K B05	
Motor relay (CMD_1: Command C012)		/	K B06	

Tab. A5-838: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q1	Close(d)	(Q81=0)
Q2	Close(d)	(Q82=0)
Q81	Close(d)	(Q1=0)
Q82	Close(d)	(Q2=0)

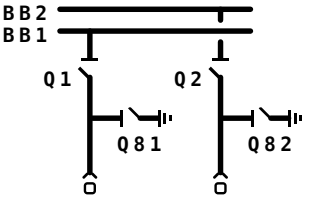
Tab. A5-839: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q1	Close(d)	(Q81=0)
Q2	Close(d)	(Q82=0)
Q81	Close(d)	(Q1=0)
Q82	Close(d)	(Q2=0)

Tab. A5-840: Bay Interlock Equations for Operation with Station Interlocking

A5.2.5.37**Bay type No. 235: Busbar measurement bay with other switchgear unit, double busbar**

M25.903.R02

Switchgear unit		Binary input	Output relay	
Q1 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q2 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
Q81 (DEV03)	Open	U A05	/	
	Close(d)	U A06	/	
Q82 (DEV04)	Open	U B01	/	
	Close(d)	U B02	/	

Tab. A5-841: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q1	Close(d)	$(Q81=0)$
Q2	Close(d)	$(Q82=0)$

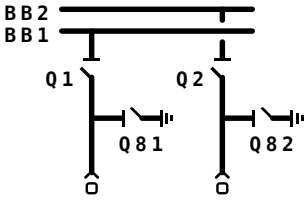
Tab. A5-842: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
Q1	Close(d)	$(Q81=0)$
Q2	Close(d)	$(Q82=0)$

Tab. A5-843: Bay Interlock Equations for Operation with Station Interlocking

A5.2.5.38**Bay type No. 196: Busbar measurement bay with other switchgear unit, double busbar**

M25.903.R04

Switchgear unit		Binary input	Output relay	
Q1 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q2 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
Q81 (DEV03)	Open	U A05	K A05	
	Close(d)	U A06	K A06	
Q82 (DEV04)	Open	U B01	K B01	
	Close(d)	U B02	K B02	

Tab. A5-844: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q1	Close(d)	$(Q81=0)$
Q2	Close(d)	$(Q82=0)$
Q81	Close(d)	$(Q1=0)$
Q82	Close(d)	$(Q2=0)$

Tab. A5-845: Bay Interlock Equations for Operation without Station Interlocking

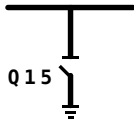
Switchgear unit	Control O/C	Interlock equation
Q1	Close(d)	$(Q81=0)$
Q2	Close(d)	$(Q82=0)$
Q81	Close(d)	$(Q1=0)$
Q82	Close(d)	$(Q2=0)$

Tab. A5-846: Bay Interlock Equations for Operation with Station Interlocking

A5.2.6 Busbar Grounding Bays

A5.2.6.1 Bay type No. 129: Busbar grounding bay with other switchgear unit, single busbar, direct motor control

E13.901.M01

Switchgear unit		Binary input	Output relay	
Q15 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Motor relay (SIG_1: Signal S012 EXT)		U B06	/	
Shunt winding (CMD_1: Command C011)		/	K B05	
Motor relay (CMD_1: Command C012)		/	K B06	

Tab. A5-847: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q15	Close(d)	(Q15=I)

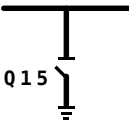
Tab. A5-848: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
		—

Tab. A5-849: Bay Interlock Equations for Operation with Station Interlocking

A5.2.6.2**Bay type No. 130: Busbar grounding bay with other switchgear unit, single busbar**

E13.901.R01

Switchgear unit		Binary input	Output relay	
Q15 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	

Tab. A5-850: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q15	Close(d)	(Q15=I)

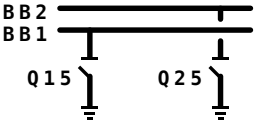
Tab. A5-851: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
		—

Tab. A5-852: Bay Interlock Equations for Operation with Station Interlocking

A5.2.6.3**Bay type No. 131: Busbar grounding bay with other switchgear unit, double busbar, direct motor control**

E23.903.M02

Switchgear unit		Binary input	Output relay	
Q15 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q25 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	
Motor relay (SIG_1: Signal S012 EXT)		U B06	/	
Shunt winding (CMD_1: Command C011)		/	K B05	
Motor relay (CMD_1: Command C012)		/	K B06	

Tab. A5-853: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q15	Close(d)	(Q15=I)
Q25	Close(d)	(Q25=I)

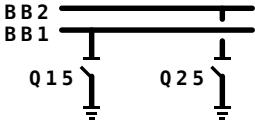
Tab. A5-854: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
		—

Tab. A5-855: Bay Interlock Equations for Operation with Station Interlocking

A5.2.6.4**Bay type No. 132: Busbar grounding bay with other switchgear unit, double busbar**

E23.903.R02

Switchgear unit		Binary input	Output relay	
Q15 (DEV01)	Open	U A01	K A01	
	Close(d)	U A02	K A02	
Q25 (DEV02)	Open	U A03	K A03	
	Close(d)	U A04	K A04	

Tab. A5-856: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
Q15	Close(d)	$(Q15=I)$
Q25	Close(d)	$(Q25=I)$

Tab. A5-857: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
		—

Tab. A5-858: Bay Interlock Equations for Operation with Station Interlocking

A5.2.7 Other Bay Types

A5.2.7.1 Bay type No. 1: Other bay type with other switchgear unit, without busbar
X99.901.R00

Switchgear unit	Binary input	Output relay	
—			

Tab. A5-859: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
		—

Tab. A5-860: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
		—

Tab. A5-861: Bay Interlock Equations for Operation with Station Interlocking

A5.2.7.2 Bay type No. 980: Other bay type with other switchgear unit, without busbar

X99.902.R06.2

Switchgear unit	Binary input	Output relay	
S001 (SIG_1: Signal S001 EXT)	U A01	/	<div><div>I</div><div>1<input type="checkbox"/>2<input type="checkbox"/>3<input type="checkbox"/>4<input type="checkbox"/>5<input type="checkbox"/>6<input type="checkbox"/>7<input type="checkbox"/></div><div>1314151617181920</div><div>0</div><div>1<input type="checkbox"/>2<input type="checkbox"/>3<input type="checkbox"/>4<input type="checkbox"/>5<input type="checkbox"/>6<input type="checkbox"/>7<input type="checkbox"/></div><div>89101112</div></div>
S002 (SIG_1: Signal S002 EXT)	U A02	/	
S003 (SIG_1: Signal S003 EXT)	U A03	/	
S004 (SIG_1: Signal S004 EXT)	U A04	/	
S005 (SIG_1: Signal S005 EXT)	U A05	/	
S006 (SIG_1: Signal S006 EXT)	U A06	/	
C001 (CMD_1: Command C001)	/	K A01	
C002 (CMD_1: Command C002)	/	K A02	
C003 (CMD_1: Command C003)	/	K A03	
C004 (CMD_1: Command C004)	/	K A04	
C005 (CMD_1: Command C005)	/	K A05	
C006 (CMD_1: Command C006)	/	K A06	

Tab. A5-862: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
		—

Tab. A5-863: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
		—

Tab. A5-864: Bay Interlock Equations for Operation with Station Interlocking

A5.2.7.3**Bay type No. 981: Other bay type with other switchgear unit, without busbar**

X99.903.R12.2

Switchgear unit	Binary input	Output relay				
S001 (SIG_1: Signal S001 EXT)	U A01	/	I 1 <input type="checkbox"/> 13 2 <input type="checkbox"/> 14 3 <input type="checkbox"/> 15 4 <input type="checkbox"/> 16 5 <input type="checkbox"/> 17 6 <input type="checkbox"/> 18 7 <input type="checkbox"/> 19 8 <input type="checkbox"/> 20 9 <input type="checkbox"/> 10 <input type="checkbox"/> 11 <input type="checkbox"/> 12 <input type="checkbox"/>			O 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 <input type="checkbox"/> 7 <input type="checkbox"/> 8 <input type="checkbox"/> 9 <input type="checkbox"/> 10 <input type="checkbox"/> 11 <input type="checkbox"/> 12 <input type="checkbox"/>
S002 (SIG_1: Signal S002 EXT)	U A02	/				
S003 (SIG_1: Signal S003 EXT)	U A03	/				
S004 (SIG_1: Signal S004 EXT)	U A04	/				
S005 (SIG_1: Signal S005 EXT)	U A05	/				
S006 (SIG_1: Signal S006 EXT)	U A06	/				
S007 (SIG_1: Signal S007 EXT)	U B01	/				
S008 (SIG_1: Signal S008 EXT)	U B02	/				
S009 (SIG_1: Signal S009 EXT)	U B03	/				
S010 (SIG_1: Signal S010 EXT)	U B04	/				
S011 (SIG_1: Signal S011 EXT)	U B05	/				
S012 (SIG_1: Signal S012 EXT)	U B06	/				
C001 (CMD_1: Command C001)	/	K A01				
C002 (CMD_1: Command C002)	/	K A02				
C003 (CMD_1: Command C003)	/	K A03				
C004 (CMD_1: Command C004)	/	K A04				
C005 (CMD_1: Command C005)	/	K A05				
C006 (CMD_1: Command C006)	/	K A06				
C007 (CMD_1: Command C007)	/	K B01				
C008 (CMD_1: Command C008)	/	K B02				
C009 (CMD_1: Command C009)	/	K B03				
C010 (CMD_1: Command C010)	/	K B04				
C011 (CMD_1: Command C011)	/	K B05				
C012 (CMD_1: Command C012)	/	K B06				

Tab. A5-865: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
		—

Tab. A5-866: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
		—

Tab. A5-867: Bay Interlock Equations for Operation with Station Interlocking

A5.2.7.4**Bay type No. 982: Other bay type with other switchgear unit, without busbar**

X99.904.R06.2

Switchgear unit	Binary input	Output relay	
S001 (SIG_1: Signal S001 EXT)	U A01	/	<div> <div>I</div> <div> <div>1 <input type="checkbox"/></div> <div>2 <input type="checkbox"/></div> <div>3 <input type="checkbox"/></div> <div>4 <input type="checkbox"/></div> <div>5 <input type="checkbox"/></div> <div>6 <input type="checkbox"/></div> <div>7 <input type="checkbox"/></div> <div>8 <input type="checkbox"/></div> <div>9 <input type="checkbox"/></div> <div>10 <input type="checkbox"/></div> <div>11 <input type="checkbox"/></div> <div>12 <input type="checkbox"/></div> </div> <div> <div>13 <input type="checkbox"/></div> <div>14 <input type="checkbox"/></div> <div>15 <input type="checkbox"/></div> <div>16 <input type="checkbox"/></div> <div>17 <input type="checkbox"/></div> <div>18 <input type="checkbox"/></div> <div>19 <input type="checkbox"/></div> <div>20 <input type="checkbox"/></div> </div> <div> <div>O</div> <div> <div>1 <input type="checkbox"/></div> <div>2 <input type="checkbox"/></div> <div>3 <input type="checkbox"/></div> <div>4 <input type="checkbox"/></div> <div>5 <input type="checkbox"/></div> <div>6 <input type="checkbox"/></div> <div>7 <input type="checkbox"/></div> <div>8 <input type="checkbox"/></div> <div>9 <input type="checkbox"/></div> <div>10 <input type="checkbox"/></div> <div>11 <input type="checkbox"/></div> <div>12 <input type="checkbox"/></div> </div> </div> </div>
S002 (SIG_1: Signal S002 EXT)	U A02	/	
S003 (SIG_1: Signal S003 EXT)	U A03	/	
S004 (SIG_1: Signal S004 EXT)	U A04	/	
S005 (SIG_1: Signal S005 EXT)	U A05	/	
S006 (SIG_1: Signal S006 EXT)	U A06	/	
S007 (SIG_1: Signal S007 EXT)	U C01	/	
S008 (SIG_1: Signal S008 EXT)	U C02	/	
S009 (SIG_1: Signal S009 EXT)	U C03	/	
S010 (SIG_1: Signal S010 EXT)	U C04	/	
S011 (SIG_1: Signal S011 EXT)	U C05	/	
S012 (SIG_1: Signal S012 EXT)	U C06	/	
S013 (SIG_1: Signal S013 EXT)	U C07	/	
S014 (SIG_1: Signal S014 EXT)	U C08	/	
C001 (CMD_1: Command C001)	/	K A01	
C002 (CMD_1: Command C002)	/	K A02	
C003 (CMD_1: Command C003)	/	K A03	
C004 (CMD_1: Command C004)	/	K A04	
C005 (CMD_1: Command C005)	/	K A05	
C006 (CMD_1: Command C006)	/	K A06	

Tab. A5-868: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
		—

Tab. A5-869: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
		—

Tab. A5-870: Bay Interlock Equations for Operation with Station Interlocking

A5.2.7.5**Bay type No. 983: Other bay type with other switchgear unit, without busbar**

X99.905.R12.2

Switchgear unit	Binary input	Output relay	
S001 (SIG_1: Signal S001 EXT)	U A01	/	<div> <div>I</div> <div> <div>1 <input type="checkbox"/></div> <div>2 <input type="checkbox"/></div> <div>3 <input type="checkbox"/></div> <div>4 <input type="checkbox"/></div> <div>5 <input type="checkbox"/></div> <div>6 <input type="checkbox"/></div> <div>7 <input type="checkbox"/></div> <div>8 <input type="checkbox"/></div> <div>9 <input type="checkbox"/></div> <div>10 <input type="checkbox"/></div> <div>11 <input type="checkbox"/></div> <div>12 <input type="checkbox"/></div> </div> <div> <div>13 <input type="checkbox"/></div> <div>14 <input type="checkbox"/></div> <div>15 <input type="checkbox"/></div> <div>16 <input type="checkbox"/></div> <div>17 <input type="checkbox"/></div> <div>18 <input type="checkbox"/></div> <div>19 <input type="checkbox"/></div> <div>20 <input type="checkbox"/></div> </div> <div> <div>O</div> <div> <div>1 <input type="checkbox"/></div> <div>2 <input type="checkbox"/></div> <div>3 <input type="checkbox"/></div> <div>4 <input type="checkbox"/></div> <div>5 <input type="checkbox"/></div> <div>6 <input type="checkbox"/></div> <div>7 <input type="checkbox"/></div> <div>8 <input type="checkbox"/></div> <div>9 <input type="checkbox"/></div> <div>10 <input type="checkbox"/></div> <div>11 <input type="checkbox"/></div> <div>12 <input type="checkbox"/></div> </div> </div> </div>
S002 (SIG_1: Signal S002 EXT)	U A02	/	
S003 (SIG_1: Signal S003 EXT)	U A03	/	
S004 (SIG_1: Signal S004 EXT)	U A04	/	
S005 (SIG_1: Signal S005 EXT)	U A05	/	
S006 (SIG_1: Signal S006 EXT)	U A06	/	
S007 (SIG_1: Signal S007 EXT)	U B01	/	
S008 (SIG_1: Signal S008 EXT)	U B02	/	
S009 (SIG_1: Signal S009 EXT)	U B03	/	
S010 (SIG_1: Signal S010 EXT)	U B04	/	
S011 (SIG_1: Signal S011 EXT)	U B05	/	
S012 (SIG_1: Signal S012 EXT)	U B06	/	
S013 (SIG_1: Signal S013 EXT)	U C01	/	
S014 (SIG_1: Signal S014 EXT)	U C02	/	
S015 (SIG_1: Signal S015 EXT)	U C03	/	
S016 (SIG_1: Signal S016 EXT)	U C04	/	
S017 (SIG_1: Signal S017 EXT)	U C05	/	
S018 (SIG_1: Signal S018 EXT)	U C06	/	
S019 (SIG_1: Signal S019 EXT)	U C07	/	
S020 (SIG_1: Signal S020 EXT)	U C08	/	

Switchgear unit	Binary input	Output relay	
C001 (CMD_1: Command C001)	/	K A01	
C002 (CMD_1: Command C002)	/	K A02	
C003 (CMD_1: Command C003)	/	K A03	
C004 (CMD_1: Command C004)	/	K A04	
C005 (CMD_1: Command C005)	/	K A05	
C006 (CMD_1: Command C006)	/	K A06	
C007 (CMD_1: Command C007)	/	K B01	
C008 (CMD_1: Command C008)	/	K B02	
C009 (CMD_1: Command C009)	/	K B03	
C010 (CMD_1: Command C010)	/	K B04	
C011 (CMD_1: Command C011)	/	K B05	
C012 (CMD_1: Command C012)	/	K B06	

Tab. A5-871: Assignment of Binary Inputs and Output Relays

Switchgear unit	Control O/C	Interlock equation
		—

Tab. A5-872: Bay Interlock Equations for Operation without Station Interlocking

Switchgear unit	Control O/C	Interlock equation
		—

Tab. A5-873: Bay Interlock Equations for Operation with Station Interlocking

A6 P532 Version History

Version		Changes
P532 -301 -401/402/403/404 -630 Release: 2011-03-23	Hardware	
		Initial product release
	Diagram	
		Initial product release
	Software	
		Initial product release
P532 -302 -405/406/407/408 -630 Release: 2012-05-16	Hardware	<p>The new Ethernet communications module for redundant communication per IEC 61850 is now available and may be fitted to slot 2 as an alternative to communications module A. Both optical interface connections are only fitted with ST connectors.</p> <p>The following communication versions are supported:</p> <ul style="list-style-type: none"> ● SHP (self healing protocol) ● RSTP (rapid spanning tree protocol) ● DHP (dual homing protocol) <p>New and more powerful auxiliary power supply modules are now available. The supply voltage range for these modules has changed as compared to previous versions.</p> <p>The following versions are available:</p> <ul style="list-style-type: none"> ● 24 to 60 V DC ● 60 to 220 V DC, 100 to 230 V AC <p>Connecting these new auxiliary power supply modules is compatible to previous versions.</p>
	Diagram	
		<p>The updated terminal connection diagrams of the P532 include the wiring configuration for the new Ethernet communications module for redundant communication.</p> <p>The following numbers have been generated for the new terminal connection diagrams:</p> <ul style="list-style-type: none"> ● P532 -405 (for 40TE case, pin-terminal connection) ● P532 -406 (for 40TE case, transformer module with ring-terminal connection, all other modules with pin-terminal connection) ● P532 -407 (for 84TE case, pin-terminal connection) ● P532 -408 (for 84TE case, ring-terminal connection)

Version		Changes
P532 -302 -405/406/407/408 -631 Release: 2013-04-15	Software	
		No changes.
	Hardware	
		No changes.
	Diagram	
		No changes.
	Software	
		Note: This software version is compatible to all previous hardware versions.
	MAIN	Bug fixing: <ul style="list-style-type: none"> The new and powerful PSU module will not be accepted in devices with text HMI and without fitted I/O modules.
	IEC	A new IEC 61850 datamodel version is now available. This version provides a full support for KEMA level A testing. Modification of K200 with new status signals for K200 failure and settable K6xxx/K7xx control in case of K200 failure.
P532 -302 -405/406/407/408 -632 Release: 2013-10-17	P<>	Bug fixing: <ul style="list-style-type: none"> There was no functional blocking in case of MCMON triggering in the previous version. Operating measurements accuracy is based on the sensitive earth fault values (dynamic range $25 \times I_{nom}$).
	Hardware	
		No changes.
	Diagram	
		No changes.
	Software	
		Note: This software version is compatible to all previous hardware versions.

Version		Changes
	MAIN	Bug fixing: <ul style="list-style-type: none"> There was a wrong scaling by a factor of 10 for the operating measurement (007 042) MAIN: Voltage C-G prim.
	DIFF	Bug fixing: <ul style="list-style-type: none"> Enhancement for the I_d/I_R monitoring. A minimum restraining current threshold of $0.01 I_{ref}$ is implemented now.
P532 -303 -409/410/411/412 -650 Release: 2015-04-02	Hardware	
		The P532 is now fitted with an improved processor module.
	Diagram	
		<p>An additional binary module X(24I) and an additional binary module X(6I 8O) are now available as order options.</p> <ul style="list-style-type: none"> P532 -409 (for 40TE case, pin-terminal connection) P532 -410 (for 40TE case, transformer module with ring-terminal connection, all other modules with pin-terminal connection) P532 -411 (for 84TE case, pin-terminal connection) P532 -412 (for 84TE case, ring-terminal connection)
	Software	
	MAIN	<p>DTOC and IDMT with settable inrush stabilization per parameter subset: Stabilization selectable per stage (Phase; E/F and I2 stages): MAIN: Funct.Rush restr.PSx (017 093, 017 064, 017 082, 017 083). Settable maximum timer, for which inrush stabilization should be effective: Blocked (w/o timer) or settable from 0.01 to 10s. (019 001, 019 002, 019 003, 019 004) MAIN: t lift rush restr.PSx.</p>
	COUNT	Function group COUNT has become available. Four binary counters can be used to count the positive pulse edges of a binary signal present at an appropriately configured binary signal input.

Version		Changes
	DVICE	<p>Instead of one parameter for the software version (previously: (002 120) DVICE: Software version) the version numbers -6XX and -7XX are now separately stored in two new parameters:</p> <ul style="list-style-type: none"> ● (010 167) DVICE: Software version 6XX ● (010 168) DVICE: Software version 7XX
	LOG_2	There is a new function group LOG_2 (Programmable Logic 2). It is identical to the previously available function group LOGIC, but it offers only four logical equations. These, however, have long-term timers, settable from 0 to 60000 s (= 16 hours, 40 minutes).
	TPD1 ... TPD4	Four virtual devices have been implemented, for the configuration of Three Position Switchgear devices (TPD) using one common motor drive for Disconnecter and Earthing Switch. There is a fixed logic to prevent wrong operation commands and to handle different switchgear positions during clockwise or anti-clockwise operation.
	SIG_1	The number of SIG_1 input signals has been extended to 64. However, this requires that two hardware modules of type X(24I) are fitted.
	GOOSE	<p>The number of GOOSE inputs has been extended to 128:</p> <p>Extension of available GOOSE inputs from 32x 1-pole/32x 2-pole to 128 GOOSE inputs configurable in the IED Configurator tool. Max. 128x 1-pole binary signals freely configurable in the device or alternatively up to max. 128x 2-pole switchgear position indications for using the Control/Interlocking conditions.</p>
	GSSE	Function group GSSE has been removed from the Data Model. Replaced by the extended GOOSE input option.
	LOGIC	The number of logic outputs (equations) has been extended to 128.
P532 -304 -409/410/411/412 -650 Release: 2015-10-16	Hardware	
		The Redundancy Ethernet Board (REB) can now be ordered with an additional redundancy protocol: PRP (Parallel Redundancy Protocol) is available now as an alternative to RSTP, SHP or DHP.
	Diagram	
		No changes.
	Software	
		No changes.

Version		Changes
P532 -305 -413/414/415/416 -660 Release: 2017-07-21	Hardware	
		The P532 is now fitted with Ethernet module (SEB LC/RJ45 or REB LC/RJ45). This module is used for IEC 61850 Edition 1 and Edition 2 and is fitted to slot 2, as an alternative to other communication modules. HSR/PRP communication protocols are supported.
	Diagram	
		<p>The updated connection diagrams now include the Ethernet module communication interface with SEB and REB.</p> <ul style="list-style-type: none"> ● P532 -413 (for 40TE case, pin-terminal connection) ● P532 -414 (for 40TE case, transformer module with ring-terminal connection, all other modules with pin-terminal connection) ● P532 -415 (for 84TE case, pin-terminal connection) ● P532 -416 (for 84TE case, ring-terminal connection)
	Software	
	CS	<p>Implementation of a dedicated function group that provides Cyber Security protection to mitigate the security risks.</p> <p>The Security Administration Tool is required for RBAC configuration and setting changes.</p> <ul style="list-style-type: none"> ● (180 031) CS: CyberSecurity Vers. ● (180 002) CS: Number of users ● (180 032) CS: Comms logout ● (180 033) CS: HMI logout ● (180 043) CS: Comms username ● (180 034) CS: HMI username ● (180 013) CS: User access role ● (180 011) CS: Max login attempts ● (180 010) CS: Login attempts left ● (180 015) CS: Blocking time ● (180 012) CS: Blocking time left ● (180 041) CS: Result EPW setting ● (180 003) CS: Change pincode ● (180 044) CS: Config disabled ● (180 014) CS: Recovery Password ● (180 045) CS: Reset RABC

Version		Changes
	IEC	<p>The protocol of the redundant connection is configurable with IEC: ETH COMM Mode .</p> <p>When Ethernet module (REB or SEB) is used, second Ethernet information is provided.</p> <ul style="list-style-type: none"> ● (104 080) IEC: ETH COMM Mode ● (104 072) IEC: Gateway address 2 ● (104 070) IEC: IP address 2 ● (104 073) IEC: Block Port A/B ● (104 074) IEC: Block Port C ● (221 125) IEC: Ctrl blocked user ● (104 071) IEC: Subnet mask 2 ● (104 079) IEC: IEC prot. variant
P532 -305 -413/414/415/416 -661 Release: 2017-12-19	Hardware	
		PRP/HSR/RSTP communication protocols are supported.
	Diagram	
		No changes.
	Software	
	IEC	<p>The RSTP protocol is supported and configurable via IEC: ETH COMM Mode.</p> <p>IEC 60870-5-104 protocol has been added. It can be enabled and selected via IEC: IEC60870-5-104enable and IEC: IEC prot. varian.</p> <p>To improve network administration, VLAN and port assignment are supported.</p>
	VINP	<p>VINP functional group includes 64 virtual inputs and is intended to process binary information from the Ethernet module running with protocol IEC 60870-5-104.</p> <p>This function group is only visible if IEC: IEC60870-5-104enable is set to Yes.</p>
	Pf<	A new function group "Underfrequency Load Shedding" (Pf<) is available.
	QV	A new function group "QV Protection" (QV) is available.
	TRMON	Implementation of a dedicated Transformer Monitoring function group that provides inputs for external transformer protection equipment (3 sets of Buchholz alarm and trip, insulation alarm).
	TIMER	A new function group "Timer" has been added.



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Publication: P532/EN M/R-b5-A Volume 2

Publishing: Schneider Electric
09/2018