

<u>minifast cords and receptacles</u>	
Installation in Class I, Division 2	Sheet 2
<u>eurofast cords and receptacles</u>	
Installation in Class I, Division 2	Sheet 3 & 4
<u>ethernet cords</u>	
Installation in Class I, Division 2	Sheet 5
<u>eurofast and minifast field wireable connectors</u>	
Installation in Class I, Division 2	Sheet 6
<u>JBBS-.SC-.... Junction Bricks</u>	
Installation in Class I, Division 2, Group C or D with approved nonincendive . . .	Sheets 7 & 8
fieldbus participants with Nonincendive Field Wiring parameters.	
<u>JBBS- .. -.... Junction Bricks</u>	
Installation in Class I, Division 2, Group A, B, C, or D with approved	Sheets 9 & 10
nonincendive fieldbus participants without Nonincendive Field Wiring parameters.	
<u>JRBS-49SC-8 Junction Bricks</u>	
Installation in Class I, Division 2, Group C or D with approved nonincendive	Sheet 11
fieldbus participants with Nonincendive Field Wiring parameters.	
<u>JBBS-25SC-.../SO Junction Bricks</u>	
Spur shut-off functionality in Class I, Division 2 hazardous locations	Sheet 12

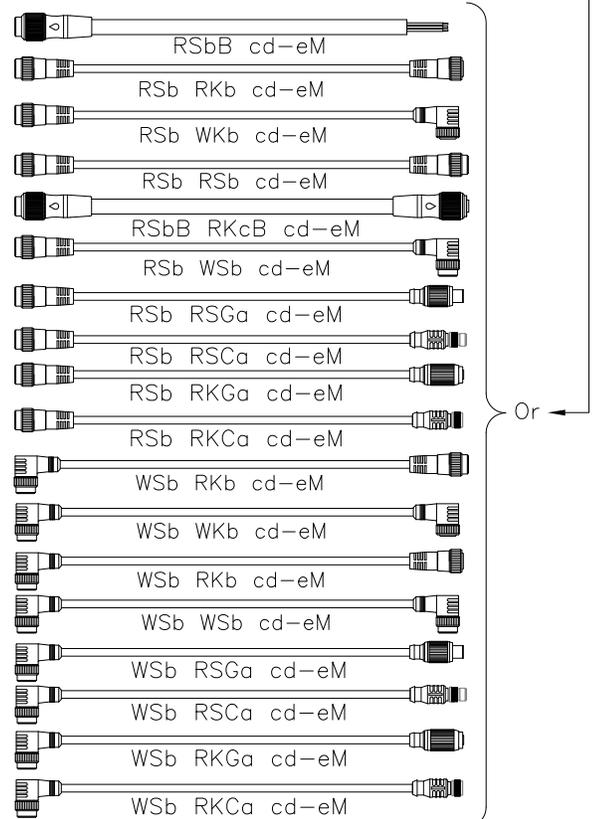
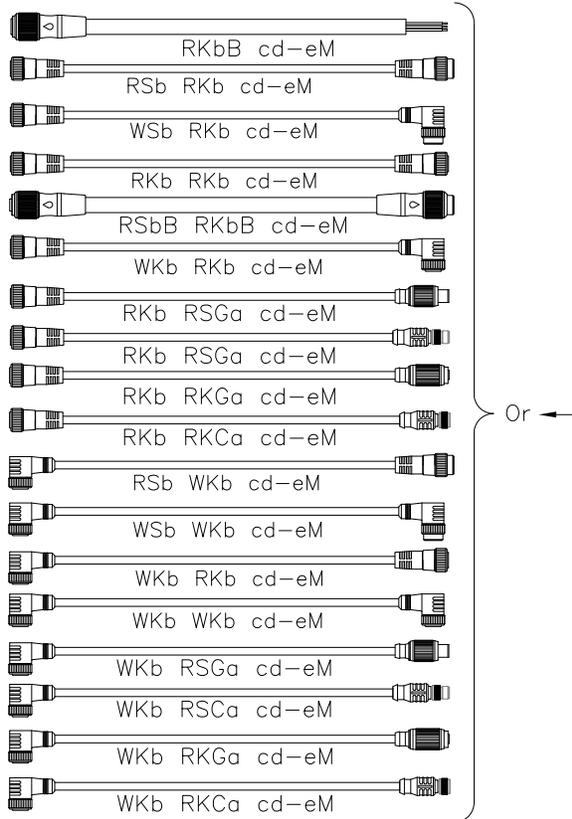
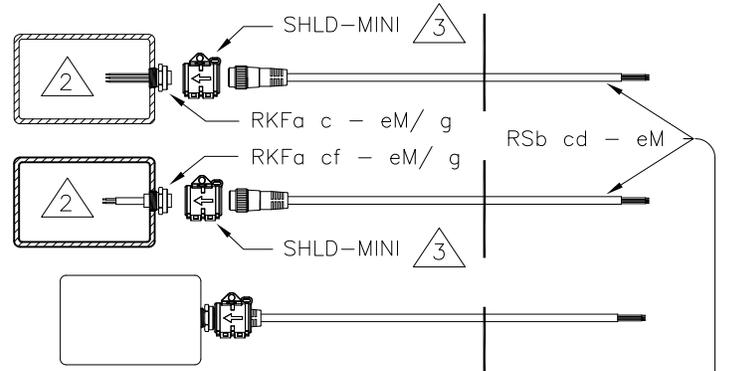
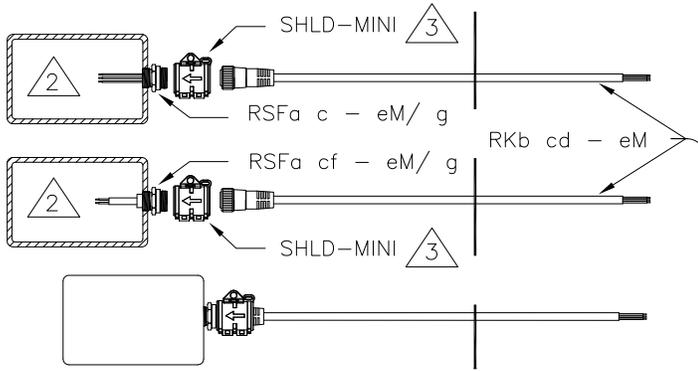
H	Correct lock reference Sheet 5	BVL	10/8/13	Drawing No.: NI-2.401	TURCK 3000 Campus Drive Plymouth, MN 55441 Phone: (763) 553-7300
G	Add new shts 2-6 with cord and recept. desc.	BVL	6/12/13		
F	Add SST and Fiberglass Enclosure Options	BVL	7/10/12	Title: Installation of FM Approved JBBS and JRBS Junction Bricks	Scale: NONE
E	Remove JTBS, repaginate	BVL	9/8/11		
D	Add JRBS-25SC-.../SO, sheet 9	BVL	5/28/10		
C	Add JRBS-49SC-8, sht 8	BVL	10/2/07	Sheet 1 of 12	
B	Add bus std 25	BVL	4/2/07		
A	Release	BVL	9/7/04		
Rev	Description	Drft	Date		

Hazardous Location
Class I, Division 2, Group A, B, C, or D

Nonhazardous
Location

Hazardous Location
Class I, Division 2, Group A, B, C, or D

Nonhazardous
Location



Notes:

1. The installation must be in accordance with the National Electrical Code (NEC), ANSI/NFPA 70. Specific requirements for the installation of ITC rated and PLTC rated cable may be found in Article 501, Article 725 and Article 727.

2. Nonincendive equipment, FM approved for installation in Class I, Division 2.

3. All quick-disconnects in the hazardous location must be secured with a lokfast guard when the circuit is live. The lokfast guard require a tool to disconnect, rendering the connection not normally arcing. SHLD-MINI is shown for straight connections; use SHLD-MINI-ANGLE for right angle connections.

4. Model number key:

- a = Material V or blank
- b = Material M, or V
- c = Bus standard 25, 45, 48, 49, or 57
- d = Cable designation 1-, 2-, or 3-character alpha-numeric code
- e = Cable/lead length in meters
- f = Cable/lead type T, O, or blank
- g = Thread 14.5, 14.75, M20, or blank

5. The molded construction of the cordset and the gas/vaportight continuous sheath of the cable meet the requirements of the NEC for cable seals in Class I, Division 2.

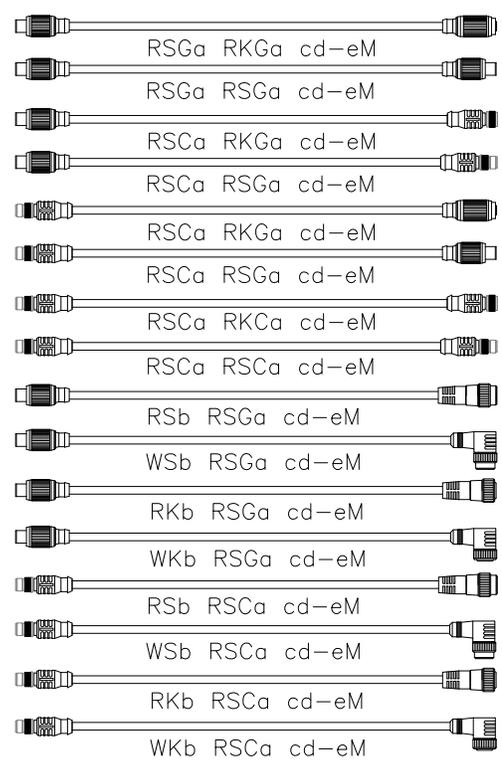
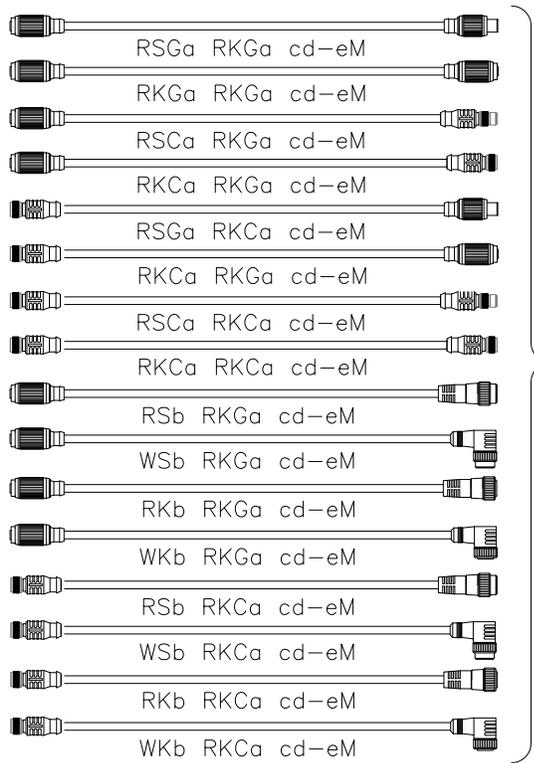
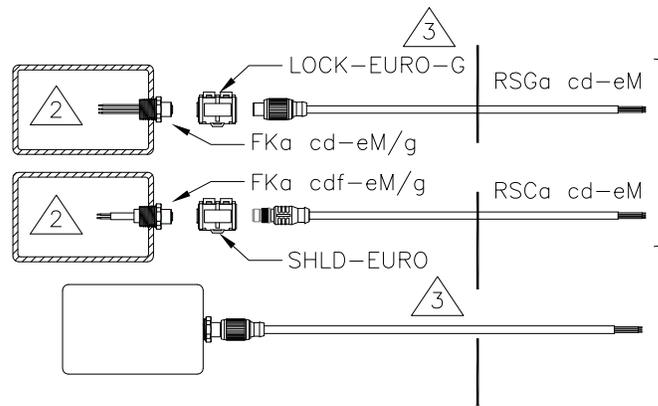
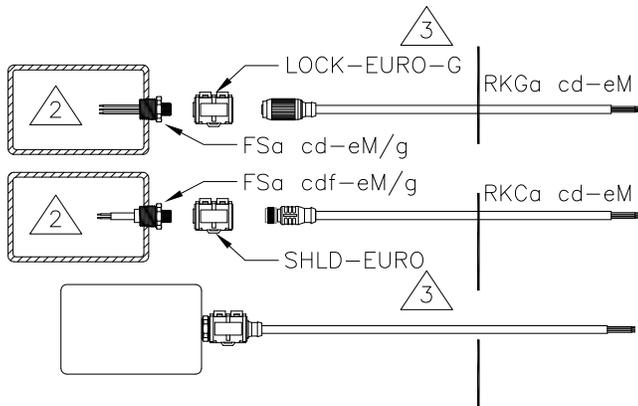
H	Correct lock reference Sheet 5	BVL	10/8/13	Drawing No.:	NI-2.401
Rev	Description	Drft	Date	Scale:	NONE
				Sheet	2 of 12

Hazardous Location
Class I, Division 1, Group A, B, C, or D

Nonhazardous
Location

Hazardous Location
Class I, Division 1, Group A, B, C, or D

Nonhazardous
Location



Notes:

1. The installation must be in accordance with the National Electrical Code (NEC), ANSI/NFPA 70. Specific requirements for the installation of ITC rated and PLTC rated cable may be found in Article 501, Article 725 and Article 727.

2. Nonincendive equipment, FM approved for installation in Class I, Division 2.

3. All quick-disconnects in the hazardous location must be secured with a lokfast guard when the circuit is live. The lokfast guard require a tool to disconnect, rendering the connection not normally arcing. Use LOCK-EURO-G with G-body (RSG/RKG types) connectors and SHLD-EURO with E-body (RSC/RKC types) connectors.

4. Model number key:

- a = Material V or blank
- b = Material M, or V
- c = Bus standard 25, 45, 48, 49, or 57
- d = Cable designation 1-, 2-, or 3-character alpha-numeric code
- e = Cable/lead length in meters
- f = Cable/lead type T, O, or blank
- g = Thread 14.5, 14.75, M20, or blank

5. The molded construction of the cordset and the gas/vaportight continuous sheath of the cable meet the requirements of the NEC for cable seals in Class I, Division 2.

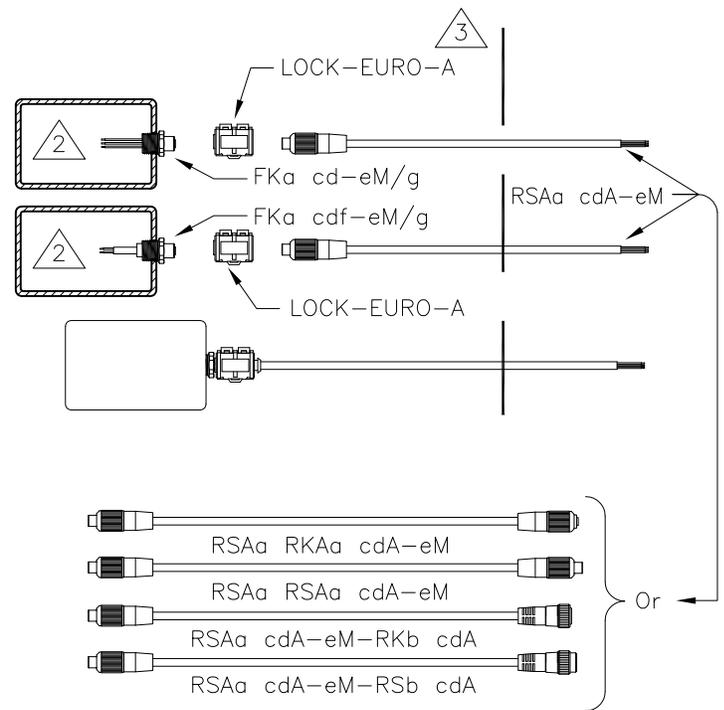
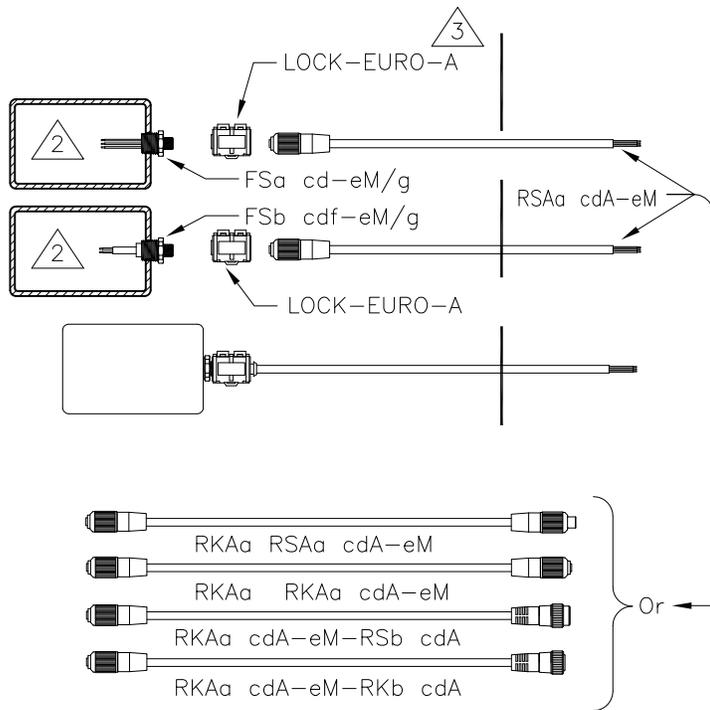
H	Correct lock reference Sheet 5	BVL	10/8/13	Drawing No.:	NI-2.401
Rev	Description	Drft	Date	Scale:	NONE
					Sheet 3 of 12

Hazardous Location
Class I, Division 1, Group A, B, C, or D

Nonhazardous
Location

Hazardous Location
Class I, Division 1, Group A, B, C, or D

Nonhazardous
Location



Notes:

1. The installation must be in accordance with the National Electrical Code (NEC), ANSI/NFPA 70. Specific requirements for the installation of ITC rated and PLTC rated cable may be found in Article 501, Article 725 and Article 727.

2. Nonincendive equipment, FM approved for installation in Class I, Division 2.

3. All quick-disconnects in the hazardous location must be secured with a lokfast guard when the circuit is live. The lokfast guard require a tool to disconnect, rendering the connection not normally arcing.

4. Model number key:

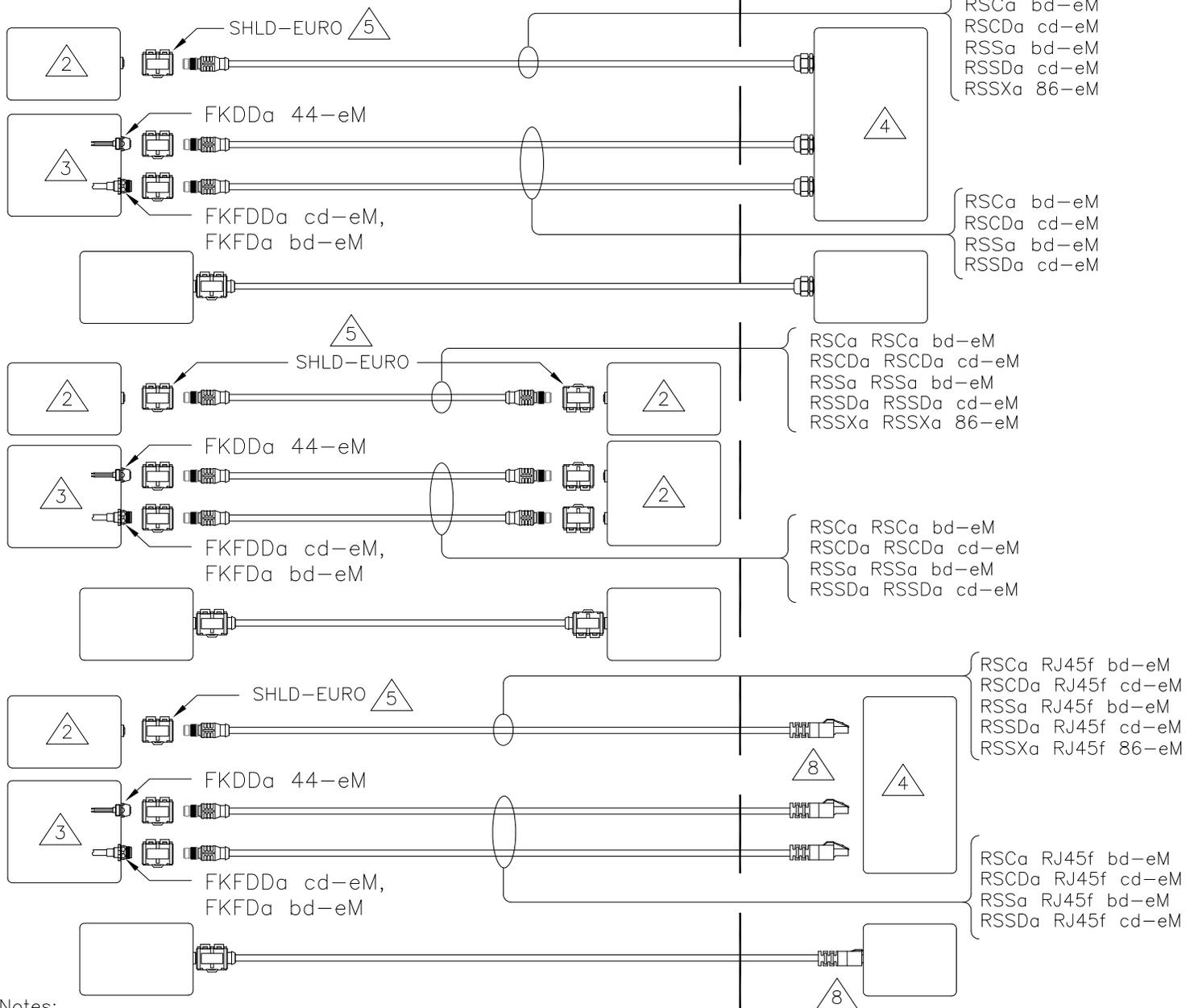
- a = Material V or blank
- b = Material M, or V
- c = Bus standard 25, 45, 48, 49, or 57
- d = Cable designation 1-, 2-, or 3-character alpha-numeric code
- e = Cable/lead length in meters
- f = Cable/lead type T, O, or blank
- g = Thread 14.5, 14.75, M20, or blank

5. The molded construction of the cordset and the gas/vaportight continuous sheath of the cable meet the requirements of the NEC for cable seals in Class I, Division 2.

H	Correct lock reference Sheet 5	BVL	10/8/13	Drawing No.:	NI-2.401
Rev	Description	Drft	Date	Scale:	NONE
				Sheet 4 of 12	

Hazardous Location
Class I, Division 2, Group A, B, C, or D

Nonhazardous Location



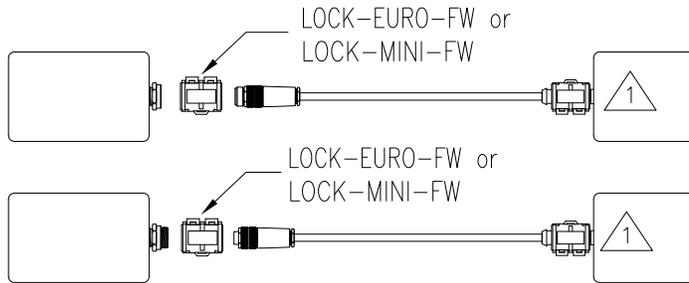
Notes:

1. The installation must be in accordance with the National Electrical Code (NEC), ANSI/NFPA 70. Specific requirements for the installation of ITC rated and PLTC rated cable may be found in Article 501, Article 725 and Article 727.
2. Nonincendive equipment with integral connectors, FM approved for installation in Class I, Division 2. The equipment must provide a Class 2 energy limited circuit when connected using PLTC cable.
3. Nonincendive equipment, FM approved for installation in Class I, Division 2. The equipment must provide a Class 2 energy limited circuit when connected using PLTC cable.
4. Equipment must provide a Class 2 energy limited circuit when connected using PLTC cable.
5. All quick-disconnects in the hazardous location must be secured with a lokfast guard when the circuit is live. The lokfast guard require a tool to disconnect, rendering the connection not normally arcing.
6. Model number key:
 - a = Material V or blank
 - b = Bus standard 84 or 86
 - c = Bus standard 42 or 44
 - d = Pinout 0, 1, 2, 3, 4 or 5
 - e = Cable length in meters
 - f = RJ connector (nonhazardous location) options S, M, IP67, SMIP67, MIP67 or blank
7. The molded construction of the cordset and the gas/vaportight continuous sheath of the cable meet the requirements of the NEC for cable seals in Class I, Division 2.
8. The RJ45 connector must be located in a nonhazardous location.

H	Correct lock reference Sheet 5	BVL	10/8/13	Drawing No.:	NI-2.401
Rev	Description	Drft	Date	Scale:	NONE
					Sheet 5 of 12

Hazardous Location
Class I, Division 2, Group A, B, C, or D

Nonhazardous Location



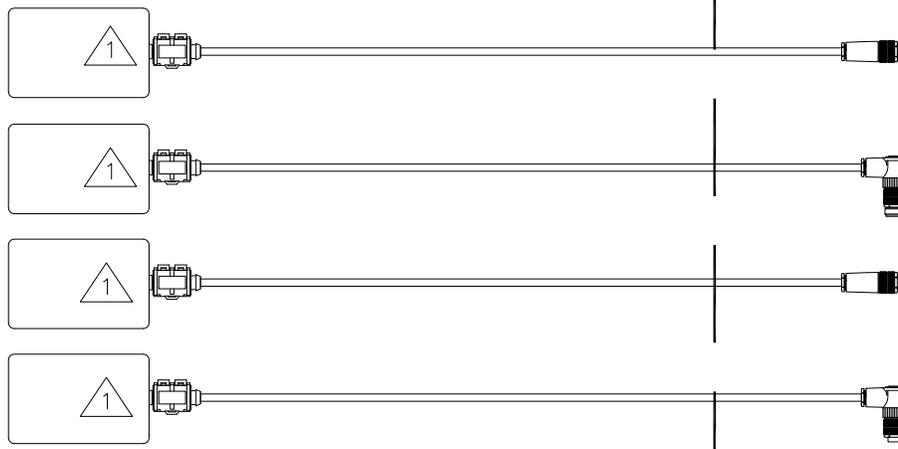
BS 41b1-0/c/d or BSa 41b0-0/c/d W/LOCK-MINI-FW
BS 81e1-0/c/d or BSa 81e0-0/c/d W/LOCK-EURO-FW

B 41b1-0/c/d or BKa 41b0-0/c/d W/LOCK-MINI-FW
B 81e1-0/c/d or BKa 81e0-0/c/d W/LOCK-EURO-FW

Field wireable connectors may be used in the hazardous location when secured with the appropriate locking guard as identified above. However, the field wireable connectors do not meet the requirements for cables seals in Class I, Division 2. Therefore, when the installation requires cable sealing, the cable may not cross the boundary to an unclassified location unless otherwise sealed in a manner in accordance with the NEC.

Hazardous Location
Class I, Division 2, Group A, B, C, or D

Nonhazardous Location



BS 41b1-0/c/d, BSa 41b0-0/c/d,
BS 81e1-0/c/d, BSa 81e0-0/c/d,

BS 42b1-0/c/d, BSa 42b0-0/c/d
BS 82e1-0/c/d, BSa 82e0-0/c/d

B 41b1-0/c/d, BKa 41b0-0/c/d
B 81e1-0/c/d, BKa 81e0-0/c/d

B 42b1-0/c/d, BKa 42b0-0/c/d
B 82e1-0/c/d, BKa 82e0-0/c/d

Field wireable connectors may be installed in the unclassified location without locking guard.

Notes:

1. Equipment installed per Sheets 2-4 or other method in accordance with the National Electrical Code (NEC), ANSI/NFPA 70.

2. Model number key:

- a = Material V or blank
- b = Number of contacts 2-6
- c = Cable size accommodated
- d = Bus standard ASI, DNET, FF, PA, PDP or blank
- e = Number of contacts 4 or 5

H	Correct lock reference Sheet 5	BVL	10/8/13	Drawing No.:	NI-2.401
Rev	Description	Drft	Date	Scale:	NONE
					Sheet 6 of 12

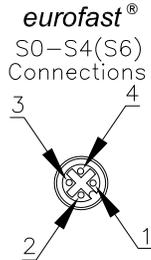
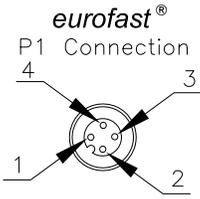
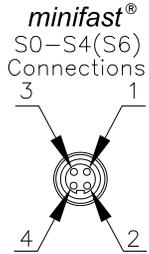
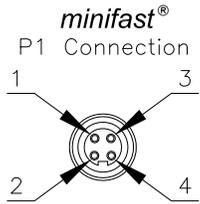
Fieldbus power supply output must not be referenced to ground. The supply voltage must be per Note 2

NON-HAZARDOUS LOCATION

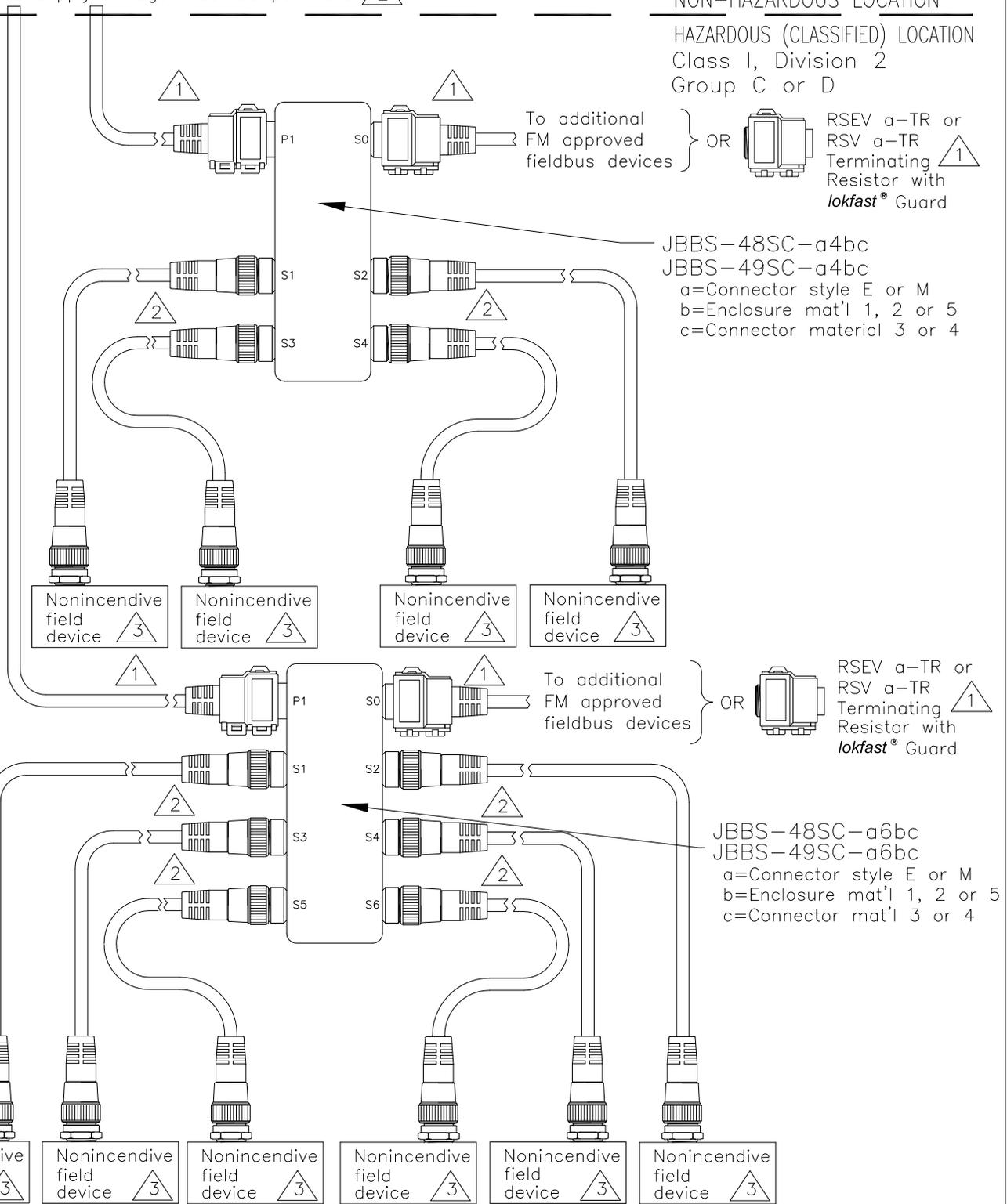
HAZARDOUS (CLASSIFIED) LOCATION

Class I, Division 2

Group C or D



48	49
1:+V	1:-V
2:nc	2:+V
3:-V	3:Sh
4:Sh	4:Gnd



JBBS-48SC-a4bc
JBBS-49SC-a4bc
a=Connector style E or M
b=Enclosure mat'l 1, 2 or 5
c=Connector material 3 or 4

JBBS-48SC-a6bc
JBBS-49SC-a6bc
a=Connector style E or M
b=Enclosure mat'l 1, 2 or 5
c=Connector mat'l 3 or 4

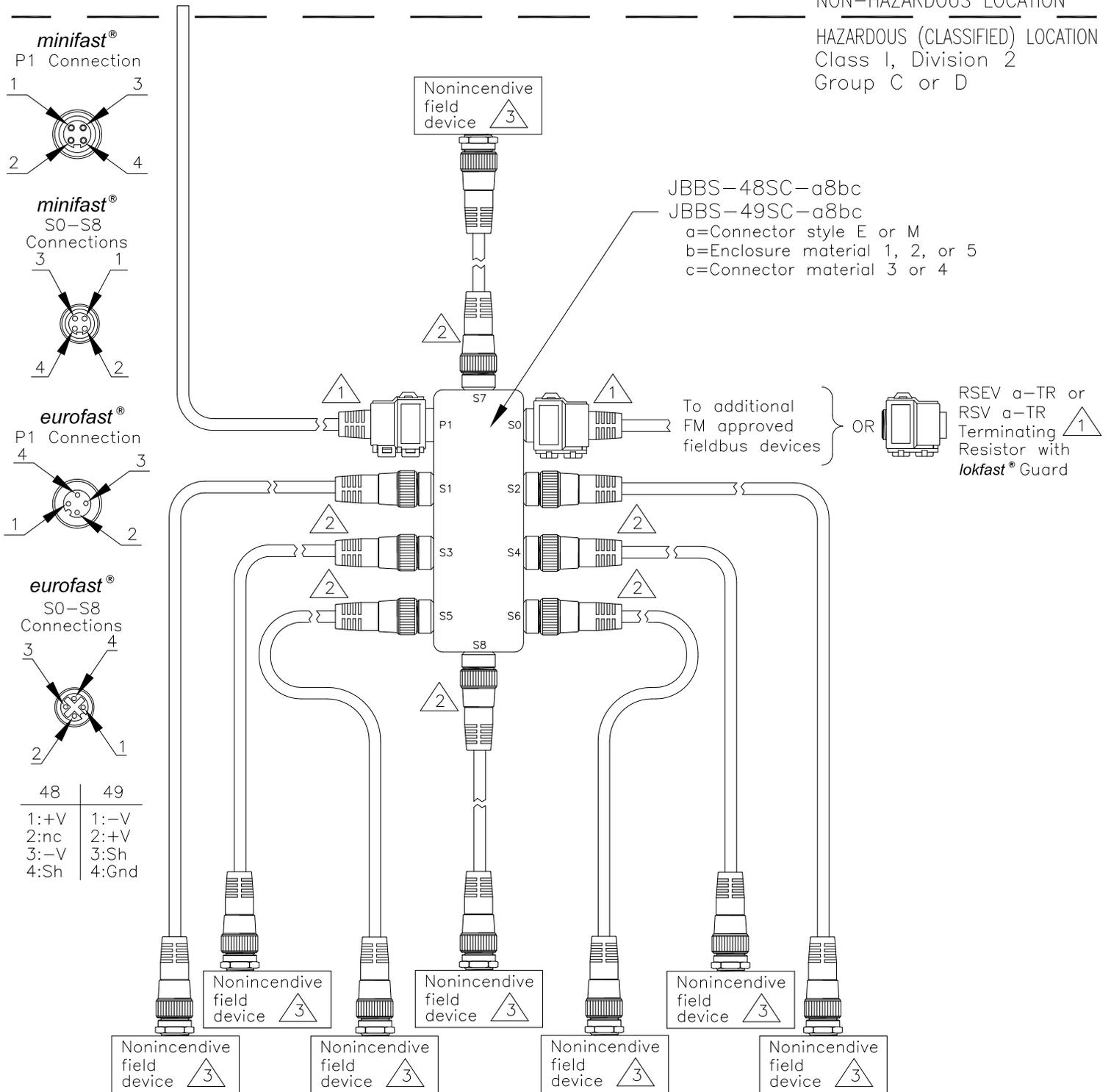
1. The trunk line (P1 - S0) must be installed using a Class I, Division 2 wiring method per the National Electrical Code (NEC), ANSI/NFPA 70, Article 501.4(B). The cables identified on Sheets 2 thru 5 are ITC and/or PLTC rated and may be used for this purpose when installed per the pertinent requirements of the NEC. Connectors and terminating resistors in the trunk line must be secured using appropriate **lokfast**® guards. Use SHIELD-EURO guards with **eurofast**® connectors; use SHIELD-MINI guards with **minifast**® connectors.
2. Installed as shown above, the JTBS junctions are Associated Nonincendive Field Wiring Apparatus. The spur circuits S1-S4 (top) and S1-S6 (bottom) are Nonincendive Field Wiring circuits with the following Nonincendive Field Wiring parameters:
 V_{oc} = The supply voltage from the fieldbus power supply, which must not be > 30V.
 When $V_{oc} \leq 28V$, $I_{sc} = 63mA$, $C_a = 0.1\mu F$, $L_a = 1.0mH$. When $V_{oc} \leq 30V$, $I_{sc} = 63mA$, $C_a = 0.06\mu F$, $L_a = 1.0mH$.
 The spur circuits may thus be installed using any NEC wiring method suitable for equivalent non-hazardous locations.
3. Field devices must be FM approved Nonincendive Field Wiring Apparatus with Nonincendive Field Wiring parameters as follows:
 $V_{max} \geq$ The supply voltage from the fieldbus power supply; $I_{max} \geq 63mA$; $C_i + C_{cable} \leq 0.1\mu F$; $L_i + L_{cable} \leq 1.0mH$
 See Sheet 9 for installation with Nonincendive equipment without Nonincendive Field Wiring parameters.

H	Correct lock reference Sheet 5	BVL	10/8/13	Drawing No.:	NI-2.401
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					Sheet 7 of 12

Fieldbus power supply output must not be referenced to ground. The supply voltage must be per Note 2

NON-HAZARDOUS LOCATION

HAZARDOUS (CLASSIFIED) LOCATION
Class 1, Division 2
Group C or D



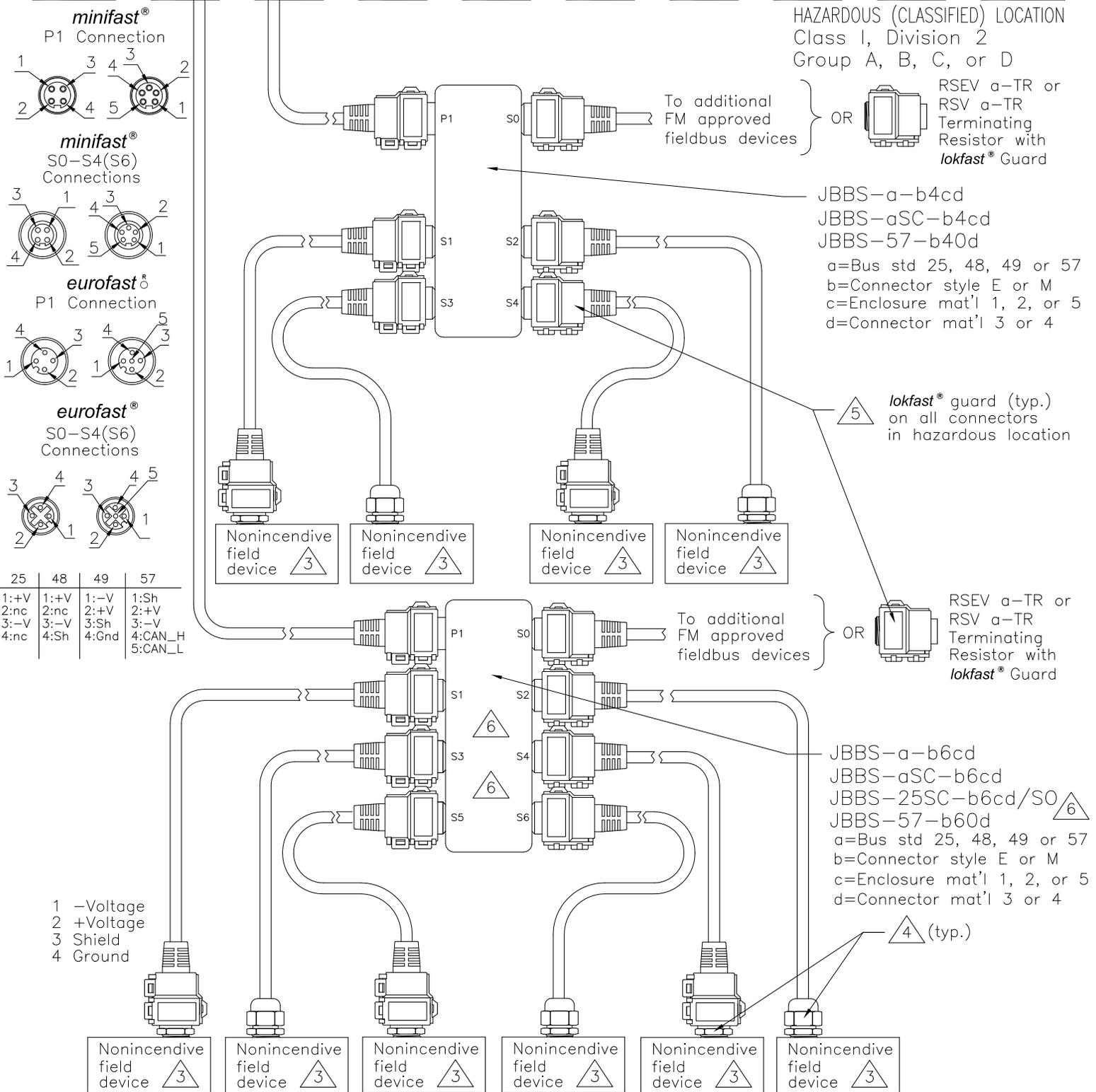
1. The trunk line (P1 - S0) must be installed using a Class 1, Division 2 wiring method per the National Electrical Code (NEC), ANSI/NFPA 70, Article 501.4(B). The cables identified on Sheets 2 thru 5 are ITC and/or PLTC rated and may be used for this purpose when installed per the pertinent requirements of the NEC. Connectors and terminating resistors in the trunk line must be secured using appropriate **lokfast®** guards. Use SHIELD-EURO guards with **eurofast®** connectors; use SHIELD-MINI guards with **minifast®** connectors.
2. Installed as shown above, the JBBS junctions are Associated Nonincendive Field Wiring Apparatus. The spur circuits S1-S4 (top) and S1-S6 (bottom) are Nonincendive Field Wiring circuits with the following Nonincendive Field Wiring parameters:
 V_{oc} = The supply voltage from the fieldbus power supply, which must not be > 30V.
 When $V_{oc} < 28V$, $I_{sc} = 63mA$, $C_a = 0.1\mu F$, $L_a = 1.0mH$. When $V_{oc} \leq 30V$, $I_{sc} = 63mA$, $C_a = 0.06\mu F$, $L_a = 1.0mH$.
 The spur circuits may thus be installed using any NEC wiring method suitable for equivalent non-hazardous locations.
3. Field devices must be FM approved Nonincendive Field Wiring Apparatus with Nonincendive Field Wiring parameters as follows:
 $V_{max} \geq$ The supply voltage from the fieldbus power supply; $I_{max} \geq 63mA$; $C_i + C_{cable} \leq 0.1\mu F$; $L_i + L_{cable} \leq 1.0mH$
 See Sheet 10 for installation with Nonincendive equipment without Nonincendive Field Wiring parameters.

H	Correct lock reference Sheet 5	BVL	10/8/13	Drawing No.:	NI-2.401
Rev	Description	Drft	Date	Scale:	NONE
					Sheet 8 of 12

Fieldbus power supply with supply voltage $\leq 35\text{Vdc}$ $\triangle 3$

NON-HAZARDOUS LOCATION

HAZARDOUS (CLASSIFIED) LOCATION
Class I, Division 2
Group A, B, C, or D



1. Wiring methods must be in accordance with Class I, Division 2 wiring practices per the National Electrical Code (NEC), ANSI/NFPA 70, Article 501.4(B).

2. All connecting cords must be constructed with ITC and/or PLTC rated cable and be one of the types identified on Sheets 2 thru 5. They may be extension cordsets or single-ended cordsets (see Note 4).

$\triangle 3$. Field devices must be FM approved for use in Class I, Division 2 hazardous (classified) locations and be rated for the fieldbus supply voltage. See Sheet 7 for installation with Nonincendive equipment with Nonincendive Field Wiring parameters.

$\triangle 4$. Connection at the field device may be made using a Device Gland Receptacle indicated on Sheets 2 thru 5, or it may be made using entry fittings suitable for Class I, Division 2 and connected to internal terminals.

$\triangle 5$. All connectors and terminating resistors must be secured using the appropriate lokfast® guard, as follows:

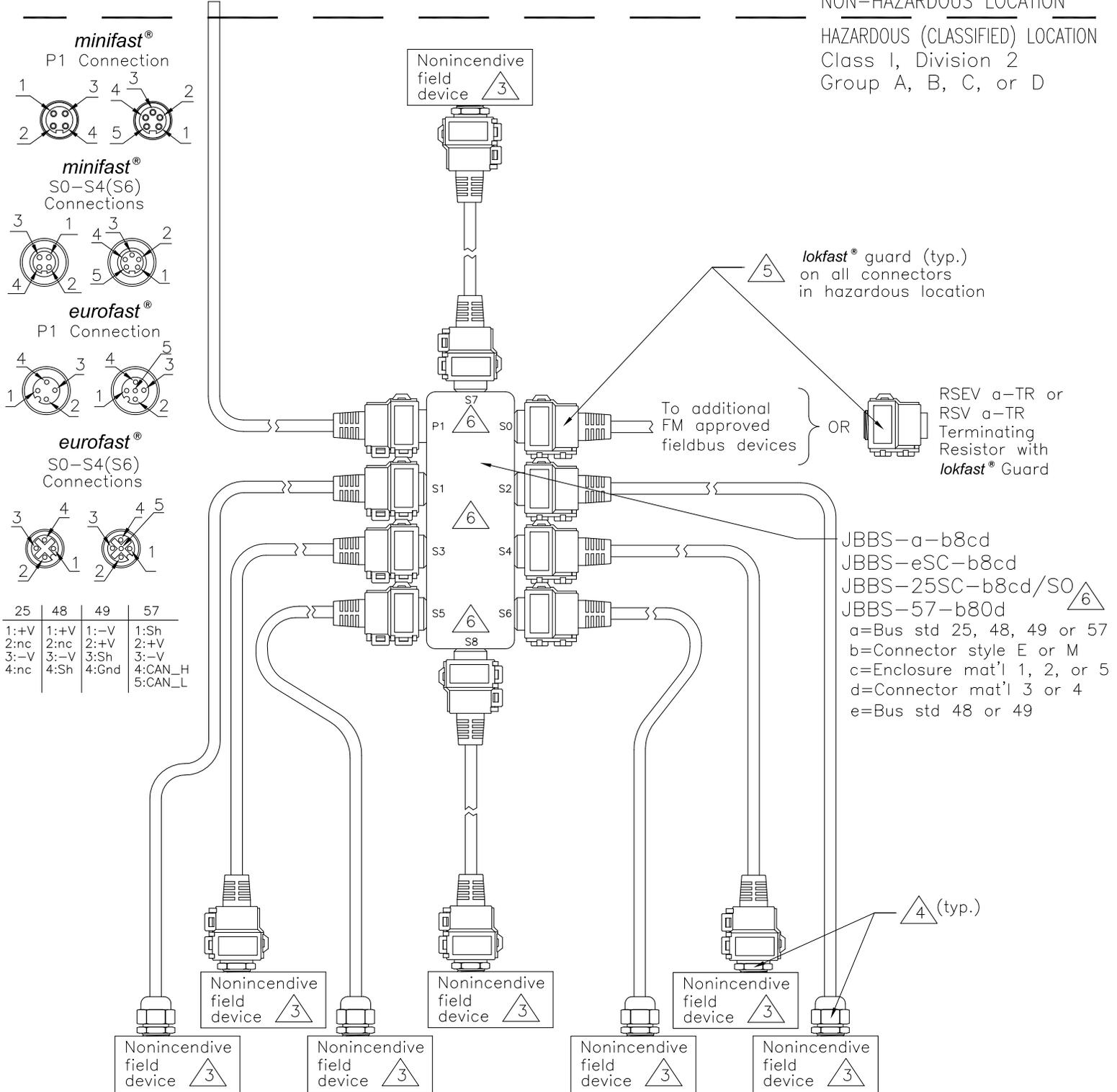
- for eurofast® connectors, use SHIELD-EURO
- for minifast® connectors, use SHIELD-MINI

$\triangle 6$. See Sheet 12 for additional spur shut-off functionality and alternative port numbering for JBBS-25SC-.../SO junctions.

H	Correct lock reference Sheet 5	BVL	10/8/13	Drawing No.:	NI-2.401
Rev	Description	Drft	Date	Scale:	NONE
					Sheet 9 of 12

Fieldbus power supply with
supply voltage $\leq 35\text{Vdc}$ 

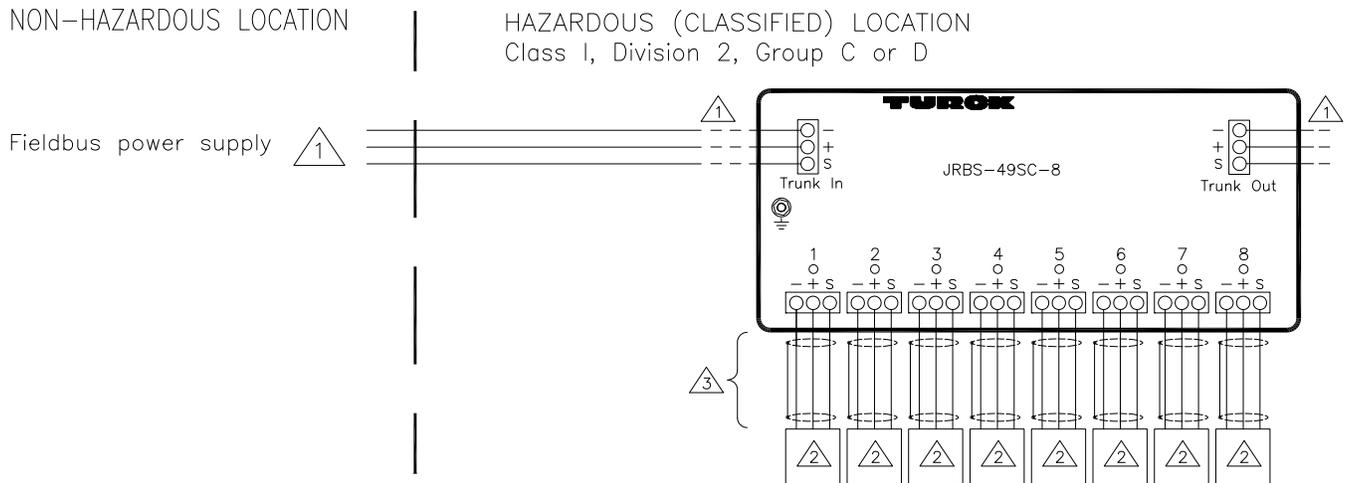
NON-HAZARDOUS LOCATION
HAZARDOUS (CLASSIFIED) LOCATION
Class I, Division 2
Group A, B, C, or D



1. Wiring methods must be in accordance with Class I, Division 2 wiring practices per the National Electrical Code (NEC), ANSI/NFPA 70, Article 501.4(B).
2. All connecting cords must be constructed with ITC and/or PLTC rated cable and be one of the types identified on Sheets 2 thru 5. They may be extension cordsets or single-ended cordsets (see Note 4).
-  3. Field devices must be FM approved for use in Class I, Division 2 hazardous (classified) locations and be rated for the fieldbus supply voltage. See Sheet 8 for installation with Nonincendive equipment with Nonincendive Field Wiring parameters.
-  4. Connection at the field device may be made using a Device Gland Receptacle indicated on Sheets 2 thru 5, or it may be made using entry fittings suitable for Class I, Division 2 and connected to internal terminals.
-  5. All connectors and terminating resistors must be secured using the appropriate lokfast® guard, as follows:
 - for eurofast® connectors, use SHIELD-EURO
 - for minifast® connectors, use SHIELD-MINI
-  6. See Sheet 12 for additional spur shut-off functionality and alternative port numbering for JBBS-25SC-.../S0 junctions.

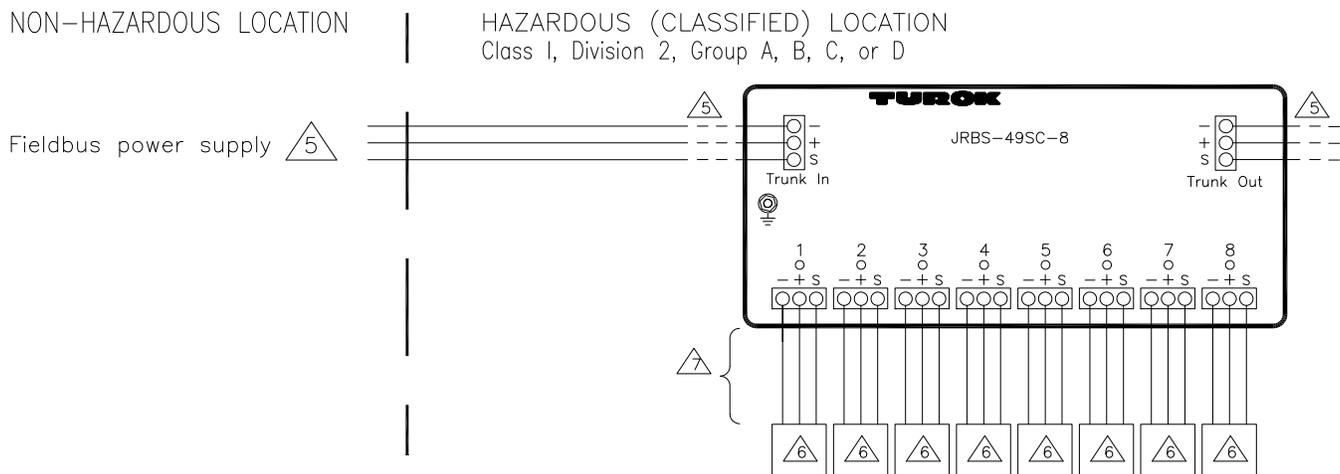
H	Correct lock reference Sheet 5	BVL	10/8/13	Drawing No.:	NI-2.401
Rev	Description	Drft	Date	Scale:	NONE
					Sheet 10 of 12

Nonincendive Equipment Junctions and Trunk-line with Nonincendive Field Wiring Circuit Spurs



1. The trunk line must be installed using a Class I, Division 2 wiring method per the National Electrical Code (NEC), ANSI/NFPA 70. The fieldbus power supply must not exceed 30 V dc and must not be referenced to ground. See also Note 3.
2. Field devices must be FM approved Nonincendive Field Wiring Apparatus with Nonincendive Field Wiring parameters as follows:
 $V_{max} \geq$ The supply voltage from the fieldbus power supply; $I_{max} \geq 63\text{mA}$; $C_i + C_{cable} \leq 0.1\mu\text{F}$; $L_i + L_{cable} \leq 1.0\text{mH}$
 If the electrical parameters of the cable are unknown, the following values may be used: Capacitance – 60pF/ft. Inductance – 0.2 μH /ft.
3. Installed as shown above, the JRBS junctions are Associated Nonincendive Field Wiring Apparatus. The spur circuits 1–4 (left), 1–6 (center), and 1–8 (right) are Nonincendive Field Wiring circuits with the following Nonincendive Field Wiring parameters with right angle output characteristic:
 $V_{oc} =$ The supply voltage from the fieldbus power supply, which must not be $> 30\text{V}$.
 When $V_{oc} \leq 28\text{V}$, $I_{sc} = 63\text{mA}$, $C_a = 0.1\mu\text{F}$, $L_a = 1.0\text{mH}$. When $V_{oc} \leq 30\text{V}$, $I_{sc} = 63\text{mA}$, $C_a = 0.06\mu\text{F}$, $L_a = 1.0\text{mH}$.
 The spur circuits may thus be installed using any NEC wiring method suitable for equivalent non-hazardous locations except that they must be installed in separate cables or separated by grounded shields.
4. The junctions must be installed in a suitable equipment enclosure in accordance with ANSI/ISA S82.01 and S82.03.

Nonincendive Equipment Junctions, Trunk-line, and Spurs

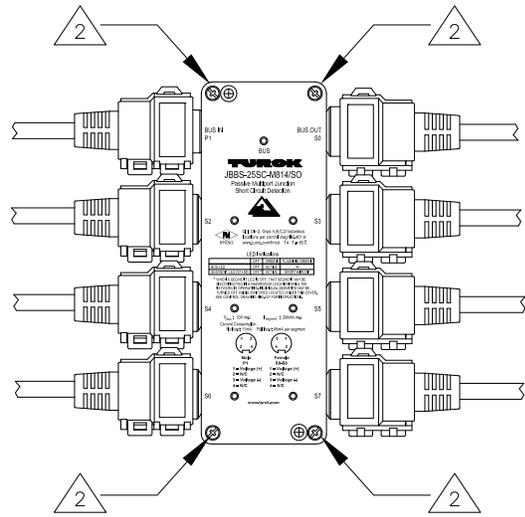


5. The trunk line must be installed using a Class I, Division 2 wiring method per the National Electrical Code (NEC), ANSI/NFPA 70. The fieldbus supply voltage must not exceed 30 V dc.
6. Field devices must be FM approved for use in Class I, Division 2 hazardous (classified) locations and be rated for the fieldbus supply voltage.
7. The spur circuits must be installed using a Class I, Division 2 wiring method per the National Electrical Code (NEC), ANSI/NFPA 70.
8. The junctions must be installed in a suitable equipment enclosure in accordance with ANSI/ISA S82.01 and S82.03.

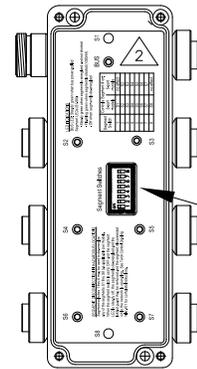
H	Correct lock reference Sheet 5	BVL	10/8/13	Drawing No.: NI-2.401
Rev	Description	Drft	Date	Scale: NONE
				Sheet 11 of 12

Spur Shut-Off Function for JBBS-25SC-.../SO Junctions

6-Port Junction (JBBS-25SC-.61./SO)



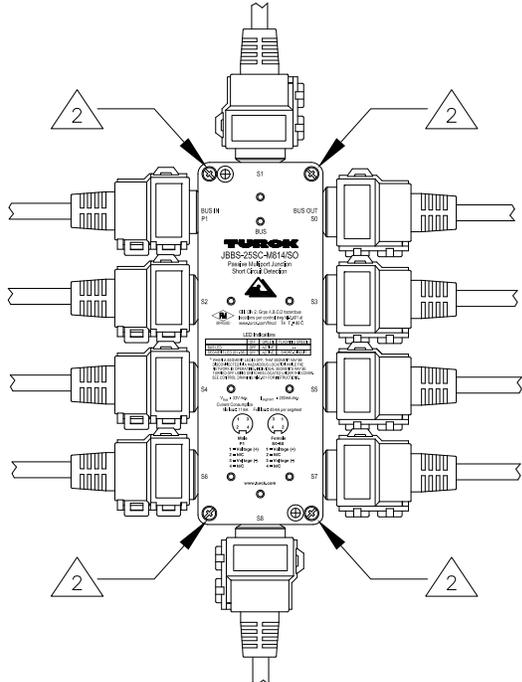
W/Trunk-in (P1), Trunk-out (S0), all spurs (S2-S7) connected and *lokfast*® guards fitted.



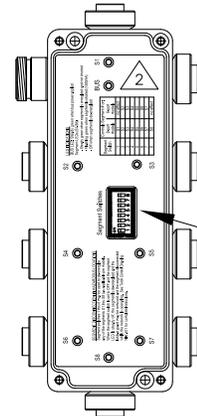
W/Cover Removed

DIP Switch	Controls Spur
1	na
2	S2
3	S3
4	S4
5	S5
6	S6
7	S7
8	na

8-Port Junction (JBBS-25SC-.81./SO)



W/Trunk-in (P1), Trunk-out (S0), all spurs (S1-S8) connected and *lokfast*® guards fitted.



W/Cover Removed

DIP Switch	Controls Spur
1	S1
2	S2
3	S3
4	S4
5	S5
6	S6
7	S7
8	S8

Notes:

- See Sheets 9 and 10 for the basic requirements for installing JBBS-25SC-.../SO junctions in Class I, Division 2 hazardous locations.
- The cover of the JBBS-25SC-.../SO junction may be removed by loosening the four indicated captive screws. This may be done in the hazardous location, as there are no unprotected exposed components.
- When the DIP switch corresponding to the spur number (S1-S8) is set to OFF, the spur is positively de-energized and the LED indicator is off. When the LED indicator for a spur is steady off, the *lokfast*® guard for that spur may be removed and that spur may then be disconnected in the hazardous location. Trunk connections P1 and S0 must have *lokfast*® guards fitted at all times when the bus is energized.
- The LED indications are as follows:
 - BUS LED:
 - Steady Green when bus power applied
 - Spur LEDs:
 - Steady Green when port is energized and not shorted
 - Flashing Green when port is energized but shorted (> 280mA)
 - Off when port is positively not energized, e.g. there is no bus power or the DIP switch for the spur is set to OFF.
- The port numbering layout shown above for JBBS-25SC-.../SO junctions is different than the layout for other JBBS junctions shown on Sheets 7 through 10 of this drawing.

H	Correct lock reference Sheet 5	BVL	10/8/13	Drawing No.:	NI-2.401
Rev	Description	Drft	Date	Scale:	NONE
					Sheet 12 of 12