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BAF

Intrinsically Safe Ethernet Coupler for signals operating in Hazardous Areas

Installation & Operation Manual

OVERVIEW

The Solexy BAF intrinsically safe Ethernet couplers are an integrated protection device that facilitates Ethernet cabling installation in hazardous areas making the signal intrinsically safe. The patented (7,507,105) BAF coupler features a barrier circuit which protects the field cabling from faults or voltage and current high enough to cause a spark ignition. The BAF circuit is encapsulated and housed in an aluminum or stainless steel housing and is designed to operate as an intrinsically safe barrier located in a safe area. The BAF intrinsically safe Ethernet coupler can be used with most PC's, Switches, Gateways and other Ethernet devices to ensure intrinsic safety for communicating into a hazardous area.

Note: The information in this manual is intended to assist with equipment design and ensure proper installation for all device with serial number starting from 12865.

READ THIS INSTRUCTION FIRST

To avoid serious or fatal personal injury or major property damage, read and follow all the safety instruction in this manual. If you require additional assistance, please contact SOLEXY.

SAFETY INSTRUCTION TO HAZARDOUS AREA INSTALLATION

- The Solexy BAF intrinsically safe Ethernet coupler must be installed and maintenance according to suitable standards for electrical application in potentially explosive atmospheres.
- Suitably trained personnel shall carry out installation according with applicable code practice.
- Read this first and keep this instruction manual always available.
- For proper installation, see the applicable control drawing DDCD-0004 attached.
- Ethernet wiring allowed up to -25°C

MARKING

C US Associated Apparatus, for installation in non-hazardous locations.
Provides I.S. Outputs for
Class I, Div 1, Group A,B,C,D;
Class II, Div 1, Group E,F,G
[Ex ia Ga] IIC
[Ex ia Da] IIIC

This instruction refers to certified equipment covered by following certificate:

QPS File: LR1504

WARNINGS

1. The Solexy BAF is an associated apparatus and shall only be installed in a non-hazardous location.
2. This device will not work with POE, using it with POE could result in equipment damage.
3. This device is intended for 10/100 Mbps Ethernet.
4. Length of cable that it is permitted at the output of the unit is dependent on the Lo and Co values assigned.
5. The Solexy Ethernet Barrier field connections MUST be used with M12, 4-pin "D" coded connectors. Any other type of M12 connector will not work or fit into the barrier. See drawing DDCD-0003.
6. The user should not repair this equipment.
7. The user should not modify the unit.
8. If the equipment is likely to come in contact with aggressive substances, is responsibility of the user to take suitable precautions that prevent it from being adversely affected, thus ensuring that the type of protection is not compromised. Aggressive substances like acids, liquids, gases that can affect metals.

INSTALLATION

1. For proper installation, see the applicable control drawing DDCD-0004 attached.
2. Mount BAF with bracket or just leave hanging in-line in safe area location.
3. If part of the equipment is in a safe area then the circuit can be completed with the BAF series coupler, make sure that proper grounding occurs per local codes.
4. Because the limitation circuitry is referenced to earth/case, it does not meet the dielectric strength requirement specified in CAN/CSA C22.2 No. 60079-11:14 and UL 60079-11. This must be considered during installation.
5. Attach Ethernet connection to bus system at each end via BXF/BAF pigtail connector according to control drawing listed above.
6. For proper wiring and cable make up, if not using a factory supplied cable, refer to control drawing DDCD-0003.
7. Attach interconnecting cable between barriers per control drawing listed above.

PRODUCT SPECIFICATIONS

Ambient Temperature Range	-40°C to +85°C
Maximum Fault Voltage	250 VAC - 48 VDC
Maximum Ethernet Power Output	1 Watts
Maximum Current	50 mA
Data Rate	10/100 Mbps
DC Resistance (per conductor)	41 Ω

Um	250 VAC at 50-60 Hz,48 VDC 2.8V at 100 MHz
Uo	3.328V at 50-60 Hz 2.8V at 100 MHz
Io	701 mA at 50-60 Hz 1.17 A at 100 MHz
Co	1000 µF
Lo	37 µH

GROUNDING

1. Earth grounding is required at both ends of the circuit
2. All Grounds need to be at the same voltage potential
3. Cable must be shielded
4. Shield must be grounded according per local codes

PRODUCT'S STORAGE

Keep the boxes away from atmospheric agents in an environment with temperature between 0°C and 40°C.

MAINTENANCE

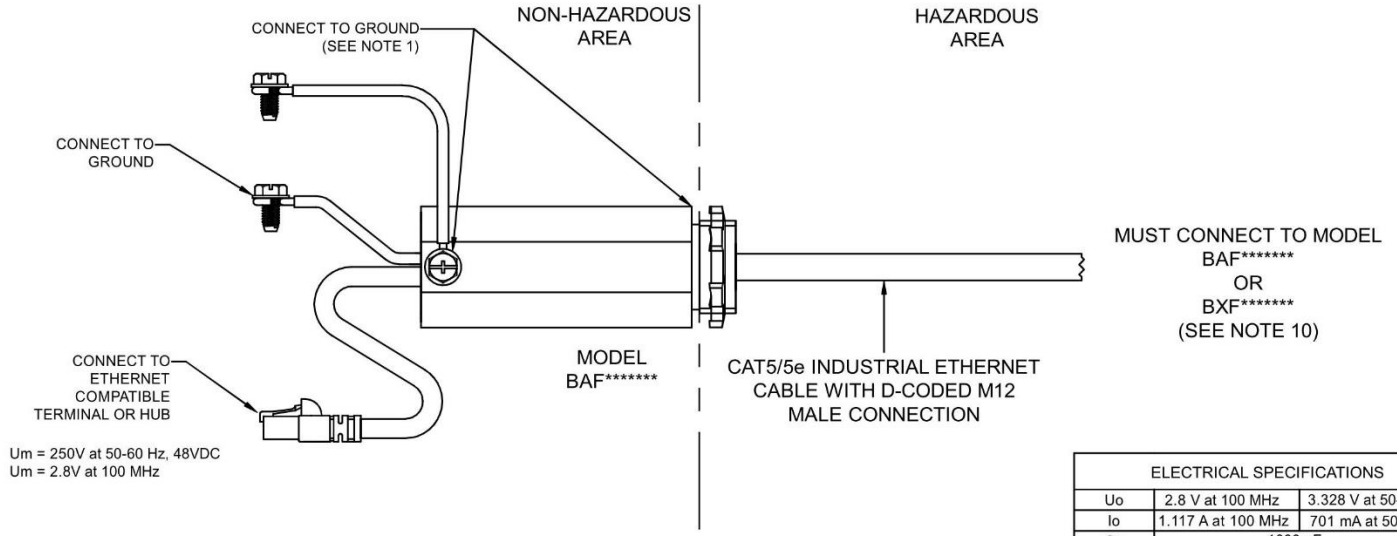
- The verification and maintenance of the electrical equipment must be performed according to local electrical code.
- The user should guarantee the keeping of the safety characteristic of the device after maintenance.
- The maintenance related the components used for wiring must be performed according to manufacturer instruction.

DISPOSAL / RECYCLING

Disposal and recycling of the product according to national regulation for waste disposal and recycling.
WARNING: Do not dispose the product and the components in the environment.

INSTALLATION REQUIREMENTS:

1. In addition to the attached pigtail lead, the BAF must additionally be grounded via either the threaded connection or the supplied grounding screw. Secondary pigtail is supplied for connection to grounding screw.
2. The Ethernet terminal or hub supply shall be a maximum of 250VAC or 48VDC with a standard Ethernet output. Supply voltage must be from same phase source at both ends.
3. Secure BAF with supplied panel nut or with bracket.
4. Um = 2.8V at 100 MHz, the apparatus shall be installed in accordance with one of the following options to ensure an input voltage of 2.8V is not exceeded:
   a) Where Um does not exceed 2.8V at 100 MHz in a SELV PELV system, or
   b) Via a safety isolating transformer complying with the requirements of CSA 61558-2-6, or technically equivalent standard,
   c) Directly connected to apparatus complying with the CSA/UL 60950 series, CSA/UL 61010-1, or a technically equivalent standard, or
   d) Fed directly from cells or batteries
5. Seal approved for air purged panels.
6. Only to be used with another BXF or BAF Ethernet coupler.
7. Ambient operating temperature (Ta): -40°C to +85°C
   Ethernet wiring allowed up to -25°C
8. Terminal refers to any endpoint device such as a computer. Hub refers to any branching device such as a switch, router, etc.
9. ANY CHANGE(S) IN THE INTRINSICALLY SAFE CIRCUITRY OR COMPONENTS MAY RESULT IN AN UNSAFE CONDITION.
10. Refer to drawing DDCD-0005 for BXF connections.
11. The BAF must be installed in a non-hazardous location.
12. Consideration must be given during installation that the BAF limitation circuitry is referenced to earth/case. As a result it does not meet the dielectric strength requirement specified in Clause 6.3.13 of UL 60079-11.
13. Length of cable that is permitted at the output of the BAF unit is dependent on the Lo and Co values assigned to the device.



ELECTRICAL SPECIFICATIONS		
Uo	2.8 V at 100 MHz	3.328 V at 50-60 Hz
Io	1.117 A at 100 MHz	701 mA at 50-60 Hz
Co	1000 µF	
Lo	37 µH	

CABLE CONFIGURATION	
CONNECTIONS	CABLE TYPE
TERMINAL to HUB	STANDARD
TERMINAL to TERMINAL	CROSSOVER
HUB to HUB	CROSSOVER

SCHEDULE DRAWING
No modifications permitted without reference to the Notified Body

REV	DATE	ECN	DESCRIPTION	DRAWN BY	CHECK BY	APPR'D BY
01	04-03-2019	-	Update electrical specification and note	SS	SS	GS

UNITS: mm	SCALE: NTS	MATERIAL: N/A	SHEET NO. 1 OF 1
ANGLE OF PROJECTION		FINISH: N/A	

UNLESS OTHERWISE SPECIFIED GENERAL TOLERANCES

	INCH	mm
.X	±.020	±0.51
.XX	±.010	±0.25
.XXX	±.005	±0.13
CONCENTRICITY	±.005	±0.13
ANGLES	±0°30'	

DRAWN BY: SS	DATE: 11/07/2018	TITLE: CONTROL DRAWING BAF QPS		
CHECK BY: GS	DATE: 11/07/2018			
APPR'D BY: GS	DATE: 16/07/2018	SIZE: A	DRAWING NUMBER: DDCD-0004-S	REV: 01

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OVERVIEW

The Solexy BXF explosion proof and intrinsically safe Ethernet coupler is an integrated protection device that facilitates Ethernet cabling installation in hazardous areas making the signal intrinsically safe. The patented (7,507,105) BXF coupler features a barrier circuit which protects the field cabling from faults or voltage and current high enough to cause a spark ignition. The BXF circuit is encapsulated and housed in an explosion-proof stainless steel body and is designed to be used with a listed enclosure for hazardous areas according to UL 1203 / CSA. By utilizing the couplers with a certified enclosure, your system will be approved for hazardous area use with most PC's, Ethernet Switches, Hubs and Masters.

Note: The information in this manual is intended to assist with equipment design and ensure proper installation for all device with serial number starting from 12865.

READ THIS INSTRUCTION FIRST

To avoid serious or fatal personal injury or major property damage, read and follow all the safety instruction in this manual. If you require additional assistance, please contact SOLEXY.

SAFETY INSTRUCTION TO HAZARDOUS AREA INSTALLATION

- The Solexy BXF explosion proof and intrinsically safe Ethernet coupler must be installed and maintenance according to suitable standards for electrical application in potentially explosive atmospheres.
- Suitably trained personnel shall carry out installation according with applicable code practice.
- Read this first and keep this instruction manual always available.
- For proper installation, see the applicable control drawing DDCD-0005 attached.
- Ethernet wiring allowed up to -25°C

MARKING

C PS US Class I, Div 1, Group A,B,C,D
Class II, Div 1, Group E,F,G
Associated Apparatus, Provides I.S. Outputs for
Class I, Group A,B,C,D;
Class II, Group E,F,G

Class I, Zone 1, AEx db mb [ia Ga] IIC T5…T4 Gb
Zone 21, AEx mb [ia Da] IIIC T100°C…T135°C Db
Ex db mb [ia Ga] IIC T5…T4 Gb
Ex mb [ia Da] IIIC T100°C…T135°C Db

NOTE = Refer to product marking if T4 and T135C class is allowed

This instruction refers to certified equipment covered by following certificate:

QPS File: LR1504

WARNINGS

1. This device will not work with POE, using it with POE could result in equipment damage.
2. This device is intended for 10/100 Mbps Ethernet.
3. Length of cable that it is permitted at the output of the unit is dependent on the Lo and Co values assigned.
4. The Solexy Ethernet Barrier field connections MUST be used with M12, 4-pin "D" coded connectors. Any other type of M12 connector will not work or fit into the barrier. See control drawing DDCD-0003.
5. The user should not repair this equipment.
6. The user should not modify the unit.
7. If the equipment is likely to come in contact with aggressive substances, is responsibility of the user to take suitable precautions that prevent it from being adversely affected, thus ensuring that the type of protection is not compromised. Aggressive substances like acids, liquids, gases that can affect metals.

INSTALLATION

1. For proper installation, see the applicable control drawing DDCD-0005 attached.
2. Feed the Ethernet cable through the enclosure conduit entry. In order to avoid any cable's damage do not attach the Ethernet cable to the device until the BXF is completely screwed.
3. Screw coupler into enclosure following local electrical code (UL1203 requires 5 thread minimum engagement)
4. If part of the equipment is in a safe area then the circuit can be completed with the BAF series coupler, make sure that proper grounding occurs per local codes.
5. Because the limitation circuitry is referenced to earth/case, it does not meet the dielectric strength requirement specified in CAN/CSA C22.2 No. 60079-11:14 and UL 60079-11. This must be considered during installation.
6. Attach Ethernet connection to bus system at each end via BXF/BAF pigtail connector according to control drawing listed above.
7. For proper wiring and cable make up, if not using a factory supplied cable, refer to control drawing DDCD-0003.
8. Attach interconnecting cable between barriers per control drawing listed above.

PRODUCT SPECIFICATIONS

Ambient Temperature Range	T5 = -40°C to +65°C T4 = -40°C to +85°C [1]
Maximum Fault Voltage	250 VAC - 48 VDC
Maximum Ethernet Power Output	1 Watts
Maximum Current	50 mA
Data Rate	10/100 Mbps
DC Resistance (per conductor)	41 Ω

[1] *Refer to product marking if allowed*

Um	250 VAC at 50-60 Hz,48 VDC 2.8V at 100 MHz
Uo	3.328V at 50-60 Hz 2.8V at 100 MHz
Io	701 mA at 50-60 Hz 1.17 A at 100 MHz
Co	1000 µF
Lo	37 µH

GROUNDING

1. Earth grounding is required at both ends of the circuit
2. All Grounds need to be at the same voltage potential
3. Cable must be shielded
4. Shield must be grounded according per local codes

PRODUCT'S STORAGE

Keep the boxes away from atmospheric agents in an environment with temperature between 0°C and 40°C.

MAINTENANCE

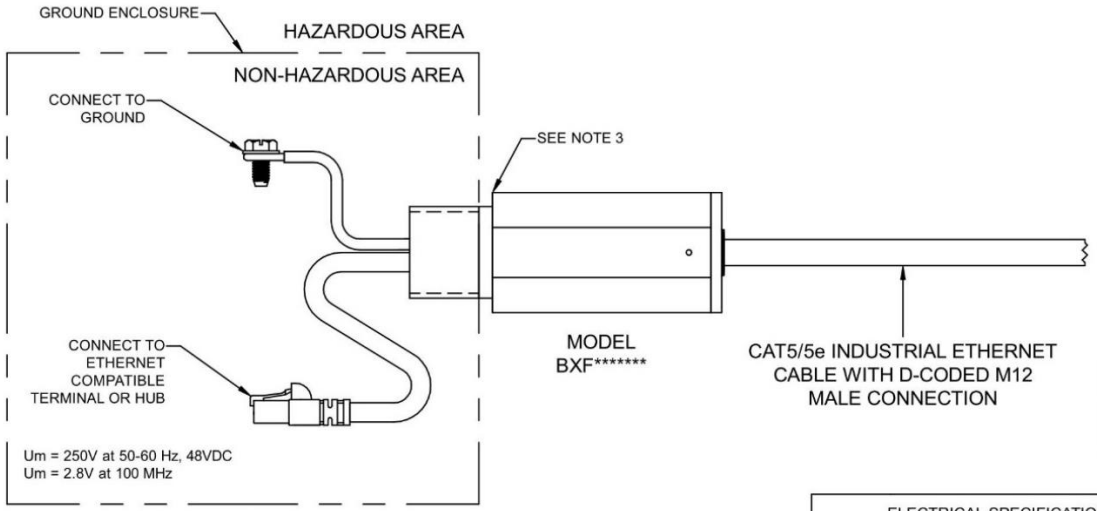
- The verification and maintenance of the electrical equipment must be performed according to local electrical code.
- The user should guarantee the keeping of the safety characteristic of the device after maintenance.
- The maintenance related to the components used for wiring must be performed according to manufacturer instruction.

DISPOSAL / RECYCLING

Disposal and recycling of the product according to national regulation for waste disposal and recycling.
WARNING: Do not dispose the product and the components in the environment.

INSTALLATION REQUIREMENTS:

1. The BXF must be securely mounted and grounded within an UL1203/CSA approved explosion-proof enclosure. Both the housing and attached pigtail lead must be grounded.
2. The Ethernet terminal or hub supply shall be a maximum of 250VAC or 48VDC with a standard Ethernet output. Supply voltage must be from same phase source at both ends.
3. The BXF thread engagement with the approved explosion-proof enclosure shall be 1/2 inch (12.7 mm) penetration with minimum 5 thread engagement.
4. Um = 2.8V at 100 MHz, the apparatus shall be installed in accordance with one of the following options to ensure an input voltage of 2.8V is not exceeded:
   a) Where Um does not exceed 2.8V at 100 MHz in a SELV PELV system, or
   b) Via a safety isolating transformer complying with the requirements of CSA 61558-2-6, or technically equivalent standard,
   c) Directly connected to apparatus certified to the CSA /UL 60950 series, CSA/UL 61010-1, or a technically equivalent standard, or
   d) Fed directly from cells or batteries
5. Only to be used with another BXF or BAF Ethernet coupler.
6. Ambient operating temperature (Ta)
   T5 = -40°C to +65°C
   T4 = -40°C to +85°C (refer to product marking if allowed)
   Ethernet wiring allowed up to -25°C
7. Terminal refers to any endpoint device such as a computer. Hub refers to any branching device such as a switch, router, etc.
8. ANY CHANGE(S) IN THE INTRINSICALLY SAFE CIRCUITRY OR COMPONENTS MAY RESULT IN AN UNSAFE CONDITION.
9. Refer to drawing DDCD-0004 for BAF connections.
10. Consideration must be given during installation that the BXF limitation circuitry is referenced to earth/case. As a result it does not meet the dielectric strength requirement specified in Clause 6.3.13 of UL 60079-11.
11. In case of use of a Ex tb enclosure with metric entries ensure 5 engaged threads minimum or use an appropriate gasket.
12. In case of use of a Ex tb enclosure with NPT entries ensure 3 engaged threads minimum.
13. It is responsability to the installer to ensure an IP6x level at the threaded joint between Ethernet coupler and Ex tb enclosure.
14. Length of cable that is permitted at the output of the BXF unit is dependent on the Lo and Co values assigned to the device.



MODEL	THREAD CONNECTION
BXF3_____	3/4-14 NPT
BXFM_____	M25 x 1.5

ELECTRICAL SPECIFICATIONS		
Uo	2.8 V at 100 MHz	3.328 V at 50-60 Hz
Io	1.117 A at 100 MHz	701 mA at 50-60 Hz
Co	1000 µF	
Lo	37 µH	

SCHEDULE DRAWING
No modifications permitted without reference to the Notified Body

CABLE CONFIGURATION	
CONNECTIONS	CABLE TYPE
TERMINAL to HUB	STANDARD
TERMINAL to TERMINAL	CROSSOVER
HUB to HUB	CROSSOVER

REV	DATE	ECN	DESCRIPTION	DRAWN BY	CHECK BY	APPR'D BY
01	04-03-2019	-	Update electrical specification and note	SS	SS	GS

UNITS: mm | SCALE: NTS | MATERIAL: N/A | FINISH: N/A | ANGLE OF PROJECTION

UNLESS OTHERWISE SPECIFIED GENERAL TOLERANCES

	INCH	mm
.X	±.020	±0.51
.XX	±.010	±0.25
.XXX	±.005	±0.13
CONCENTRICITY	±.005	±0.13
ANGLES	±0°30'	

DRAWN BY: SS | DATE: 11/07/2018
CHECK BY: GS | DATE: 11/07/2018
APPR'D BY: GS | DATE: 16/07/2018

SOLEXY WIRELESS

SHEET NO. 1 OF 1

TITLE: CONTROL DRAWING BXF QPS

SIZE: A | DRAWING NUMBER: DDCD-0005-S | REV: 01

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