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Ethernet I/O Selection Guide

BL67 Gateway	AS-i Gateway
F5 - F8	F9 - F16

Ethernet 8-wire Selection Guide

Cables	Switches	Conduit Adapters
F17 - F22	F23 - F24	F25

Cabinet Adapters	Receptacles
F26	F27- F30

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Ethernet 4-wire Selection Guide

Cables	Switches	Conduit Adapters
F31 - F35	F37 - F42	F43

Wall Plate Adapter	Cabinet Adapters	Receptacles
F44	F45	F46

Field Wireables	RJ11 Cordset
F47 - F48	F49

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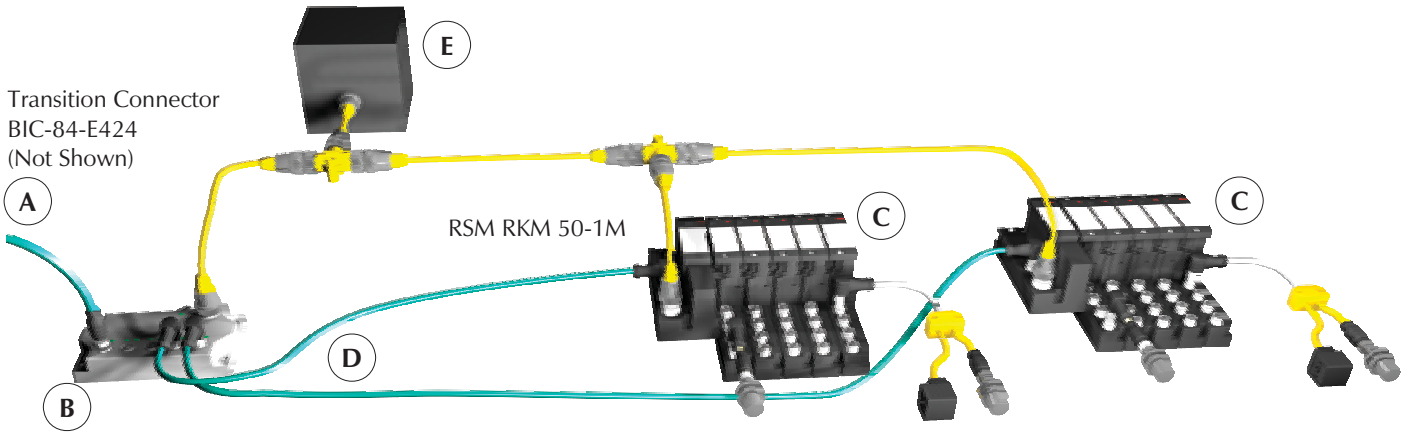
Ethernet System Description

Ethernet is the most popular protocol used to connect office computers and peripherals today. It is increasingly finding its way into other applications, and is rapidly becoming the network of choice for higher level industrial control applications. Ethernet is primarily used to connect PLCs, computers, HMI displays and other high level components.

The term "Ethernet" actually refers to the lower level communication structure. Various different versions, or implementations, of Ethernet are available, such as Ethernet/IP™ and Modbus-TCP. It is important to note that while all of these different specifications use the same physical communication method and can operate on the same cable simultaneously, they cannot necessarily communicate with each other. For example, Modbus-TCP devices cannot communicate with Ethernet/IP devices. This is because the messages and communication protocol have been defined differently for these systems, even though the physical electrical structure is the same. Think of it as two people who speak different languages; they speak by moving air with their mouths, but the rules of the languages are different.

TURCK's BL67 Ethernet gateways provide a convenient way to connect industrial I/O devices directly to the Ethernet system, expediting monitoring and troubleshooting for the overall control scheme.

Typical System Configuration



Basic Parts List

A typical Ethernet system consists of the following parts:

- A - Controller
- B - Switches
- C - Ethernet I/O modules
- D - Ethernet cable
- E - Power supply

Ethernet I/O modules act as clients on a network. A server device is needed to retrieve data from and post data to the client. This is analogous to an office network, where the client PC on a user's desk may actively connect with multiple servers to access information in different areas of the enterprise. **TURCK** Ethernet stations are designed to be fully compatible with established Ethernet standards for industrial use.

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Cordsets

TURCK offers a complete line of molded Ethernet cordsets to facilitate network installation, resulting in a faster start-up and fewer wiring errors. Cables are available with stranded or solid-core conductors, with or without shielding.

Most **TURCK** Ethernet equipment uses the 4 or 8-pin (M12) ***eurofast***® connector specifications. These connectors provide a tough, rugged seal, and are IP 67 rated. In some cases (mainly in the control cabinet) a traditional RJ45 Ethernet connector needs to be used. **TURCK** provides RJ45 cordsets, as well as a variety of devices made to convert between RJ45 and ***eurofast*** connectors.

TURCK cordsets for the Ethernet system are available in standard lengths. Please contact your local sales representative to order custom lengths.

Addressing

Industrial Ethernet stations use the IP addressing scheme. An address defined by this scheme consists of four byte values usually displayed in decimal form, for example, 192.168.1.254. Different classifications of networks require different portions of this address to be constant for all devices on the network (referred to as a "subnet"). This means that the number of stations allowed on a particular network varies depending on what class of subnet is being used. If the first three bytes of the IP address are constant (which is common), then the remaining byte may be addressed between 2 and 254, resulting in 253 possible addresses.

Maximum Ratings

Ethernet allows different maximum cable lengths depending on the type of cable being used. Normally an Ethernet segment may be as long as 100 m, where 90 m must be solid core cable and the remaining 10 m can be stranded patch cords.

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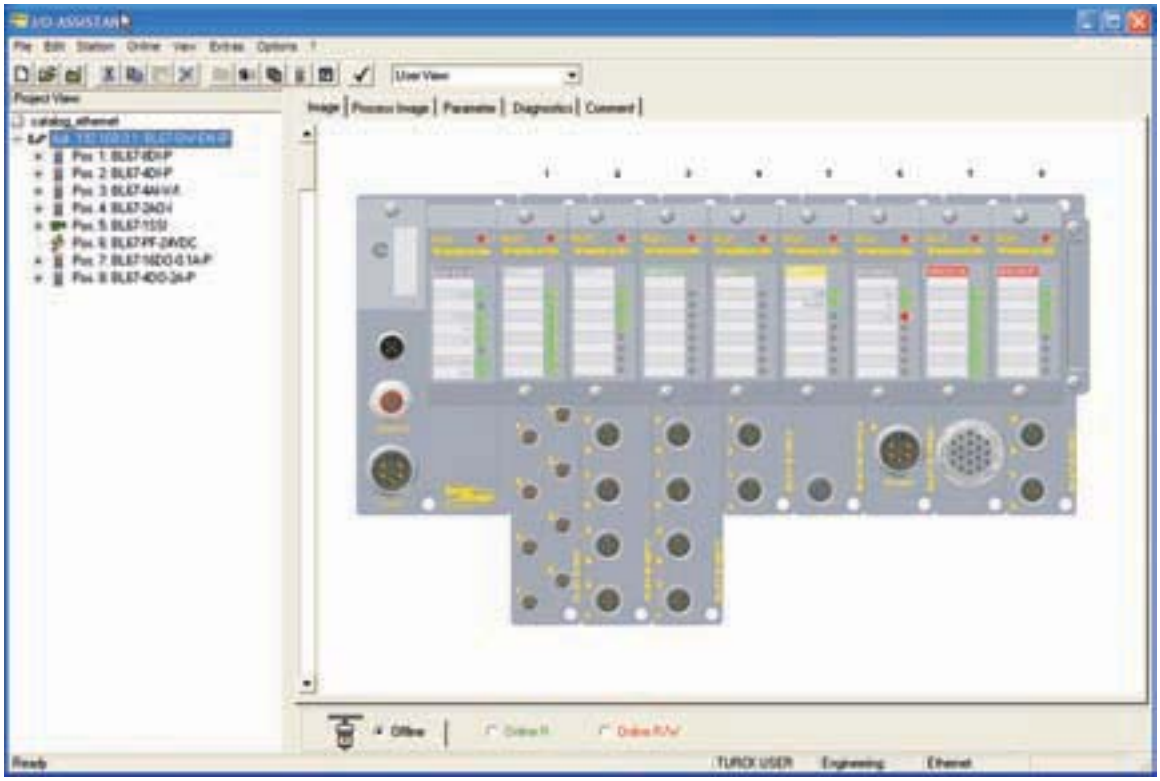
Ethernet BL67 Stations

TURCK's BL67 is a modular, user configurable network I/O system designed to allow installation of nodes containing different types and sizes of I/O depending on the users needs for a particular area. Featuring IP 67 protection and metal threaded connectors, the BL67 can often be mounted directly on a machine without the need to plan or purchase a separate enclosure for the I/O. This saves planning and installation time, as well as the cost of the enclosure itself.

The BL67 system supports several different network protocols, including Ethernet/IP™ and Modbus-TCP. A BL67 station consists of a gateway module that interfaces to the Ethernet system, and several I/O modules that interface with the physical I/O in the field. Different connector options are available to allow a greater level of customization to the user.

For more details on the BL67 system please see section G of this catalog.



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ModBus TCP/IP
Ethernet Gateways

Gateway:
BL67-GW-EN
Progammable Gateway:
BL67-PG-EN

- **Modular I/O**
- **Fieldbus Independent Configuration**
- **IP 67 Protection**
- **Various I/O Styles**

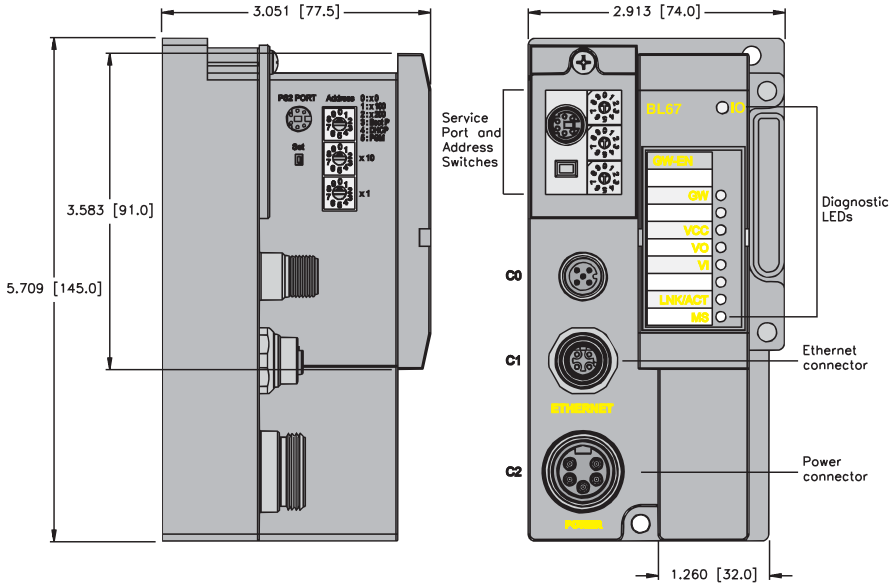
Electrical
- Operating Current: <600 mA from V_{MB}
- Input Supply Current: <4 A (from V_I)
- Output Supply Current: <8 A (from V_O)
- Backplane Current: <1.5 A (from V_{MB})

Mechanical
- Operating Temperature: -12 to +55°C (-13 to +131°F)
- Protection: IP 67
- Vibration: 5 g @ 10-500 Hz

Material
- Housing: PC-V0 (Lexan)

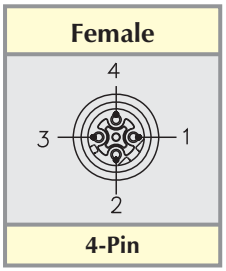
Diagnostics (Logical)
- Diagnostic information available through the system I/O map

Diagnostics (Physical)
- LEDs to indicate status of Network and Module Bus communication



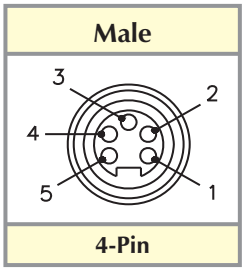
Ethernet Pinout

1 = TD+
2 = RD+
3 = TD-
4 = RD-



5-pin *minifast*® Power Pinout

1 = Gnd
2 = Gnd
3 = PE
4 = V_I
5 = V_O



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BL67 Ethernet

Ethernet IP
Ethernet Gateways

Gateway:
BL67-GW-EN-IP
Programmable Gateway
BL67-PG-EN-IP

- **Modular I/O**
- **Fieldbus Independent Configuration**
- **IP 67 Protection**
- **Various I/O Styles**

Electrical
- Operating Current: <600 mA from V_{MB}
- Input Supply Current: <4 A (from V_I)
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Mechanical
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- Protection: IP 67
- Vibration: 5 g @ 10-500 Hz

Material
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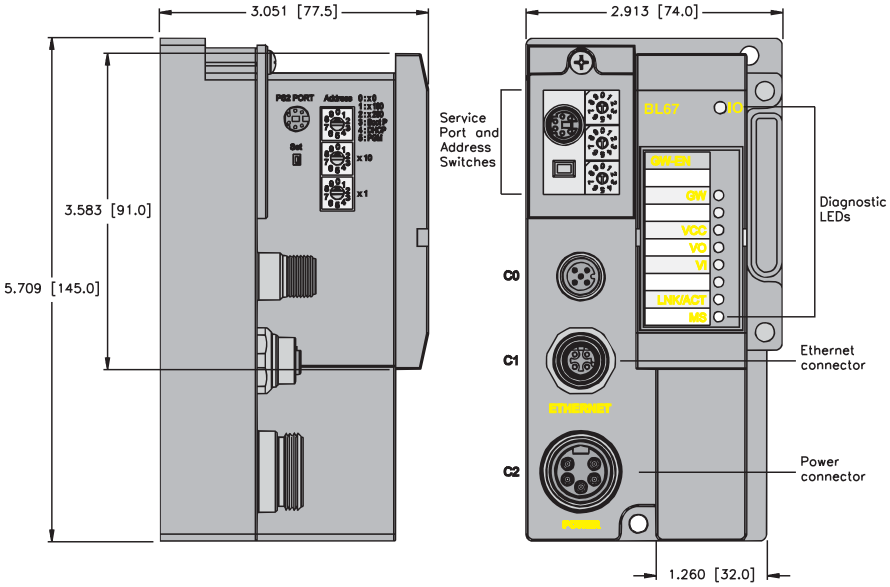
Diagnostics (Physical)
- LEDs to indicate status of Network and Module Bus communication



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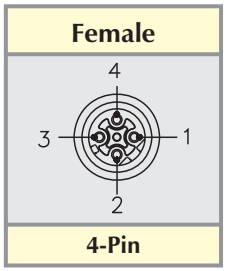

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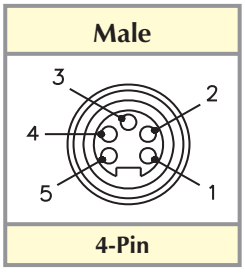

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Profinet
Ethernet Gateways

BL67-GW-EN-PN

- **Modular I/O**
- **Fieldbus Independent Configuration**
- **IP 67 Protection**
- **Various I/O Styles**

Electrical

- Operating Current: <600 mA from V_{MB}
- Input Supply Current: <4 A (from V_I)
- Output Supply Current: <8 A (from V_O)
- Backplane Current: <1.5 A (from V_{MB})

Mechanical

- Operating Temperature: -12 to +55°C (-13 to +131°F)
- Protection: IP 67
- Vibration: 5 g @ 10-500 Hz

Material

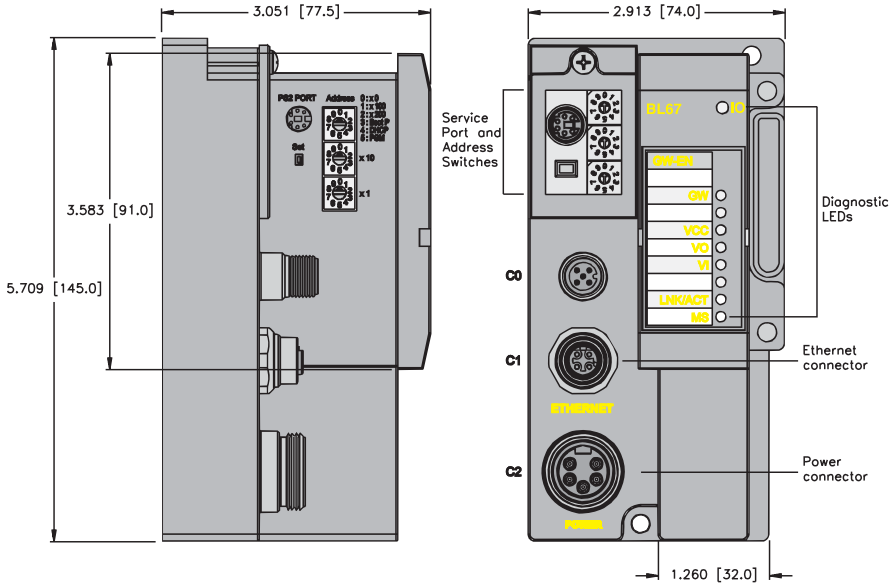
- Housing: PC-V0 (Lexan)

Diagnostics (Logical)

- Diagnostic information available through the system I/O map

Diagnostics (Physical)

- LEDs to indicate status of Network and Module Bus communication



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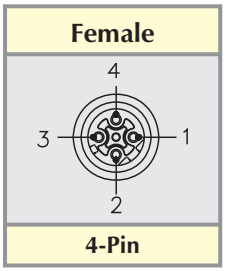

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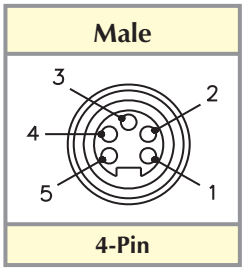

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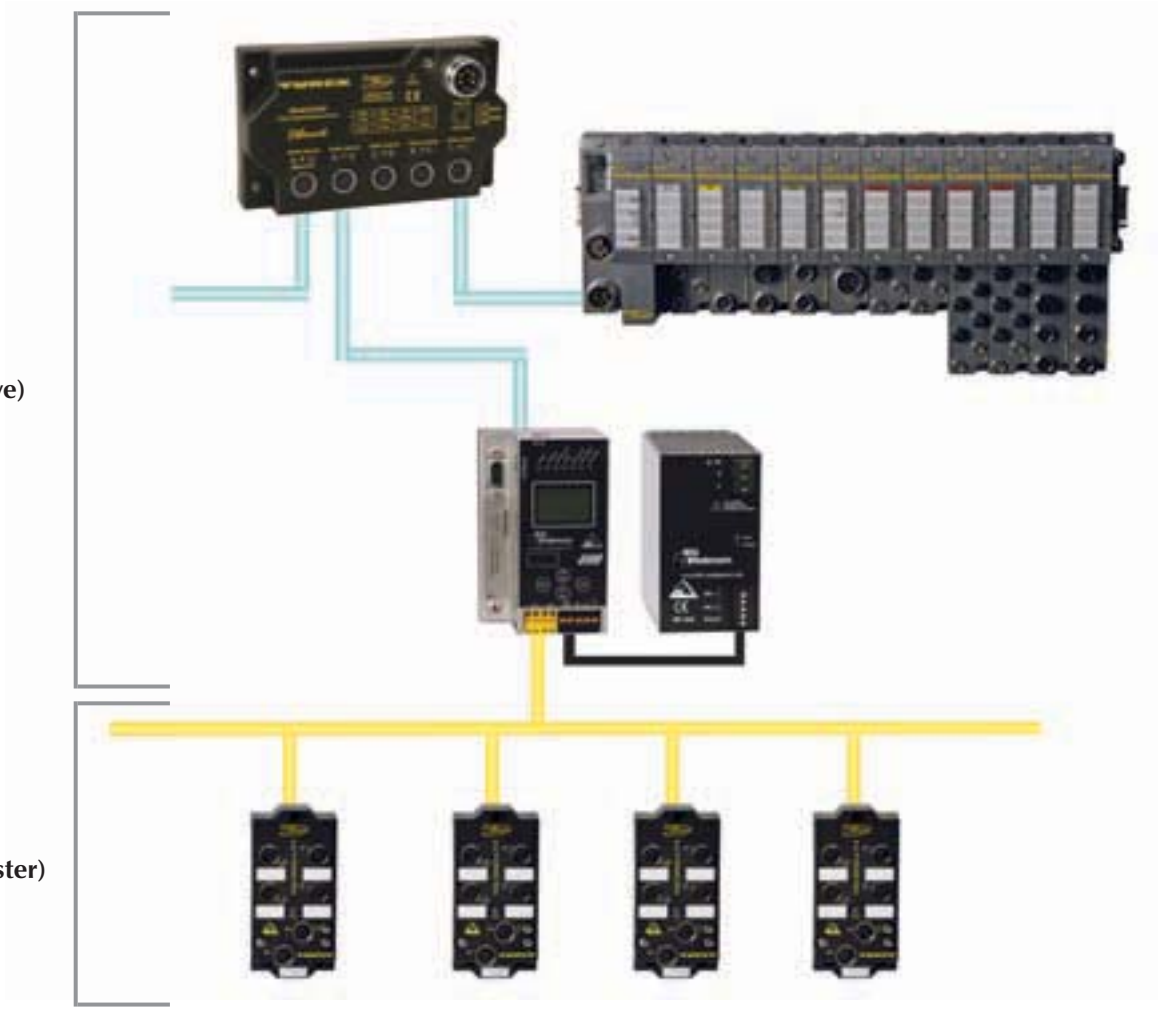
Ethernet to AS-interface® Gateways

AS-I systems can be easily connected to a higher-level network, such as EtherNet/IP™ and Modbus-TCP, through a gateway master. The gateway acts as a master to the AS-I system(s) and a slave to the Ethernet system, mapping all of the AS-I data for Ethernet in a single block.

For AS-I specifications and rating details, see section G of this catalog.



Ethernet System
(Gateway is the Slave)

AS-I System
(Gateway is the Master)

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Addressing

Ethernet stations must have an IP address for communication. The address for AS-i/Ethernet gateways may be set via the on-unit display and push buttons. Please consult the manual for a particular gateway for instruction on the procedure.

Diagnostics

AS-i/Ethernet gateways contain LEDs for diagnosing I/O and communication problems for Ethernet and AS-I. For a detailed description of the LED states, see the Bihl+Wiedemann AS-i/Ethernet Gateway User Manual available for download from www.bihl-wiedemann.com.

Power

Most AS-i/Ethernet gateways draw power from the AS-I power supply. The option to use a separate, non-AS-I power supply is also available. Consult the gateway documentation to ensure the gateway being selected meets the requirements of your system.

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Ethernet

Modbus TCP Gateways in Stainless Steel

ASI-ENG-SS BW1650*
ASI-ENG-SS BW1651*
ASI-ENG-SS BW1652*
ASI-ENG-SS-C1D2 BW1659
ASI-ENG-SS-C1D2 BW1660
ASI-ENG-SS-C1D2 BW1661

* not ETL Listed

- **AS-I v3.0 Supported**
- **Graphical Display**
- **Integrated Ground-Fault Detection**
- **Integrated AS-I Diagnostics**

Electrical

- Operating Current: 200 mA from V_{AS-I} (Power Supply A)
  200 mA from V_{AS-i1}, 70mA from V_{AS-i2} (Power Supply A2)
  250 mA from V_{AUX} (Power Supply E)

Power Distribution

- From AS-I supply for each network (Power Supply A, A2)
- From external supply (Power Supply E)

Mechanical

- Operating Temperature: 0 to +55°C (+32 to +131°F)
- Protection: IP 20

Material

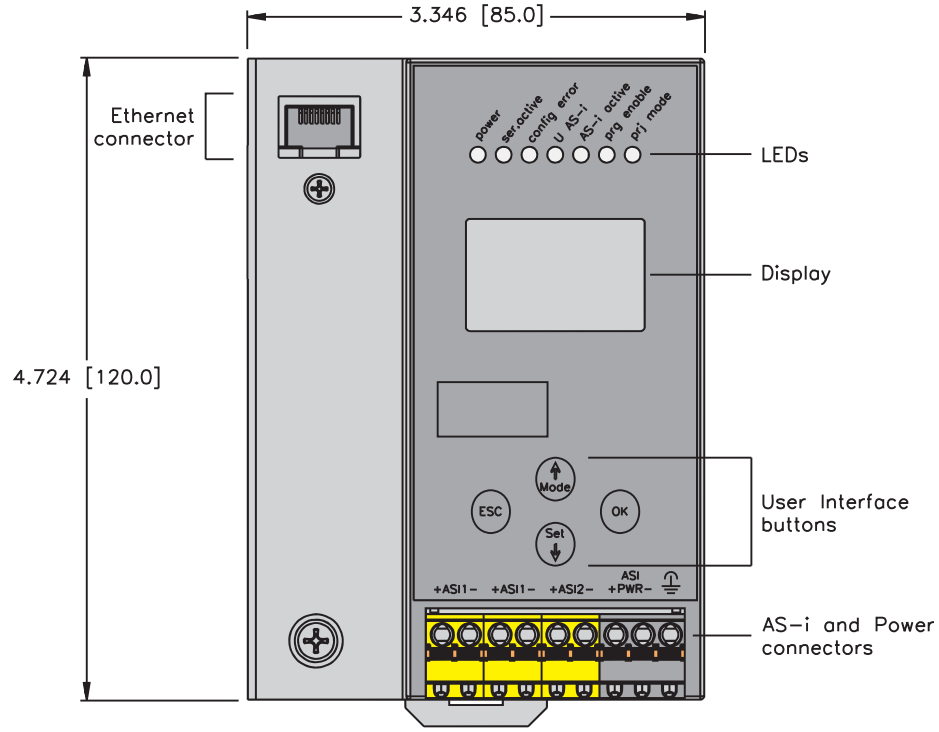
- Housing: Stainless Steel

Diagnostics (Logical)

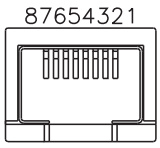
- Health of AS-I network is available via Network interface

Diagnostics (Physical)

- LED to indicate status of network and AS-I communication and power supply



RJ45 Ethernet Standard



1 = WH/or (+TX)
2 = OR (-TX)
3 = WH/GN (+RX)
4 = BU
5 = WH/BU
6 = GN (-RX)
7 = WH/BN
8 = BN

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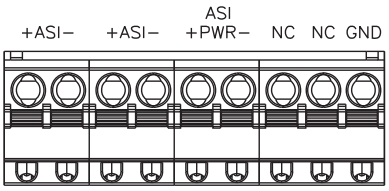
Part Number	Higher Level Network	Power Style	AS-I Version	# of AS-I Masters	Duplicate Address Detection	Programming Interface
ASI-ENG-SS BW1650	ModbusTCP	A	3.0	1	X	X
ASI-ENG-SS BW1651	ModbusTCP	A2	3.0	2	X	X
ASI-ENG-SS BW1652	ModbusTCP	E	3.0	2	X	X
ASI-ENG-SS-C1D2 BW1659*	ModbusTCP	A	3.0	1		
ASI-ENG-SS-C1D2 BW1660*	ModbusTCP	A2	3.0	2		
ASI-ENG-SS-C1D2 BW1661*	ModbusTCP	E	3.0	2		

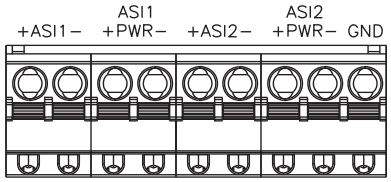
* Approved for use in Class 1, Division 2 areas

Input/Output Connectors

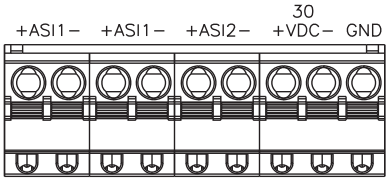
A



A2



E



A - Single AS-I network is powered by and AS-I power supply

A2 - Dual AS-I networks are each powered by their own AS-I power supply

E - Dual AS-I networks are both powered by a single 30 VDC supply, decoupled through the gateway

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AS-I Ethernet/IP Gateways in Stainless Steel

- **AS-I v3.0 Supported**
- **Graphical Display**
- **Integrated Ground-Fault Detection**
- **Integrated AS-I Diagnostics**

ASI-EIPG-SS BW1828*
ASI-EIPG-SS BW1829*
ASI-EIPG-SS BW1833*
ASI-EIPG-SS-C1D2 BW1834
ASI-EIPG-SS-C1D2 BW1835
ASI-EIPG-SS-C1D2 BW1836

* not ETL listed

Electrical

- Operating Current: 300 mA from VAS-$_{I}$ (Power Supply A)
  200 mA from VAS-$_{i1}$, 70mA from VAS-$_{i2}$ (Power Supply A2)
  250 mA from V_{AUX} (Power Supply E)

Power Distribution

- From AS-I supply for each network (Power Supply A, A2)
- From external supply (Power Supply E)

Mechanical

- Operating Temperature: 0 to +55°C (+32 to +131°F)
- Protection: IP 20

Material

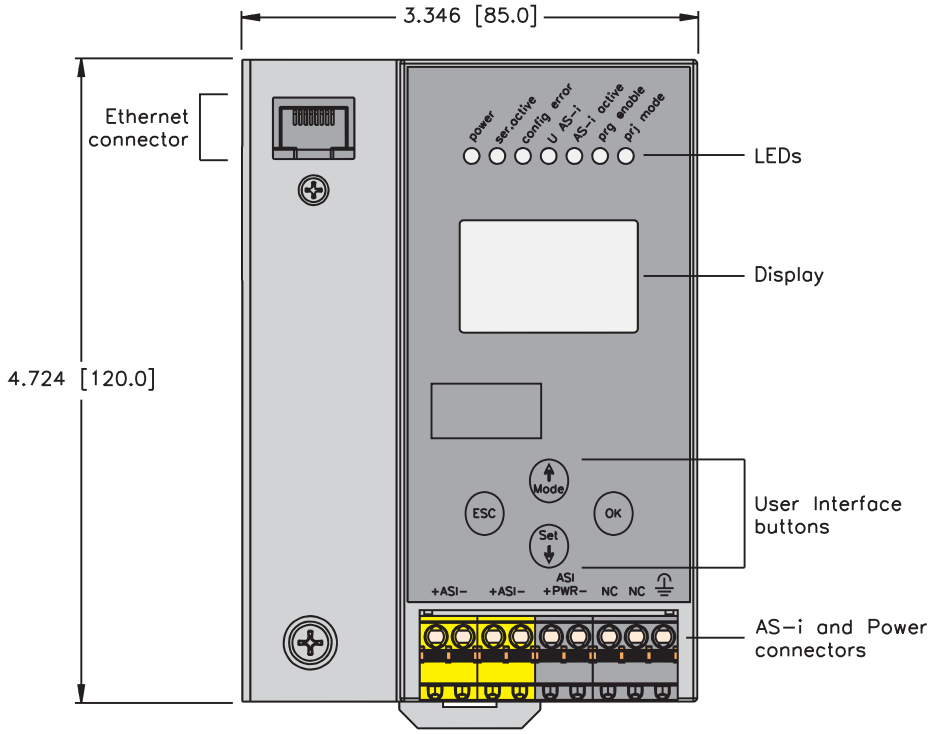
- Housing: Stainless Steel

Diagnostics (Logical)

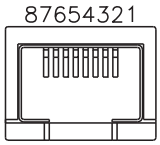
- Health of AS-I network is available via Network interface

Diagnostics (Physical)

- LED to indicate status of network and AS-I communication and power supply



RJ45 Ethernet Standard



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2 = OR (-TX)
3 = WH/GN (+RX)
4 = BU
5 = WH/BU
6 = GN (-RX)
7 = WH/BN
8 = BN

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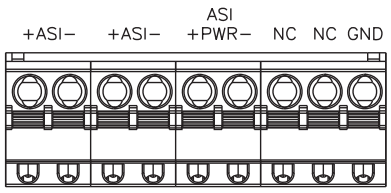
Part Number	Higher Level Network	Power Style	AS-I Version	# of AS-I Masters	Duplicate Address Detection	Programming Interface
ASI-EIPG-SS BW1828	Ethernet/IP	A	3.0	1	X	X
ASI-EIPG-SS BW1829	Ethernet/IP	A2	3.0	2	X	X
ASI-EIPG-SS BW1833	Ethernet/IP	E	3.0	2	X	X
ASI-EIPG-SS-C1D2 BW1834*	Ethernet/IP	A	3.0	1		
ASI-EIPG-SS-C1D2 BW1835*	Ethernet/IP	A2	3.0	2		
ASI-EIPG-SS-C1D2 BW1836*	Ethernet/IP	E	3.0	2		

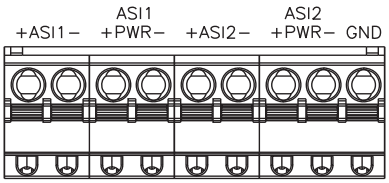
* Approved for use in Class 1, Division 2 areas

Input/Output Connectors

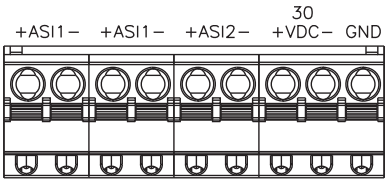
A



A2



E



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AS-I ProfiNET Gateways in Stainless Steel

- **AS-I v3.0 Supported**
- **Graphical Display**
- **Integrated Ground-Fault Detection**
- **Integrated AS-I Diagnostics**

ASI-PNG-SS BW1912

Electrical

- Operating Current: 300 mA from V_{AS-I} (Power Supply A)

Power Distribution

- From AS-I supply

Mechanical

- Operating Temperature: 0 to +55°C (+32 to +131°F)
- Protection: IP 20

Material

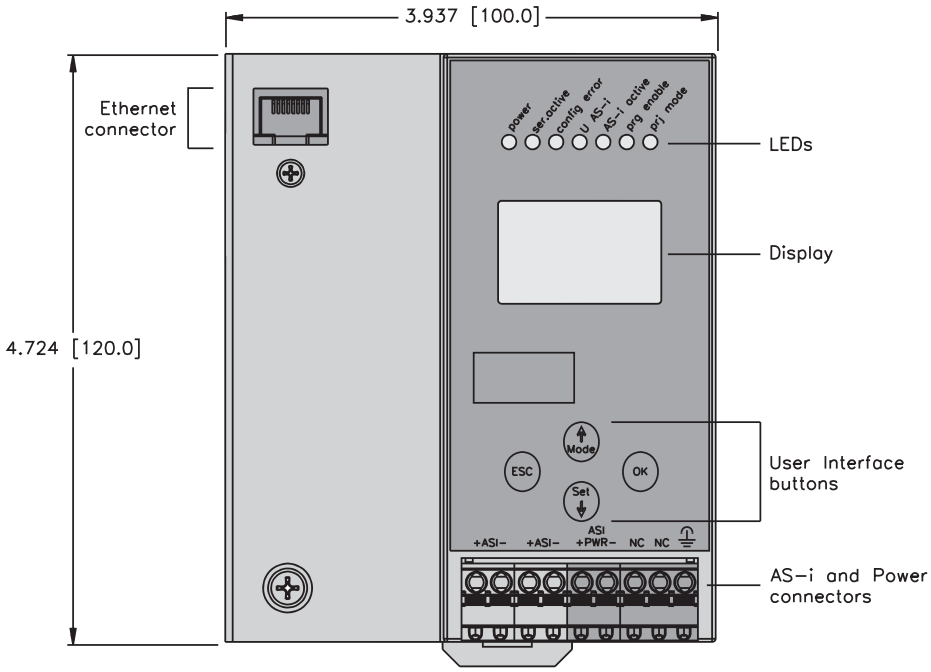
- Housing: Stainless Steel

Diagnostics (Logical)

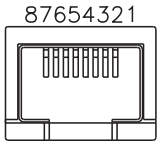
- Health of AS-I network is available via Network interface

Diagnostics (Physical)

- LED to indicate status of network and AS-I communication and power supply



RJ45 Ethernet Standard



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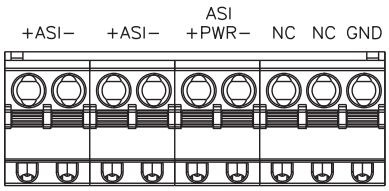
Part Number	Higher Level Network	Power Style	AS-I Version	# of AS-I Masters	Duplicate Address Detection	Programming Interface
ASI-PNG-SS BW1912	PROFINET	A	3.0	1	X	X

Input/Output Connectors

A



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Ethernet, Cable Specifications, 8-wire

- **Cable that Meets the Requirements of TIA/EIA568-B.2 Category 5e Cable for 10 and 100 Base-T Ethernet**
- **Cable is UL Rated for Sunlight and Oil Resistant**

Figure A

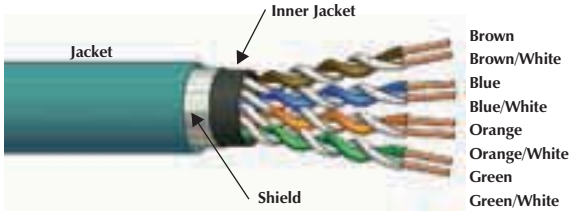

Figure B

Maximum 100 meters of cable of which:

- 90 meters Horizontal Cable (SOLID - 842 or 843)
- 2 x 5 meters Patch Cables (STRANDED - 840 or 841)
- Direct Connect 30 M STRANDED

Type	Approvals	Data Pair		Outer Jacket	Shields	Bulk Cable Part Number / Weight/300 M	Figure
		AWG Color Code	DCR (/1000 feet) Insulation	Material Color Nominal O.D.	Type		
840 75°C 300 Volts	**NEC** CMR (ETL) **CEC** C (ETL)	8/24 AWG Stranded	28.6 Ohms PE	PVC Teal 6.5 mm (.256 in)	None	RB50856-*M 39 lbs. ***flexlife*** ® ††	**A**
841 75°C 300 Volts	**NEC** CMR (ETL) **CEC** C (ETL)	8/24 AWG Stranded	28.6 Ohms PE	PVC Teal 7.3 mm (.286 in)	Foil/Braid	RB50893-*M 50 lbs. ***flexlife*** ††	**A**
842 75°C 100 Volts	**NEC** CMR (ETL) CEC C (ETL)	8/24 AWG Solid	28.6 Ohms PE	PVC Teal 5.9 mm (.231 in)	None	RB50857-*M 39 lbs. ***flexlife*** †	**A**
843 75°C 300 Volts	**NEC** CMR (ETL) CEC C (ETL)	8/24 AWG Solid	28.6 Ohms PE	PVC Teal 7.3 mm (.286 in)	Foil/Braid	RB50894-*M 50 lbs. ***flexlife*** †	**A**
845 50°C 125 Volts	TSB-36 ISO/IEC 11801	8/26 AWG Stranded	37.3 Ohms PE	PUR Teal 6.3 mm (.248 in)	Foil/Braid	RB51305-*M 54 lbs. ***flexlife*** ††† Halogen Free	**A**
849A AWM 444 80°C 300 Volts	**NEC** CMG CEC HL CMG	8/24 AWG Solid	28.6 Ohms PO	PVC Black 15.3 mm (.530 in)	Foil/Braid Armor	RB51100-*M 159 lbs. ***armorfast*** ®	**B**

* Indicates length in meters.
Standard cable lengths are 30, 75, 150, 225 and 300 meters.
† 85 thousand cycles on c-track flexing machine at 1.5" bend radius.
†† 4 million cycles on c-track flexing machine at 1.5" bend radius.
††† 2 million cycles on c-track flexing machine at 1.5" bend radius.

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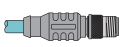
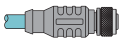
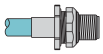
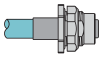
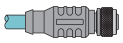
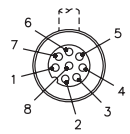
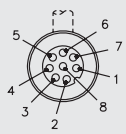
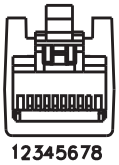
Ethernet, (M12x1) *eurofast*® Cable/Cordset Selection Matrix - Cable Type 840 & 842 Only

			eurofast				
			Pin (Male)	Socket (Female)	Pin (Male)	Socket (Female)	RJ45 Plug
			1  RSC	2  RKC	3  FSFD	4  FKFD	7  RJ45
		 Bare	RSC 84x-*M	RKC 84x-*M	FSFD 84x-*M	FKFD 84x-*M	RJ45 84x-*M
eurofast	Pin (Male)	1  RSC	RSC RSC 84x-*M	RSC RKC 84x-*M	RSC FSFD 84x-*M	RSC FKFD 84x-*M	RSC RJ45 84x-*M
	Socket (Female)	2  RKC		RKC RKC 84x-*M	RKC FSFD 84x-*M	RKC FKFD 84x-*M	RKC RJ45 84x-*M
	RJ45 Plug	7  RJ45			RJ45 FSFD 84x-*M	RJ45 FKFD 84x-*M	RJ45 RJ45 84x-*M

See pages F20 - F21 for dimensional drawings.

* Indicates length in meters.
x Indicates cable type.
Refer to the Cordset Builder at www.turck.com for assistance with cordset/cable combinations.
Standard cable lengths are 0.3, 0.5, 1.0, 2.0, 2.5, 3.0, 3.5, 4.0, 5.0, 6.0, 8.0, 10, 15....50 meters. Consult factory for other lengths.
For stainless steel coupling nuts change part number RSC … to RSCV, FKFD … to FKFDV.
For cross-over cable, add "CR" to part number RJ45 RJ45 CR 84x-*M.

eurofast	Pinouts	*eurofast*
Male 	1. White/Blue 2. White/Brown 3. Brown 4. Orange 5. White/Green 6. White/Orange 7. Blue 8. Green	Female 

Standard Pinout	RJ45 Plug	(CR) Pinout
1. White/Orange 2. Orange 3. White/Green 4. Blue 5. White/Blue 6. Green 7. White/Brown 8. Brown	Male 	1. White/Green 2. Green 3. White/Orange 4. Blue 5. White/Blue 6. Orange 7. White/Brown 8. Brown

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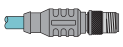
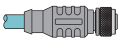
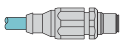
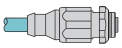
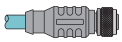
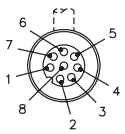
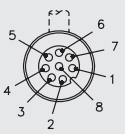
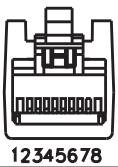
Ethernet, (M12x1) *eurofast*® Cable/Cordset Selection Matrix - Cable Type 841 & 843 Only

		eurofast				
		Pin (Male)	Socket (Female)	Pin (Male)	Socket (Female)	RJ45 Plug
		1  RSS	2  RKS	5  FSSDE	6  FKSDE	7  RJ45S
	Bare 	RSS 84x-*M	RKS 84x-*M	FSSDE 84x-*M	FKSDE 84x-*M	RJ45S 84x-*M
eurofast Pin (Male)	1  RSS	RSS RSS 84x-*M	RSS RKS 84x-*M	RSS FSSDE 84x-*M	RSS FKSDE 84x-*M	RSS RJ45S 84x-*M
eurofast Socket (Female)	2  RKS		RKS RKS 84x-*M	RKSS FSSDE 84x-*M	RKS FKSDE 84-*M	RKS RJ45S 84x-*M
eurofast RJ45 Plug	7  RJ45S			RJ45S FSSDE 84x-*M	RJ45S FKSDE 84x-*M	RJ45S RJ45S 84x-*M

See pages F20 - F21 for dimensional drawings.

* Indicates length in meters.
x Indicates cable type.
Refer to the Cordset Builder at www.turck.com for assistance with cordset/cable combinations.
Standard cable lengths are 0.3, 0.5, 1.0, 2.0, 2.5, 3.0, 3.5, 4.0, 5.0, 6.0, 8.0, 10, 15....50 meters. Consult factory for other lengths.
For stainless steel coupling nuts change part number RSS … to RSSV, FKSDE … to FKSDEV.
For cross-over cable, add "CR" to part number RJ45S RJ45S CR 84x-*M.

eurofast	Pinouts	*eurofast*
Male 	1. White/Blue 2. White/Brown 3. Brown 4. Orange 5. White/Green 6. White/Orange 7. Blue 8. Green	**Female** 

Standard Pinout	RJ45 Plug	(CR) Pinout
1. White/Orange 2. Orange 3. White/Green 4. Blue 5. White/Blue 6. Green 7. White/Brown 8. Brown	**Male** 	1. White/Green 2. Green 3. White/Orange 4. Blue 5. White/Blue 6. Orange 7. White/Brown 8. Brown

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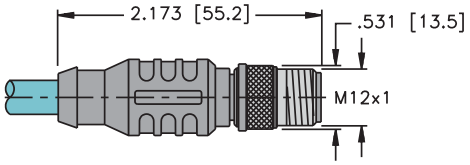
Ethernet, *eurofast*® Cordset Connector Dimensions / Configuration

Specifications

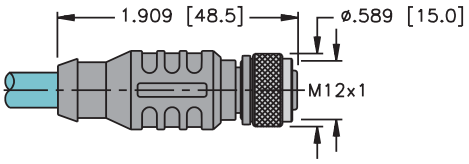
Housing:	PUR (Polyurethane)
Coupling Nut:	Nickel Plated CuZn or Stainless Steel
Contact Carrier:	TPU (Polyurethane) or POM (Nylon)
Contacts:	Gold Plated CuZn
Protection:	NEMA 1, 3, 4, 6P and IEC IP 68
Rated Voltage:	60 V
Rated Current:	2 A
Ambient Temperature:	-40° to +75°C (-22° to +167°F)

1



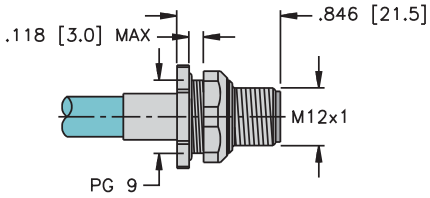
RSC/RSS .. **Pages F18 - F19**

2



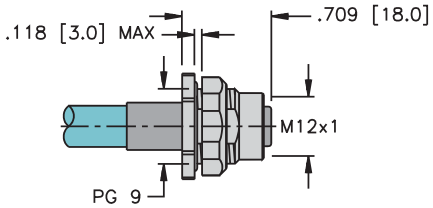
RKC/RKS .. **Pages F18 - F19**

3



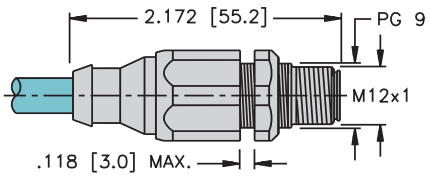
FSFD .. **Pages F18 - F19**

4



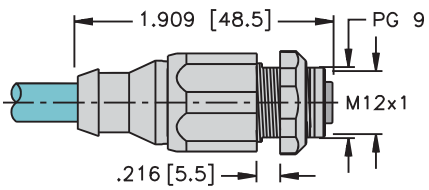
FKFD .. **Pages F18 - F19**

5



FSSDE .. **Pages F18 - F19**

6



FKSDE .. **Pages F18 - F19**

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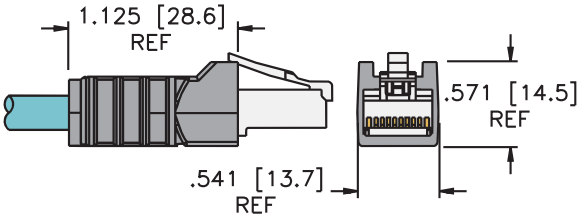
Ethernet, RJ45 Connector Dimensions / Configuration

Specifications

Housing:	Polyolefin
Protection:	NEMA 1 and IEC IP 20
Rated Voltage:	42 V
Rated Current:	1.5 A
Ambient Temperature:	-40° to +80°C (-22° to +176°F)

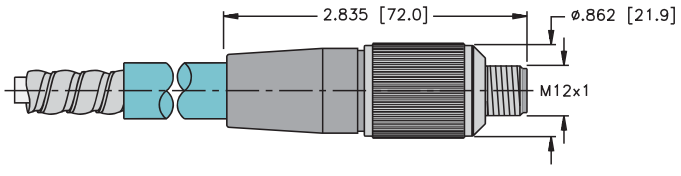
7



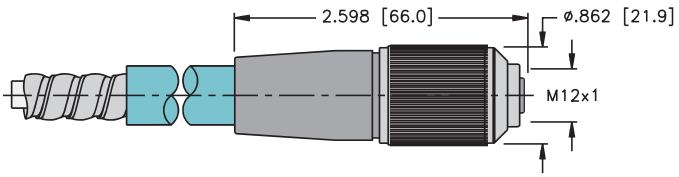
RJ45/RJ45S .. **Page F18 - F19**

Specifications

Housing:	PUR (Polyurethane)
Coupling Nut:	Nickel Plated CuZn or Stainless Steel
Contact Carrier:	TPU (Polyurethane) or POM (Nylon)
Contacts:	Gold Plated CuZn
Protection:	NEMA 1, 3, 4, 6P and IEC IP 68
Rated Voltage:	60 V
Rated Current:	2 A
Ambient Temperature:	-40° to +75°C (-22° to +167°F)



RSA .. **(*armorfast*® only)**



RKA .. **(*armorfast* only)**

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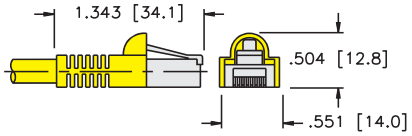
Ethernet, Economy RJ45 to RJ45 Cordsets

- **For "In the Panel" Applications Where Industrial Cordsets are not Needed**
- **Available on Yellow, 3 FT and 7 FT Lengths Only**

	Part Number	Application	Pinout
	RJ45 RJ45 840-3FT/ECON RJ45 RJ45 840-7FT/ECON	• Ethernet patch cordsets for panel connections • Economy, non industrial	Male 

RJ45 Plug	Pinout
Male 	1. White/Orange 2. Orange 3. White/Green 4. Blue 5. White/Blue 6. Green 7. White/Brown 8. Brown

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Unmanaged Switches

SE-84X-E524
SE-84X-E924
SE-84X4-E524
SE-84X4-E924

CE

- **5 and 9 Ports Available**
- **10/100 Mbps**
- **IP 67 Protection**
- **8-pin Ethernet Connectors**

Electrical

- Power Consumption: 2 W (...-E524), 4 W (...-E924)
- Operating Voltage: 10-30 VDC

Mechanical

- Operating Temperature: -30 to +80°C (-22 to +176°F)
- Protection: NEMA 1,3,4,6,13 and IEC IP 67

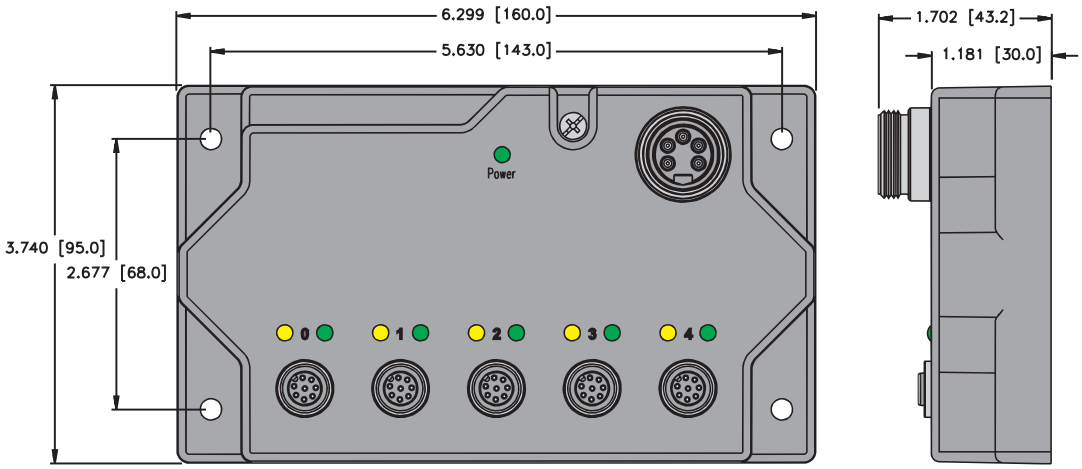
Material

- Housing: Nylon 6 (other materials available on request)
- Connectors: Nickel-plated Brass (other materials available on request)

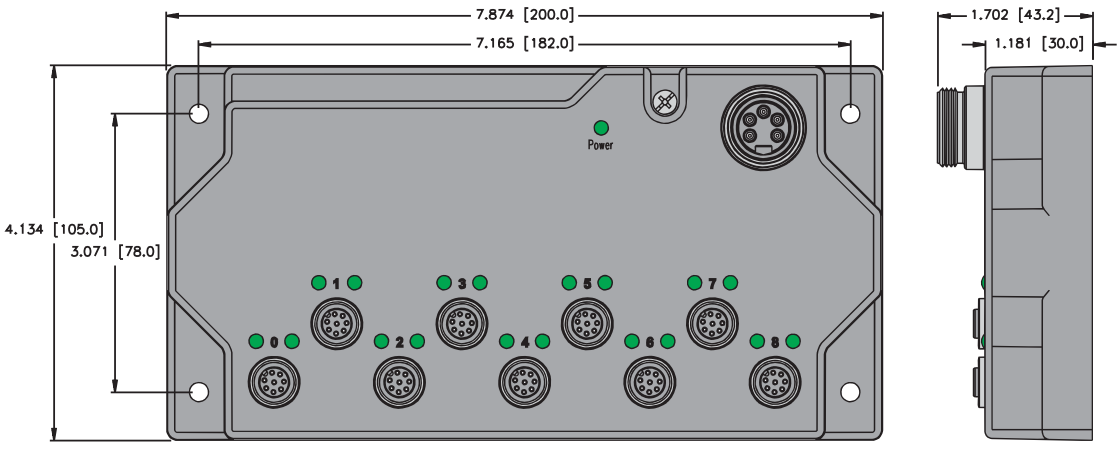
Diagnostics (Physical)

- LEDs to indicate status of Ethernet communication

A



B



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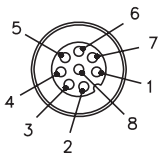
	Inputs			
Part Number	Ports*	Ethernet Pinouts	Power Pinout	Dimensions
SE-84X-E524	5	8E	5M	A
SE-84X-E924	9	8E	5M	B
SE-84X4-E524	5	8E	4M	A
SE-84X4-E924	9	8E	4M	B

* Note: One port for each switch is a dedicated uplink port

Port/Power Connectors

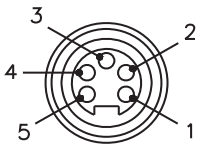
8E



8-pin *eurofast*®

1 = WH/BU
2 = WH/BN
3 = BN
4 = OG (TX-)
5 = WH/GN (RX+)
6 = WH/OG (TX+)
7 = BU
8 = GN (RX-)

5M



5-pin *minifast*® Power

1 = NC
2 = V-
3 = NC
4 = V+
5 = NC

4M

4-pin *minifast* Power

1 = V+
2 = NC
3 = NC
4 = V-

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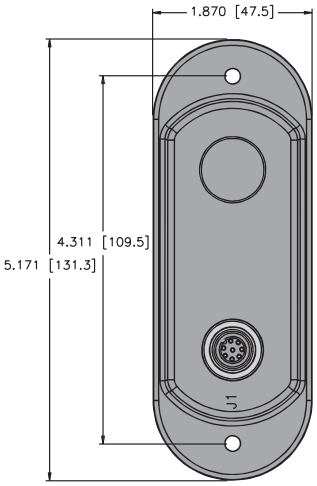
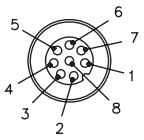
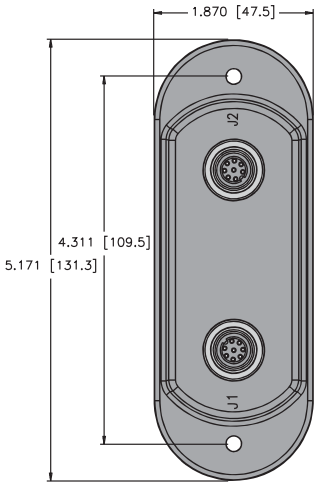
Ethernet, Conduit Adapters, 8-wire

- **Gasket and Mounting Screws Provided**
- **Same Housing Style for Single or Double Port**

Housing	Part Number	Specs	Application	Pinout
	BCA 84-E124	Nylon Housing 60 V, 2 A -40° to +75°C	Attaches to standard conduit body* for transition to 8-wire (M12x1) ***eurofast*** ® connector *Cross Hinds 3/4" Mark 9, Form 8 or Equivalent.	**Female** 
	BCA 84-E224		Attaches to standard conduit body* for transition to 8-wire (M12x1) ***eurofast*** connector *Cross Hinds 3/4" Mark 9, Form 8 or Equivalent.	

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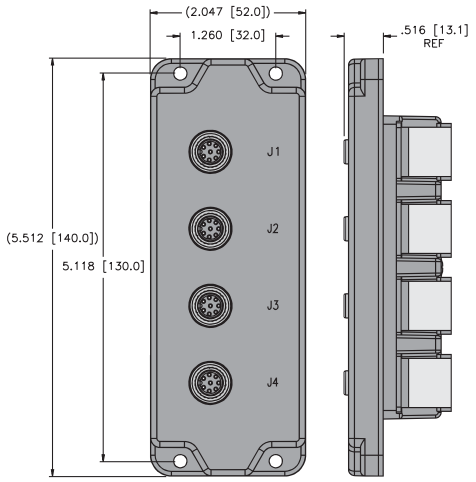
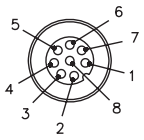
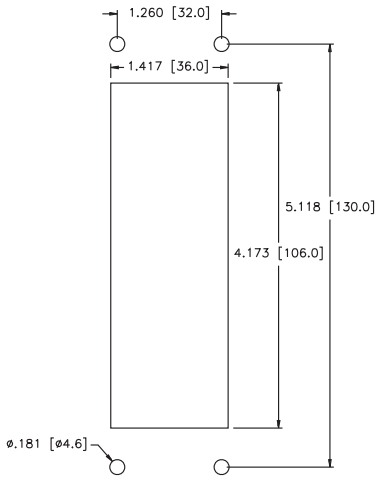
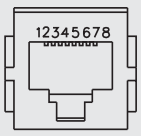
Ethernet, Cabinet Adapter, 8-wire

- **Mounts to any Cabinet for Transition from (M12x1) *eurofast*® 8-Pin Connectors to RJ45 Connectors**
- **Gasket and Mounting Hardware Included (8-32 x 1/2")**

Housing	Part Number	Specs	Application	Pinout
	BIC 84-E424	Nylon Housing 60 V, 2 A -40° to +75°C	Attaches to cabinet for transition to 4-wire (M12x1) ***eurofast*** connector	**Female** 

Panel Dimensions



RJ45 Plug	Pinouts
	1. White/Orange (+TX) 2. Orange (-TX) 3. White/Green (+RX) 4. Blue 5. White/Blue 6. Green (-RX) 7. White/Brown 8. Brown

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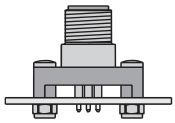
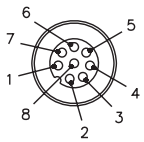
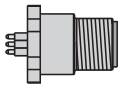
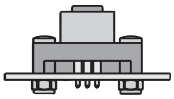
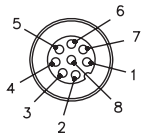
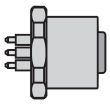
Ethernet, Circuit Board Connectors and OEM Receptacles, 8-wire

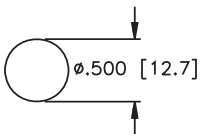
- **Provides (M12x1) *eurofast*® 8-Pin Connection to Field Devices**

Housing	Part Number	Specs	Application	Pinouts	
19 	FS 84 PCB KIT	Nickel Plated CuZn or Stainless Steel 250 V, 4 A -40° to +75°C	Male ***eurofast*** with mounting kit	1. WH/BU 2. WH/BN 3. BN 4. OG 5. WH/GN 6. WH/OG 7. BU 8. GN	**Male** 
21 	FS 84 PCB		Male ***eurofast***		
20 	FK 84 PCB KIT		Female ***eurofast*** with mounting kit		**Female** 
22 	FK 84 PCB		Female ***eurofast***		

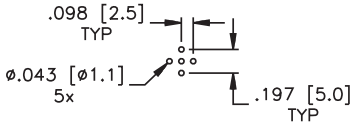
See pages F29 - F30 for dimensional drawings.

Standard housing material is nickel plated brass "FSV .."; "FKV .." indicates 316 stainless steel.

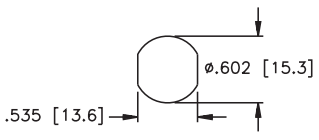
Panel Cutout
FK ... FS



Board Layout (reference only)
FK ... FS



Panel Cutout
FKFD ... FSFD



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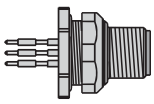
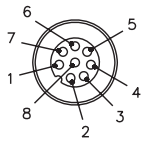
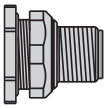
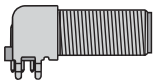
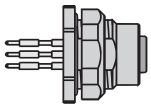
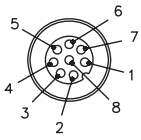
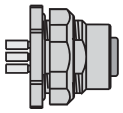
Ethernet, Circuit Board Connectors and OEM Receptacles, 8-wire

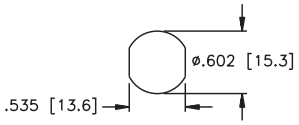
- **Provides (M12x1) *eurofast*® 8-Pin Connection to Field Devices**

Housing	Part Number	Specs	Application	Pinouts	
17 	FSFD 84 PCB	Nickel Plated CuZn or Stainless Steel 250 V, 4 A -40° to +75°C	Male ***eurofast*** PCB pins	1. WH/BU 2. WH/BN 3. BN 4. OG 5. WH/GN 6. WH/OG 7. BU 8. GN	Male 
15 	FSFDL 84		Male ***eurofast*** solder cups		
23 	WFS 84 PCB		Male ***eurofast*** right angle PCB pins		
18 	FKFD 84 PCB		Female ***eurofast*** PCB pins		Female 
16 	FKFDL 84		Male ***eurofast*** solder cups		

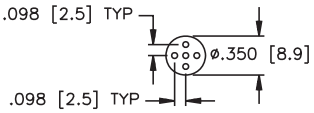
See pages F29 - F30 for dimensional drawings.

Standard housing material is nickel plated brass "FKFD.."; "FKFDV.." indicates 316 stainless steel.

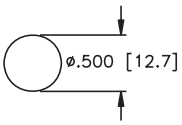
Panel Cutout
FKFD … FSFD



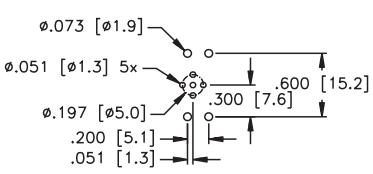
Board Layout (reference only)
FKFD … FSFD



Panel Cutout
WFS



Board Layout (reference only)
WFS



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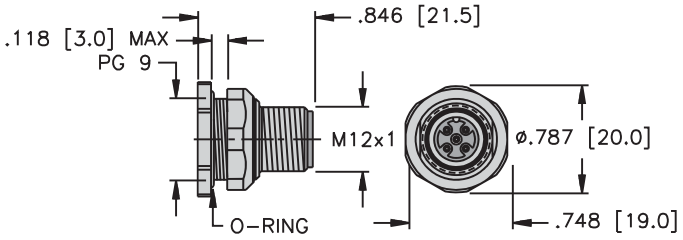
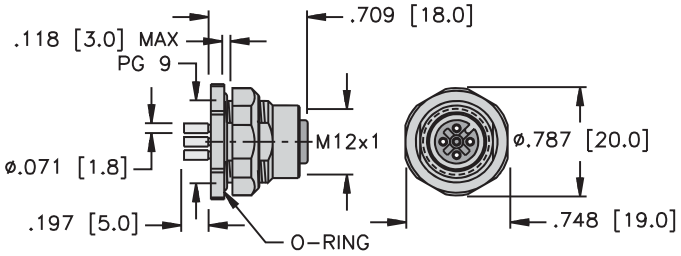
eurofast® PCB Mount Male and Female Receptacles

15



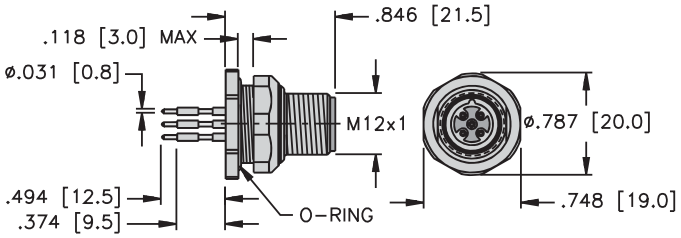
FSFDL .. **Page F28**

16



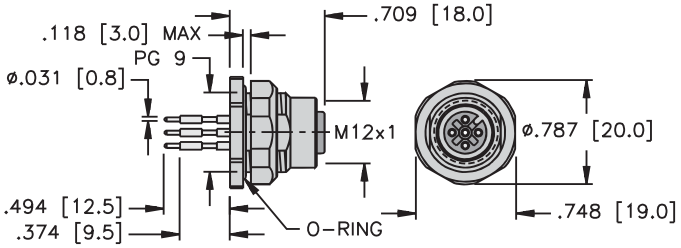
FKFDL .. **Page F28**

17



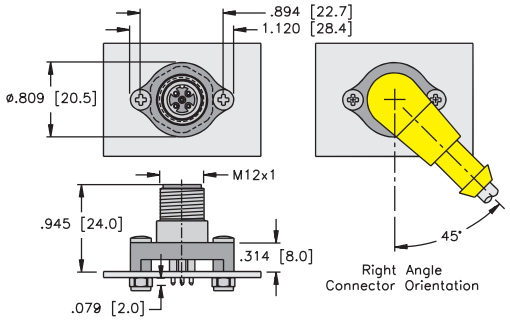
FSFD .. PCB **Page F28**

18



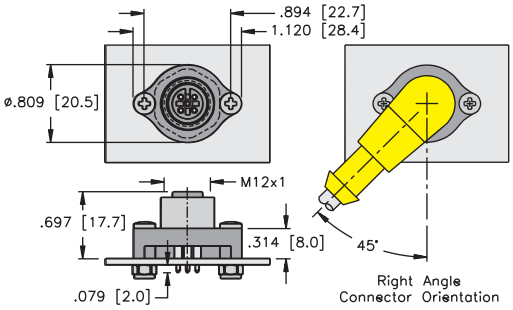
FKFD .. PCB **Page F28**

19



FS .. PCB KIT **Page F27**

20



FK .. PCB KIT **Page F27**

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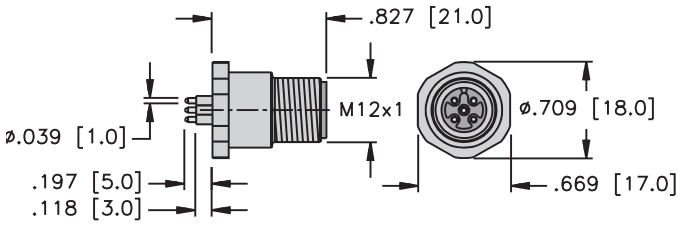
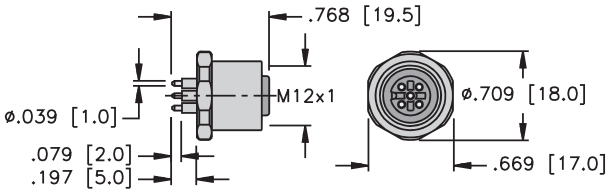
eurofast® PCB Mount Male and Female Receptacles

21



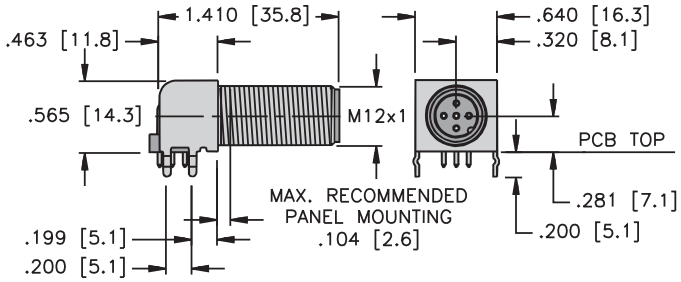
FS .. PCB KIT **Page F27**

22



FK .. PCB KIT **Page F27**

23



WFS .. PCB **Page F28**

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Ethernet, Cable Specifications, 4-wire

- **Cable that Meets the Requirements of TIA/EIA568-B.2 Category 5e Performance Requirements Cable for 10 and 100 Base-T Ethernet**
- **Compliant with Ethernet/IP Standards**
- **Cable is UL Rated for Sunlight and Oil Resistant**

Figure A

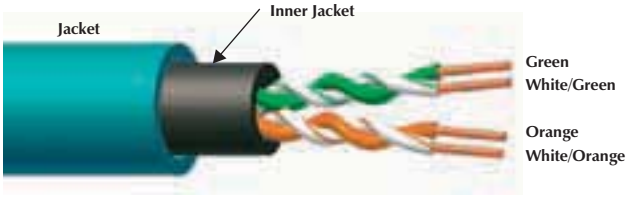
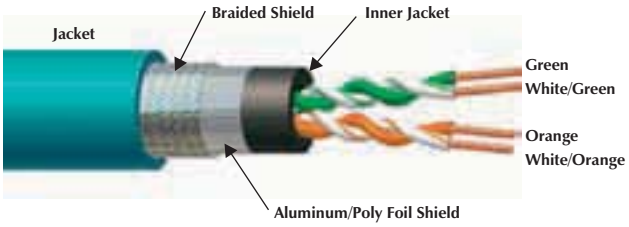


Figure B



Maximum 100 meters of cable of which:

- 90 meters Horizontal Cable (SOLID - 442 or 443)
- 2 x 5 meters Patch Cables (STRANDED - 440 or 441)

Type	Approvals	Data Pair		Outer Jacket	Shields	Bulk Cable Part Number / Weight/300 M	Figure
		AWG Color Code	DCR (/1000 feet) Insulation	Material Color Nominal O.D.	Type		
440 75°C 300 Volts	**NEC** CMR **CEC** C(UL) CMR	4/24 AWG Stranded	28.6 Ohms PO	PVC Teal 6.9 mm (.270 in)	None	RB51210-*M 29 lbs.	**A**
441 75°C 300 Volts	**NEC** CMR **CEC** C(UL) CMR	4/24 AWG Stranded	28.6 Ohms PO	PVC Teal 7.2 mm (.285 in)	Foil/Braid	RB51211-*M 44 lbs.	**B**
442 75°C 100 Volts	**NEC** CMR **CEC** C(UL) CMR	4/24 AWG Solid	28.6 Ohms PO	PVC Teal 6.4 mm (.250 in)	None	RB51212-*M 27 lbs.	**A**
443 75°C 300 Volts	**NEC** CMR **CEC** C(UL) CMR	4/24 AWG Solid	28.6 Ohms PO	PVC Teal 7.1 mm (.280 in)	Foil/Braid	RB51213-*M 49 lbs.	**B**
4410 50°C 124 Volts	TSB-36 ISO/IEC 11801	4/26 AWG Stranded	37.3 Ohms PE	PUR Teal 6.1 mm (.240 in)	Foil/Braid	RB51306-*M 48 lbs. ***flexlife***®† Halogen Free	**A**

* Indicates length in meters.
Standard cable lengths are 30, 75, 150, 225 and 300 meters. Consult factory for other lengths.
† 2.5 million flex motions at 12.5x cable diameter bend radius.

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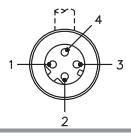
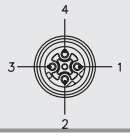
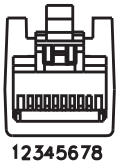
Ethernet, (M12x1) *eurofast*® Cables and Extensions - Cable Type 440 & 442 D-coded

			eurofast				
			Pin (Male)	Socket (Female)	Pin (Male)	Socket (Female)	RJ45 Plug
			8 RSCD	9 RKCD	12 FSFDD	13 FKFDD	14 RJ45
		Bare	RSCD 44x-*M	RKCD 44x-*M	FSFDD 44x-*M	FKFDD 44x-*M	RJ45 44x-*M
eurofast	Pin (Male)	8 RSCD	RSCD RSCD 44x-*M	RSCD RKCD 44x-*M	RSCD FSFDD 44x-*M	RSCD FKFDD 44x-*M	RSCD RJ45 44x-*M
	Socket (Female)	9 RKCD		RKCD RKCD 44x-*M	RKCD FSFDD 44x-*M	RKCD FKFDD 44x-*M	RKCD RJ45 44x-*M
	RJ45 Plug	14 RJ45			RJ45 FSFDD 44x-*M	RJ45 FKFDD 44x-*M	RJ45 RJ45 44x-*M

See pages F34 - F35 for dimensional drawings.

* Indicates length in meters.
x Indicates cable type.
Refer to the Cordset Builder at www.turck.com for assistance with cordset/cable combinations.
Standard cable lengths are 0.3, 0.5, 1.0, 2.0, 2.5, 3.0, 3.5, 4.0, 5.0, 6.0, 8.0, 10, 15....50 meters. Consult factory for other lengths.
For stainless steel coupling nuts change part number RSCD … RSCDV, FSFDED … FSFDEDV.

eurofast	Pinouts	*eurofast*
Male 	1. White/Orange (+ tx) 2. White/Green (+rx) 3. Orange (-tx) 4. Green (-rx)	**Female** 

RJ45 Pinout	RJ45 Plug	RJ45 (CR) Pinout
1. White/Orange 2. Orange 3. White/Green 4. N/C 5. N/C 6. Green 7. N/C 8. N/C	**Male**  12345678	1. White/Green 2. Green 3. White/Orange 4. N/C 5. N/C 6. Orange 7. N/C 8. N/C

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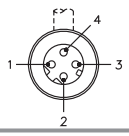
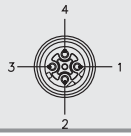
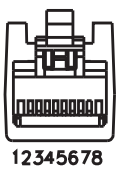
Ethernet, (M12x1) *eurofast*® Cables and Extensions - Cable Type 441 & 443 D-coded

			eurofast				
			Pin (Male)	Socket (Female)	Pin (Male)	Socket (Female)	RJ45 Plug
			8 RSSD	9 RKSD	10 FSSDED	11 FKSDED	14 RJ45S
		Bare	RSSD 44x-*M	RKSD 44x-*M	FSSDED 44x-*M	FKSDED 44x-*M	RJ45S 44x-*M
eurofast	Pin (Male)	8 RSSD	RSSD RSSD 44x-*M	RSSD RKSD 44x-*M	RSSD FSSDED 44x-*M	RSSD FKSDED 44x-*M	RSSD RJ45S 44x-*M
	Socket (Female)	9 RKSD		RKSD RKSD 44x-*M	RKSD FSSDED 44x-*M	RKSD FKSDED 44x-*M	RKSD RJ45S 44x-*M
	RJ45 Plug	14 RJ45S			RJ45S FSSDED 44x-*M	RJ45S FKSDED 44x-*M	RJ45S RJ45S 44x-*M

See pages F34 - F35 for dimensional drawings.

* Indicates length in meters.
x Indicates cable type.
Refer to the Cordset Builder at www.turck.com for assistance with cordset/cable combinations.
Standard cable lengths are 0.3, 0.5, 1.0, 2.0, 2.5, 3.0, 3.5, 4.0, 5.0, 6.0, 8.0, 10, 15....50 meters. Consult factory for other lengths.
For stainless steel coupling nuts change part number RSSD … RSSDV, FSSDED … FSSDEDV.

eurofast	Pinouts	*eurofast*
Male 	1. White/Orange (+ tx) 2. White/Green (+rx) 3. Orange (-tx) 4. Green (-rx)	Female 

RJ45 Pinout	RJ45 Plug	RJ45 (CR) Pinout
1. White/Orange 2. Orange 3. White/Green 4. N/C 5. N/C 6. Green 7. N/C 8. N/C	Male  12345678	1. White/Green 2. Green 3. White/Orange 4. N/C 5. N/C 6. Orange 7. N/C 8. N/C

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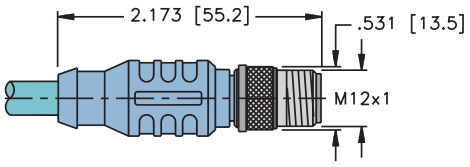
Ethernet, *eurofast*® Cordset Connector Dimensions / Configuration

Specifications

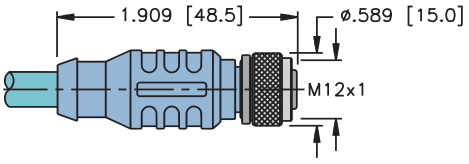
Housing:	TPU (Polyurethane)
Coupling Nut:	Nickel Plated CuZn or Stainless Steel
Contact Carrier:	TPU (Polyurethane) or POM (Nylon)
Contacts:	Gold Plated CuZn
Protection:	NEMA 1, 3, 4, 6P and IEC IP 68
Rated Voltage:	250 V
Rated Current:	4 A
Ambient Temperature:	-40° to +75°C (-22° to +167°F)

8



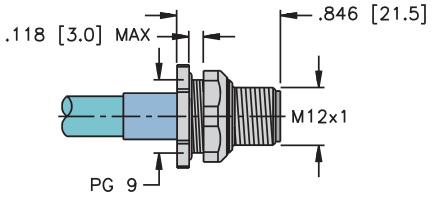
RSCD/RSSD .. **Pages F32 - F33**

9



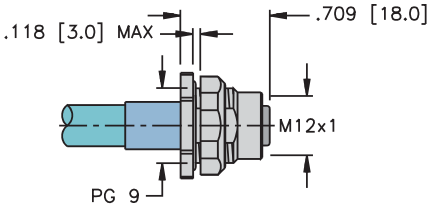
RKCD/RKSD .. **Pages F32 - F33**

10



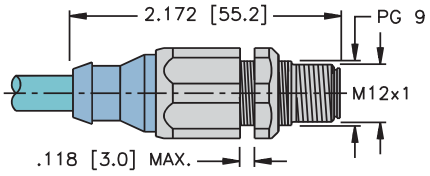
FSFDD .. **Pages F32 - F33**

11



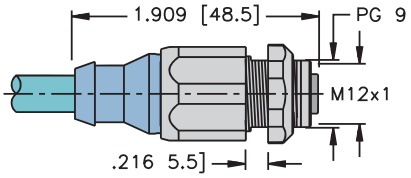
FKFDD .. **Pages F32 - F33**

12



FSSDED .. **Pages F32 - F33**

13



FKSDED .. **Pages F32 - F33**

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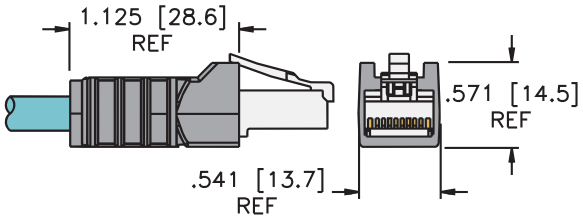
Ethernet, RJ45 Connector Dimensions / Configuration

Specifications

Housing:	Polyolefin
Protection:	NEMA 1, 3, 4, 6P and IEC IP 20
Rated Voltage:	42 V
Rated Current:	1.5 A
Ambient Temperature:	-40° to +80°C (-22° to +176°F)

14



RJ45/RJ45S ..

Pages F32 - F33

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Notes:

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Unmanaged Switches

SE-44X-E524
SE-44X-E924
SE-44X4-E524
SE-44X4-E924

- **5 and 9 Ports Available**
- **10/100 Mbps**
- **IP 67 Protection**
- **4-pin Ethernet Connectors**

Electrical

- Power Consumption: 2 W (...-E524), 4 W (...-E924)
- Operating Voltage: 10-30 VDC

Mechanical

- Operating Temperature: -30 to +80°C (-22 to +176°F)
- Protection: NEMA 1,3,4,6,13 and IEC IP 67

Material

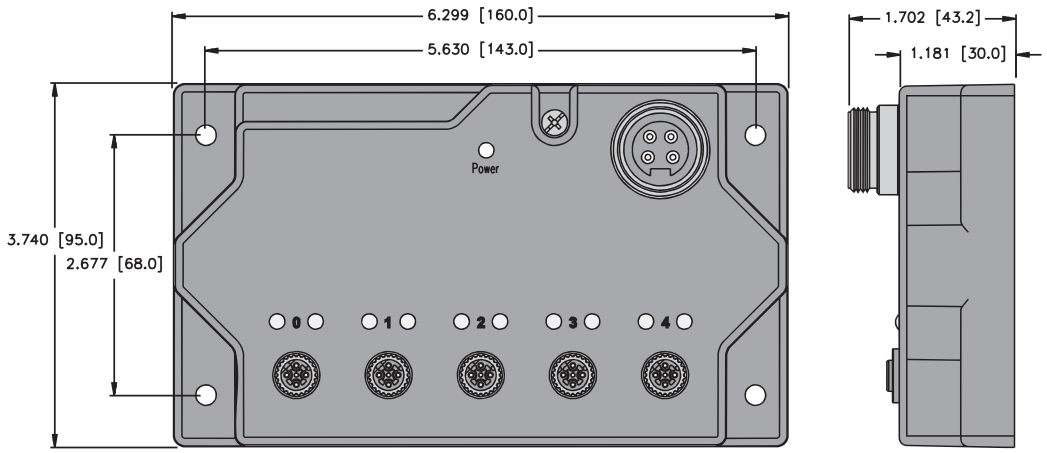
- Housing: Nylon 6 (other materials available on request)
- Connectors: Nickel-plated Brass (other materials available on request)

Diagnostics (Physical)

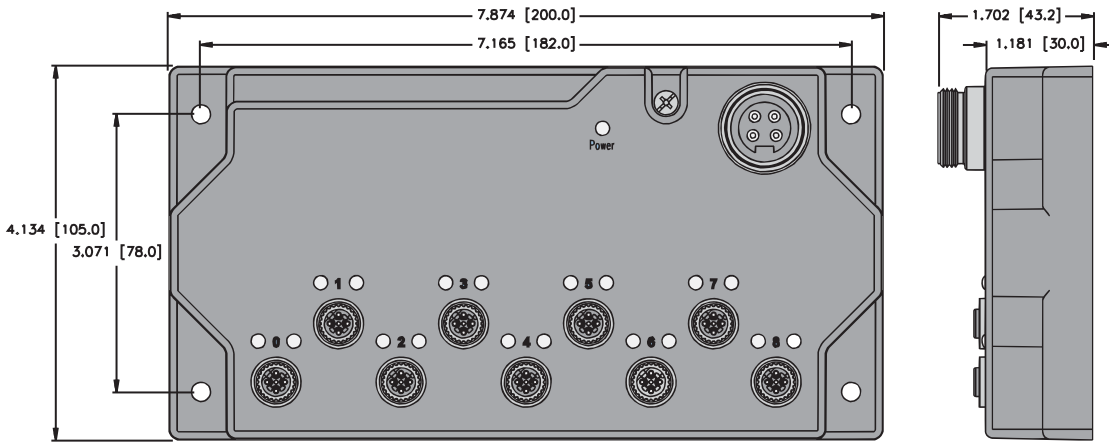
- LEDs to indicate status of Ethernet communication

CE

A



B



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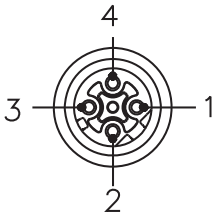
Part Number	Ports*	Ethernet Pinouts	Power Pinout	Dimensions
SE-44X-E524	5	4E	5M	A
SE-44X-E924	9	4E	5M	B
SE-44X4-E524	5	4E	4M	A
SE-44X4-E924	9	4E	4M	B

* Note: One port for each switch is a dedicated uplink port

Input/Output Connectors

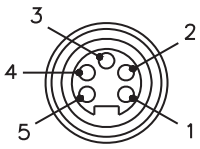
4E



4-pin *eurofast*® Female

1 = WH/OG (TX+)
2 = WH/GN (RX+)
3 = OG (TX-)
4 = GN (RX-)

5M



5-pin *minifast*® Power

1 = NC
2 = V-
3 = NC
4 = V+
5 = NC

4M

4-pin *minifast* Power

1 = V+
2 = NC
3 = NC
4 = V-

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Unmanaged switches

- **Molded Cords for Panel Mounting**
- **10/100 Mbps**
- **IP 67 Protection**
- **8-pin Ethernet Connectors**

SE-84ST-E524/C1165
SE-84ST-E924/C1165
SE-84ST-E924/C1190

Electrical

- Power Consumption: 2 W (...-E524), 4 W (...-E924)
- Operating Voltage: 10-30 VDC

Mechanical

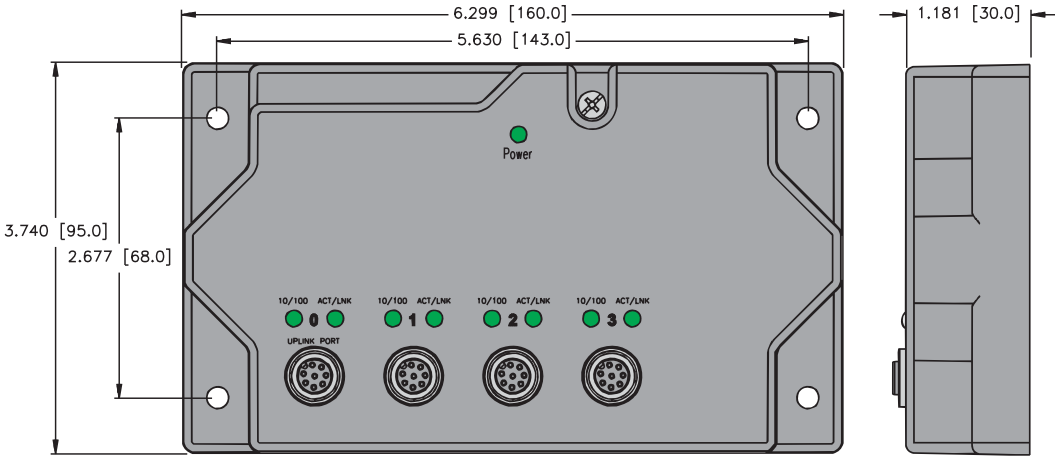
- Operating Temperature: -30 to +80 °C (-22 to +176 °F)
- Protection: NEMA 1,3,4,6,13 and IEC IP 67

Material

- Housing: Nylon 6 (other materials available on request)
- Connectors: Nickel-plated Brass (other materials available on request)

Diagnostics (Physical)

- LEDs to indicate status of Ethernet communication



In-Cabinet Ethernet Connector

1 = WH/or (+TX)
2 = OR (-TX)
3 = WH/GN (+RX)
4 = BU
5 = WH/BU
6 = GN (-RX)
7 = WH/BN
8 = BN

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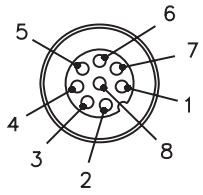
Part Number	Ports*	Ethernet Pinout	Power Pinout	Dimensions
SE-84ST-E524/C1165	5	8E	2Wire	A
SE-84ST-E924/C1165	9	8E	2Wire	B
SE-84ST-E924/C1190	9	8E	2Wire	B

Notes:
* One port for each switch is a dedicated uplink port.
…/C1165 have one port in the cabinet; …/C1190 has two ports in the cabinet.

Input/Output Connectors

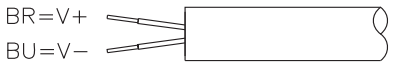
8E



8-pin *eurofast*®

1 = WH/BU
2 = WH/BN
3 = BN
4 = OG (TX-)
5 = WH/GN (RX+)
6 = WH/OG (TX+)
7 = BU
8 = GN (RX-)

2-Wire



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Managed switches

- **8 Ports Available**
- **Configuration Port**
- **IP 67 Protection**
- **4-pin Ethernet Connectors**

SE-44M-E924

Electrical

- Power Consumption: 4 W
- Operating Voltage: 10-30 VDC

Mechanical

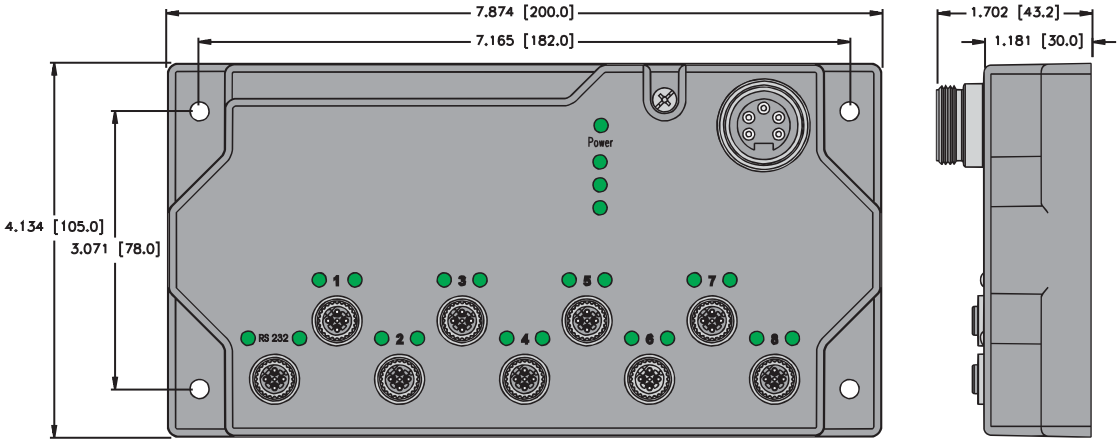
- Operating Temperature: -30 to +80 °C (-22 to +176 °F)
- Protection: NEMA 1,3,4,6,13 and IEC IP 67

Material

- Housing: Nylon 6 (other materials available on request)
- Connectors: Nickel-plated Brass (other materials available on request)

Diagnostics (Physical)

- LEDs to indicate status of Ethernet communication



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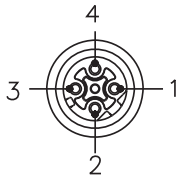
Inputs

Part Number	Ports*	Ethernet Pinout	Power Pinout	Dimensions
SE-44M-E924	8	4E	5M-2	A

* Note: 8 Ethernet ports plus one RS232 configuration port

Port/Power Connectors

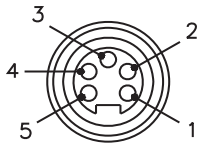
4E



4-pin *eurofast*® Female

1 = WH/OG (TX+)
2 = WH/GN (RX+)
3 = OG (TX-)
4 = GN (RX-)

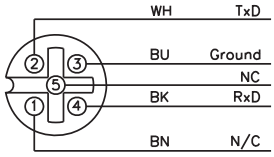
5M-2



5-pin *minifast*® Power

1 = Gnd
2 = Gnd
3 = Ok
4 = V_1+
5 = V_2+

Configuration Port 232



Mating cordset:
RK 4.4T-*-RS 4.4T

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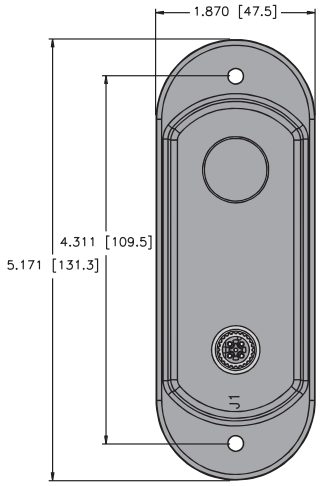
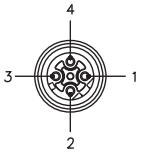
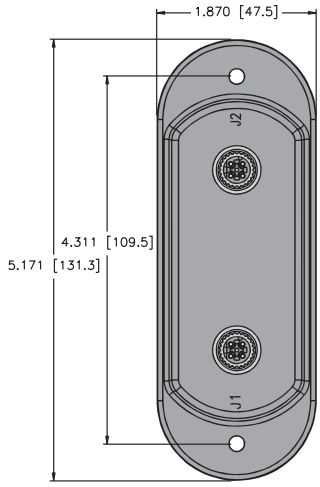
Ethernet, Conduit Adapters, 4-wire

- **Gasket and Mounting Screws Provided**
- **Same Housing Style for Single or Double Port**

Housing	Part Number	Specs	Application	Pinout
	BCA 44-E123	Nylon Housing 250 V, 9A -40° to +75°C	Attaches to standard conduit body* for transition to 4-wire (M12x1) ***eurofast*** ® connector *Cross Hinds 3/4" Mark 9, Form 8 or Equivalent.	**Female** 
	BCA 44-E223		Attaches to standard conduit body* for transition to 4-wire (M12x1) ***eurofast*** connector *Cross Hinds 3/4" Mark 9, Form 8 or Equivalent.	

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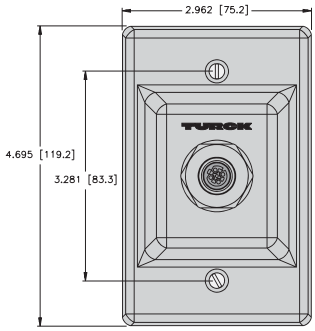
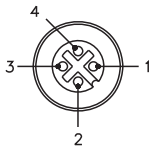
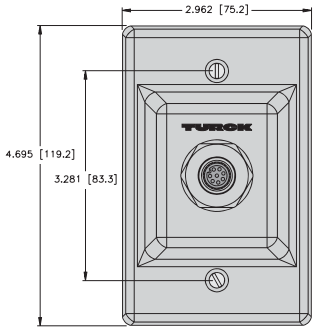
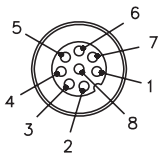
Ethernet, Wall Plate Adapters, 4 and 8-wire

- **Gasket and Mounting Screws Provided**
- **For Use with a Single Gang Electrical Box**

Housing	Part Number	Specs	Application	Pinouts
	BPA-44-E113	Stainless Steel 30 VAC/36 VDC, 1.5 A -40 to +70°C (-40 to +158°F)	Attaches to standard single gang electrical box for transition to 4-wire (7/8-16UN) ***eurofast*** connector w/punch-down blocks	
	BPA-84-E113		Attaches to standard single gang electrical box for transition to 8-wire (M12x1) ***eurofast*** connector w/punch-down blocks	

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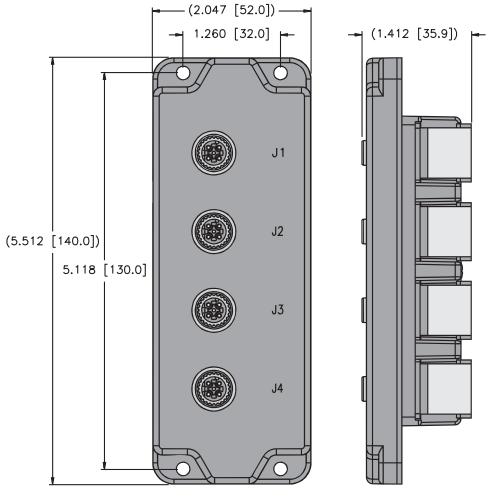
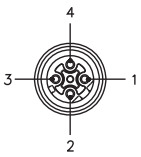
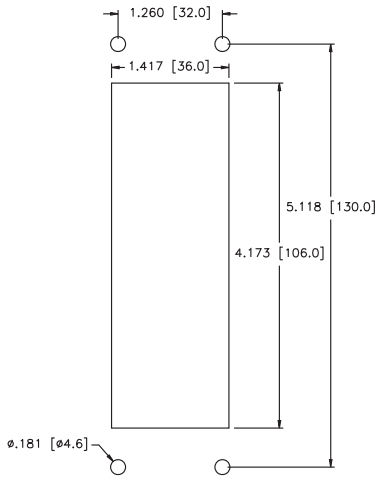
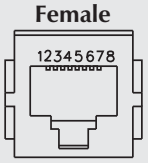
Ethernet, Cabinet Adapter, 4-wire

- **Mounts to Any Cabinet for Transition from (M12x1) *eurofast*® 4-Pin Connectors to RJ45 Connectors**
- **Gasket and Mounting Hardware Included (8-32 x 1/2")**

Housing	Part Number	Specs	Application	Pinout
	BIC 44-E424	Nylon Housing 250 V, 4 A -40° to +75°C	Attaches to cabinet for transition to 4-wire (M12x1) ***eurofast*** connector	**Female** 

Panel Dimensions



RJ45 Receptacle	Pinout
Female 	1. White/Orange (+TX) 2. Orange (-TX) 3. White/Green (+RX) 4. N/C 5. N/C 6. Green (-RX) 7. N/C 8. N/C

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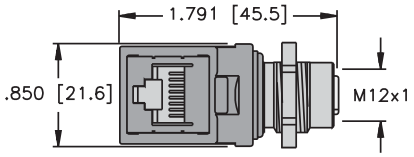
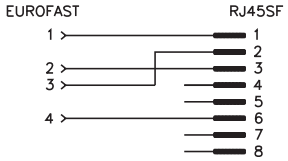
Ethernet, Receptacle

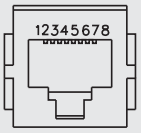
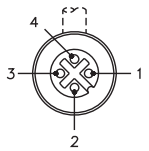
- **Transitions from a RJ45 Connector to a 4-wire *eurofast*® Connector**

Housing	Part Number	Application
	FKSDD RJ45SF 44	Polyurethane PUR Overmold 42 V, 1.5 A -40° to +75°C

Panel mounting clearance hole 19/32" (15 mm). Panel thickness: .060-.120" (1.5-3 mm)

Wiring Diagram



RJ45 Receptacle	Pinouts	*eurofast* Female
Female 	1. White/Orange (+TX) 2. Orange (-TX) 3. White/Green (+RX) 4. N/C 5. N/C 6. Green (-RX) 7. N/C 8. N/C	Female 

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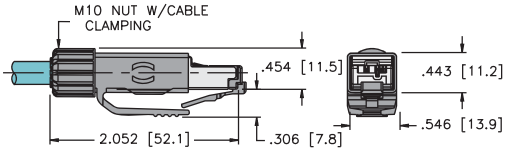
Ethernet, RJ45 Field Wireable

- Allows for Quick Connections in the Field
- Fully Shielded
- Includes Assembly Instructions

Housing	Part Number	Application	Pinout
	Connector, RJ45S IDC	*RJ45 4-wire field wireable*	Male 

RJ45 Plug	Pinout
Male 	1. White/Orange (+TX) 2. Orange (-TX) 3. White/Green (+RX) 4. N/C 5. N/C 6. Green (-RX) 7. N/C 8. N/C

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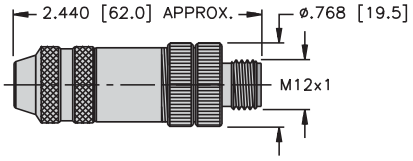
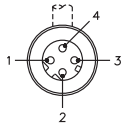
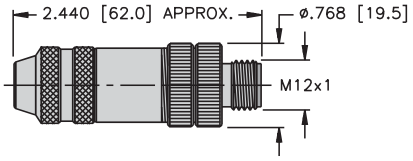
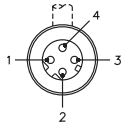
Ethernet, 4-Pin D-coded Field Wireables

- Allows for Quick Connections when Pre-Molded Cables are not Available
- Available in Male, Straight and Right Angle Connector Configurations

Housing	Part Number	Application	Pinout
	CMBSD 8141-0/PG9	*Mates with female 4-pin D-coded eurofast® cordsets and receptacles*	Male 
	CMBSD 8241-0/PG9		Male 

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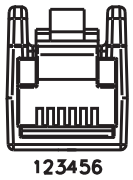
Ethernet®, RJ11 Cordsets

- **Double Ended**
- **Available in 1, 2, 5 Meter Extended Lengths**

Part Number	Specs	Application	Pinouts	
RJ11S RJ11S 4412-*M	PVC 1.5 A 42 V -40° to +75°C	Industrial phone connection RJ11 connector	1. N/C 2. White/Orange (+TX) 3. Orange (-TX) 4. White/Green (+RX) 5. Green (-RX) 6. N/C	

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Notes:

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