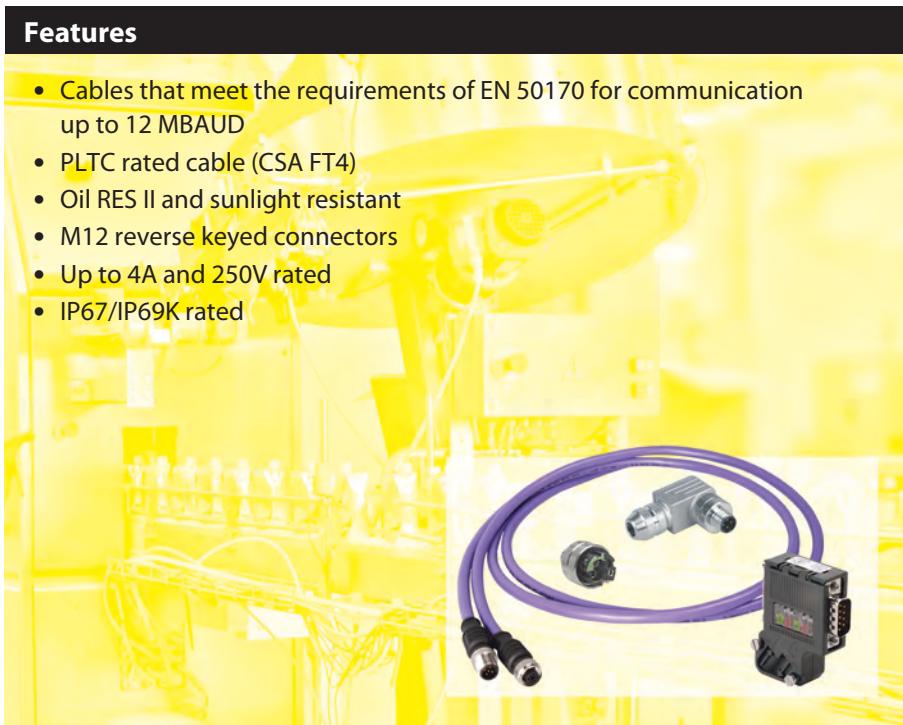

PROFIBUS-DP Cable	P3
Part Number Key	P5
Cordsets	P7
Receptacles	P15
Field Wireables	P19

Features

- Cables that meet the requirements of EN 50170 for communication up to 12 MBAUD
- PLTC rated cable (CSA FT4)
- Oil RES II and sunlight resistant
- M12 reverse keyed connectors
- Up to 4A and 250V rated
- IP67/IP69K rated



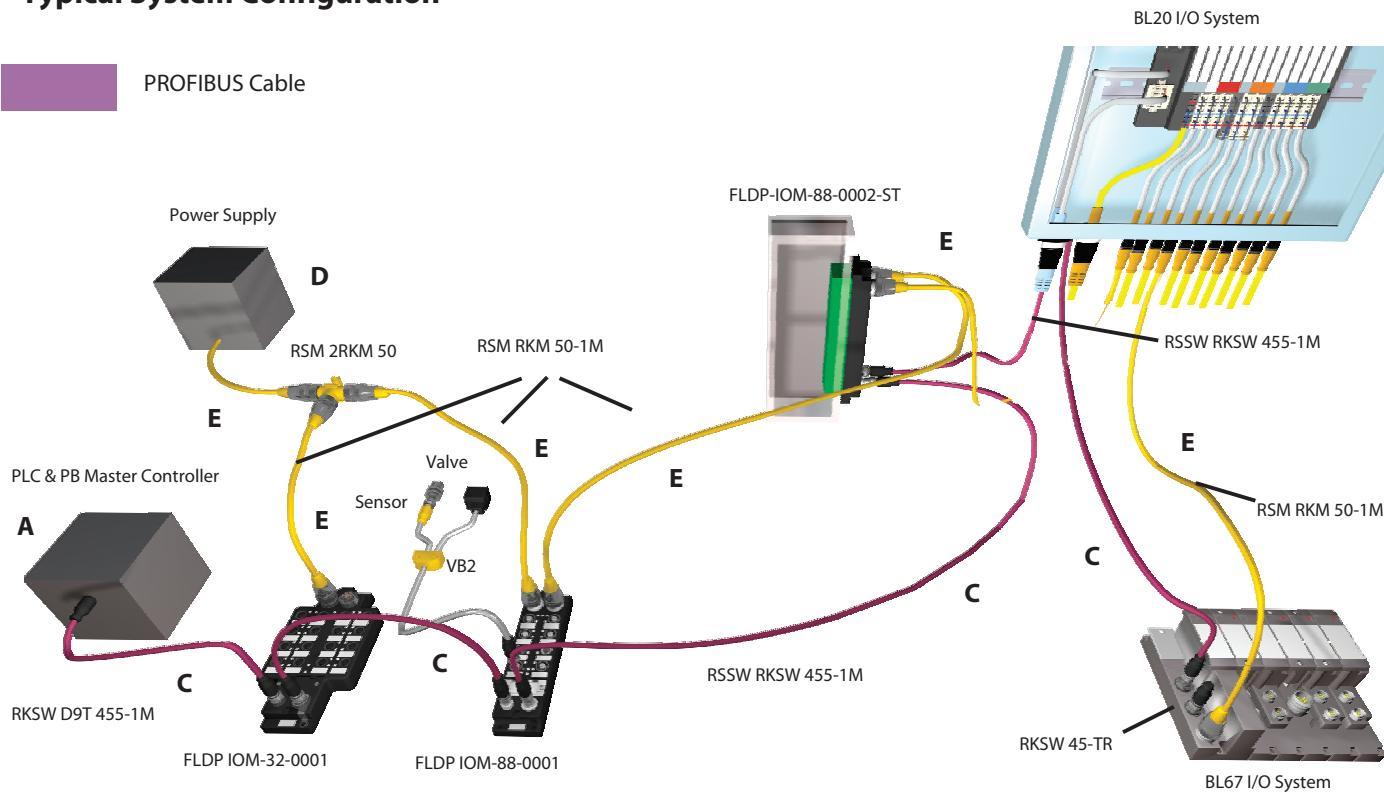
PROFIBUS®-DP System Description

PROFIBUS-DP is an industrial network protocol that connects field I/O devices in order to eliminate hard wiring. The network connection increases device-level diagnostic capabilities, while also providing high-speed communication between devices.

PROFIBUS-DP is based on the RS-485 serial data transfer standard. In most cases, the termination and physical media rules for PROFIBUS-DP are the same as those required for RS-485 communication. A PROFIBUS-DP network supports up to 126 nodes and virtually an unlimited amount of I/O. The bus uses a trunkline/dropline topology. Power and communication are provided via separate cables, allowing easy segmentation of the power structure to avoid overloading.

PROFIBUS-DP is capable of running at data rates as high as 12 Mbaud. When used at high data rates, the cable drop length from the trunk to a node is severely limited. For example, when used at 12 Mbaud, nodes must be directly connected to the trunk, with no drop length allowed.

Typical System Configuration



Basic Parts List

A typical PROFIBUS-DP system consists of the following parts:

- A - Master
- B - Slaves
- C - Communication cable
- D - Power supply
- E - Power cable

PROFIBUS-DP stations require a network master (also called a scanner) to interface the stations to the host controller. **TURCK** PROFIBUS-DP stations are designed to be fully compatible with PROFIBUS-DP equipment from other manufacturers.

Cordsets

TURCK offers a complete line of molded PROFIBUS-DP cordsets to facilitate network installation, resulting in a faster start-up and fewer wiring errors. The bus and drop cables are specially designed foil-shielded, high-flex cables with very low inductance and capacitance to minimize propagation delay time. PROFIBUS-DP cables consist of a shielded and twisted data pair with a bare drain wire.

In most cases, connections of the bus cable to the stations are made using 5-pin reverse-key **eurofast**® (M12) connectors. A variety of stations are also available that support D9 type connections. Power for most stations is provided through one or two 5-pin **minifast**® (7/8-16UN) connectors.

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

Diagnostics

TURCK network stations provide increased diagnostics over using traditional hard-wired I/O systems. **TURCK** stations also serve as a buffer between I/O devices and the PROFIBUS-DP network by detecting short circuits without disrupting communication.

The PROFIBUS-DP system includes a provision for special diagnostic data messages. These messages are triggered when a fault occurs at the station (for example a short circuit on a sensor). When the master asks the station for data, the station responds and includes a flag to indicate that diagnostic data is present. The master then asks for the diagnostic data, which is mapped to a special location in the controller's memory.

Addressing

The valid range of PROFIBUS-DP node addresses is 0 to 125. **TURCK** station's addresses are usually set via rotary dials or switches on the node. Changes to the address settings take effect when the station power is cycled or when the station receives a software reset. Care must be taken to prevent the same address from being assigned to more than one node in a system. Bihl+Wiedemann PROFIBUS-DP to AS-I gateways addresses are set in software using the on-unit display.

Communication Rate/Cycle Time

PROFIBUS-DP specifications define multiple transmission speeds ranging from 9.6 kbaud to 12 Mbaud. All nodes on a network must communicate at the same rate.

The complete cycle time of a PROFIBUS-DP system is affected by several factors:

- Number of nodes being scanned
- Amount of data produced and consumed by the nodes
- Network communication rate
- Cycle time of the control program

All of these factors must be considered when calculating the cycle time of a particular network.

GSD Files

GSD files contain detailed information about a PROFIBUS-DP device, including I/O data size and the devices configurable parameters. The information in an GSD file, when used with a PROFIBUS-DP configuration tool, guides a user through the steps necessary to configure a device. GSD files are available on the **TURCK** website (www.turck.com).

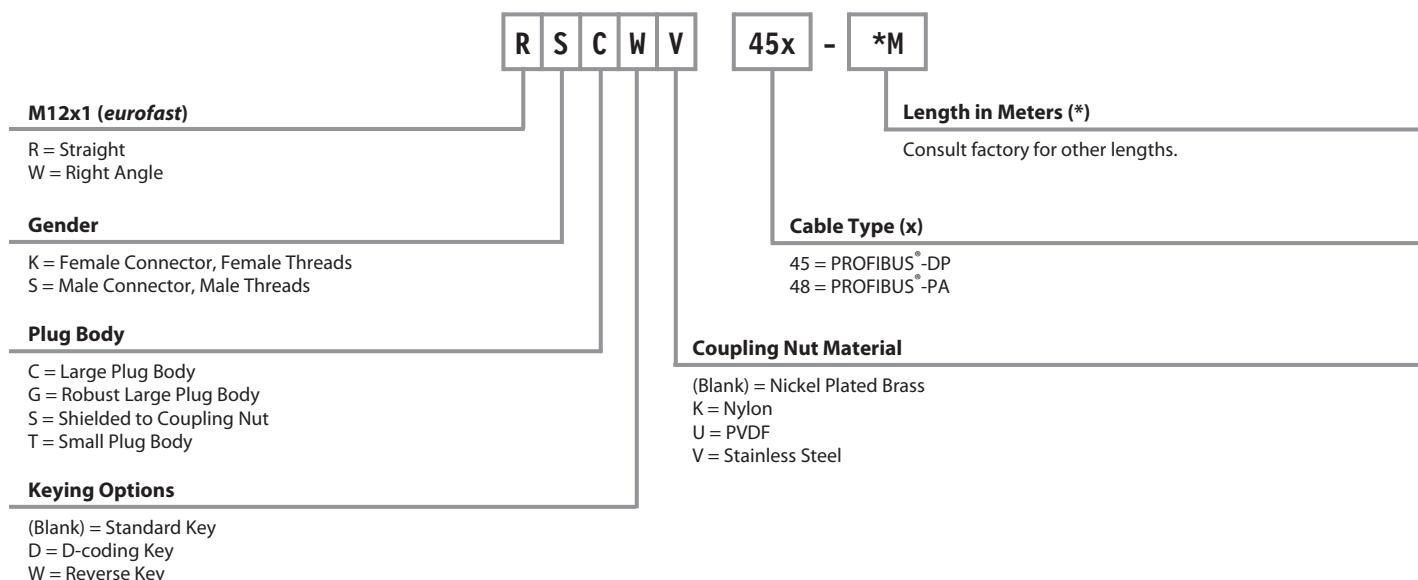
Maximum Ratings

The PROFIBUS-DP bus uses a trunkline/dropline topology. The trunk is the main communication cable and requires the appropriate RS-485 termination at both ends of the trunk. Terminating resistors are available as plug-in **eurofast**® modules or can be built into the D9 connectors. The length of the trunk depends on the communication rate. Drops or branches off the trunk are allowed, but are greatly limited as the communication rate increases. The table shows the maximum ratings for a trunk at different communication rates.

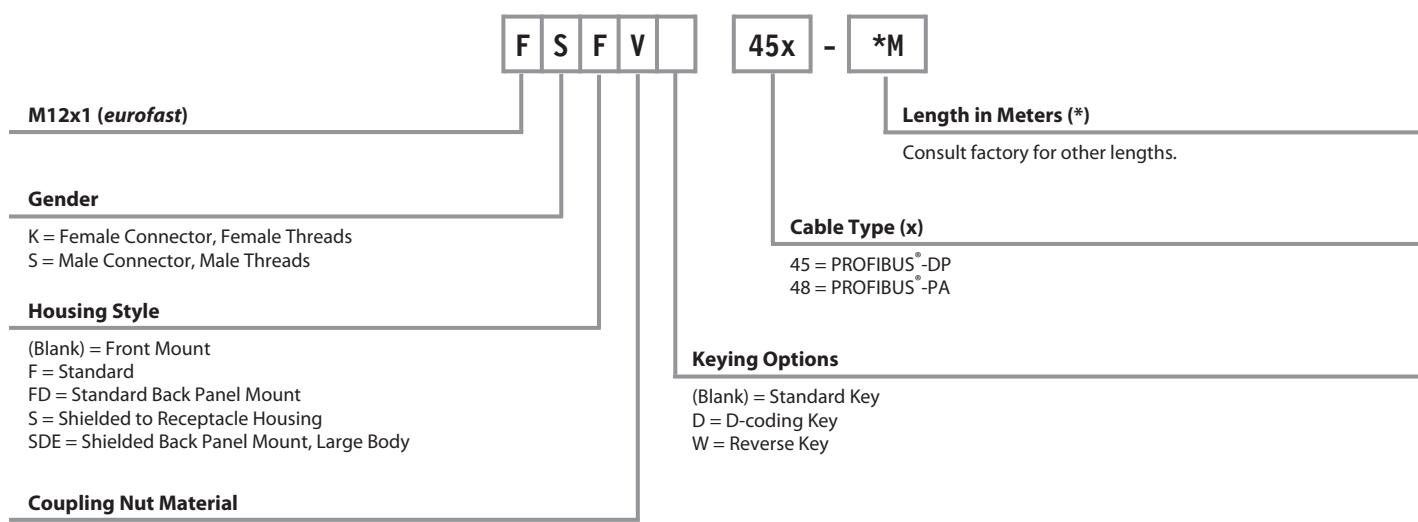
Communication Rate	Max. Segment Length
9.6 kbps	1200 m
19.2 kbps	1200 m
93.75 kbps	1200 m
187.5 kbps	1000 m
500 kbps	400 m
1.5 Mbps	200 m
12 Mbps	100 m

eurofast® Cordset Part Number Key

Part Number Keys are to assist in IDENTIFICATION ONLY. Consult factory for catalog items not identified.

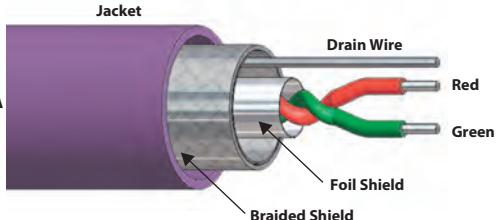
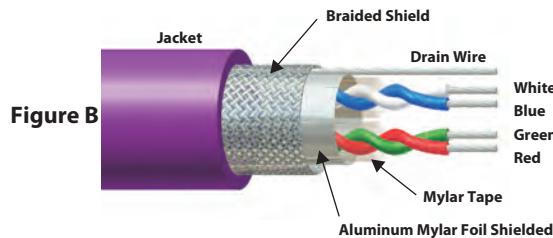
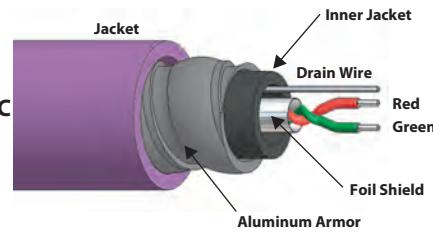


eurofast Receptacle Part Number Key



PROFIBUS®-DP, Cable Specifications

- Cable that Meets the Requirements of EN50170-2-2:1996 for Communications Up to 12 Mbaud**


Figure A

Figure B

Figure C

Baud Rate (k baud)	9.6	19.2	93.75	187.5	500	1500	1200
Maximum Trunk Length	1200 meters	1200 meters	1200 meters	1000 meters	400 meters	200 meters	100 meters

Type	Approvals	Data Pair		2nd Data Pair		Outer Jacket	Shields	Bulk Cable Part Number / Weight/300 M	Figure
		AWG Color Code	DCR (/1000 feet) Insulation	AWG Color Code	DCR (/1000 feet) Insulation				
455 AWM 2464 75°C 300 Volts	NEC PLTC CEC AWM-I/II A/B FT4	2/22 AWG RD/GN	16.5 Ohms PE	None	N/A	PVC Purple 8.5 mm (.335 in)	Foil/Braid 22 AWG	RB50672-*M 62 lbs.	A
456 AWM 20233 80°C 300 Volts	NEC AWM CEC AWM-I/II A/B FT4	2/22 AWG RD/GN	16.5 Ohms PE	None	N/A	TPU Purple 7.9 mm (.310 in)	Foil/Braid 22 AWG	RB50683-*M 48 lbs.	A
457 75°C 300 Volts	NEC CMX	2/22 AWG RD/GN solid	16.5 Ohms PE	None	N/A	TPU Purple 8.0 mm (0.315 in)	Foil/Braid No Drain	RB50708-*M 51 lbs.	A
458 AWM 20233 80°C 300 Volts	NEC AWM CEC AWM-I/II A/B FT4	2/22 AWG RD/GN	16.5 Ohms PE	None	N/A	TPU Plum 8.5 mm (0.335 in)	Foil/Braid 22 AWG	RB50692-*M 58 lbs. flexlife-10*	A
4511 AWM 2464 75°C 300 Volts	NEC PLTC CEC AWM-I/II A/B FT4	2/22 AWG RD/GN	16.5 Ohms PE	None	N/A	PVC Purple 8.5 mm (.319 in)	Foil/Braid 22 AWG	RB50881-*M 64 lbs. flexlife-10	A
4510A 75°C 300 Volts	NEC PLTC CEC CM-CMG HL ABCD	2/22 AWG RD/GN	16.5 Ohms PE	None	N/A	Aluminum Armor/PVC 15.4 mm (.605 in)	Foil/Braid 22 AWG	RB50875-*M 112 lbs. armorfast ®	C
4515 80°C 300 Volts	IEC-60332-3 IEC-60754-1 EN 50267-2-2	2/22 AWG RD/GN	16.5 Ohms PE	None	N/A	TPU Purple 7.5 mm (0.295 in)	Foil/Braid 22 AWG	RB51225-*M 42 lbs. Halogen-Free ++	A
4516 105° 300 Volt	NEC PLTC/ISO Open Wiring CEC CMG	2/22 AWG RD/GN	16.5 Ohms PE	None	N/A	PVC Purple 11.1 mm (.435 in)	Foil/Braid 22 AWG	RB51259-*M 93 lbs.	A
590 AWM 2464 75°C 300 Volts	NEC PLTC CEC AWM-I/II A/B FT4	2/22 AWG RD/GN	16.5 Ohms PE	2/22 AWG BU/WH	16.5 Ohms PE	PVC Purple 9.6 mm (.380 in)	Foil/Braid 22 AWG	RB51057-*M 75 lbs.	B

* Indicates length in meters.

Standard spool lengths are 30, 75, 100, 150, 200, 225, 300 meters. Consult factory for other lengths.

† Zero Halogen: to DIN VDE 0472 part 815 + IEC 60754-1

		eurofast					
		Pin (Male)			Socket (Female)		
		5 RSAW	1 RSSW	2 WSSW	6 RKAW	3 RKS	4 WKSW
Bare		RSAW 45x-*M	RSSW 45x-*M	WSSW 45x-*M	RKAW 45x-*M	RKS 45x-*M	WKSW 45x-*M
	5 RSAW	RSAW RSAW 45x-*M			RSAW RKAW 45x-*M		
eurofast	1 RSSW			RSSW RSSW 45x-*M	RSSW WSSW 45x-*M	RSSW RKS 45x-*M	RSSW WKSW 45x-*M
	2 WSSW				WSSW WSSW 45x-*M	WSSW RKS 45x-*M	WSSW WKSW 45x-*M
eurofast	6 RKAW				RKAW RKAW 45x-*M		
	3 RKS					RKS RKS 45x-*M	RKS WKSW 45x-*M
eurofast	4 WKSW						WKSW WKSW 45x-*M

See page P8 for dimensional drawings.

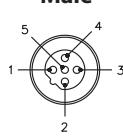
* Indicates length in meters.

x Indicates cable type.

Standard cable lengths are 1, 2, 4, 6, 8, 10, 15, and in +5 meter increments from there. Consult factory for other lengths.

For stainless steel coupling nuts change part number RSSW...RSSWV.

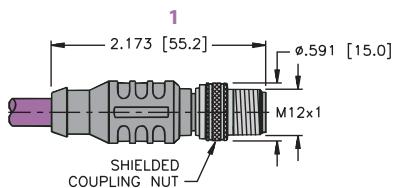
Pinouts

eurofast	45 series pinout	59 series pinout	eurofast
Male 	1. N/C 2. Green (TxD) 3. N/C 4. Red (RxD) 5. Bare (Shield Drain Wire)	1. Blue (TxD_1) 2. Green (TxD) 3. White (RxD_1) 4. Red (RxD) 5. Bare (Shield Drain Wire)	Female 

PROFIBUS®-DP, (M12x1) eurofast® Cable and Cordsets

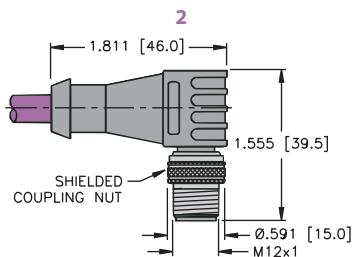
Specifications

Overmold:	TPU
Coupling Nut:	Nickel Plated CuZn or Stainless Steel
Contact Carrier:	TPU 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)



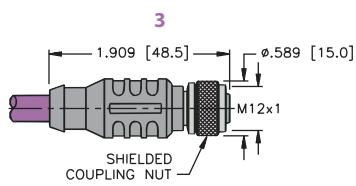
RSSW ..

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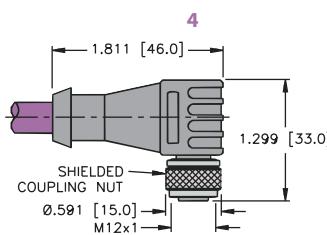
WSSW ..

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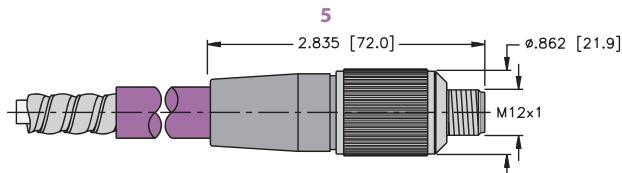
RKSW ..

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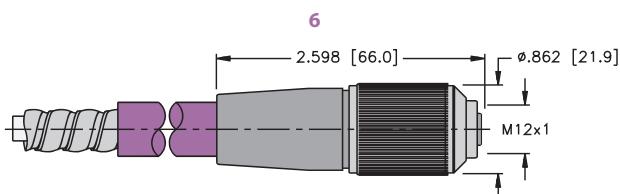
WKSW ..

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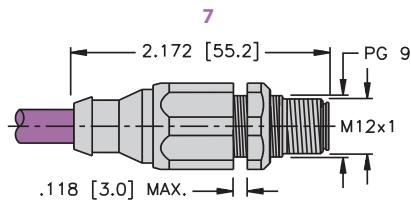
RSAW ..

Page P7



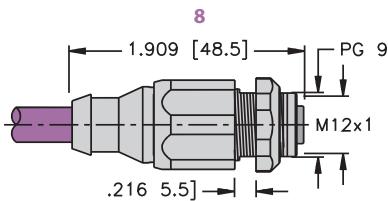
RKAW ..

Page P7



FSSDWE ..

Page P9



FKSDWE ..

Page P9

PROFIBUS®-DP, (M12x1) eurofast® Cable and Cordset Selection Matrix

		eurofast					
		Pin (Male)		Socket (Female)		Pin (Male)	Socket (Female)
		Bare	1 RSSW	2 WSSW	3 RKS	4 WKS	7 FSSDWE
9-Pin Sub D Connector	Terminator	10 D9S/T 45x-*M D9S/T	RSSW D9S/T 45x-*M	WSSW D9S/T 45x-*M	RKS D9S/T 45x-*M	WKS D9S/T 45x-*M	FSSDWE D9S/T 45x-*M
	Master	12 D9SM/T 45x-*M D9SM/T	RSSW D9SM/T 45x-*M	WSSW D9SM/T 45x-*M	RKS D9SM/T 45x-*M	WKS D9SM/T 45x-*M	FSSDWE D9SM/T 45x-*M
		11 SD9S/T 45x-*M SD9S/T	RSSW SD9S/T 45x-*M	WSSW SD9S/T 45x-*M	RKS SD9S/T 45x-*M	WKS SD9S/T 45x-*M	FSSDWE SD9S/T 45x-*M

See page P8 and P11 for dimensional drawings.

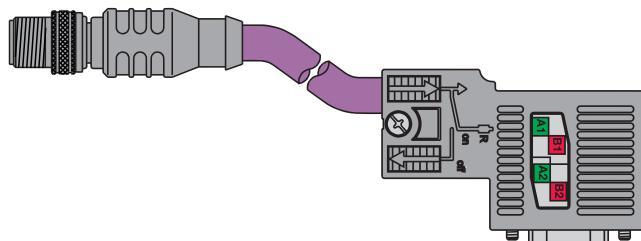
* Indicates length in meters.

x Indicates cable type.

Standard cable lengths are 1, 2, 4, 6, 8, 10, 15, and in +5 meter increments from there. Consult factory for other lengths.

For stainless steel coupling nuts change part number RSSW...RSSWV.

Extension Example:



RSSW D9S/T 455-0.3M

Pinouts

eurofast	45 series pinout	eurofast	D9	D9 pinout
Male 	1. N/C 2. Green (TxD) 3. N/C 4. Red (RxD) 5. Bare (Shield Drain Wire)	Female 	Male 	1 = N/C 2 = N/C 3 = RD (RXD) 4 = N/C 5 = N/C 6 = N/C 7 = N/C 8 = GN (TXD) 9 = N/C

PROFIBUS®-DP, (M12x1) eurofast® Cable and Cordset Selection Matrix

		eurofast							
		Pin (Male)		Socket (Female)		Pin (Male)		Socket (Female)	
		Bare	1 RSSW	2 WSSW	3 RKS	4 WKSW	7 FSSDWE	8 FKSDWE	
Node	10 D9S	D9S 45x-*M	RSSW D9S RSSW 45x-*M-*M	WSSW D9S WSSW 45x-*M-*M	RKS D9S RKS 45x-*M-*M	WKSW D9S WKSW 45x-*M-*M	FSSDWE D9S FSSDWE 45x-*M-*M	FKSDWE D9S FKSDWE 45x-*M-*M	
	11 SD9S	SD9S 45x-*M	RSSW SD9S RSSW 45x-*M-*M	WSSW SD9S WSSW 45x-*M-*M	RKS SD9S RKS 45x-*M-*M	WKSW SD9S WKSW 45x-*M-*M	FSSDWE SD9S FSSDWE 45x-*M-*M	FKSDWE SD9S FKSDWE 45x-*M-*M	
	12 D9SM	D9SM 45x-*M	RSSW D9SM RSSW 45x-*M	WSSW D9SM WSSW 45x-*M-*M	RKS D9SM RKS 45x-*M-*M	WKSW D9SM WKSW 45x-*M-*M	FSSDWE D9SM FSSDWE 45x-*M-*M	FKSDWE D9S FKSDWE 45x-*M-*M	

		eurofast			
		Pin (Male)		Socket (Female)	
		Bare	1 RSSW/RKS	2 WSSW/WKSW	3 FSSDWE/FKSDWE
Node	10 D9S	D9S 45x-*M	RSSW D9S RKS 45x-*M-*M	WSSW D9S WKSW 45x-*M-*M	FSSDWE D9S FKSDWE 45x-*M-*M
	11 SD9S	SD9S 45x-*M	RSSW SD9S RKS 45x-*M-*M	WSSW SD9S WKSW 45x-*M-*M	FSSDWE SD9S FKSDWE 45x-*M-*M
	12 D9SM	D9SM 45x-*M	RSSW D9SM RKS 45x-*M-*M	WSSW D9SM WKSW 45x-*M-*M	FSSDWE D9SM FKSDWE 45x-*M-*M

See page P8 and P11-P12 for dimensional drawings.

* Indicates length in meters.

x Indicates cable type.

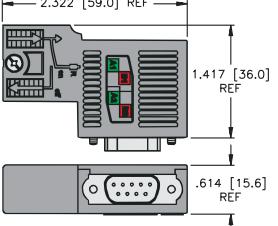
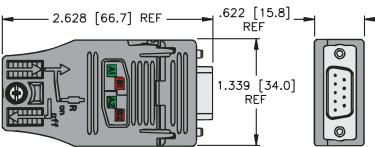
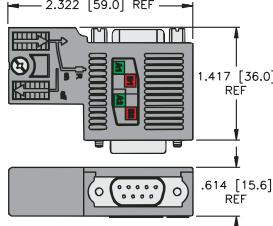
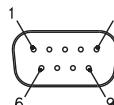
Standard cable lengths are 1, 2, 4, 6, 8, 10, 15, and in +5 meter increments from there. Consult factory for other lengths.

For stainless steel coupling nuts change part number RSSW...RSSWV.

See previous page for pinouts.

PROFIBUS®-DP, Field Wireable D9 Connectors

- Provides Connection to Master or Node in the field
- Maximum Cable O.D. is 8.5 mm

Housing Style	Part Number	Features	Pinouts
	Connector, PDP, D9S	-25° to +80°C, right angle, terminating switch	
	Connector, PDP, SD9S	-25° to +80°C, straight, terminating switch	1. N/C 2. N/C 3. RED (Bus_B) 4. N/C 5. N/C 6. N/C 7. N/C 8. Green (Bus_A) 9. N/C
	Connector, PDP, D9SM	-25° to +80°C, right angle, master, terminating switch	Male 

PROFIBUS®-DP, Field Wireable D9 Connectors

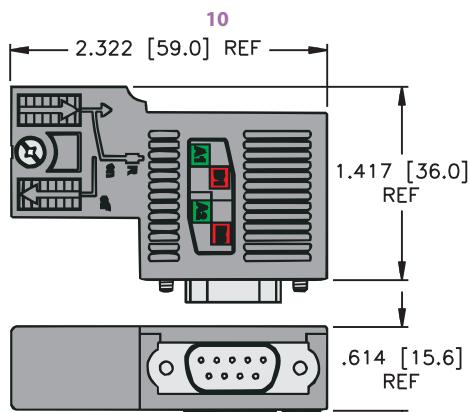
Specifications - (D9)

Terminating Switch:	Yes
Protection:	IEC IP 20
Rated Voltage:	4.75-5.25 VDC
Rated Current:	5 mA
Temperature Rating:	-25° to +60°C

*Max. Cable diameter: 8.5 mm

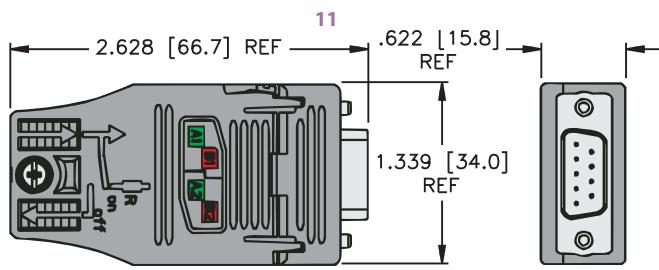
Specifications (FKSDWE .. FSFDWE)

Overmold:	TPU
Coupling Nut:	Nickel Plated CuZn or Stainless Steel
Contact Carrier:	TPU or POM (Nylon)
Contacts:	Gold Plated CuZn
Protection:	NEMA 1, 3, 4, 6P and IEC IP 67
Rated Voltage:	250 V
Rated Current:	4 A
Temperature Rating:	-40° to +75°C



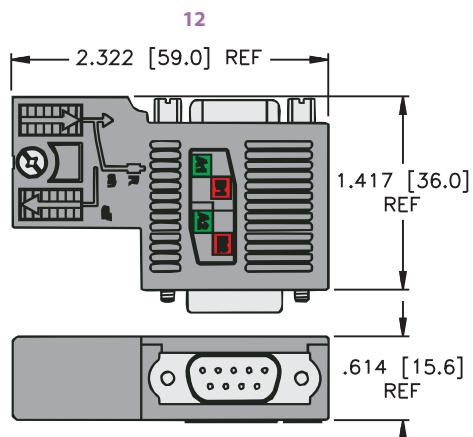
Connector, PDP, D9S

Page P10



Connector, PDP, SD9S

Page P10



Connector, PDP, D9SM

Page P10

Note: Part numbers are for ordering connector only.
Cable must be ordered separately.

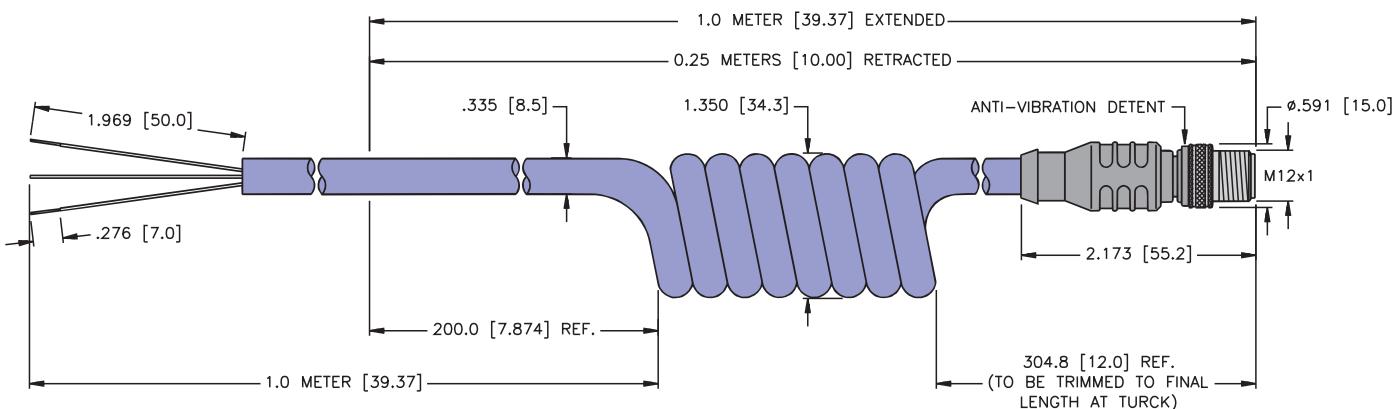
PROFIBUS®-DP (M12x1), eurofast® Retractile Cordsets

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



Part Number	Features	Pinouts
RSSW 456SP-1M	TPU , 250 V, 4 A, -40° to +80°C, (M12x1) eurofast male connector, 1 M extended length, .25 M retracted length	1. NC 2. GN 3. NC 4. RD 5. Drain

Single ended cordset part numbers shown. Also available in double ended (M12x1) eurofast connectors.
Different lengths available upon request.

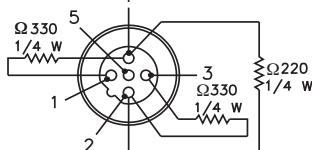
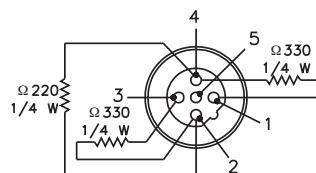
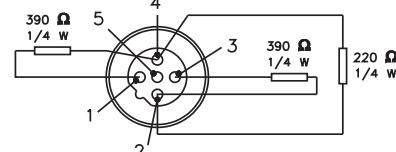


PROFIBUS®-DP, Terminating Resistors

- **Terminating Resistors Stabilize and Minimize Reflections on the Bus Line**
- **A Terminating Resistor is Required at the Beginning and End of the Main Bus Line**



Housing Style	Part Number	Features	Pinouts
	RSSW 45-TR	Nickel plated brass, 250 V, 4 A, -40° to +75°C, internal resistor, male eurofast connector, reverse keyed	1. N/C 2. GN 3. N/C 4. RD 5. BARE See Below
	RKS 45-TR	Nickel plated brass, 250 V, 4 A, -40° to +75°C, internal resistor, female eurofast connector, reverse keyed	1. N/C 2. GN 3. N/C 4. RD 5. BARE See Below
	PDP-TRA	Nickel plated brass, 250 V, 4 A, -40° to +75°C, active terminating resistor, external power supply minifast ® and eurofast connector, LED signal for power status	1. N/C 2. BUS_A 3. N/C 4. BUS_B 5. N/C See Below
			1. N/C 2. GND 3. N/C 4. U=24 VDC 5. N/C Male

Pinout Diagram, RSSW 45-TR

eurofast Male Connector
Pinout Diagram, RKS 45-TR

eurofast Female Connector
Pinout Diagram, PDP-TRA

eurofast Male Connector

PROFIBUS®-DP, Circuit Board Connectors and OEM Receptacles

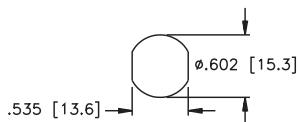
- Provides (M12x1) **eurofast®** Connection to Field Devices



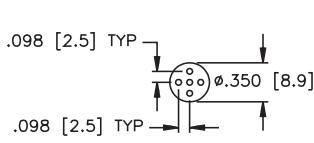
Housing	Female Part Number	Male Part Number	Application	Pinouts
FKFDW 45.. 	FKFDW 45-PCB	FSFDW 45-PCB	Nickel plated CuZn or stainless Steel, 250 V, 4 A, -40° to +75°C, male eurofast PCB pins	Female
FSFDW 45.. 				
FKFDLW 45.. 	FKFDLW 45	FSFDLW 45	Nickel plated CuZn or stainless Steel, 250 V, 4 A, -40° to +75°C, male eurofast solder cups	1. N/C 2. GN 3. N/C 4. RD 5. BARE
FSFDLW 45.. 				
WFSW 45.. 	WFSW 45-PCB		Nickel plated CuZn or stainless Steel, 250 V, 4 A, -40° to +75°C, male eurofast right angle PCB pins	Male

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

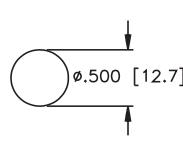
Panel Cutout
FKFD ... FSFD



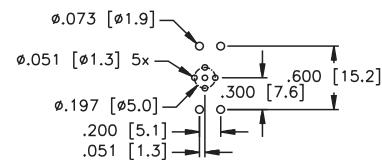
Board Layout (reference only)
FKFD ... FSFD



Panel Cutout
WFS



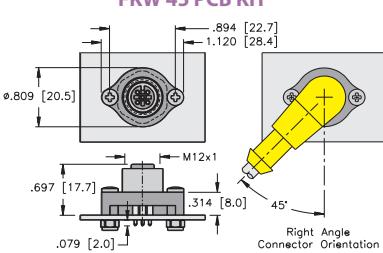
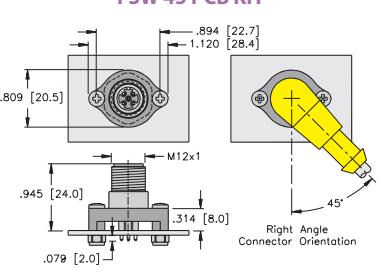
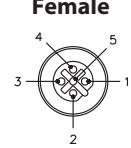
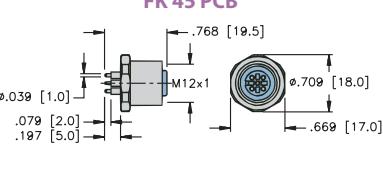
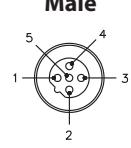
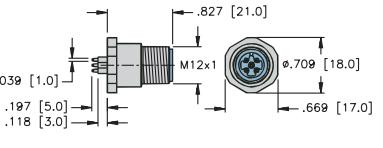
Board Layout (reference only)
WFS



PROFIBUS®-DP, Circuit Board Connectors and OEM Receptacles

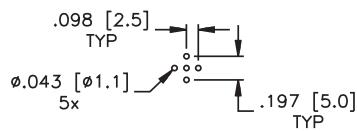
- Provides (M12x1) eurofast® Connection to Field Devices



Housing	Female Part Number	Male Part Number	Application	Pinouts
FKW 45 PCB KIT  FSW 45 PCB KIT 	FKW 45-PCB KIT	FSW 45-PCB KIT	Nickel plated CuZn or stainless steel, 250 V, 4 A, -30° to +75°C, male eurofast with mounting kit, Reverse key	Female  1. N/C 2. GN 3. N/C 4. RD 5. BARE
FK 45 PCB 	FK 45-PCB	FSW 45-PCB	Nickel plated CuZn or stainless steel, 250 V, 4 A, -30° to +75°C, male eurofast , reverse key	Male 
FSW 45 PCB 				

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

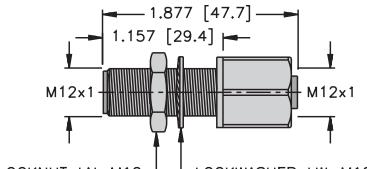
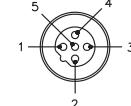
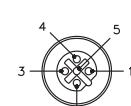
**Board Layout (reference only)
FK ... FS**



PROFIBUS®-DP, eurofast® Feed Through Receptacle

- Provides Bulkhead Panel Mount Connection



Housing Style	Part Number	Features	Pinouts
 M12x1 LOCKNUT LN-M12 LOCKWASHER LW-M12	FKW FSW 45/M12	Nickel plated brass or stainless steel, 250 V, 4 A, -40° to +75°C, straight male/female connector, for pre-molded reverse keyed eurofast cables	 

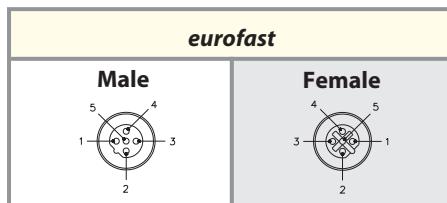
For stainless steel change part number to FKVV FSVV 45/M12

PROFIBUS®-DP, eurofast® Bus Tees

- Creates a Branch from the Main Bus Line



Housing Style	Part Number	Features	Wiring Diagrams
	RKSW 2RSSW 45 * RKSW 2RSSW 45-0001	TPU, Nickel plated brass, 250 V, 4 A, -40° to +75°C, male eurofast drop connector, fully shielded eurofast tee, passive termination	
	VB2/FSW/FKW/FSW 45	TPU, Nickel plated brass, 250 V, 4 A, -40° to +75°C, Y Junction, fully shielded eurofast connectors	
	YBZ2-FSW/FKW/FSW 45	TPU, Nickel plated brass, 250 V, 4 A, -40° to +75°C	
	YBZ2-FKM/FKW/FSW 45	TPU, Nickel plated brass, 250 V, 4 A, -40° to +75°C	

Pinouts


PROFIBUS®-DP, eurofast® Field Wireable Connectors with Labels

- Allows for Quick Connection when Pre-Molded Cables not Available
- Available for Male and Female Connectors
- Color Coded Wire Connection for PROFIBUS-DP



Housing Style	Female Part Number	Male Part Number	Features	Pinouts
BMWS 81.. BMSWS 81.. 	BMWS 8151-8.5/PDP	BMSWS 8151-8.5/PDP	Nickel plated brass, PG 9 cable gland, accepts 4-9 mm cable diameter, screw terminals, accepts up to 18 AWG conductors 85°C, 125 V, 4 A, mates with reverse key, 5-pin cordsets and receptacles, metal, fully shielded	
BMWS 82.. BMSWS 82.. 	BMWS 8251-8.5/PDP	BMSWS 8251-8.5/PDP	Nickel plated brass, PG 9 cable gland, accepts 4-9 mm cable diameter, screw terminals, accepts up to 18 AWG conductors 85°C, 125 V, 4 A, mates with reverse key, 5-pin cordsets and receptacles, metal, fully shielded	

Notes: