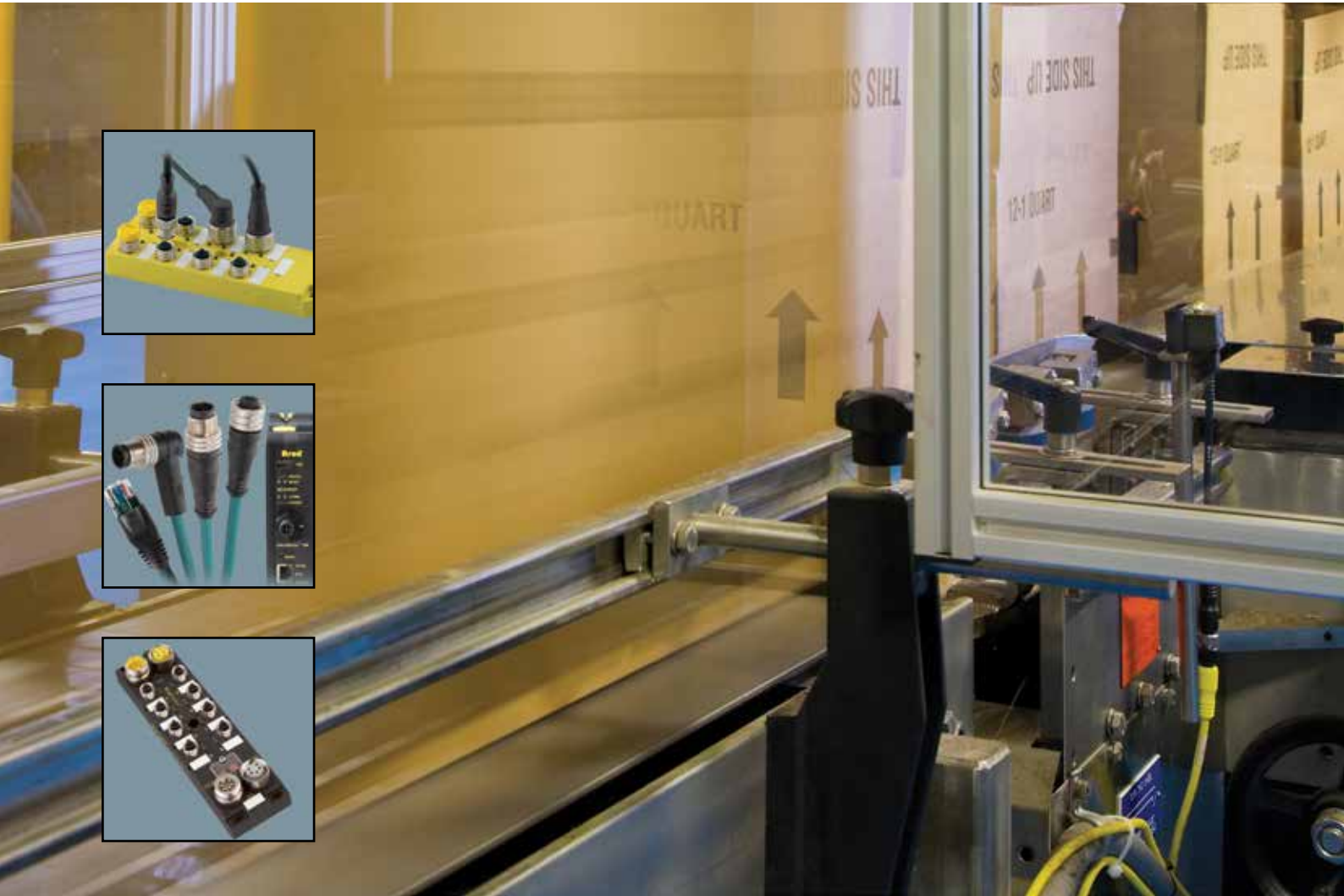


Brad® AUTOMATION > INDUSTRIAL IO DESIGNER GUIDE

European Core Program





TOTAL SYSTEM SOLUTION >

Molex® is a leading one-source supplier of interconnect products. Our team of highly skilled experts is focused on the design, development and distribution of innovative product solutions that touch virtually every walk of life. The Molex® product portfolio is among the world's most extensive, with over 100,000 reliable products. Because our product line includes automation products for passive media, network media and power applications, Molex® can interconnect an entire automation infrastructure—one total system solution from a global company dedicated to meeting your total system needs. Molex® utilizes extensive worldwide resources to meet customer needs on a local, regional and global level. Molex® offers well-established sales, product development, manufacturing and logistics resources in Asia, Europe and the Americas.

The products you need... when and where you need them.

The Brad® Core Program

- Molex® supports one of **the largest portfolios of connectivity and wiring solutions** in the market for automotive, food and beverage, robotic, infrastructure, commercial vehicles and solar applications.
- The core program is part of this portfolio that is **focused on the standard requirements** related to automation in the European market and highlights the active and passive IO modules and the related connectivity products for installation in harsh environments.
- Molex® commits to **timely availability** of the core program parts and even quicker response, with delivery in 5 working days on the parts that belong to the **BradExpress program** (parts identified in bold in this guide).
- Molex® commits to **supporting its customers** by helping them choose the right network as well as the most optimized infrastructure solution for their application. The Molex® tech support team also supports its customers in selecting corresponding parts from the complete portfolio or designing customer-dedicated solutions and prototyping.

Molex® has the right solution for your automation application!

Find the Latest Innovations and Information at **Molex.com**

For the most in-depth and up-to-date information on all our products, visit Molex.com. It's designed to help you get more done in less time with advanced search capabilities, 3D models, product specifications, easy sample ordering and more.



Molex.com provides a first stop for comprehensive overviews of our industrial products. Some of the tools you'll find are:

Capabilities Videos

Short online videos highlight key industry products, as well as our unique cross-functional design and manufacturing capabilities.

Featured Products

To find out about new products that can take your design to the next level, look no further than this convenient product spotlight.

Other Time-Saving Site Features

Monthly E-ouncements

Electronic newsletter keeps you up-to-date on our latest innovations

Favorite Products Feature

Lets you select and save up to 200 products as you browse

Electrical Testing Models and Data

Available on an array of products in our "Signal Integrity" section

New Videos, Webinars, Articles and More

Available right from our home page

Detailed Application Pages

Instant Access to Product Specs

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PROFIBUS

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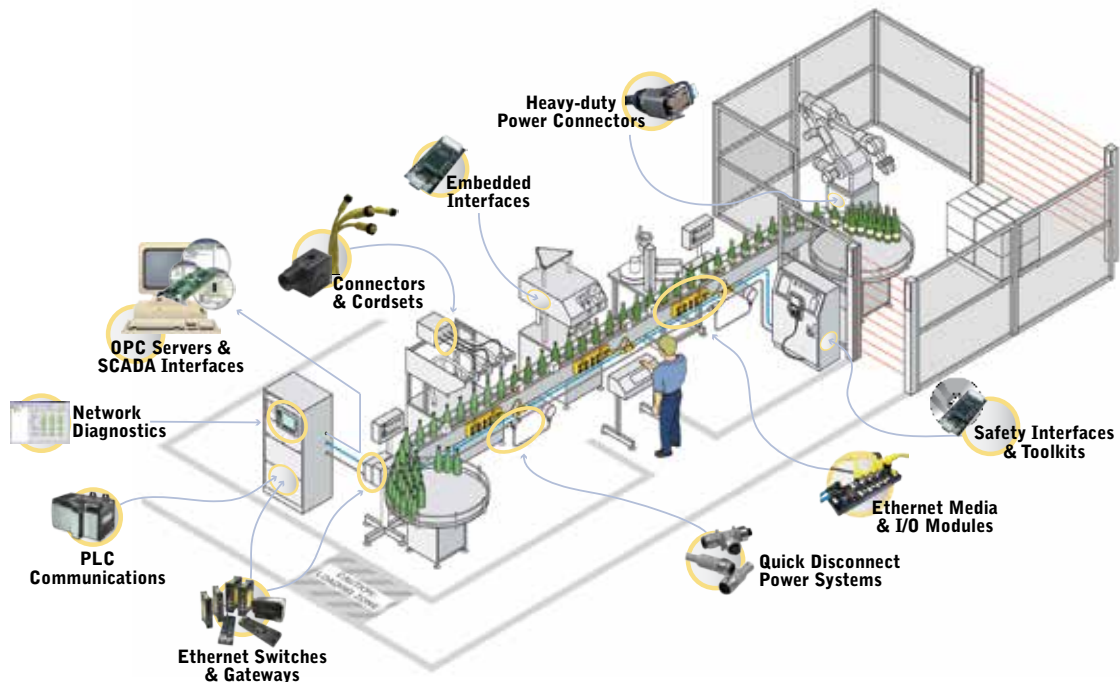
POWER

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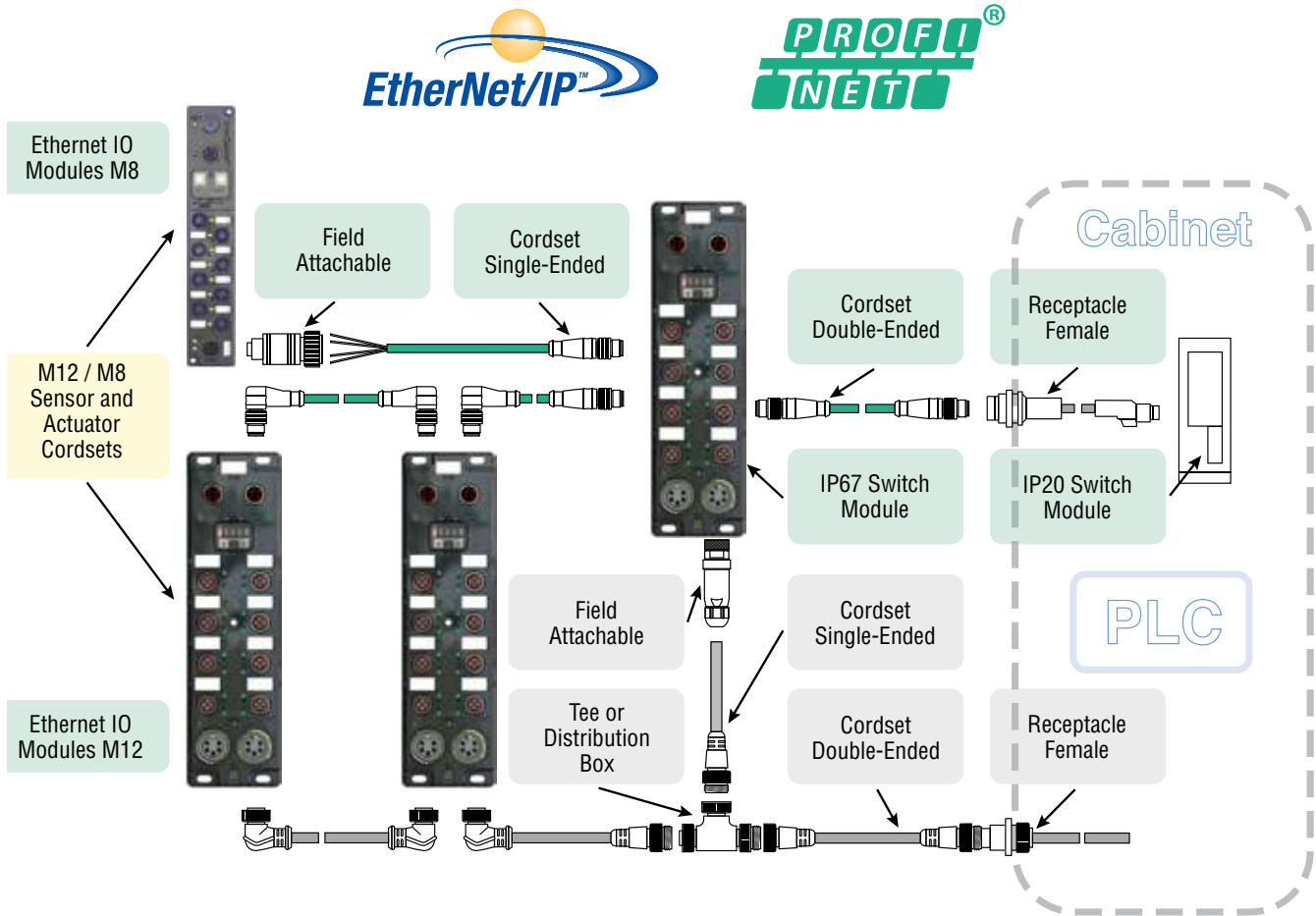
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Complete Solution For Automation Infrastructures In Harsh Environments

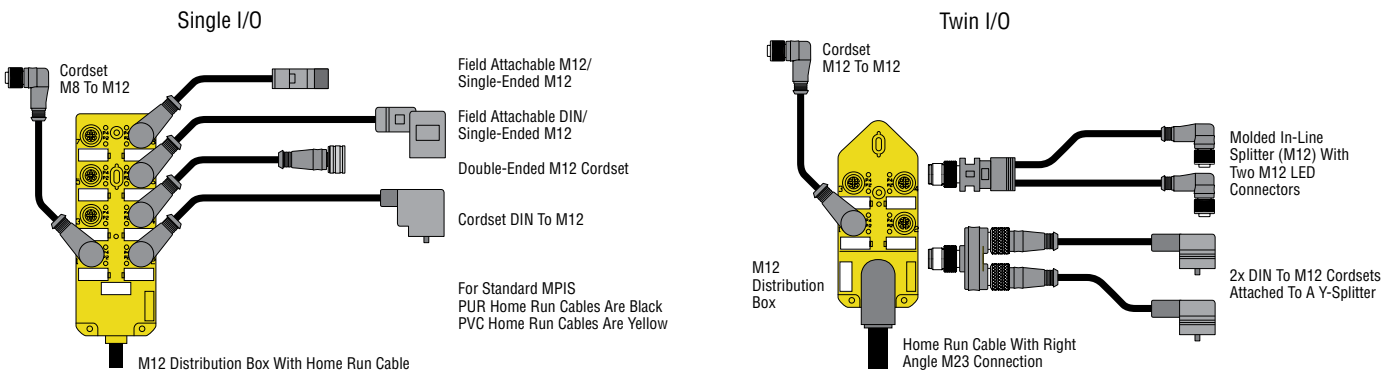


IP67 rated digital IO modules for harsh environments are designed for direct machine mount applications.

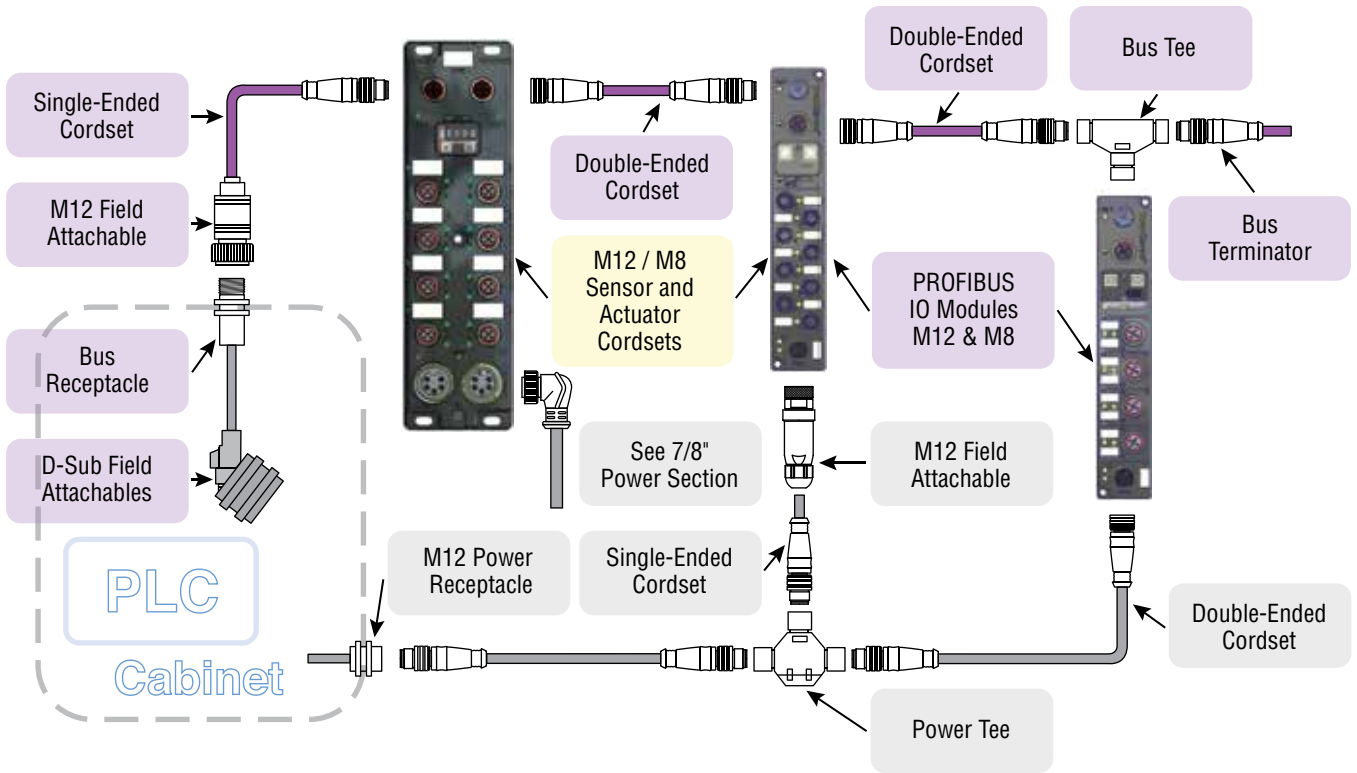
Ethernet and 7/8" Power Distribution Architecture



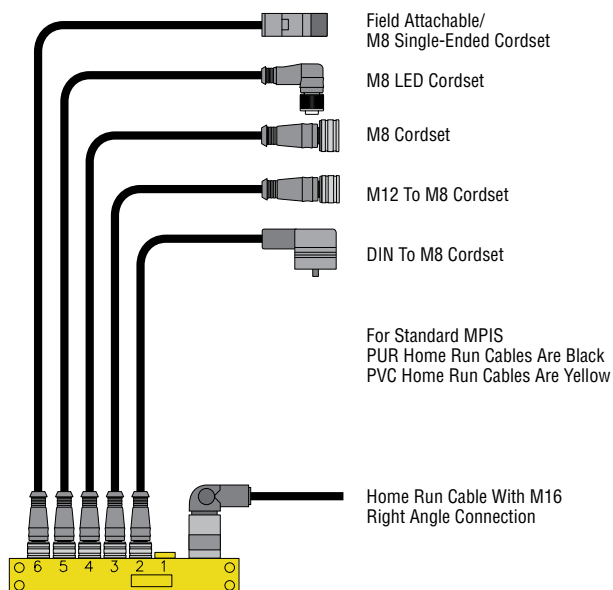
M12 Sensor Actuator Interconnection



PROFIBUS and M12 Power Distribution Architecture



M8 Sensor Actuator Interconnection



Ethernet IO reliable connections in harsh environments.



Worldwide Unique Feature: Quicker Setups and More Uptime through Secure Connections Using the Brad® Ultra-Lock® Patented Connection System

- One simple push delivers a secure, consistent seal each and every time
- Eliminates connector-related intermittent signals that lead to costly production downtime
- Quick change-overs can now be a reality

React to Problems Sooner Using Easy-to-Read Diagnostics

- Visible LEDs provide maintenance personnel with ability to easily determine I/O, module and network status
- Scrolling 4-character display for IP addressing and module status
- Built-in web server for remote monitoring, configuration and diagnostics

Reduce Infrastructure Costs with Built-in 2-Port Ethernet Switch

- 10/100 Mbps auto-sensing
- Supports straight or crossover Ethernet cable

Reduce Inventory Costs Using Configurable I/O

- User configurable – 16 points of digital I/O can be set as either an Input or Output (also available in fixed I/O configurations)

Save Time Configuring or Replacing I/O Modules

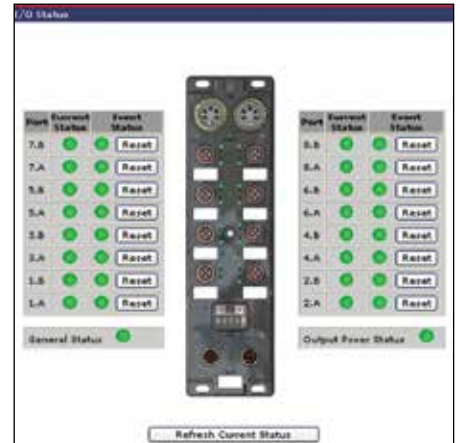
- On PROFINET or EtherNet/IP, configuration setup can be downloaded on the Harsh IO directly from the Master, IO-Controller or Scanner
- With simple-to-use push buttons, quickly adjust the last three octets of the IP address

Save Energy by Minimizing Power Supply

- On PROFINET, Harsh IO supports PROFlenergy service, allowing the IO-Controller to minimize power supply to the connected Harsh IO Module(s)

Brad® Harsh IO Modules

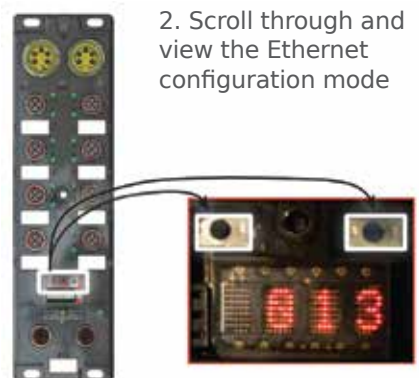
Built-in Web Server with Password Protection



Push Buttons

Two push buttons located above the display window are used to:

1. Quickly adjust the last octet or last 3 characters of the module's IP address
2. Scroll through and view the Ethernet configuration mode



IP67 rated digital IO modules for harsh environments are designed for direct machine mount applications with PROFINET-IO communication capabilities.

Specifications



PROFINET IO-Device, Conformance Class B
 IP addressing: DCP or static
 RT I/O update, up to 1 ms
 Services²: PROFIenergy, SNMP V1/V2/V3, LLDP S/R, MRP, I&M, EasyDevice replacement, Fast Start-Up (FSU) < 500ms
 GSDML configuration file (downloadable via integrated Web server)
 Embedded display¹ for diagnostic
 Grounding isolation² between Input/logic and Output Power
 Operating Temperature: -25 to +70°C
 Storage Temperature: -40 to +90°C
 Approvals: CE, UL, cUL, Rohs, REACH, PNO Certified

Brad® PROFINET Harsh IO Modules

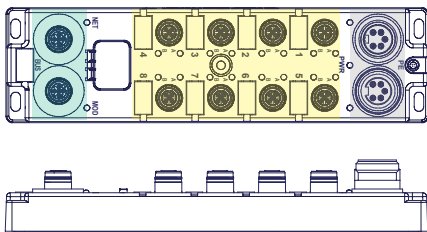


Brad® Harsh IO IP67 PROFINET Modules
60mm and 30mm

User manual and GSDML files to download under:
www.molex.com (select Brad Automation Products Support Center)

Ordering Information

Brad® Harsh IO IP67 PROFINET Module – 60mm M12

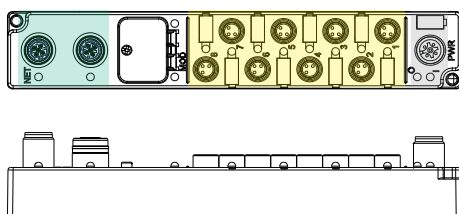


Connectivity

Ethernet: 2x Female M12 4P D-Code Built-in 2 port switch Ultra-Lock® compatible	Inputs/Outputs: 8x Female M12 5P A-Code Dual IO signal per port Inputs 24V max. 140mA Outputs 24V max. 2A Ultra-Lock® compatible	Power: 1x Male 7/8" 4 or 5 Pole 1x Fem. 7/8" 4 or 5 Pole Voltage: 24V Input & Output, max. 8 Amps
--	---	---

Power Type	Input/Output (PNP)	Engineering No.	Standard Order No.
7/8" 5 Pole	16I	TCDEP-8D0P-D1U-G	112095-5048
	8I/8O	TCDEP-888P-D1U-G	112095-5050
	12I/4O	TCDEP-8B4P-D1U-G	112095-5051
	16O	TCDEP-80DP-D1U-G	112095-5049
	User Config.	TCDEP-8YYX-D1U	112095-5037
7/8" 4 Pole ⁽³⁾	16I	TCDEP-8D0P-DYU-G	112095-5052
	8I/8O	TCDEP-888P-DYU-G	112095-5053
	12I/4O	TCDEP-8B4P-DYU-G	112095-5054
	16O	TCDEP-80DP-DYU-G	112095-5055

Brad® Harsh IO IP67 PROFINET Module – 30mm M8



Connectivity

Ethernet: 2x Female M12 4P D-Code Built-in 2 port switch Ultra-Lock® compatible	Inputs/Outputs: 8x Female M8 3 Poles Single IO signal per port Inputs 24V max. 140mA Outputs 24V max. 1.4A	Power: 1x Male M12 5 Pole Voltage: 24V Input & Output, max. 4 Amps
---	---	---

Power Type	Input/Output (PNP)	Engineering No.	Standard Order No.
M12 5 Pole	8I	TBDEP-880P-D84-G	112095-5064
	4I/4O	TBDEP-844P-D84-G	112095-5065
	8O	TBDEP-808P-D84-G	112095-5066
	User Config.	TBDEP-8YYP-D84-G	112095-5067

(1) Only on Harsh IO 60mm model.
 (2) Not available on User Configurable IO model.
 (3) 4 Poles Mini-Change® (7/8") cordsets are not listed in this brochure. For more information consult our web page or industrial automation catalog.

IP67 rated digital IO modules for harsh environments are designed for direct machine mount applications with EtherNet/IP communication capabilities.

Specifications



EtherNet/IP IO Adapter
 IP address: DHCP, Static Address, and 0xF5/0xF6 objects
 RT I/O update, up to 1 ms
 Services: Automatic Conflict Detection (ACD), QuickConnect < 500ms (QC Class A device)
 EDS configuration file (downloadable via integrated Web server)
 Embedded display¹ for diagnostic
 Grounding isolation² between Input/logic and Output Power
 Operating Temperature: -25 to +70°C
 Storage Temperature: -40 to +90°C
 Approvals: CE, UL, cUL, Rohs, REACH, ODVA Certified

Brad® EtherNet/IP Harsh IO Modules

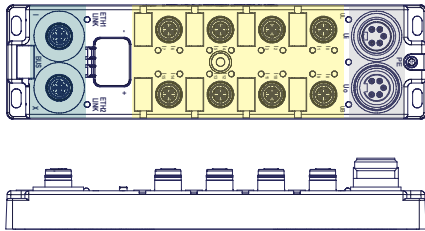


Brad® Harsh IO IP67 EtherNet/IP Modules
60mm and 30mm

User manual and EDS files to download under:
www.molex.com (select Brad Automation Products Support Center)

Ordering Information

Brad® Harsh IO IP67 EtherNet/IP Module – 60mm M12

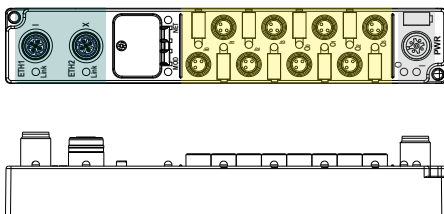


Connectivity

Ethernet:	Inputs/Outputs:	Power:
2x Female M12 4P D-Code Built-in 2 port switch Ultra-Lock® compatible	8x Female M12 5P A-Code Dual IO signal per port Inputs 24V max. 140mA Outputs 24V max. 2A Ultra-Lock® compatible	1x Male 7/8" 4 or 5 Pole 1x Fem. 7/8" 4 or 5 Pole Voltage: 24V Input & Output, max. 8 Amps

Power Type	Input/Output (PNP)	Engineering No.	Standard Order No.
7/8" 5 Pole	16I	TCDEI-8D0P-D1U-G	112095-5060
	8I/8O	TCDEI-888P-D1U-G	112095-5061
	12I/4O	TCDEI-8B4P-D1U-G	112095-5063
	16O	TCDEI-80DP-D1U-G	112095-5062
	User Config.	TCDEI-8YYX-D1U	112095-5011
7/8" 4 Pole ⁽³⁾	16I	TCDEI-8D0P-DYU-G	112095-5040
	8I/8O	TCDEI-888P-DYU-G	112095-5041
	12I/4O	TCDEI-8B4P-DYU-G	112095-5043
	16O	TCDEI-80DP-DYU-G	112095-5042
	User Config.	TCDEI-8YYX-DYU	112095-5020

Brad® Harsh IO IP67 EtherNet/IP Module – 30mm M8



Connectivity

Ethernet:	Inputs/Outputs:	Power:
2x Female M12 4P D-Code Built-in 2 port switch Ultra-Lock® compatible	8x Female M8 3 Poles Single IO signal per port Inputs 24V max. 140mA Outputs 24V max. 1,4A	1x Male M12 5 Pole Voltage: 24V Input & Output, max. 4 Amps

Power Type	Input/Output (PNP)	Engineering No.	Standard Order No.
M12 5 Pole	8I	TBDEI-880P-D84-G	112095-5068
	4I/4O	TBDEI-844P-D84-G	112095-5069
	8O	TBDEI-808P-D84-G	112095-5070
	User Config.	TBDEI-8YYP-D84-G	112095-5071

(1) Only on Harsh IO 60mm model.
 (2) Not available on User Configurable IO model.
 (3) 4 Poles Mini-Change® (7/8") cordsets are not listed in this brochure.
 For more information consult our web page or industrial automation catalog.

IP67 rated digital IO modules for harsh environments are designed for direct machine mount applications with Modbus TCP communication capabilities.

Brad® Modbus TCP Harsh IO Modules

Specifications

Modbus TCP server
 Speed: 10/100 Mbps. (auto-negotiation, full duplex)
 Data Access: I/O data
 IP address: DHCP, Static Address
 Embedded display for diagnostic
 Operating Temperature: -25 to +70°C
 Storage Temperature: -40 to +90°C
 Approvals: CE, UL, cUL, Rohs, REACH, Schneider Certified

MODBUS TCP



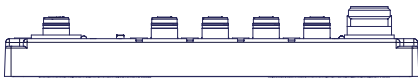
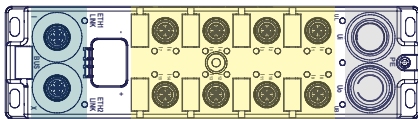
Brad® Harsh IO IP67 Modbus TCP Module 60mm

User manual to download under:

www.molex.com (select Brad Automation Products Support Center)

Ordering Information

Brad® Harsh IO IP67 Modbus TCP/IP Module – 60mm M12



Connectivity

Ethernet:	Inputs/Outputs:	Power:
2x Female M12 4P D-Code Built-in 2 port switch Ultra-Lock® compatible	8x Female M12 5P A-Code Dual IO signal per port Inputs 24V max. 140mA Outputs 24V max. 2A Ultra- Lock® compatible	1x Male 7/8" 4 or 5 Pole 1x Fem. 7/8" 4 or 5 Pole Voltage: 24V Input & Output, max. 8 Amps

Power Type	Input/Output	Engineering No.	Standard Order No.	
7/8" 5 Pole	NPN	16I	TCDEM-8D0N-D1U	112095-0007
		8I/8O	TCDEM-888N-D1U	112095-0001
		12I/4O	TCDEM-8B4N-D1U	112095-0003
		14I/2O	TCDEM-8C2N-D1U	112095-0005
	User Config.	TCDEM-8YYX-D1U	112095-0009	
	PNP	16I	TCDEM-8D0P-D1U	112095-0008
		8I/8O	TCDEM-888P-D1U	112095-0002
		12I/4O	TCDEM-8B4P-D1U	112095-0004
		14I/2O	TCDEM-8C2P-D1U	112095-0006
	7/8" 4 Pole ⁽³⁾	NPN	16I	TCDEM-8D0N-DYU
8I/8O			TCDEM-888N-DYU	112095-5024
12I/4O			TCDEM-8B4N-DYU	112095-5023
14I/2O			TCDEM-8C2N-DYU	112095-5022
User Config.		TCDEM-8YYX-DYU	112095-5038	
PNP		16I	TCDEM-8D0P-DYU	112095-5025
		8I/8O	TCDEM-888P-DYU	112095-5028
		12I/4O	TCDEM-8B4P-DYU	112095-5027
		14I/2O	TCDEM-8C2P-DYU	112095-5026

(1) Only on Harsh IO 60mm model.

(2) Not available on User Configurable IO model.

(3) 4 Poles Mini-Change® (7/8") cordsets are not listed in this brochure. For more information consult our web page or industrial automation catalog.

IP67 rated fast Ethernet switches for harsh environments are designed for direct machine mount applications.

Specifications

Unmanaged IP67 switches
 Speed 10/100Mbps auto negotiation, full or half duplex
 Auto-learning with no software or configuration required
 Operating Temperature: -20 to +75°C
 Storage Temperature: -25 to +90°C
 Class1 Div 2 (Oil and Gas, Mining and utility applications)
 Approvals: CE, UL, cUL

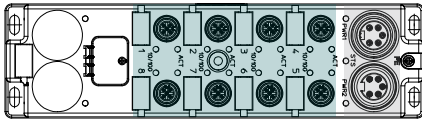
Brad® Harsh-Duty Ethernet Switches



Brad® Harsh-Duty Ethernet switches — 60mm and 30mm

Ordering Information

Brad® Harsh-Duty Unmanaged IP67 Switches – 60mm M12



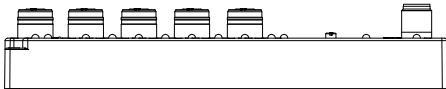
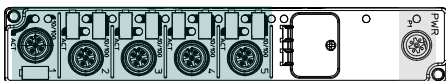
Engineering No.	Standard Order No.
DRL-780	112105-5002

Connectivity

Ethernet:
 8x Female M12 4P
 D-Code
 Ultra-Lock® compatible

Power:
 1x Male 7/8" 5 Pole
 1x Fem. 7/8" 5 Pole
 Dual power supply entry, 9-36VDC (continuous)

Brad® Harsh-Duty Unmanaged IP67 Switches – 30mm M12



Engineering No.	Standard Order No.
DRL-750	112111-5001

Connectivity

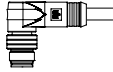
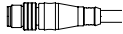
Ethernet:
 5x Female M12 4P
 D-Code

Power:
 1x Male M12 5 Pole
 9-36VDC (continuous)

Plug & Play infrastructure to interconnect Ethernet IP67 devices based on D-Code M12 standard connectors. Designed with 2 versions of cable to comply to the PROFINET (PUR, Green, AWG22) and EtherNet/IP (PVC, Teal, AWG26) specification and to cover most customer's Ethernet applications.

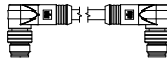
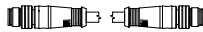
Ordering Information

Brad® PROFINET Single-Ended M12 Cordsets



PROFINET Shielded PUR Cable				
	Male Straight		Male 90°	
Length	Engineering No.	Standard Order No.	Engineering No.	Standard Order No.
5m	E10A00611M050	130048-0281	E10A00711M050	130048-0286
10m	E10A00611M100	130048-0282	E10A00711M100	130048-0287
20m	E10A00611M200	130048-0283	E10A00711M200	130048-0288
30m	E10A00611M300	130048-0284	—	—
50m	E10A00611M500	130048-0285	—	—

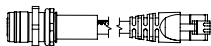
Brad® PROFINET Double-Ended M12 Cordsets



PROFINET Shielded PUR Cable				
	Male to Male Straight		Male to Male 90°	
Length	Engineering No.	Standard Order No.	Engineering No.	Standard Order No.
1m	E11A06011M010	120108-0236	E11A06311M010	120108-0295
2m	E11A06011M020*	120108-0199*	E11A06311M020*	120108-0200*
5m	E11A06011M050	120108-0238	E11A06311M050	120108-0296
10m	E11A06011M100	120108-0243	E11A06311M100	120108-0297
15m	E11A06011M150	120108-0246	—	—
20m	E11A06011M200	120108-0248	—	—
30m	E11A06011M300	120108-0250	—	—

* Parts in bold belong to the BradExpress Program (see page 3)

Brad® PROFINET M12 Receptacle



Female M12 to RJ45 Straight

PROFINET Shielded PUR Cable		
Length	Engineering No.	Standard Order No.
1m	ERWPAU7011M010	120108-0252
2m	ERWPAU7011M020	120108-0206

Brad®
PROFINET
Infrastructure
Components



PROFINET Cable Specification

AWG22 Shielded PROFINET Cat5e cable

Jacket material: green PUR

Conductors: 2 Pairs x 0.34mm² (White, Yellow, Blue, Orange)

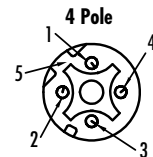
Operating Temperature: -20°C to +60°C

C-Track compatible (5M cycles)

Bend radius: 5x cable diameter

Halogen free and silicon free

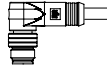
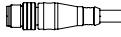
Approvals: UL, CSA



- 1 - Orange
- 2 - Blue
- 3 - Orange-White
- 4 - Blue-White
- 5 - D-Code

Ordering Information

Brad® EtherNet/IP Single-Ended M12 Cordsets

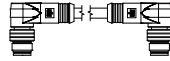
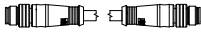


EtherNet/IP Shielded PVC Cable				
	Male Straight		Male 90°	
Length	Engineering No.	Standard Order No.	Engineering No.	Standard Order No.
5m	E10A00615M050	130048-0056	E10A00715M050	130048-0080
10m	E10A00615M100	130048-0057	E10A00715M100	130048-0081
20m	E10A00615M200	130048-8006	E10A00715M200	130048-0290
30m	E10A00615M300	130048-0059	—	—
50m	E10A00615M500	130048-0289	—	—

**Brad®
EtherNet/IP
Infrastructure
Components**



Brad® EtherNet/IP Double-Ended M12 Cordsets



EtherNet/IP Shielded PVC Cable (Teal)				
	Male to Male Straight		Male to Male 90°	
Length	Engineering No.	Standard Order No.	Engineering No.	Standard Order No.
1m	E11A06015M010	130048-0122	E11A06315M010	130048-0179
2m	E11A06015M020	130048-0124	E11A06315M020	130048-0181
5m	E11A06015M050	130048-0126	E11A06315M050	130048-0183
10m	E11A06015M100	130048-0128	E11A06315M100	130048-0185
15m	E11A06015M150	130048-0130	—	—
20m	E11A06015M200	130048-0010	—	—
30m	E11A06015M300	130048-0132	—	—

EtherNet/IP Cable Specification

Shielded Ethernet Cat5e cable

Conductors: 2 Pairs AWG26
(White/Green, Green, White/
Orange and Orange)

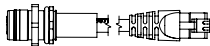
Jacket Material: Teal PVC

Operating Temperature:
-20°C to +75°C

Sun and Oil resistant

Approvals: UL, cUL, EtherNet/IP

Brad® EtherNet/IP M12 Receptacle



Female M12 to RJ45 Straight

EtherNet/IP Shielded PVC Cable		
Length	Engineering No.	Standard Order No.
1m	ERWPAB3002M010*	130058-0025*
2m	ERWPAB3002M020	130054-0021

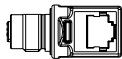
* Parts in bold belong to the BradExpress Program (see page 3)

Note:

Further technical information, datasheet or drawing can be downloaded from the Molex® website using the ordering part number.

Ordering Information

Brad® Ethernet Bulkhead Adapter (M12 Female to RJ45)



Straight		90°	
Engineering No.	Standard Order No.	Engineering No.	Standard Order No.
ER1PADAPTER	130054-0009	ER1PADAPTER90	130054-0010

Brad® Ethernet Field Attachable



M12 Male		M12 Female	
Engineering No.	Standard Order No.	Engineering No.	Standard Order No.
E1AS06-52*	130047-0018*	E1AS00-52*	130047-0017*

* Parts in bold belong to the BradExpress Program (see page 3)

Brad® RJ45 Connector



Engineering No.	Standard Order No.
85720-1050	85720-1050

**Brad®
Ethernet
Infrastructure
Accessories**



IP67 rated digital IO modules for harsh environments are designed for direct machine mount applications.

Specifications

PROFIBUS DP-V0 Slave according EN 50170
 Auto baud: all baud rates up to 12M Baud
 Address Settings: 1 – 99 by 2 rotary switches
 Operating Temperature: -25 to +70°C
 Storage Temperature: -25 to +90°C
 Approvals: CE, UL, PNO Certification



Brad® PROFIBUS Harsh IO Modules

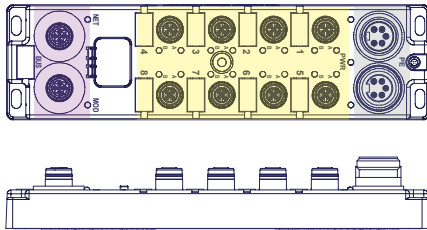


Brad® Harsh IO IP67 PROFIBUS Modules
 60mm and 30mm

User manual and GSD files to download under:
www.molex.com (select Brad Automation Products Support Center)

Ordering Information

Brad® Harsh IO IP67 PROFIBUS Module – 60mm M12

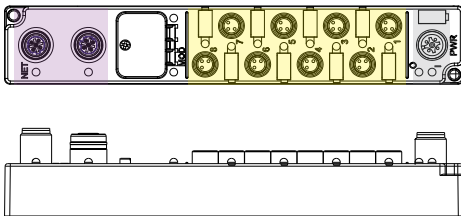


Connectivity

PROFIBUS:	Inputs/Outputs:	Power:
1x Male M12 5P B-Code 1x Fem. M12 5P B-Code	8x Female M12 5P A-CodeDual IO signal per port Inputs 24V max. 140mA Outputs 24V max. 2A Ultra- Lock® compatible	1x Male 7/8" 5 Poles 1x Female 7/8" 5 Poles Voltage: 24V Input & Output, max. 8 Amps

Power Type	Input/ Output	Engineering No.	Standard Order No.	
7/8" 5 Pole	NPN	16I	TCDPB-8D0N-B1U	112038-0030
		14I/2O	TCDPB-8C2N-B1U	112038-0028
		12I/4O	TCDPB-8B4N-B1U	112038-0026
		8I/8O	TCDPB-888N-B1U	112038-0024
	User Config.	TCDPB-8YXX-B1U	112038-5005	
	PNP	16I	TCDPB-8D0P-B1U	112038-0031
		14I/2O	TCDPB-8C2P-B1U	112038-0029
		12I/4O	TCDPB-8B4P-B1U	112038-0027
8I/8O		TCDPB-888P-B1U	112038-0025	

Brad® Harsh IO IP67 PROFIBUS Module – 30mm M8



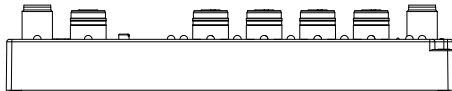
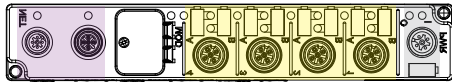
Connectivity

PROFIBUS:	Inputs/Outputs:	Power:
1x Male M12 5P B-Code 1x Fem. M12 5P B-Code	8x Female M8 3 Poles Single IO signal per port Inputs 24V max. 140mA Outputs 24V max. 1,4A	1x Male M12 5 Pole Voltage: 24V Input & Output, max. 4 Ampere

Power Type	Input/ Output	Engineering No.	Standard Order No.	
M12 5 Pole	NPN	8I	TBDPB-880N-B84	112038-0019
		6I/2O	TBDPB-862N-B84	112038-0017
		4I/4O	TBDPB-844N-B84	112038-0015
	PNP	8I	TBDPB-880P-B84	112038-0021
		6I/2O	TBDPB-862P-B84	112038-0018
		4I/4O	TBDPB-844P-B84	112038-0016
		8O	TBDPB-808P-B84	112038-0014

Ordering Information

Brad® Harsh IO IP67 PROFIBUS Module – 30mm M12



Brad® PROFIBUS Harsh IO Modules



Connectivity

PROFIBUS: 1x Male M12 5P B-Code 1x Fem. M12 5P B-Code	Inputs/Outputs: 4x Female M12 5P A-Code Dual IO signal per port Inputs 24V max. 140mA Outputs 24V max. 1.4A Ultra-Lock® compatible	Power: 1x Male M12 5 Pole Voltage: 24V Input & Output, max. 4 Ampere
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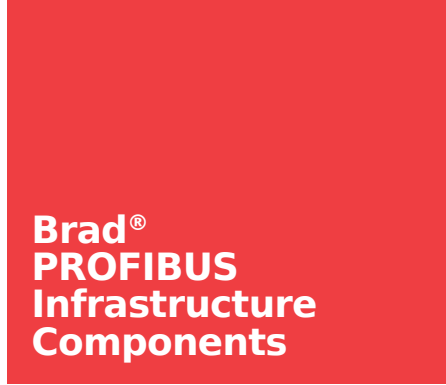
Power Type	Input/Output	Engineering No.	Standard Order No.	
M12 5 Pole	NPN	8I	TBDPB-480N-B8U	112038-0009
		6I/2O	TBDPB-462N-B8U	112038-0007
		4I/4O	TBDPB-444N-B8U	112038-0005
	PNP	8I	TBDPB-480P-B8U	112038-0011
		6I/2O	TBDPB-462P-B8U	112038-0008
		4I/4O	TBDPB-444P-B8U	112038-0006
		8O	TBDPB-408P-B8U	112038-0003

All Brad® IP67 Harsh IO Modules with Micro-Change® (M12) ports accept both threaded cordsets and the new Brad® Ultra-Lock® Connection System, the fastest, easiest and most secure connection ever.



Ultra-Lock® technology is designed for higher performance and reliability to eliminate downtime, increase productivity and lower costs.

Plug & Play PROFIBUS infrastructure to interconnect IP67 devices based on B-Code M12 standard connectors. Designed with PUR jacket material for better chemical and oil resistance, low-resistance contact design and 360° shielded head design to reduce RFI/EMI.



Ordering Information

Brad® PROFIBUS Single-Ended M12 Cordsets



PROFIBUS Shielded PUR Cable				
	Male Straight		Male 90°	
Length	Engineering No.	Standard Order No.	Engineering No.	Standard Order No.
5m	B05S06PP4M050	120098-0104	B05S07PP4M050	120098-0111
10m	B05S06PP4M100	120098-0107	B05S07PP4M100	120098-0112
20m	B05S06PP4M200	120098-8053	B05S07PP4M200	120098-8054
30m	B05S06PP4M300	120098-0108	B05S07PP4M300	120098-8055



PROFIBUS Shielded PUR Cable				
	Female Straight		Female 90°	
Length	Engineering No.	Standard Order No.	Engineering No.	Standard Order No.
5m	B05S00PP4M050	120098-0087	B05S01PP4M050	120098-0095
10m	B05S00PP4M100	120098-0089	B05S01PP4M100	120039-0136
20m	B05S00PP4M200	120039-0122	B05S01PP4M200	120098-8056
30m	B05S00PP4M300	120098-0222	B05S01PP4M300	120098-8057

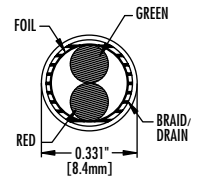
Brad® PROFIBUS Double-Ended M12 Cordsets



PROFIBUS Shielded PUR Cable				
	Female to Male Straight		Female to Male 90°	
Length	Engineering No.	Standard Order No.	Engineering No.	Standard Order No.
1m	BB5S30PP4M010	120098-0006	BB5S33PP4M010	120098-0029
2m	BB5S30PP4M020	120098-0007	BB5S33PP4M020*	120098-0031*
5m	BB5S30PP4M050	120098-0010	BB5S33PP4M050	120098-0033
10m	BB5S30PP4M100	120098-0014	BB5S33PP4M100	120098-0035
15m	BB5S30PP4M150	120098-0160	BB5S33PP4M150	120098-8050
20m	BB5S30PP4M200	120098-0017	BB5S33PP4M200	120098-8051
30m	BB5S30PP4M300	120098-0019	BB5S33PP4M300	120098-8052

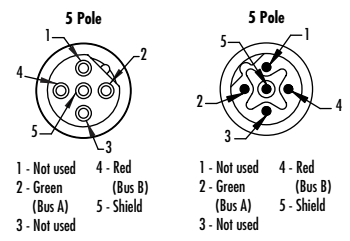


PROFIBUS Cable Specification



PROFIBUS Twisted Pair AWG22 (0,34mm²) cable
 Conductors: 2x Red and Green
 Jacket Material: Purple PUR
 Voltage Rating: 300V
 Operating Temperature: -40 to +60°C
 C-Track compatible (3M cycles)
 Bend radius: 10x cable diameter
 Approvals: UL, CSA

PROFIBUS M12 B-Code Connector Pinout (front view)



* Parts in bold belong to the BradExpress Program (see page 3)

Ordering Information

Brad® PROFIBUS M12 Receptacles



PROFIBUS Shielded PUR Cable				
	Male		Female	
Length	Engineering No.	Standard Order No.	Engineering No.	Standard Order No.
2m	BR5U76PP4M0203	120099-0015	BR5U70PP4M0203	120099-0007
4m	BR5U76PP4M0403*	120099-0016*	BR5U70PP4M0403	120099-0009

Brad® PROFIBUS M12 Field Attachables



Male		Female	
Engineering No.	Standard Order No.	Engineering No.	Standard Order No.
BA5S06-32*	120100-0002*	BA5S00-32*	120100-0001*

Brad® PROFIBUS IP20 Bus Terminators



	With Diagnostic		Without Diagnostic	
Desc.	Engineering No.	Standard Order No.	Engineering No.	Standard Order No.
Straight	MA9D00-42*	120103-5001*	—	—
90°	PA9D01-42*	120103-0001*	PA9S01-42*	120103-0005*
45°	PA9D0B-42*	120103-0003*	—	—

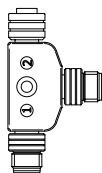
Brad® PROFIBUS Accessories

PROFIBUS M12 Male Terminator	
Engineering No.	Standard Order No.
B05S06*	120102-0002*



* Parts in bold belong to the BradExpress Program (see page 3)

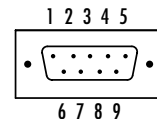
PROFIBUS M12 Bus Tee	
Engineering No.	Standard Order No.
PDTS01*	120101-0002*



Brad® PROFIBUS Infrastructure Components

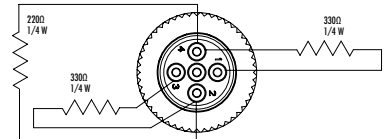


PROFIBUS Terminator Resistor Wiring

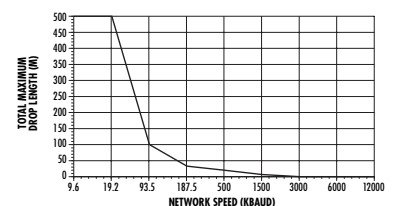
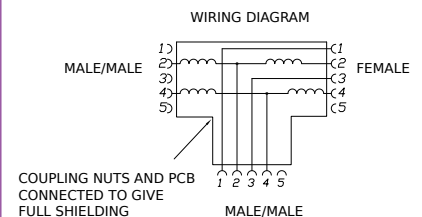


- 1 - Not used
- 2 - Not used
- 3 - Red (Bus B)
- 4 - Not used
- 5 - Not used
- 6 - Not used
- 7 - Not used
- 8 - Green (Bus A)
- 9 - Not used

PROFIBUS Terminator Resistor Wiring



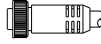
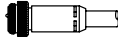
PROFIBUS Tee Wiring



Plug & Play 5 Pole power distribution infrastructure to interconnect IP67 devices based on the 7/8" standard connectors also called Mini-Change®.

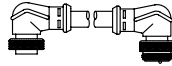
Ordering Information

Brad® Mini-Change® Single-Ended 5 Pole Cordsets



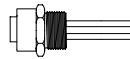
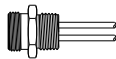
5 Pole Mini-Change® Auxiliary Power PUR Cable				
	Male Straight		Female Straight	
Length	Engineering No.	Standard Order No.	Engineering No.	Standard Order No.
5m	105006B21M050	130006-8139	105000B21M050	130006-8131
10m	105006B21M100	130006-8140	105000B21M100	130006-8132
20m	105006B21M200	130006-8141	105000B21M200	130006-8133
30m	105006B21M300	130006-8142	105000B21M300	130006-8134

Brad® Mini-Change® Double-Ended 5 Pole Cordsets



5 Pole Mini-Change® Auxiliary Power PUR Cable				
	Female to Male Straight		Female to Male 90°	
Length	Engineering No.	Standard Order No.	Engineering No.	Standard Order No.
1m	115030B21M010	130010-8029	115033B21M010	130010-8036
2m	115030B21M020	130010-8030	115033B21M020	130010-8037
3m	115030B21M030	130010-8031	115033B21M030	130010-8038
5m	115030B21M050	130010-8032	115033B21M050	130010-8039
10m	115030B21M100	130010-8033	115033B21M100	130010-8040
15m	115030B21M150	130010-8034	115033B21M150	130010-8041
20m	115030B21M200	130010-8035	115033B21M200	130010-8042

Brad® Mini-Change® 5 Pole Receptacles



5 Pole Mini-Change® Auxiliary Power PUR Cable				
	Male Receptacle		Female Receptacle	
Length	Engineering No.	Standard Order No.	Engineering No.	Standard Order No.
1m	1R5006A80M010	130013-8078	1R5000A80M010	130013-8076
2m	1R5006A80M020	130013-8079	1R5000A80M020	130013-8077

Description	Engineering No.	Standard Order No.
Gasket for Receptacle, 1/2"	00-5087	130180-0059
Locknut for Receptacle, 1/2" 14NPT	30-1100	130184-0031

Brad® Mini-Change® 7/8" Auxiliary Power Infrastructure Components



Mini-Change® 5 Pole Power Cable Specification

5 Pins AWG16 cable for 24V power distribution

Conductors: 5x1,5mm² (Black, Blue, Green/Yellow, Brown, White)

Jacket Material: Grey PUR, halogen free, flame retardant, oil resistant

Voltage Rating: 300V

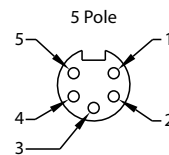
Operating Temperature: -20°C to +80°C

C-Track compatible (2M cycles)

Bend radius: 10x cable diameter

Approvals: UL pending

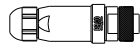
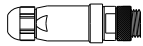
Mini-Change® 5 Pole Female Connector Pinout (Front view)



1. Black – Output Power V-
2. Blue – Bus Power V-
3. Green/Yellow – Ground
4. Brown – Bus Power V+
5. White – Output Power V+

Ordering Information

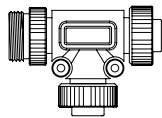
Brad® Mini-Change® 5 Pole Field Attachable Connector



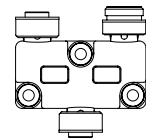
Male		Female	
Engineering No.	Standard Order No.	Engineering No.	Standard Order No.
1A5006-34	130017-0029	1A5000-34	130017-0023

Brad® Mini-Change® 5 Pole Tees

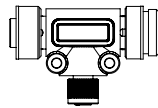
Mini-Change® Tee	
Engineering No.	Standard Order No.
DN3020	130035-0057



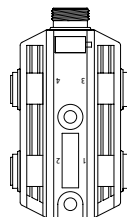
Mini-Change® Y-Splitter	
Engineering No.	Standard Order No.
DN3200	130035-0071



Mini-Change® Tee w/M12 Drop	
Engineering No.	Standard Order No.
DND3020	130039-0341

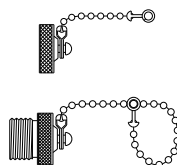


Mini-Change® Distribution Box		
Description	Engineering No.	Standard Order No.
4 Ports	DN4000	130036-0005
6 Ports	DN6000	130036-0008



Brad® Mini-Change® Accessories

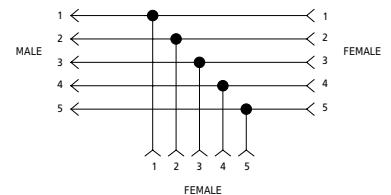
Mini-Change® Caps		
Description	Engineering No.	Standard Order No.
Int. Thread	65-0086	130201-1111
Ext. Thread	65-0085	130201-1109



Brad® Mini-Change® 7/8" Auxiliary Power Infrastructure Components



5 Pole Mini-Change® Tee, Y-Splitter and Distribution Box Wiring



Note:

Further technical information, datasheet or drawing can be downloaded from the Molex® website using the Standard Order part number listed.

Plug & Play 5 Pole power distribution infrastructure to interconnect IP67 devices based on the A-Code M12 standard connectors.

Ordering Information

Brad® Micro-Change® M12 Single-Ended 5 Pole Cordsets

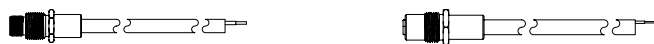


E03 PVC Cable				
	Male Straight		Male 90°	
Length	Engineering No.	Standard Order No.	Engineering No.	Standard Order No.
5m	805006E03M050	120006-1345	805007E03M050	120006-2929
10m	805006E03M100	120006-2209	805007E03M100	120006-2498
20m	805006E03M200	120065-8897	805007E03M200	120065-9146
30m	805006E03M300	120065-9145		
H09 PUR Cable				
5m	805006H09M050	120065-8746	805007H09M050	120065-8753
10m	805006H09M100	120065-8747	805007H09M100	120065-8754
20m	805006H09M200	120065-9141	805007H09M200	120065-9143
30m	805006H09M300	120065-9142		



E03 PVC Cable				
	Female Straight		Female 90°	
Length	Engineering No.	Standard Order No.	Engineering No.	Standard Order No.
5m	805000E03M050*	120065-1978*	805001E03M050	120006-0654
10m	805000E03M100*	120006-0638*	805001E03M100	120006-0657
20m	805000E03M200	120065-8081	805001E03M200	120065-9147
30m	805000E03M300	120006-3779		
H09 PUR Cable				
5m	805000H09M050	120065-8173	805001H09M050	120065-8297
10m	805000H09M100	120065-8174	805001H09M100	120065-8298
20m	805000H09M200	120065-8780	805001H09M200	120065-9140
30m	805000H09M300	120065-9144		

Brad® Micro-Change® M12 Auxiliary Power 5 Pole Receptacles



PVC Wires				
	Male		Female	
Length	Engineering No.	Standard Order No.	Engineering No.	Standard Order No.
2m	8R5E36E03M020	120070-8173	8R5E30E03M020	120070-8171
3m	8R5E36E03M030	120070-8174	8R5E30E03M030	120070-8172

Brad® Micro-Change® M12 Auxiliary Power Infrastructure Components



E03 PVC M12 Cable Specification

For use in packaging machines and production lines, in static or less demanding environments.

Conductors: 3x0,34 4x0,34 or 5x0,34mm²

(Black, Brown, Blue, White, Grey)

Jacket Material: Black PVC

Voltage Rating: 300V, Max 4 Amps

Operating Temperature: -30 to +80°C

Diameter 3 pole 4,9^{-0,1+0,3} mm

Diameter 4 pole 5,4^{-0,1+0,3} mm

Diameter 5 pole 5,8^{-0,1+0,3} mm

Approvals: UL, CSA

H09 PUR M12 Cable Specification

For use in machine tools, metal cutting production with harsh fluid, mechanical or continuous flex requirements.

Conductors: 3x0,34 4x0,34 or 5x0,34mm²

(Black, Brown, Blue, White, Grey)

Jacket Material: Black PUR, halogen free, flame retardant

Voltage Rating: 300V, Max 4 Amps

Operating Temperature: -30 to +80°C

Bending Cycles: 2 Mio with 10 x D (60°C)

Diameter 3 pole 4,3^{±0,2} mm

Diameter 4 pole 4,7^{±0,2} mm

Diameter 5 pole 5,0^{±0,2} mm

Approvals: UL, CSA

* Parts in bold belong to the BradExpress Program (see page 3)

Ordering Information

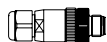
**Brad® Micro-Change® M12 Auxiliary Power
Double-Ended 5 Pole Cordsets**



E03 PVC Cable				
	Female to Male Straight		Female to Male 90°	
Length	Engineering No.	Standard Order No.	Engineering No.	Standard Order No.
1m	885030E03M010	120007-0906	885033E03M010	120066-5402
2m	885030E03M020	120007-0970	885033E03M020	120066-8675
3m	885030E03M030	120007-0586	885033E03M030	120066-8676
5m	885030E03M050	120007-0969	885033E03M050	120066-8677
10m	885030E03M100	120066-8347	885033E03M100	120066-8678
15m	885030E03M150	120066-8674	—	—
20m	885030E03M200	120066-8487	—	—

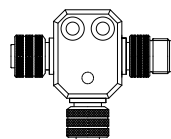
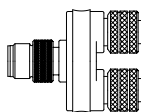
H09 PUR Cable				
	Female to Male Straight		Female to Male 90°	
Length	Engineering No.	Standard Order No.	Engineering No.	Standard Order No.
1m	885030H09M010	120066-8497	885033H09M010	120066-8499
2m	885030H09M020	120066-8500	885033H09M020	120066-8679
3m	885030H09M030	120066-8510	885033H09M030	120066-8680
5m	885030H09M050	120066-8501	885033H09M050	120066-8681
10m	885030H09M100	120066-8511	885033H09M100	120066-8682
15m	885030H09M150	120066-8683	—	—
20m	885030H09M200	120066-8684	—	—

Brad® Micro-Change® M12 5 Pole Field Attachable



	Male		Female	
Type	Engineering No.	Standard Order No.	Engineering No.	Standard Order No.
PG9	8A5006-31	120071-0045	8A5000-31	120071-0041
PG11	8A5006-32	120071-0047	8A5000-32	120071-0043

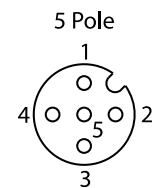
Brad® Micro-Change® M12 5 Pole Accessories



5 Poles M12 Y-Splitter	
Engineering No.	Standard Order No.
0812-05EMF-00001	120068-0137

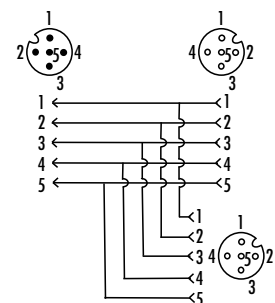
5 Poles M12 Tee	
Engineering No.	Standard Order No.
0812-051FJ-00000	120068-8009

**Micro-Change®
A-Code M12 5 Pole
Auxiliary Power
Connector on the
IO modules.
Female Pinout**
(Front view):



1. Brown – Module Power V-
2. White – Output Power V-
3. Blue – Ground
4. Black – Ground
5. Grey – Protective Earth

**Micro-Change®
M12 5 Pole Tee and
Y-Splitter Wiring**



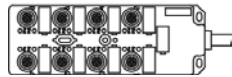
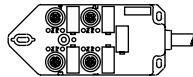
IP67 rated passive IO module for harsh environments are designed to concentrate the sensor/actuator signals into one unique home run cable for a better mechanical infrastructure wiring on the machine.

Specifications

IP67 Molded PBT Housing, color Black
 Single or Dual Input/Output signal per port
 Indicating LED for Power and sensor trigger
 PNP Version (available also in NPN version)
 Electrical: 10-30V DC max. & 12.0A max. (4.0A max. per port)
 Approvals: UL, CSA, IP67, NEMA 6

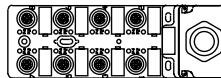
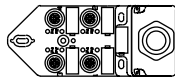
Ordering Information

Brad® M12 Distribution Boxes with PUR Home Run Cable



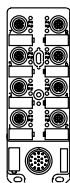
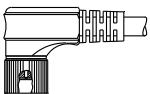
		4 Ports		8 Ports	
IO Type	Length	Engineering No.	Standard Order No.	Engineering No.	Standard Order No.
Single IO	5m	BTY400P-FBP-05*	120114-8011*	BTY800P-FBP-05*	120114-8022*
	10m	BTY400P-FBP-10	120114-8012	BTY800P-FBP-10	120114-8023
Dual IO	5m	BTY405P-FBP-05*	120114-0039*	BTY805P-FBP-05*	120114-0089*
	10m	BTY405P-FBP-10	120114-0040	BTY805P-FBP-10*	120114-0090*

Brad® M12 Distribution Boxes with Field Attachable Terminals



		4 Ports		8 Ports	
IO Type	Engineering No.	Standard Order No.	Engineering No.	Standard Order No.	Standard Order No.
Dual IO	BTY403P-FBA*	120114-0029*	BTY803P-FBA*	120114-0082*	

Brad® M12 Distribution Boxes with M23 Connector and Home Run Cable



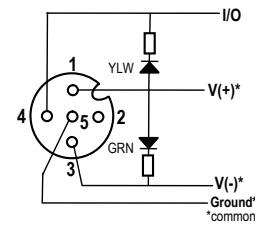
			8 Ports	
IO Type	Engineering No.	Standard Order No.	Engineering No.	Standard Order No.
Single IO	BTY801P-FBC*	120114-0066*		
Dual IO	BTY803P-FBC*	120114-0084*		

		Single IO Home Run Cable (12p/11 wires)		Dual IO Home Run Cable (19p/19 wires)	
Length	Engineering No.	Standard Order No.	Engineering No.	Standard Order No.	Standard Order No.
10m	K02101P80M100*	120094-0125*	K03001B20M100*	120094-5009*	
15m	K02101P80M150	120094-8038	K03001B20M150*	120094-5031*	

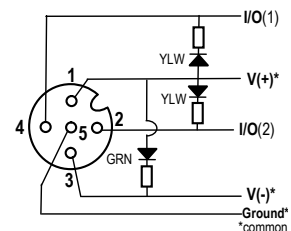
Brad® Sensor/Actuator Distribution Boxes



Micro-Change® M12 Single IO Connector Wiring



Micro-Change® M12 Dual IO Connector Wiring



* Parts in bold belong to the BradExpress Program (see page 3)

Ordering Information

Brad® M8 Distribution Boxes with Side Mount PUR Home Run Cable

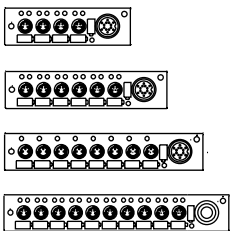


		4 Ports		6 Ports	
IO Type	Length	Engineering No.	Standard Order No.	Engineering No.	Standard Order No.
Single IO	5m	BEY401P-FBP-05*	120113-0006*	BEY601P-FBP-05*	120113-0011*
	10m	BEY401P-FBP-10	120113-0007	BEY601P-FBP-10	120054-0026

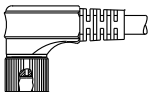


		8 Ports		10 Ports	
IO Type	Length	Engineering No.	Standard Order No.	Engineering No.	Standard Order No.
Single IO	5m	BEY801P-FBP-05*	120113-0014*	BEYA01P-FBP-05*	120113-0002*
	10m	BEY801P-FBP-10*	120113-0015*	BEYA01P-FBC-10	120054-0091

Brad® M8 Distribution Boxes with M16 Connector and Home Run Cable



Single IO Distribution Box with M16 connector		
Ports	Engineering No.	Standard Order No.
4	BNY401P-FBC*	120113-0023*
6	BNY601P-FBC*	120113-0026*
8	BNY801P-FBC*	120113-0029*
10	BNYA01P-FBC*	120113-0020*

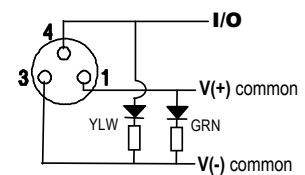


M16 Single IO Home Run Cable 10 Meter		
Block	Engineering No.	Standard Order No.
4 Ports	L04301M78M100*	130023-0063*
6 Ports	L04201M78M100*	130023-0059*
8 Ports	L04101M78M100*	130023-0055*
10 Ports	L04A01M78M100*	130023-0068*

Brad® Sensor/Actuator Distribution Boxes



Nano-Change® M8 Single IO Connector Wiring



Note:

Further technical information, datasheet or drawing can be downloaded from the Molex® website using the ordering part number.

* Parts in bold belong to the BradExpress Program (see page 3)

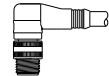
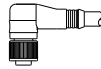
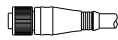
Brad® Micro-Change® M12 connectivity is a ready-to-use solution based on the A-Code M12 standard with IP67/68 rating to wire a wide range of sensors and actuators from proximity switches to rotary encoders in harsh environments.

Brad®
Micro-Change® M12
Sensor/Actuator
Connectivity



Ordering Information

Brad® Micro-Change® M12 Single-Ended Cordsets



E03 PVC Cable									
		Female Straight		Female 90°		Male Straight		Male 90°	
Poles	Length	Engineering No.	Standard Order No.	Engineering No.	Standard Order No.	Engineering No.	Standard Order No.	Engineering No.	Standard Order No.
3	1m	803000E03M010	120065-8562	803001E03M010	120006-0175	803006E03M010	120065-8565	803007E03M010	120065-8567
	2m	803000E03M020	120006-0001	803001E03M020	120006-0007	803006E03M020	120006-0240	803007E03M020	120006-0273
	5m	803000E03M050	120006-0002	803001E03M050*	120006-0008*	803006E03M050	120006-0241	803007E03M050	120006-0275
	10m	803000E03M100	120006-0003	803001E03M100	120006-0009	803006E03M100	120006-0242	803007E03M100	120065-8506
4	1m	804000E03M010	120006-0426	804001E03M010	120006-0479	804006E03M010	120006-0559	804007E03M010	120006-0582
	2m	804000E03M020*	120006-0014*	804001E03M020*	120006-0021*	804006E03M020	120006-0560	804007E03M020	120006-1975
	5m	804000E03M050*	120006-0015*	804001E03M050*	120006-0022*	804006E03M050	120006-0562	804007E03M050	120006-0584
	10m	804000E03M100*	120006-0016*	804001E03M100*	120006-0023*	804006E03M100	120006-0563	804007E03M100	120006-2238
5	1m	805000E03M010	120006-3314	805001E03M010	120065-8573	805006E03M010	120006-2799	805007E03M010	120065-9138
	2m	805000E03M020	120006-0634	805001E03M020	120006-0652	805006E03M020	120006-0667	805007E03M020	120065-8096
	5m	805000E03M050*	120065-1978*	805001E03M050	120006-0654	805006E03M050	120006-1345	805007E03M050	120006-2929
	10m	805000E03M100*	120006-0638*	805001E03M100	120006-0657	805006E03M100	120006-2209	805007E03M100	120006-2498
H09 PUR Cable									
3	1m	803000H09M010	120065-8636	803001H09M010	120065-8713	803006H09M010	120065-8653	803007H09M010	120065-8720
	2m	803000H09M020	120065-8175	803001H09M020	120065-8715	803006H09M020	120065-8655	803007H09M020	120065-8722
	5m	803000H09M050	120065-8176	803001H09M050	120065-8718	803006H09M050	120065-8248	803007H09M050	120065-8725
	10m	803000H09M100	120065-8177	803001H09M100	120065-8719	803006H09M100	120065-8247	803007H09M100	120065-8726
4	1m	804000H09M010	120065-8640	804001H09M010	120065-8668	804006H09M010	120065-8727	804007H09M010	120065-8734
	2m	804000H09M020	120065-8178	804001H09M020	120065-8513	804006H09M020	120065-8729	804007H09M020	120065-8736
	5m	804000H09M050	120065-8179	804001H09M050	120065-8193	804006H09M050	120065-8732	804007H09M050	120065-8739
	10m	804000H09M100	120065-8190	804001H09M100	120065-8194	804006H09M100	120065-8733	804007H09M100	120065-8740
5	1m	805000H09M010	120065-8632	805001H09M010	120065-8664	805006H09M010	120065-8741	805007H09M010	120065-8748
	2m	805000H09M020	120065-8172	805001H09M020	120065-8296	805006H09M020	120065-8743	805007H09M020	120065-8750
	5m	805000H09M050	120065-8173	805001H09M050	120065-8297	805006H09M050	120065-8746	805007H09M050	120065-8753
	10m	805000H09M100	120065-8174	805001H09M100	120065-8298	805006H09M100	120065-8747	805007H09M100	120065-8754

* Parts in bold belong to the BradExpress Program (see page 3)

Ordering Information

Brad® Micro-Change® M12 Double-Ended Cordsets



Brad® Micro-Change® M12 Sensor/Actuator Connectivity



E03 PVC Cable					
		Fem. To Male Straight		Fem. 90° To Male Straight	
Poles	Length	Engineering No.	Standard Order No.	Engineering No.	Standard Order No.
4	0.6m	884030E03M006*	120007-0472*	884031E03M006	120007-0508
	1m	884030E03M010	120007-0473	884031E03M010	120007-0509
	2m	884030E03M020*	120007-0474*	884031E03M020	120007-0511
	3m	884030E03M030	120007-0475	884031E03M030	120007-0512
	5m	884030E03M050*	120006-0049*	884031E03M050	120007-0904
	10m	884030E03M100	120007-0476	884031E03M100	120007-1278
5	0.6m	885030E03M006	120066-8338	885031E03M006	120066-8339
	1m	885030E03M010	120007-0906	885031E03M010	120066-8189
	2m	885030E03M020	120007-0970	885031E03M020	120066-8278
	3m	885030E03M030	120007-0586	885031E03M030	120066-8340
	5m	885030E03M050	120007-0969	885031E03M050	120066-8279
	10m	885030E03M100	120066-8347	885031E03M100	120066-8348
H09 PUR Cable					
4	0.6m	884030H09M006	120066-8378	884031H09M006	120066-8669
	1m	884030H09M010	120066-8379	884031H09M010	120066-8484
	2m	884030H09M020	120066-8234	884031H09M020	120066-8212
	3m	884030H09M030	120066-8174	884031H09M030	120066-8215
	5m	884030H09M050	120066-8244	884031H09M050	120066-8670
	10m	884030H09M100	120066-8381	884031H09M100	120066-8671
5	0.6m	885030H09M006	120066-8509	885031H09M006	120066-8512
	1m	885030H09M010	120066-8497	885031H09M010	120066-8496
	2m	885030H09M020	120066-8500	885031H09M020	120066-8513
	3m	885030H09M030	120066-8510	885031H09M030	120066-8514
	5m	885030H09M050	120066-8501	885031H09M050	120066-8515
	10m	885030H09M100	120066-8511	885031H09M100	120066-8516

E03 PVC M12 Cable Specification

For use in packaging machines and production lines, in static or less demanding environments.

Conductors: 3x0,34 4x0,34 or 5x0,34mm²

(Black, Brown, Blue, White, Grey)

Jacket Material: Black PVC

Voltage Rating: 300V, Max 4 Amps

Operating Temperature: -30 to +80°C

Diameter 3 pole 4,9^{-0,1+0,3} mm

Diameter 4 pole 5,4^{-0,1+0,3} mm

Diameter 5 pole 5,8^{-0,1+0,3} mm

Approvals: UL, CSA

H09 PUR M12 Cable Specification

For use in machine tools, metal cutting production with harsh fluid, mechanical or continuous flex requirements.

Conductors: 3x0,34 4x0,34 or 5x0,34mm²

(Black, Brown, Blue, White, Grey)

Jacket Material: Black PUR, halogen free, flame retardant

Voltage Rating: 300V, Max 4 Amps

Operating Temperature: -30 to +80°C

Bending Cycles: 2 Mio with 10 x D (60°C)

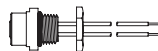
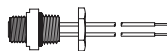
Diameter 3 pole 4,3^{±0,2} mm

Diameter 4 pole 4,7^{±0,2} mm

Diameter 5 pole 5,0^{±0,2} mm

Approvals: UL, CSA

Brad® Micro-Change® M12 Front Mount Receptacles

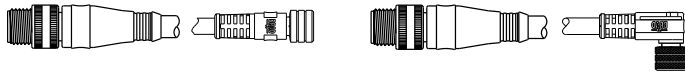


Wires with PVC Jacket					
		Male		Female	
Poles	Mount Thread	Engineering No.	Standard Order No.	Engineering No.	Standard Order No.
4	PG9	8R4J36E03C3003*	120070-0156*	8R4J30E03C3003*	120070-0395*
	M14x1	8R4E36E03C3003	120011-0017	8R4E30E03C3003	120011-0013
5	PG9	8R5J36E03C3003*	120070-0231*	8R5J30E03C3003*	120070-0229*
	M14x1	8R5E36E03C3003	120011-0035	8R5E30E03C3003*	120011-0033*

* Parts in bold belong to the BradExpress Program (see page 3)

Ordering Information

Brad® Micro-Change® M12 Cordsets to M8 Sensors

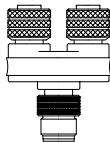


Brad® Micro-Change® M12 Sensor/Actuator Connectivity

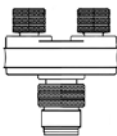


E02 PVC Cable					
		M12 Male Straight to M8 Female Straight		M12 Male Straight to M8 Female 90°	
Poles	Length	Engineering No.	Standard Order No.	Engineering No.	Standard Order No.
3	.6m	483030E02M006	120087-8038	483031E02M006	120087-8421
	1m	483030E02M010	120087-8406	483031E02M010	120087-8422
	2m	483030E02M020	120087-8039	483031E02M020	120087-8167
	5m	483030E02M050	120087-8409	483031E02M050	120087-8425
4	.6m	484030E02M006	120087-8461	484031E02M006	120087-8477
	1m	484030E02M010	120087-8073	484031E02M010	120087-8478
	2m	484030E02M020	120087-8463	484031E02M020	120087-8480
	5m	484030E02M050	120087-8468	484031E02M050	120087-8483
H08 PUR Cable					
3	.6m	483030H08M006	120086-8221	483031H08M006	120087-8560
	1m	483030H08M010	120087-8510	483031H08M010	120087-8513
	2m	483030H08M020	120087-8255	483031H08M020	120087-8561
	5m	483030H08M050	120087-8511	483031H08M050	120087-8514
4	.6m	484030H08M006	120087-8565	484031H08M006	120087-8562
	1m	484030H08M010	120087-8516	484031H08M010	120087-8563
	2m	484030H08M020	120087-8566	484031H08M020	120087-8564
	5m	484030H08M050	120087-8567	484031H08M050	120087-8517

Brad® Micro-Change® M12 Y-Splitters & Adapters



Y-Splitter		
1x M12 Male to 2x M12 Female		
Poles	Engineering No.	Standard Order No.
4	081204EMF00000	120068-0294
5	081205EMF00000	120068-0139



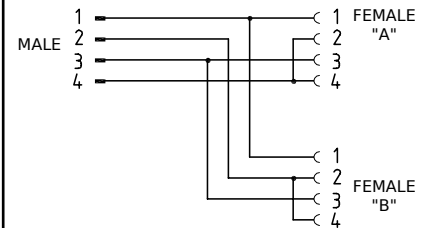
Y-Splitter		
1x M12 Male to 2x M8 Female		
Poles	Engineering No.	Standard Order No.
4	080804EMF00000	120089-0031



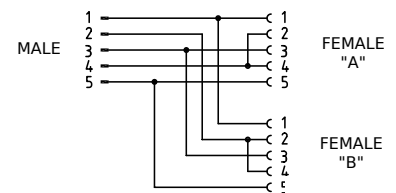
Adapter Connector		
1x M12 Male to 1x M8 Female		
Poles	Engineering No.	Standard Order No.
3	483030	120033-0002
4	484030	120033-0001

Y-Splitter Wiring Schematic

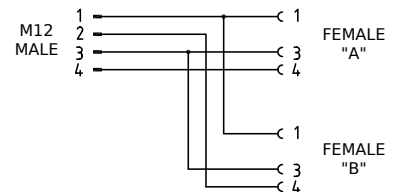
M12 to M12 4 Pole



M12 to M12 5 Pole

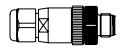


M12 to M8 4 Pole

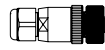


Ordering Information

Brad® Micro-Change® M12 Field Attachable Connectors



		Male Straight		Male 90°	
Poles	Max. Wire Size	Engineering No.	Standard Order No.	Engineering No.	Standard Order No.
4	3.3-6.6	8A4006-31	120071-0038	8A4007-31	120071-0040
	4.1-8.1	8A4006-32	120071-0039	8A4007-32	120071-5011
5	3.3-6.6	8A5006-31	120071-0045	8A5007-31	120071-0049
	4.1-8.1	8A5006-32	120071-0047	8A5007-32	120071-0071



		Female Straight		Female 90°	
Poles	Max. Wire Size	Engineering No.	Standard Order No.	Engineering No.	Standard Order No.
4	3.3-6.6	8A4000-31	120071-0035	8A4001-31	120071-0037
	4.1-8.1	8A4000-32	120071-0036	8A4001-32	120071-5010
5	3.3-6.6	8A5000-31	120071-0041	8A5001-31	120071-0044
	4.1-8.1	8A5000-32	120071-0043	8A5001-32	120071-0070

Brad® Micro-Change® M12 Closure Caps



Plastic Closure Cap

To Cover Male		To Cover Female	
Engineering No.	Standard Order No.	Engineering No.	Standard Order No.
—	120308-0680	—	120358-0030



Rubber Closure Cap with Leash

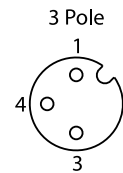
To Cover Male		To Cover Female	
Engineering No.	Standard Order No.	Engineering No.	Standard Order No.
—	120076-5046	—	120076-5047*

* Parts in bold belong to the BradExpress Program (see page 3)

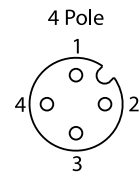
Brad® Micro-Change® M12 Sensor/Actuator Connectivity



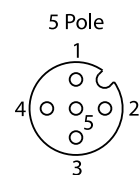
Micro-Change® M12 Connector Pinout



1 - Brown 4 - Black
3 - Blue



1 - Brown 3 - Blue
2 - White 4 - Black



1 - Brown 4 - Black
2 - White 5 - Gray
3 - Blue

Brad® Nano-Change® M8 connectivity provides a rugged and space-saving solution to wire a wide range of sensors and actuators from proximity switches to rotary encoders in harsh environments.

Brad® Nano-Change® M8 Sensor/Actuator Connectivity



Ordering Information

Brad® Nano-Change® M8 Single-Ended Cordsets



E02 PVC Cable									
Poles	Length	Female Straight		Female 90°		Male Straight		Male 90°	
		Engineering No.	Standard Order No.	Engineering No.	Standard Order No.	Engineering No.	Standard Order No.	Engineering No.	Standard Order No.
3	1m	403000E02M010	120027-0400	403001E02M010	120086-8293	403006E02M010	120027-0364	403007E02M010	120086-8323
	2m	403000E02M020*	120027-0066*	403001E02M020*	120027-0090*	403006E02M020*	120086-8228*	403007E02M020*	120027-0106*
	5m	403000E02M050*	120027-0068*	403001E02M050*	120027-0092*	403006E02M050*	120027-0105*	403007E02M050*	120086-8324*
	10m	403000E02M100*	120027-0070*	403001E02M100*	120027-0093*	403006E02M100*	120086-8307*	403007E02M100*	120086-8325*
4	1m	404000E02M010	120027-0549	404001E02M010	120086-8356	404006E02M010	120086-8161	404007E02M010	120086-8489
	2m	404000E02M020*	120027-0127*	404001E02M020*	120027-0152*	404006E02M020*	120086-8368*	404007E02M020*	120027-0483*
	5m	404000E02M050*	120027-0129*	404001E02M050*	120027-0153*	404006E02M050*	120027-0376*	404007E02M050*	120086-8378*
	10m	404000E02M100*	120027-0131*	404001E02M100*	120027-0154*	404006E02M100*	120086-8369*	404007E02M100*	120086-8379*
H08 PUR Cable									
3	1m	403000H08M010	120027-1409	403001H08M010	120086-8497	403006H08M010	120086-8496	403007H08M010	120086-8490
	2m	403000H08M020	120086-8045	403001H08M020	120086-8052	403006H08M020	120086-8390	403007H08M020	120086-8393
	5m	403000H08M050	120086-8101	403001H08M050	120086-8054	403006H08M050	120086-8078	403007H08M050	120086-8491
	10m	403000H08M100	120086-8115	403001H08M100	120086-8004	403006H08M100	120086-8433	403007H08M100	120086-8492
4	1m	404000H08M010	120086-8487	404001H08M010	120086-8055	404006H08M010	120086-8409	404007H08M010	120086-8493
	2m	404000H08M020	120086-8207	404001H08M020	120027-1328	404006H08M020	120086-8392	404007H08M020	120086-8394
	5m	404000H08M050	120086-8053	404001H08M050	120086-8211	404006H08M050	120086-8227	404007H08M050	120086-8494
	10m	404000H08M100	120086-8117	404001H08M100	120086-8077	404006H08M100	120086-8488	404007H08M100	120086-8495

* Parts in bold belong to the BradExpress Program (see page 3)

Ordering Information

Brad® Nano-Change® M8 Double-Ended Cordsets



Brad® Nano-Change® M8 Sensor/Actuator Connectivity



E02 PVC Cable					
Poles	Length	Female to Male Straight		Fem. 90° to Male Straight	
		Engineering No.	Standard Order No.	Engineering No.	Standard Order No.
3	.6m	443030E02M006*	120087-5035*	443031E02M006*	120087-5016*
	1m	443030E02M010*	120087-8258*	443031E02M010*	120028-0016*
	2m	443030E02M020*	120028-0321*	443031E02M020*	120087-8305*
	5m	443030E02M050*	120028-0462*	443031E02M050*	120087-8308*
4	.6m	444030E02M006*	120087-8348*	444031E02M006*	120087-8364*
	1m	444030E02M010*	120087-8349*	444031E02M010*	120087-8365*
	2m	444030E02M020*	120087-8350*	444031E02M020*	120087-8366*
	5m	444030E02M050*	120087-8354*	444031E02M050*	120087-8368*
H08 PUR Cable					
4	.6m	443030H08M006	120087-8558	443031H08M006	120087-8557
	1m	443030H08M010	120087-8500	443031H08M010	120087-8499
	2m	443030H08M020	120087-8149	443031H08M020	120087-8128
	5m	443030H08M050	120087-8127	443031H08M050	120087-8130
5	.6m	444030H08M006	120087-8559	444031H08M006	120087-8554
	1m	444030H08M010	120087-8495	444031H08M010	120087-8196
	2m	444030H08M020	120087-8356	444031H08M020	120087-8555
	5m	444030H08M050	120087-8509	444031H08M050	120087-8556

Brad® Nano-Change® M8 Front Mount Receptacles



Wires with PVC Jacket					
Poles	Mount Thread	Male		Female	
		Engineering No.	Standard Order No.	Engineering No.	Standard Order No.
3	M8x0.5	4R3F06E02C3003*	120031-0004*	4R3F30E02C3003*	120031-0015*
	M12x1	4R3F46E02C200*	120090-5073*	4R3L40E02C200*	120090-5104*
4	M8x0.5	4R4F06E02C3003*	120031-0006*	4R4F30E02C3003*	120031-0049*
	M12x1	4R4F46E02C200*	120090-5078*	4R4L40E02C200	120090-8037

* Parts in bold belong to the BradExpress Program (see page 3)

E02 PVC M8 Cable Specification

For use in packaging machines and production lines in static or less demanding environments.
 Conductors: 3x0,25 or 4x0,25mm² (Black, Brown, Blue, White)
 Jacket Material: Black PVC
 Voltage Rating: 300V, Max 4 Amps
 Operating Temperature: -30 to +80°C
 Diameter 3 pole 4,5^{-0,1+0,3} mm
 Diameter 4 pole 5,8^{-0,1+0,3} mm
 Approvals: UL, CSA

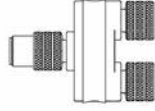
H08 PUR M8 Cable Specification

For use in machine tools, metal cutting production with harsh fluid, mechanical or continuous flex requirements.
 Conductors: 3x0,25 or 4x0,25mm² (Black, Brown, Blue, White)
 Jacket Material: Black PUR, halogen free, flame retardant
 Voltage Rating: 300V, Max 4 Amps
 Operating Temperature: -30 to +80°C
 Bending Cycles: 2 Mio with 10 x D (60°C)
 Diameter 3 pole 4,4^{±0,2} mm
 Diameter 4 pole 4,7^{±0,2} mm
 Approvals: UL, CSA

Ordering Information

Brad® Nano-Change® M8 Y-Splitters & Adapters

Y-Splitter		
	1x M8 Male to 2x M8 Female	
Poles	Engineering No.	Standard Order No.
4	080804LMF00000	120089-0033



Adapter Connector		
	1x M8 Male to 1x M12 Female	
Poles	Engineering No.	Standard Order No.
3	853030	120017-0004
4	854030	120017-0003



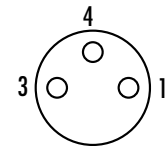
Note:

M8 male connector thread is fixed. To connect only with M8 female connectors.

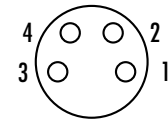
Brad® Nano-Change® M8 Sensor/Actuator Connectivity



Nano-Change® M8 Connector Pinout (front view)



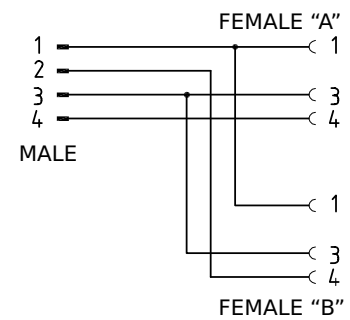
1 - Brown 4 - Black
3 - Blue



1 - Brown 3 - Blue
2 - White 4 - Black

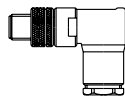
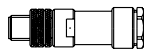
Y-Splitter Wiring Schematic

M8 to M8 4 Pole

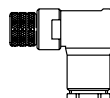
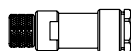


Ordering Information

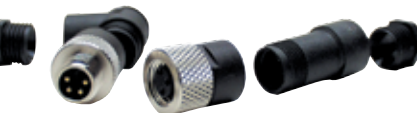
Brad® Nano-Change® M8 Field Attachable Connectors



		Male Straight		Male 90°	
Poles	Max Wire Size	Engineering No.	Standard Order No.	Engineering No.	Standard Order No.
3	3.5-5mm	N03MA03124	120091-0004	N03MA04124	120091-0006
4	3.5-5mm	N04MA03124	120091-0010	N04MA04124	120091-0012



		Female Straight		Female 90°	
Poles	Max Wire Size	Engineering No.	Standard Order No.	Engineering No.	Standard Order No.
3	3.5-5mm	N03FA03124	120091-0001	N03FA04124	120091-0003
4	3.5-5mm	N04FA03124	120091-0007	N04FA04124	120091-0009



**Brad®
Nano-Change® M8
Sensor/Actuator
Connectivity**

Brad® Nano-Change® M8 Closure Caps



Plastic Closure Cap

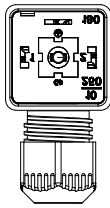
To Cover Female	
Engineering No.	Standard Order No.
—	120308-0677

The mPm® DIN valve connectors conform to the industry standard of electrical connectors EN 175301-803, which are commonly used with solenoid valves. The new generation of Molex® DIN connectors provides unsurpassed sealing performance, easier assembly and mounting and lower applied costs.

Ordering Information

Brad® mPm® Field Attachable DIN Valve Connectors

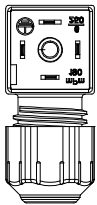
Brad® mPm® DIN Valve Connectors



Form A External Thread		
Description	Engineering No.	Standard Order No.
Non-Electronic	C28200N2RSN*	121201-0034*
With Electronic	S28200TC422RSN	121207-0358



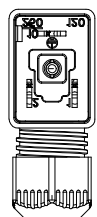
Form B External Thread		
Description	Engineering No.	Standard Order No.
Non-Electronic	C22200N2RSN*	121202-0012*
With Electronic	S22200TC422RSN	121208-0230



Form C External Thread		
Description	Engineering No.	Standard Order No.
Non-Electronic	C92200N2TSN*	121203-0009*
With Electronic	S92200TC422TSN	121209-0197



Form Micro External Thread		
Description	Engineering No.	Standard Order No.
Non-Electronic	C25200N2TSN*	121204-0010*
With Electronic	S25200TC422TSN	121210-0332



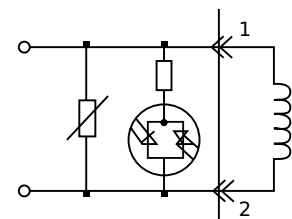
Form Industrial External Thread		
Description	Engineering No.	Standard Order No.
Non-Electronic	C29200N2TSN*	121205-0012*
With Electronic	S29200TC422TSN	121211-0332

Circuit C4 Schematics

Bipolar yellow LED and VDR to protect supply and switch. (The energy in the coil is limited by the VDR).

Voltage: AC-DC 12 to 230V.

For type 192 only 12-24 and 115V



Note:

The mPm® DIN valve connectors are available in various version, Pole count, housing and electronics. For further information consult our website or automation catalog or your local sales support.

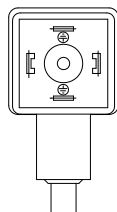
Further technical information, datasheet or drawing can be downloaded from the Molex® website using the ordering part number.

* Parts in bold belong to the BradExpress Program (see page 3)

The mPm® connectors with molded-in cable are suitable for use with most types of solenoid. They offer a fast and efficient method of connection resulting in greatly reduced installation time and costs.

Ordering Information

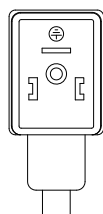
Brad® mPm® DIN Valve Connectors Over Molded to M12 Male Connector



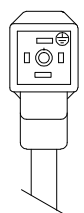
DIN Valve Connector, FORM A, C4 Circuit, Ground Pos H6/H12				
	Male Straight		Male 90°	
Length	Engineering No.	Standard Order No.	Engineering No.	Standard Order No.
.6m	E850B0P12M006	121036-0192	E850B2P12M006	121036-0208
1m	E850B0P12M010	121036-0193	E850B2P12M010	121036-0209
1.5m	E850B0P12M015	121036-0194	E850B2P12M015	121036-0821
3m	E850B0P12M030	121036-0356	E850B2P12M030	121036-0211



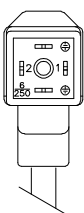
DIN Valve Connector, FORM Industrial, C4 Circuit, Ground Pos H6				
	Male Straight		Male 90°	
Length	Engineering No.	Standard Order No.	Engineering No.	Standard Order No.
.6m	F850B0P12M006	121036-0352	F850B2P12M006	121036-0505
1m	F850B0P12M010	121036-0255	F850B2P12M010	121036-0506
1.5m	F850B0P12M015	121036-0822	F850B2P12M015	121036-0823
3m	F850B0P12M030	121036-0257	F850B2P12M030	121036-0824



DIN Valve Connector, FORM B, C4 Circuit, Ground Pos H6				
	Male Straight		Male 90°	
Length	Engineering No.	Standard Order No.	Engineering No.	Standard Order No.
.6m	D850B0P12M006	121036-0056	D850B2P12M006	121036-0828
1m	D850B0P12M010	121036-0825	D850B2P12M010	121036-0829
1.5m	D850B0P12M015	121036-0826	D850B2P12M015	121036-0830
3m	D850B0P12M030	121036-0827	D850B2P12M030	121036-0831



DIN Valve Connector, FORM C, C4 Circuit, Ground Pos H6/H12				
	Male Straight		Male 90°	
Length	Engineering No.	Standard Order No.	Engineering No.	Standard Order No.
.6m	H850B0P12M006	121036-0295	H850B2P12M006	121036-0832
1m	H850B0P12M010	121036-0296	H850B2P12M010	121036-0305
1.5m	H850B0P12M015	121036-0471	H850B2P12M015	121036-0833
3m	H850B0P12M030	121036-0440	H850B2P12M030	121036-0834



DIN Valve Connector, FORM Micro, C4 Circuit, Ground Pos H6/H12				
	Male Straight		Male 90°	
Length	Engineering No.	Standard Order No.	Engineering No.	Standard Order No.
.6m	G850B0P12M006	121036-0406	G850B2P12M006	121036-0836
1m	G850B0P12M010	121036-0277	G850B2P12M010	121036-0621
1.5m	G850B0P12M015	121036-0835	G850B2P12M015	121036-0837
3m	G850B0P12M030	121036-0481	G850B2P12M030	121035-0270

Brad® mPm® DIN Valve Connectors



DIN PUR/PVC Cable Specification

Conductors: 3x0,5mm² PVC (Brown, Blue, Green/Yellow)

Jacket Material: Black PUR

Voltage Rating: 300V

Operating Temperature:

-5 to +90°C (flexing)

-30 to +90°C (static)

Diameter: 5,5 ±0,3 mm

Note:

The mPm® DIN valve over molded cordsets are available in various versions, Pole count, housing, cable, lengths and electronics. For further information consult our website or automation catalog or your local sales support.

Further technical information, datasheet or drawing can be downloaded from the Molex® website using the ordering part number.

Get more insights at: molex.com/industry/industrial.html