BRAD M12 POWER L-CODE CONNECTOR SYSTEM

NPI INNOVATION

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BRAD M12 POWER L-CODE CONNECTOR SYSTEM

Providing the power required for Industry 4.0 electric propulsion while being both compact and reliable, the Brad M12 Power L-Code Connector System meets PROFIBUS and PROFINET International (PI) standards for PROFINET systems.

Weld-Slag and Oil-Resistant (WSOR) cables from Molex Manufacturing provide protection for the cordset and wiring system in harsh environments.

Key Product Information

Category: **Industrial Connectors**
Poles: **4/5**
IP Rating: **IP67**
IEC: **61076-2-111**

View Product Landing Page

Download Datasheet

Series

120500	**M12 Power L-Code Single-Ended Cordsets, 4 by 1.50mm², 5 by 1.50mm², 4 by 2.50mm², 5 by 2.50mm²**
120501	**M12 Power L-Code Double-Ended Cordsets, 4 by 1.50mm², 5 by 1.50mm², 4 by 2.50mm², 5 by 2.50mm²**
120502	**M12 Power L-Code Receptacles**
120504	**M12 Power L-Code Splitters**
120505	**M12 Power L-Code to Mini-Change Adapter Cables**

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VITAL PRODUCT INFORMATION

How does this product/solution create value for our customers?

Full pre-assembly capabilities and utilization of Weld-Slag and Oil-Resistant (WSOR) cables (Molex Manufacturing) differentiate Brad M12 L-Code Connectors compared to the competition.

Molex offers a complete product portfolio with cordsets, receptacles, field-attachable connectors, and customized options.

Brad M12 Power L-Code Connectors provide a compact solution with a high current for 24V DC installations.

The Brad M12 Power L-Code Connector helps Molex customers transfer their infrastructure from Mini-Change to a more space-saving M12 solution.

Finally, the L-Code interface was selected by the PROFINET User Organization (PNO) as the preferred circular connector for high-power capacity areas/applications.

What is the Molex Advantage?

Global manufacturing capability, robust engineering support, and the latest and most high-performance components make Molex a unique partner in finding capability solutions.

PRODUCT OVERVIEW

Brad M12 Power L-Code Connector System

The Brad M12 L-Code Connector System provides space-saving flexibility with the power capacity needed for modern Industry 4.0 innovation. The system delivers up to 4 times the power of standard M12 connectors – as much as 16.0A current per pin at 63V AC or DC.

Brad M12 Power L-Code Single- and Double-Ended Cordsets

Reliability and durability are highlights of Brad M12 Power L-Code Cordsets. Pre-assembly processes mitigate wiring and assembly errors, while Flamar WSOR cabling provides protection for the cordset and wiring system in harsh environments. An IP67-sealed interface enhances protection against dust and water ingress.

Brad M12 Power L-Code Connector System Standards

The Brad M12 Power L-Code Connector System is appropriate for a range of industrial applications. Connectors are designed for compatibility with existing infrastructure and full intermateability with competitors' M12 Power L-Code products. It also meets PROFIBUS and PROFINET International (PI) standards for PROFINET systems.

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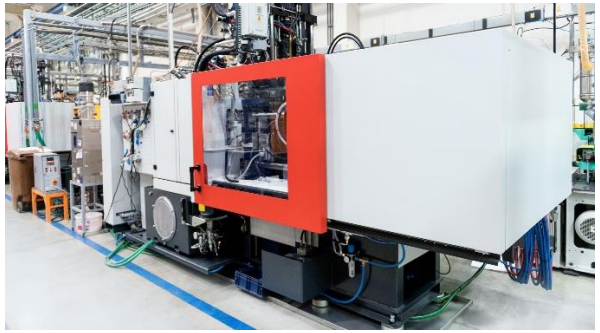
MARKETS AND APPLICATIONS



Industrial Automation

- Power supplies of decentralized I/O
- Fieldbus-controlled I/O boxes
- Small server/DC motors and drives
- Machine tools, presses, molding and stamping
- Automotive plants

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FREQUENTLY ASKED QUESTIONS

What current can the Brad M12 Power L-Code deliver?

With the use of thicker 2.50mm² wires, the M12 Power L-Code Connector System can power customers' applications with 16.0A.
If customers don't need to take advantage of the full 16.0A, there is also a cost-reduced 12.0A version with 1.50mm² wires available.

What is the advantage of the Brad M12 Power L-Code?

The smaller form factor and higher amperage makes the M12 Power L-Code more attractive than physically larger or electrically lower performing products.

SOLVING INDUSTRY CHALLENGES

Industry Need	Industry Challenge	Industry Solution	Anticipated Results
Compactness	Manufacturing plants are facing rising power requirements within smaller spaces. However, current power connector systems tend to be large.	The Brad M12 Power L-Code Connector System provides a foundation for a new standard device connection while providing space savings in keeping with the trend toward miniaturization that is driving Industry 4.0 developments. Details below: • 16.0A @ 63V with M12 size 2.50mm² • 12.0A @ 63V with M12 size 1.50mm²	Plant managers can find connectors with the same or more power via a standard M12 interface, along with flexibility in power distribution via cable configuration (1.50mm² or 2.50mm²).
Standard Compliance	Industry 4.0 developments require improved connectivity with more connections/nodes and more power. Ethernet on the factory floor is the future (i.e., digital manufacturing). However, connectors need to meet international standards.	Brad M12 Power L-Code connectors meet the new standard for PROFINET applications: • IEC Standard IEC 61076-2-111 • PNO listing/acceptance • Full intermateability with competitors M12 Power L-Code	Plant managers will find the Brad M12 Power L-Code Connector System is appropriate for industrial applications and easily implemented with existing infrastructure.

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SOLVING INDUSTRY CHALLENGES (CONT'D.)

Industry Need	Industry Challenge	Industry Solution	Anticipated Results
Reliability	To keep up with Industry 4.0, plant managers need connectivity that is equal to or better than the performance/reliability of established M12 connector systems.	The Brad M12 Power L-Code Connector System delivers the following cutting-edge advantages: • Pre-assembly processes mitigate wiring and assembly errors while saving valuable time due to Molex's exact production processes. • Flamar WSOR cabling further protects the entire cordset and wiring system even in the harshest of environments.	Plant managers will be able to implement a reliable power supply with their existing M12 interface.
Industry 4.0	Decentralization plays a key role in the digitization of industrial automation technology. True to the zero-cabinet philosophy, there is a trend toward shifting applications and components out of the traditional control cabinet and into the field as part of smaller units or machines.	As applications move out of the cabinet and into the field, Brad M12 Power L-Code connectors deliver the IP67-rated sealed interface, which can withstand harsh conditions.	Plant operators will be able to move applications to factory floors and other locations that experience harsh environments.

PRODUCT FEATURES AND ADVANTAGES

63V AC/DC; up to 16.0A current per pin

- Delivers 4 times the power of standard M12 connectors
- Allows installations over a longer distance and reduced voltage drop due to 2.50mm2 thick wires

IP67-sealed interface

- Provides a sealed connection ideal for use in harsh and wet industrial environments
- Includes a dust-proof connector that can be temporarily submerged in up to 1 meter of water

Pins enclosed in contact carrier

Enhances operator safety by eliminating the chance of electrical shock due to exposed pins

L-Code mating interface

Prevents mis-mating with other M12 connectors being used for input, output, signal or industrial network connections

Key Specifications	
Current	16.0A per pin
Voltage	63V AC/DC
Poles	4 or 5
IP Standard	IP67
IEC Standard	61076-2-111
Operating Temperature	-25 to +85°C

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PRODUCT FEATURES AND ADVANTAGES (CONT'D)

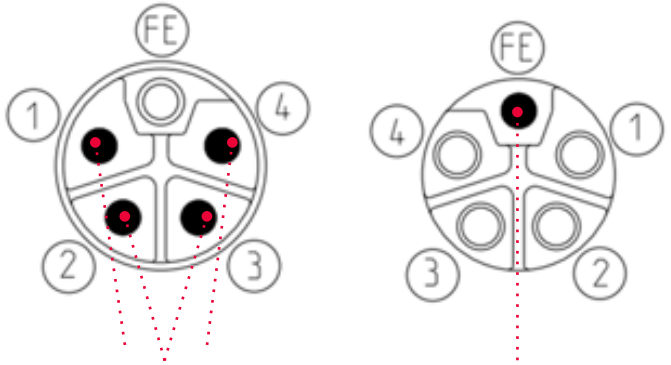
PI Selected

- Enables immediate implementation into PROFINET applications
- Saves time and costs

Products developed according to IEC Standard 61076-2-111

Establishes an open-industry connector standard to increase adoption among a wide array of platforms and manufacturers

Brad M12 Power L-Code Face View

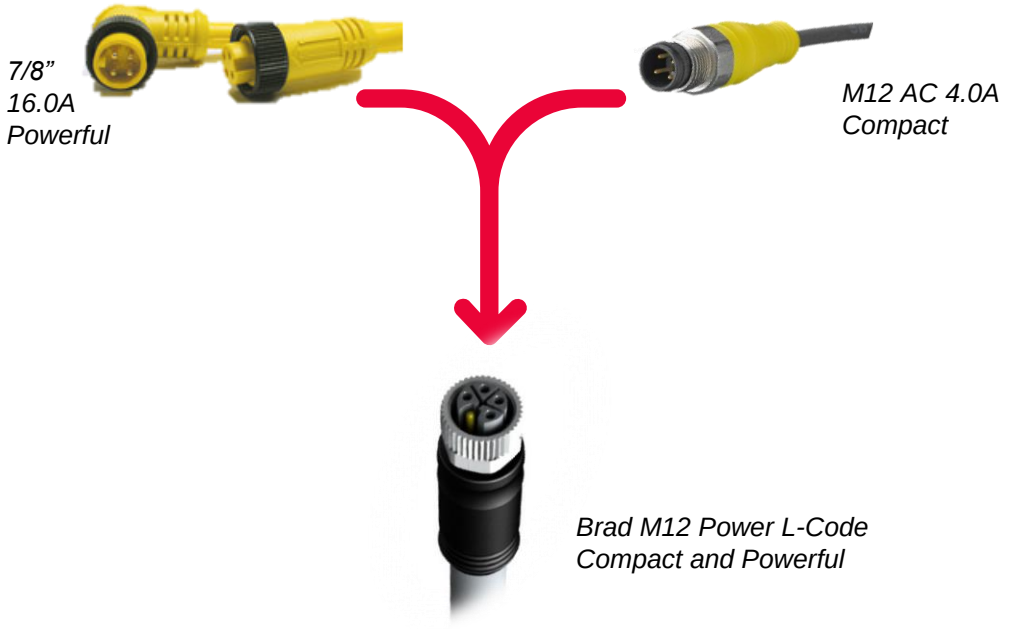


4 Power Poles on Male

FE Grounding Pole on Female

The Result of Industry Collaboration

PROFINET Cabling and Interconnection Technology Guideline
Unification of the 24V Power Supply



7/8" 16.0A Powerful

M12 AC 4.0A Compact

Brad M12 Power L-Code Compact and Powerful

Brad M12 Power L-Code combines the power capabilities of 7/8" connectors with the compact size of the M12 form factor

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SPECIFICATIONS AND SUPPORTING INFORMATION

Reference Information

Packaging: Bag

Mates With: M12 Power L-Code cordsets, receptacles and field-attachable connectors

Coding/Number of Pins:

CSE L-Code 5 by 2.50mm² – L-Code (4+FE)
CSE L-Code 4 by 2.50mm² – L-Code (4 without FE)
CSE L-Code 5 by 1.50mm² – L-Code (4+FE)
CSE L-Code 4 by 1.50mm² – L-Code (4 without FE)
Receptacles – L-Code (4+FE)

Designed In: Millimeters

RoHS: Yes

Glow Wire: Yes

UL: Pending

IEC Standard: 61076-2-111:2017

IP Rating: IP67

Electrical

Voltage (max.): 63V (pollution degree 3)

Current (max.): 12.0A per pin (1.50mm² wires)
16.0A per pin (2.50mm² wires)

Contact Resistance: < 5 milliohms

Insulation Resistance: >108 Ohms

Physical

Housing/Insert: PA

Coupling Nut: Brass

Overmold: TPU black

Contact: Brass

Contact Plating: Gold-plated

Operating Temperature: -25 to +85°C

Additional Resources	
Web Overview Page	**www.molex.com/link/m12-l-code.html**
Datasheet	987652-5861.pdf (molex.com)

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