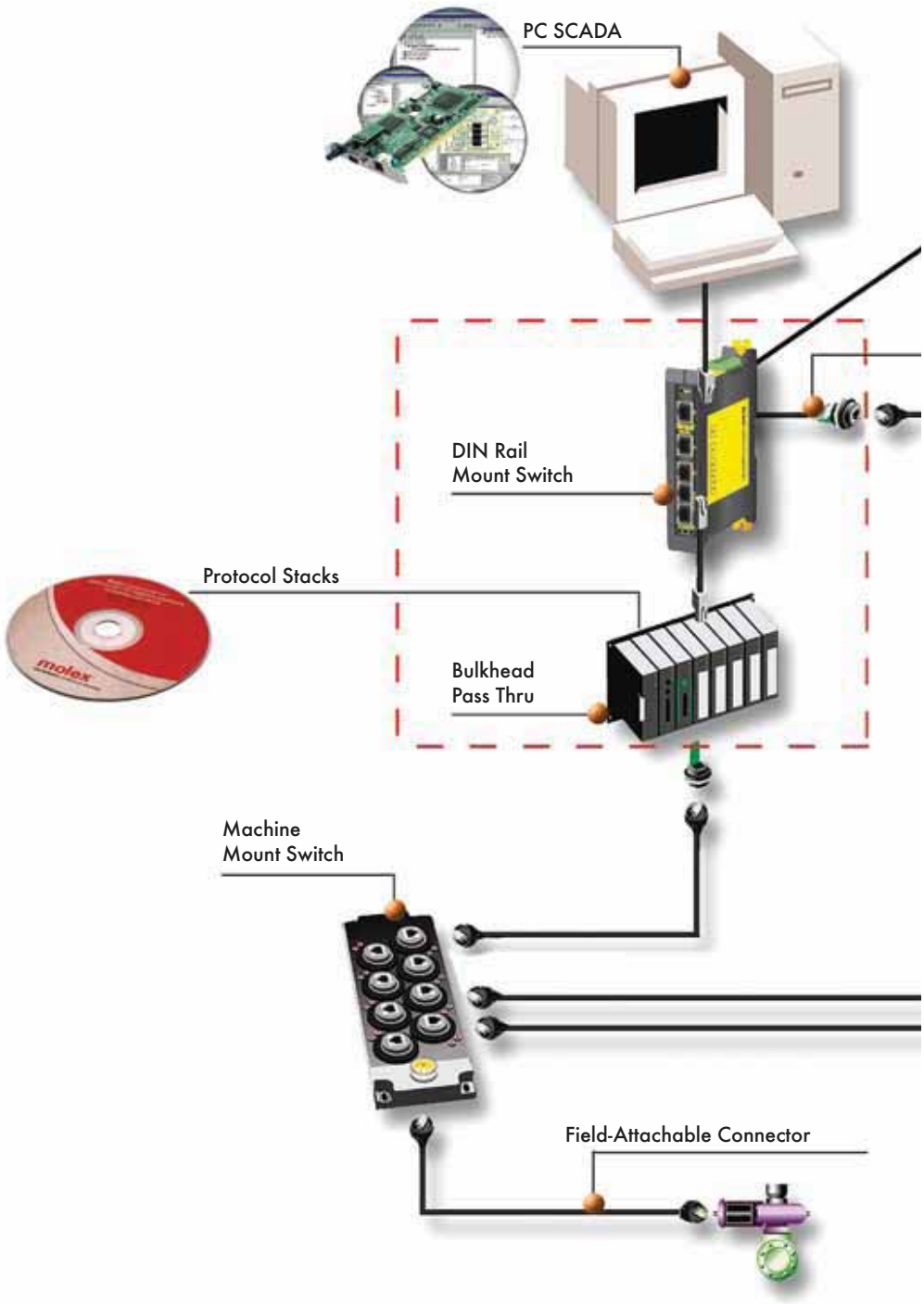
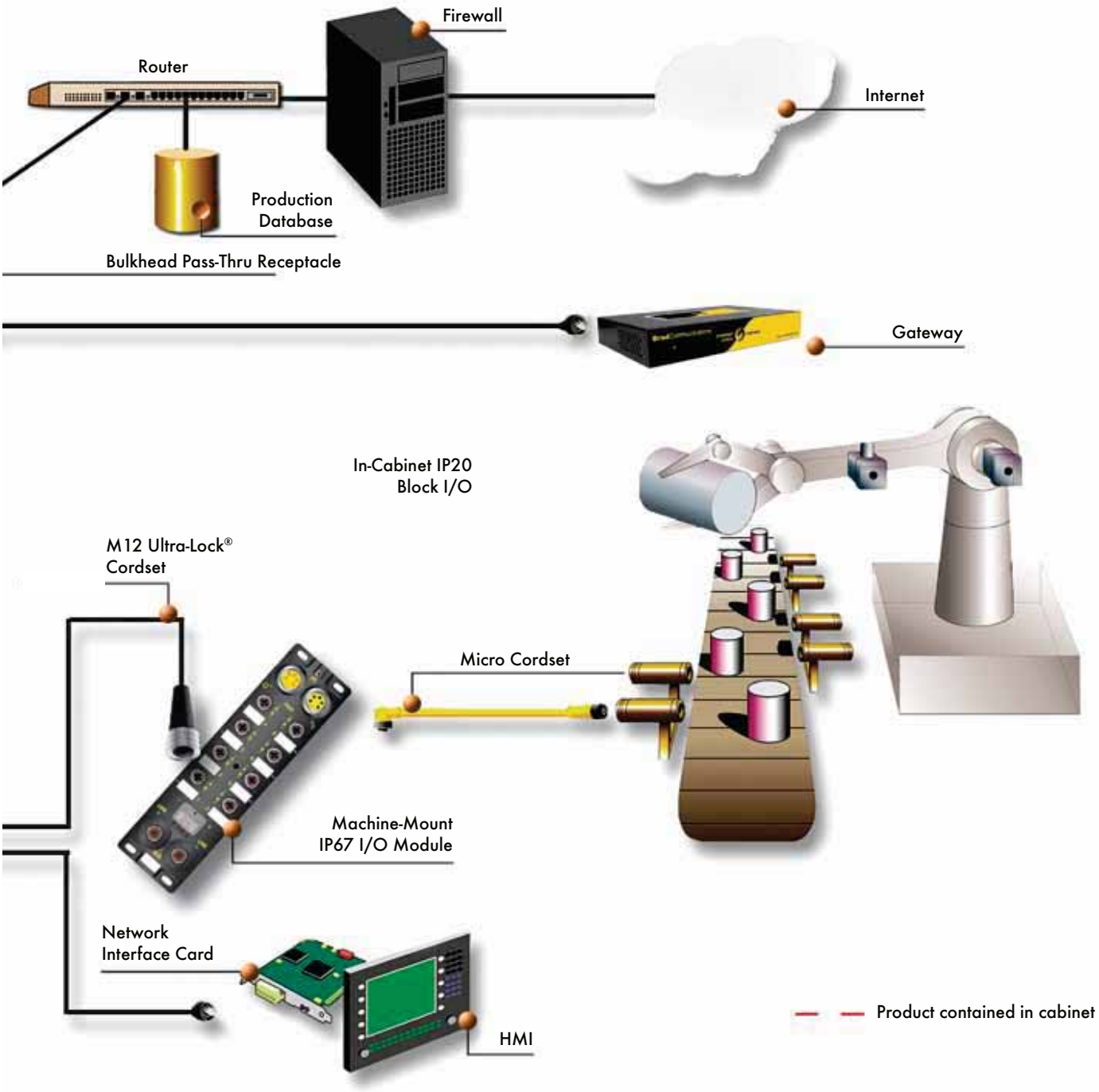
Brad® Ethernet

Brad® ethernet products provide solutions that enable the world's most popular Local Area Network to be reliably utilized on the factory floor or in harsh commercial environments. The Brad line offers a large choice of products including physical media, IP67 I/O modules, unmanaged and managed switches, powerful network interfaces, industrial gateways and protocol development kits to connect the most popular Ethernet industrial networks and fieldbuses. Brad Ethernet products give the user a complete communication and connectivity solution to design a large scope of industrial applications–PC-Based control, supervision, data storage, protocol bridging, etc.–to suit all industry sectors.



molex®



Brad® Ethernet Software Development Kit for PROFINET IO

112106
IO-Controller and IO-Device

Features and Benefits

- Master and slave protocol stacks can address both controller (master) or device (slave) manufacturers who want to implement PROFINET networks
- Brad stacks have no hardware and OS dependencies and can be easily implemented on a large range of hardware system platforms or software operating systems
- Sample applications with source codes are provided and can be quickly and easily implemented
- Brad stacks are successfully tested with PNO conformance test tools
- Molex can provide stack training, technical support and engineering development for both hardware and software design

Description

- PROFINET IO Class-A/Class-B (RT Class-1, RT Class-2)
- Portable on any real time or not operating systems implementing multithread (Windows, VxWorks, Linux, QNX, ThreadX, eCOS, etc)
- Hardware: Compatible with 32-bit microprocessors
- Multiplatform (Intel, ARM, PowerPC, Fido, Texas DSP, etc)
- Support of Intel and Motorola formats
- Consistent IO data access through shared memory (configurable or automatic) or messaging access (API)

Conformance

- Conforms to PROFINET IO specifications v2.2
- Molex is an active member of PROFINET technical working groups

Included Hardware/Software

PROFINET IO—Controller Stack

- Supported Services: Context management, configuration, IO data, alarm, and diagnostic
- Manage up to 128 IO-Devices
- Cyclic Data Exchange: Up to 1440 Input bytes and 1440 Output bytes per IO-Device slot
- IP Device Configuration: DCP or Local
- LLDP (PROFINET MIB)
- SDK initialization via XML file
- CD Deliverable: Single product line licensing (with royalties), ANSI C source code, electronic documentation, application samples

PROFINET IO Device Stack

- IO Data: Up to 1440 Input bytes and 1440 Output bytes per IO-Device slot
- GSD File: Yes
- IP Device Configuration: DCP or Local
- LLDP (PROFINET MIB)
- Allows design of fixed and modular device

OEM Engineering Console

- Generate IO-Controller stack configuration files (XML format)
- Automatic IO-Device network detection including module configuration
- GSD device library management
- IO-Device commissioning (Set Name, Device blinking, etc.)
- Integrated diagnostic
- Windows 32-bit (XP,Vista)
- OEM customization
- USB dongle protection

MRP Client/Manager Stack

- Manage media redundancy for Ethernet ring topology according PROFINET Class-B
- CD Deliverable: Single product line licensing (no royalty), ANSI C source code, electronic documentation
- Does not include PNO MRP patent

Ordering Information

Engineering No.	Standard Order No.	Description
SDK-PFN-DEV	112106-5001	PROFINET IO-Device Software Development Kit
SDK-PFN-DEV-UPD	112106-5002	PROFINET IO-Device SDK Maintenance Update
SDK-PFN-CON	112106-5005	PROFINET IO-Controller Software Development Kit—1 License Fee included
SDK-PFN-CON-UPD	112106-5006	PROFINET IO-Controller SDK Maintenance Update
SDK-PFN-CON-L	112106-5010	PROFINET IO-Controller License Fee
SDK-PFN-CON-CNF-U	112106-5012	PROFINET IO-Controller OEM Configuration Console, USB Dongle, 1 license
SDK-PFN-MRP	112106-5007	Client/Manager Media Redundancy Protocol SDK for PROFINET IO

Support/Training Information

Engineering No.	Standard Order No.	Description
SDK-PFN-EDS	860000-0142	Engineering Development Support for PROFINET stack
SDK-PFN-TRN	860000-0144	Training Support for PROFINET stack

Brad® Ethernet Software Development Kit for EtherNet/IP

112106
Scanner and Adapter

Features and Benefits

- Master and slave protocol stacks can address both controller (master) or device (slave) manufacturers who want to implement EtherNet/IP networks
- Brad stacks have no hardware and OS dependencies and can be easily implemented on a large range of hardware system platforms or software operating systems
- Sample applications with source codes are provided and can be quickly and easily implemented
- Brad stacks are successfully tested with ODVA conformance test tools
- Molex can provide stack training, technical support and engineering development for both hardware and software design

Description

- Portable on any real time or not operating systems implementing multithread (Windows, VxWorks, Linux, QNX, ThreadX, eCOS, etc)
- Hardware: Compatible with 32-bit microprocessors
- Multi platform (Intel, ARM, PowerPC, etc)
- Support of Intel and Motorola formats
- Consistent process data image access through messaging access (API)

Conformance

- Conforms to ODVA specifications v1.4 and CIP v3.3
- Fully compatible with EtherNet/IP Conformance Test Suite Version A7
- Molex is an active member of ODVA technical working groups

Included Hardware/Software

EtherNet/IP Scanner and Adapter

- CIP Features:
  - IO messaging (process data)
  - Explicit messaging (configuration/diagnostic)
- Supported Objects according to CIP Standard
  - Identity Object
  - Message Router Object
  - Assembly Object
  - Connection Manager Object
  - Connection Configuration Object
  - TCP/IP Interface Object
  - Ethernet Link Object
- Stack Resolution: Timing resolution in microseconds
- Application Watchdog
- Rack Optimization for best performances with PointIO and FlexIO devices
- CD Deliverable: single product line licensing (with royalties), ANSI C source code, electronic documentation, application samples

EtherNet/IP Adapter

- CIP Features:
  - IO messaging (process data)
  - Explicit messaging (configuration/diagnostic)
- Supported Objects according to CIP Standard
  - Identity Object
  - Message Router Object
  - Assembly Object
  - Connection Manager Object
  - Connection Configuration Object
  - TCP/IP Interface Object
  - Ethernet Link Object
- Stack Resolution: Timing resolution in microseconds
- Application Watchdog
- Generic EDS file
- CD Deliverable: single product line licensing (no royalty), ANSI C source code, electronic documentation, application samples

OEM Engineering Console

- Generate EtherNet/IP stack configuration files
- Automatic EtherNet/IP network detection including module configuration
- ESD device library management
- Device commissioning
- Integrated diagnostic
- Windows 32-bit (XP,Vista)
- OEM customization
- USB dongle protection

Ordering Information

Engineering No.	Standard Order No.	Description
SDK-EIP-ADP	112106-0000	EtherNet/IP Adapter Software Development Kit
SDK-EIP-ADP-UPD	112106-5000	EtherNet/IP Adapter SDK Maintenance Update
SDK-EIP-SCA	112106-5003	EtherNet/IP Scanner/Adapter Software Development Kit—1 License Fee included
SDK-EIP-SCA-UPD	112106-5004	EtherNet/IP Scanner/Adapter SDK Maintenance Update
SDK-EIP-SCA-L	112106-5009	EtherNet/IP Scanner/Adapter License Fee
SDK-EIP-CON-CNF-U	112106-5011	EtherNet/IP Scanner OEM Configuration Console, USB Dongle, 1 license

Support/Training Information

Engineering No.	Standard Order No.	Description
SDK-EIP-EDS	860000-0141	Engineering Development Support for EtherNet/IP stack
SDK-EIP-TRN	860000-0143	Training Support for EtherNet/IP stack

Brad®
Windows Compatible Multi-Slave Driver for PROFINET

112027
PROFINET Multi IO-Device

Features and Benefits
- Connect a PC under Windows to PROFINET controller
- Use standard Ethernet card
- Support PROFINET IO Real-Time communication
- Support multi-slave functionnality on single PC by using multiple Ethnernet ports
- Typical applications:
  - HMI/Operator panel
  - Workbench
  - IO simulation

Description
- Conform to PROFINET IO v2.2 specifications
- Support up to 32 IO-Device connections in a single PC
- Support PROFINET Alarms
- Engineering Tools:
  - Configuration console
  - Test and diagnostic tools
- Includes Windows Library (DLL)
- Windows (32-bit): Seven, 2008 Server, Windows Vista,® 2003 Server, Windows XP®

Included Hardware/Software
- IO Data: Up to 1440 Input bytes and 1440 Output bytes per IO-Device slot
- Automatic generation of GSD file based on user configuration ready to use in PROFINET I/O-Controller engineering software
- Allows design of fixed and modular device
- IP Device configuration: DCP or Local
- Software Protection

Conformance
- Conform to PNO conformance test tool (PN Tester)
- Molex is an active member of PROFINET technical working groups

Engineering No.	Standard Order No.	Description
DRL-EPN-SWF-S	112027-5007	Windows PROFINET Multi IO-Device Driver, Software protection key

Brad®
Windows Compatible Explicit Messaging Driver for EtherNet/IP

112106
EtherNet/IP EM Driver

Features and Benefits
- Fastest and easiest solution to implement EtherNet/IP Explicit Messaging communication on PC-based systems
- User friendly library, no EtherNet/IP knowledge required
- Typical applications:
  - Engineering tool
  - Commissioning console
  - Diagnostic and Monitoring tools
  - HMI/Scada applications
  - Custom software

Description
- EIP_Driver provides an Application Programming Interface (API) that simply send/receive buffer of data on the network with remote EtherNet/IP EM Server devices
- The EIP_Driver manages the complete CIP communication (connection/reconnection, etc) so the developer needs no special expertise in the EtherNet/IP protocol.

Included Hardware/Software
- Send and receive explicit messages
- Client mode (Server mode on request)
  - Supports connected and unconnected messages
  - Supports synchronous and asynchronous modes
- Support of ListIdentify service to detect all EtherNet/IP stations connected to the network
- DLL library for Windows 32-bit (Seven/XP/Vista)
  - Designed to be used in multi-threaded applications
  - Several applications can use the EIP_Driver simultaneously
- DLL library can be statically or dynamically linked with the target application
- CD Deliverable: single product line licensing (no royalty), ANSI C source code, electronic documentation, application samples

Conformance
- Fully compatible with EtherNet/IP Conformance Test Suite Version A7
- Molex is an active member of ODVA (Open DeviceNet® Vendor Association) technical working groups

Engineering No.	Standard Order No.	Description
SDK-EIP-EML	112106-5008	EtherNet/IP Explicit Messaging DLL library, Client mode

Brad® Direct-Link® Windows Compatible Protocol Drivers

112027
Ethernet TCP/IP and Serial

Features and Benefits

- Direct-Link™ SW1000 provides data acquisition between Windows PC-based applications and industrial devices connected to Ethernet TCP/IP
- Economic solution; well suited for embedded and light architecture (laptop, panel PC, MMI)
- 100% software solution; use PC COM port or integrated Ethernet interface (3COM, NE2000)
- Wide variety of open and vendor specific industrial protocols
- 1000 tags, full tags and Siemens (S5, S7, TI) versions

Description

- Based on Windows TCP/IP socket
- All Ethernet protocols can run simultaneously
- All Ethernet protocols can run Client and Server modes
- Database (32 Kbits, 32 Kwords) for Server mode to exchange data with applications

Included Hardware/Software

- Engineering Tools:
  - Engineering console
  - Test and diagnostic tools
- Compatible Data Servers:
  - OPC DA v3.0, 2.05 and 1.0a
  - Wonderware® DAServer (XP only)
  - Wonderware I/O (SuiteLink/FastDDE) (XP only)
- Includes Development Libraries
- Windows Compatibility (32-bit and 64-bit): Seven, 2008 Server, Windows Vista®, 2003 Server, Windows XP®
- Software or Dongle (Parallel or USB) Protection

Compatible Protocols

Ethernet TCP/IP

- Altus® Alnet II (AL200x, webgate); Client/Server
- Alstom® SRTP (C80-35, C80-75); Client/Server
- Allen-Bradley® Logix5000 (ControlLogix and FlexLogix); Client/Server
- GE Fanuc® SRTP (C90-30, C90-70); Client/Server
- Mitsubishi® Melsec (A and Q); Client/Server
- Omron® FINS (C, CV, CS); Client/Server
- Schneider® Modbus TCP and UDP; Client/Server
- Schneider® UNI-TE (Premium and Micro); Client/Server
- Siemens® Industrial Ethernet (S5, S7, TI); Client/Server

Serial

- Modbus Master (ASCII and RTU)
- Modbus Slave (ASCII and RTU)
- GE Fanuc® SNPX Master (90-xx and 80-xx Series)
- Schneider® Uni-Telway Slave (TSX 7 Series)
- Siemens® AS511 Master (Simatic S5 Series)
- Siemens® PPI/PPI+ Master (Simatic S7-200 Series)
- Siemens® Ti-Dir Master (Simatic TI-505 Series)

Engineering No.	Standard Order No.	Description
DRL-ALL-SWL-S	112027-0005	SW1000 software drivers, 1000 tags, Software key protection.
DRL-ALL-SWF-S	112027-0002	SW1000 software drivers, Full tags, Software key protection.
DRL-SIE-SWF-S	112027-5014	SW1000 for Siemens (S5, S7, TI), Full tags, Software key protection.
DRL-ALL-SWL-P	112027-0004	SW1000 software drivers, 1000 tags, Parallel dongle protection
DRL-ALL-SWF-P	112027-0001	SW1000 software drivers, Full tags, Parallel dongle protection
DRL-SIE-SWF-P	112027-5013	SW1000 for Siemens (S5, S7, TI), Full tags, Software key protection.
DRL-ALL-SWL-U	112027-0006	SW1000 software drivers, 1000 tags, USB dongle protection
DRL-ALL-SWF-U	112027-0003	SW1000 software drivers, Full tags, USB dongle protection
DRL-SIE-SWF-U	112027-5015	SW1000 for Siemens (S5, S7, TI), Full tags, Software key protection.
DRL-UPG-SWF	112027-0010	SW1000 upgrade from 1000 tags to Full tags

Brad® applicom® Network Interface Card

112000
Industrial Ethernet

Features and Benefits

- Fast data acquisition between PC-based applications and industrial devices connected to Ethernet TCP/IP
- On board co-processor eliminates data bottlenecks, ensuring delivery of time critical information
- All protocols are included
- Best choice for Supervision/HMI/SCADA applications
- Equipment redundancy via OPC server
- Combo offer:
  - Ethernet + PROFIBUS (1.5 Mbps)
  - Ethernet + Serial (38.4 Kbps)

Description

- Engineering Tools:
  - Engineering console
  - Test and diagnostic tools
- Compatible Data Servers:
  - OPC DA v3.0
  - Wonderware® DAServer (XP only)
  - Wonderware IO (SuiteLink/FastDDE) (XP only)
- Includes Development Libraries
- Supported OS:
  - Windows (32-bit and 64-bit): Seven, 2008 Server, Windows Vista®, 2003 Server, Windows XP®/ XP Embedded
  - Others: Linux, VxWorks, RTX VenturCom

Included Hardware/Software

- Bus Format
  - PCI Universal bus 3.3V/5V (PCI-X compatible)
  - PCI Express 1x
- Hardware plug and play
- AMD SC520
- 16 Mb SDRAM
- 4 Mb Flash Memory
- One Ethernet port
  - Fast Ethernet 10/100 Mbps, auto negotiating
  - Base-T (RJ45), 4 leds (Rx, Tx, Link, 10/100)

Compatible Protocols

Ethernet TCP/IP (Client/Server modes)

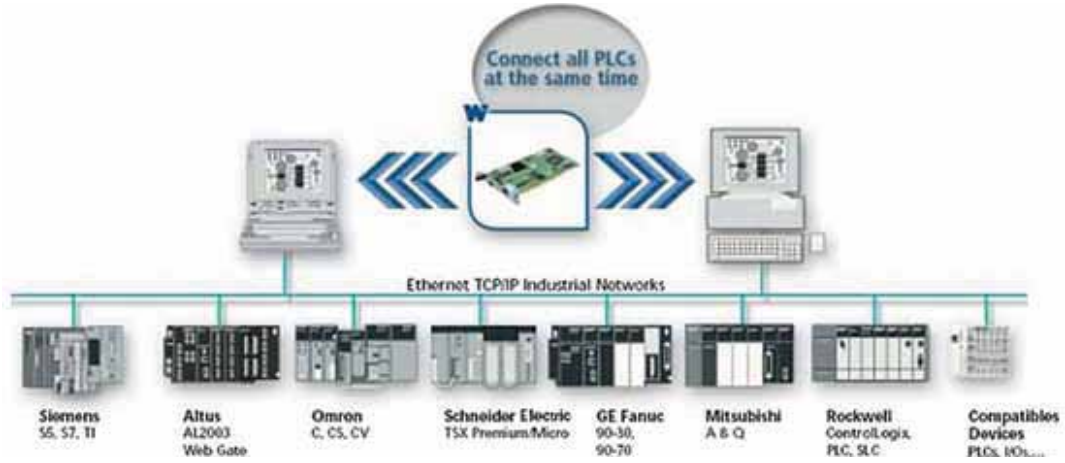
- Altus® Alnet II (AL 200x, Webgate)
- Alstom® SRTP (C80-35, C80-75)
- Allen-Bradley® EtherNet/IP(PCCC) (Logix, PLC-5 and SLC 500)
- GE Fanuc® SRTP (90-30, 90-70)
- Mitsubishi® Melsec (A, Q)
- Omron® FINS (C, CV, CS)
- Schneider Electric® Open Modbus TCP
- Schneider Electric® UNI-TE (Premium and Micro)
- Siemens® Industrial Ethernet (S5, S7, TI)
- UDP Send/Receive (Free messaging)

Ethernet ISO

- Schneider Electric® Ethway
- Siemens® Industrial Ethernet ISO (S5, S7, TF and TI)

Conformance

- RoHS compliant
- CE
- OPC certified
- Rockwell Encompass™
- Schneider Collaborative



Engineering No.	Standard Order No.	Description
APP-ETH-PCU-C	112000-0005	PCU2000ETH PCI Network Interface Card for Ethernet
APP-ETH-PCIE	112000-5026	PCIE2000ETH PCI Express Network Interface Card for Ethernet
APP-EPB-PCU-C	112000-0001	PCU2000ETH PCI Network Interface Card for Ethernet + Profibus
APP-EPB-PCIE	112000-5028	PCIE2000ETH PCI Express Network Interface Card for Ethernet + Profibus
APP-ESR-PCU-C	112000-0003	PCU2000ETH PCI Network Interface Card for Ethernet + Serial
APP-ESR-PCIE	112000-5027	PCIE2000ETH PCI Express Network Interface Card for Ethernet + Serial

Brad® applicom® Network Interface Card

112000
Ethernet Fieldbus

Features and Benefits
- Deterministic data acquisition for real time PC-based control applications
- On board co-processor eliminates data bottlenecks, ensuring delivery of time critical information
- Very Easy-to-Use; no knowledge of protocol required
- Remote Access via TCP/IP connection; to able configuration and diagnostic when using real time OS (VxWorks, QNX, etc)

Description
- Auto mapping of IO in card DPRAM
- IO exchange up to 14 Kbytes
- Hardware and software Watchdog
- Auto-Boot (Configuration stored in Flash)
- Engineering Tools:
  - Engineering console with automatic test and diagnostic tools
- Compabtible Data Servers:
  - OPC DA v3.0, 2.05 and 1.0a
  - Wonderware® DAServer
  - Wonderware IO (SuiteLink/FastDDE)
- Includes Development Libraries
- Supported OS:
  - Windows (32-bit and 64-bit): Seven, 2008 Server, Windows Vista®, 2003 Server, Windows XP®/ XP Embedded
  - Others: Linux, VxWorks, RTX VenturCom

Included Hardware/Software
- PCI Universal bus 3.3V/5V (PCI-X compatible)
- Hardware plug and play
- AMD SC520
- 16 Mb SDRAM; 4 Mb Flash Memory
- 1 Digital Input + 1 Digital Output
- 1 Ethernet port
  - Fast Ethernet 10/100 Mbps, auto negotiating
  - Base-T (RJ45), 4 LEDs (Rx, Tx, Link, 10/100)

Compatible Protocols

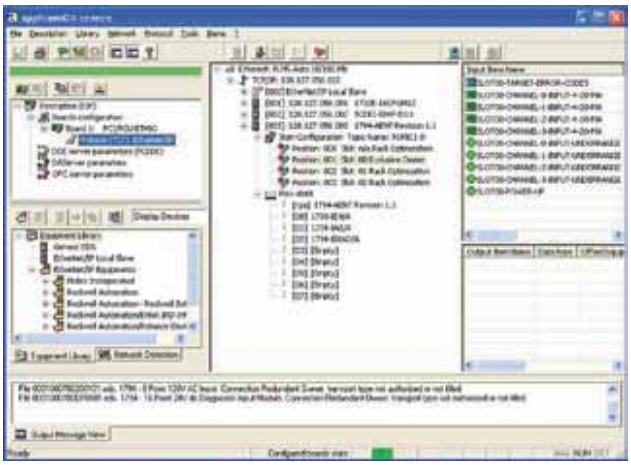
Modbus TCP and UDP
- Client mode
- Up to 127 simultaneous devices

EtherNET/IP
- Scanner and adapter
- Explicit messaging (Client/Server)
- Up to 128 simultaneous CIP connections
- EtherNet/IP Devices supported: Generic and Rockwell IO through EDS files (FlexIO, CompactLogix, etc)
- IP address settings configurable via the console or DHCP/ BOOTP server
- Client DNS Supported

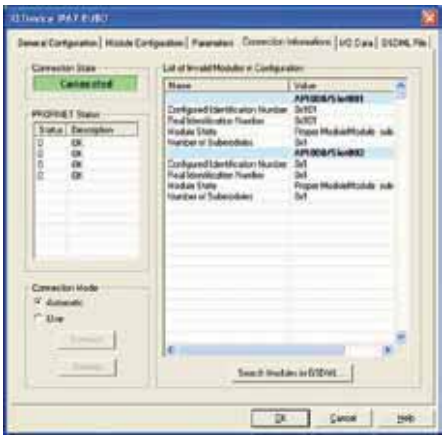
PROFINET IO-Controller
- RT Class-1
- Up to 127 IO-Devices; max. IO size 14K
- Cyclic Data Exchange (IO); up to 1437 In and 1437 Out per device
- Acyclic Data Exchange (for Configuration + Diagnostic)
- Minimum cycle time 1 ms
- Alarm handling
- IP Address manager
- Commissioning tool (set name, set IP address, device blinking, etc)

PROFINET IO-Device
- RT Class-1
- Up to 1437 In and 1437 Out; 1 slot for Inputs + 1 slot for Outputs
- Instructions and Maintenance 0, 1, 2, 3
- 1x Record for user custom diagnostics
- Process- and Diagnostic Alarm
- GSD file

Conformance
- RoHS compliant
- CE
- OPC certified
- ODVA conformance tested
- Rockwell Encompass™



Configuration Console



Device Diagnostics

Engineering No.	Order No	Description
DRL-EMB-PCU	112000-5029	PCU-ETHIO PCI Network Interface Card for Modbus TCP/IP
DRL-EMB-PCIE	112000-5034	PCU-ETHIO PCI Express Network Interface Card for Modbus TCP/IP
DRL-EIP-PCU	112000-5030	PCU-ETHIO PCI Network Interface Card for EtherNet/IP
DRL-EIP-PCIE	112000-5033	PCU-ETHIO PCI Express Network Interface Card for EtherNet/IP
DRL-EPN-PCU	112000-5031	PCU-ETHIO PCI Network Interface Card for PROFINET IO
DRL-EPN-PCIE	112000-5032	PCU-ETHIO PCI Express Network Interface Card for PROFINET IO

Brad® SST™ Communication Module for Rockwell ControlLogix

112073

Modbus TCP and Serial

Features and Benefits

- Connects your Allen-Bradley® ControlLogix to a Modbus Ethernet or Serial network
- Direct IO Mapping, no Ladder Logic to write for configuration and data transfer between module and CLX processor
- Fully integrated into the Rockwell® Automation environment
- User-friendly configuration tool with intuitive graphical interface

Description

- RLL support: remote configuration and monitoring via RSLinx
- Add-On-Profile for Rockwell® RSLogix5000
- USB port for user configuration and firware upgrade
- Engineering console simplified user configuration and diagnostic
- Support multiple modules in a chassis
- Support Local and Remote chassis
- Easy diagnostics: Built-in LEDs and 4 characters display

Included Hardware/Software

- 128 MB of onboard memory
- 8 MB of flash memory (user configuration data and firmware)
- CPU Data exchange:
  - 496 Inputs bytes + 496 Output bytes
  - 32.000 Words Registers (CIP messaging)
- Type A, USB 2 and 1.1 compatible
- Communication Ports
  - 1x Ethernet, 10/100 Mbps, RJ45
  - 2x Serial, 110 bps to 115.2 kbps, RS232/RS485/RS422, RJ45 (DB9 male supplied cable)

Compatible Protocols

- Modbus Master (RTU or ASCII)
- Modbus Slave (RTU or ASCII)
- Modbus TCP and UDP Client and Server

Conformance

- RoHS compliant
- CE, UL, cUL
- Class 1 Div 2
- Rockwell Encompass™

Engineering No.	Standard Order No.	Description
SST-ESR2-CLX-RLL	112073-0001	Modbus communication module for Rockwell ControlLogix

Brad® applicom® Industrial Multi-Protocol Gateway

112034

Ethernet, Serial and PROFIBUS

Features and Benefits

- Allows simultaneous communication between industrial devices using up to 20 different Ethernet TCP/IP, PROFIBUS and Serial protocols
- Typical architectures: data translator, data concentrator, Industrial firewall
- No programming, just configuring (tools included)
- Supports unsolicited data exchange from Client device

Description

- Real-Time data exchange through internal database (32 Kbits/32 Kwords)
- Upload/Download configuration and diagnostic through Remote TCP/IP
- Up to 128 PLCs on Ethernet TCP and 126 PROFIBUS devices
- Full management of Read/Write cyclic access through word status commands
- Engineering Tools:
  - Configuration console
  - Test and diagnostic tools

Included Hardware/Software

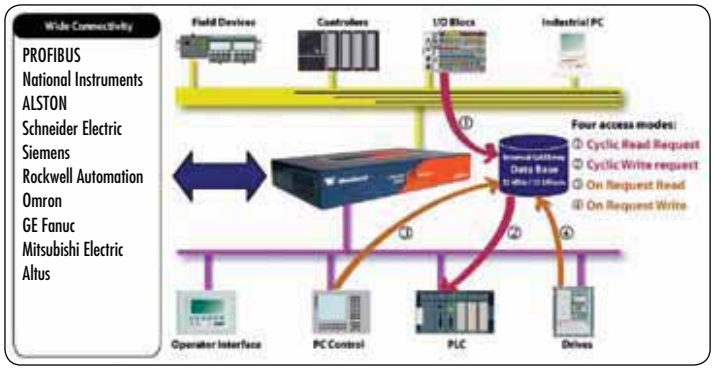
- RAM 32 Mbytes; Flash Disk 32 Mbytes
- Diagnostic LEDs
- Communication Ports
  - 1x Serial, 2400 bps up to 115.2 Kbps, RS485/422 (2-wire or 4-wire), DB9 male
  - 1x Ethernet, 10/100 Mbps, RJ45
  - 1x PROFIBUS, 9.6 Kbps up to 12 Mbps, DB9 female
- Embedded 6 Digital Inputs/2 Digital Outputs
- Desktop or DIN Rail mounting

Compatible Protocols

- Ethernet TCP/IP (Client/Server modes)
  - Altus® Alnet II (AL 200x, Webgate)
  - Alstom® SRTP (C80-35, C80-75)
  - Allen-Bradley® EtherNet/IP (Logix, PLC-5 and SLC 500)
  - GE Fanuc® SRTP (90-30, 90-70)
  - Mitsubishi® Melsec (A, Q)
  - Omron® FINS (C, CV, CS)
  - Schneider Electric® Open Modbus TCP and UDP
  - Schneider Electric® Uni-TE (Premium and Micro)
  - Siemens® Industrial Ethernet (S5, S7, TI)
- PROFIBUS
  - DP-V0 Master
  - DP-V0 Slave
  - S7/MPI Client
  - FDL S5 Client
- Serial
  - Allen-Bradley® DF1 Master
  - GE Fanuc® SNP-X Master
  - Modbus Master/Slave (ASCII and RTU)
  - Schneider Electric® Uni-Telway Slave
  - Siemens® AS511 Master
  - Siemens® TI-Dir Master

Conformance

- RoHS compliant
- CE



Engineering No.	Standard Order No.	Description
APP-ESP-GTW	112034-0001	Ethernet to PROFIBUS/Ethernet/Serial Gateway
APP-ESR-GTW	112034-0002	Ethernet to Ethernet/Serial Gateway

Brad® HarshIO 600

112095

Digital IP67 IO module

Features and Benefits

- Reliable solution for connecting industrial controllers to IO devices in harsh duty environments.
- Accepts M12 threaded connectors or Brad Ultra-Lock® Push-Pull connection system
- Standard hole housing pattern allows for interchangeability with popular IO modules
- User configurable versions; user can set up each digital channel as either an input or output
- Scrolling 4 characters and visible LEDs provide maintenance personnel with the ability to easily determine IO, module and network status

Description

- Rated IP67 for harsh environments
- Designed for direct machine mount applications
- Sixteen digital input/output per module
- Supports PNP and NPN input devices
- IP addressing via BootP, DHCP or static (through web interface, push button and PLC Scanner command)
- Built-in 2-port Ethernet switch for daisy chain topology
- Configurable IO capability (through webinterface and PLC Scanner commands)
- Watchdog with output reply state
- Built-in web server for remote configuration and diagnostics

Compatible Protocols

- Modbus TCP and UDP Server
- EtherNet/IP Adapter
- PROFINET IO-Device

Conformance

- IP67 according to IEC 60529
- NEMA 6P
- Vibration: MIL-STD-202F, method 204D, condition A
- Mechanical Shock: MIL-STD-202F, method 213B, condition B
- Thermal Shock: MIL-STD-1344A
- CE, UL, cUL
- RoHS compliant
- ODVA certified
- PNO certified

Included Hardware/Software

- IO Configurations:
  - 16 inputs
  - 14 inputs + 2 outputs
  - 12 inputs + 4 outputs
  - 8 inputs + 8 outputs
  - Universal
  - User configurable
- IO Connectors: 8x M12 ports, Ultra-Lock® M12 female 5-pole, internally threaded
- Ethernet Connectors: Ultra-Lock M12 female, 4-pole D-coded acting as a switch, crossover capability
- Power Connectors:
  - Power In—Male Mini-Change®, 4- or 5-pole
  - Power Out—Female Mini-Change, 4- or 5-pole
- Power Requirements:
  - Module Input Power—24V DC
  - Module Output Power—24V DC, 2.0A max. per channel, 8.0A max. per module
- Communication Rate: 10/100 Mbps auto-sensing, auto-crossing, half/full duplex
- Input Type:
  - Compatible with dry contact and PNP or NPN 3-wire switches.
  - Electronic short circuit protection
- Input Delay: 2.5ms default or configurable (through web interface and PLC Scanner commands)
- Input Device Supply: 200mA per port at 25°C
- Output Load Current: 2.0A max. per channel, electronic short circuit protection
- Maximum Switching Frequency: 200 Hz
- Housing Dimensions: 60.00mm (2.36") by 220.00mm (8.66") by 20.00mm (.78")
- Mounting Dimensions:
  - 37.50mm (1.48") horizontal on centers
  - 210.00mm (8.27") vertical on centers
  - Center hole
- Operating Temperature: -25 to +70°C
- Storage Temperature: -40 to +85°C

Modbus TCP

Engineering No.	Standard Order No.	No. of Power Pins	IO Configuration		Input Channel Type
			Input	Output	
TCDEM-8D0N-D1U	112095-0007	5	16		NPN
TCDEM-8C2N-D1U	112095-0005	5	14	2	NPN
TCDEM-8B4N-D1U	112095-0003	5	12	4	NPN
TCDEM-888N-D1U	112095-0001	5	8	8	NPN
TCDEM-8D0P-D1U	112095-0008	5	16		PNP
TCDEM-8C2P-D1U	112095-0006	5	14	2	PNP
TCDEM-8B4P-D1U	112095-0004	5	12	4	PNP
TCDEM-888P-D1U	112095-0002	5	8	8	PNP
TCDEM-8YYX-D1U	112095-0009	5	16 User Configurable		User Configurable
TCDEM-8D0N-DYU	112095-5021	4	16		NPN
TCDEM-8C2N-DYU	112095-5022	4	14	2	NPN
TCDEM-8B4N-DYU	112095-5023	4	12	4	NPN
TCDEM-888N-DYU	112095-5024	4	8	8	NPN
TCDEM-8D0P-DYU	112095-5025	4	16		PNP
TCDEM-8C2P-DYU	112095-5026	4	14	2	PNP
TCDEM-8B4P-DYU	112095-5027	4	12	4	PNP
TCDEM-888P-DYU	112095-5028	4	8	8	PNP
TCDEM-8YYX-DYU	112095-5038	4	16 User Configurable		User Configurable

EtherNet/IP

Engineering No.	Standard Order No.	No. of Power Pins	IO Configuration		Input Channel Type
			Input	Output	
TCDEI-8D0N-D1U	112095-5003	5	16		NPN
TCDEI-8C2N-D1U	112095-5004	5	14	2	NPN
TCDEI-8B4N-D1U	112095-5005	5	12	4	NPN
TCDEI-888N-D1U	112095-5006	5	8	8	NPN
TCDEI-8D0P-D1U	112095-5007	5	16		PNP
TCDEI-8C2P-D1U	112095-5008	5	14	2	PNP
TCDEI-8B4P-D1U	112095-5009	5	12	4	PNP
TCDEI-888P-D1U	112095-5010	5	8	8	PNP
TCDEI-8YYX-D1U	112095-5011	5	16 User Configurable		User Configurable
TCDEI-8D0N-DYU	112095-5012	4	16		NPN
TCDEI-8C2N-DYU	112095-5013	4	14	2	NPN
TCDEI-8B4N-DYU	112095-5014	4	12	4	NPN
TCDEI-888N-DYU	112095-5015	4	8	8	NPN
TCDEI-8D0P-DYU	112095-5016	4	16		PNP
TCDEI-8C2P-DYU	112095-5017	4	14	2	PNP
TCDEI-8B4P-DYU	112095-5018	4	12	4	PNP
TCDEI-888P-DYU	112095-5019	4	8	8	PNP
TCDEI-8YYX-DYU	112095-5020	4	16 User Configurable		User Configurable

PROFINET IO

Engineering No.	Standard Order No.	No. of Power Pins	IO Configuration		Input Channel Type
			Input	Output	
TCDEP-8D0N-D1U	112095-5029	5	16		NPN
TCDEP-8C2N-D1U	112095-5030	5	14	2	NPN
TCDEP-8B4N-D1U	112095-5031	5	12	4	NPN
TCDEP-888N-D1U	112095-5032	5	8	8	NPN
TCDEP-8D0P-D1U	112095-5033	5	16		PNP
TCDEP-8C2P-D1U	112095-5034	5	14	2	PNP
TCDEP-8B4P-D1U	112095-5035	5	12	4	PNP
TCDEP-888P-D1U	112095-5036	5	8	8	PNP
TCDEP-8YYX-D1U	112095-5037	5	16 User Configurable		User Configurable

Brad® Direct-Link® Harsh Duty Ethernet Switches

112115/112105

Series 750 (5-port) and 780 (8-port)

As our world becomes more connected, an increasing number of manufacturers and installers are specifying Ethernet devices for their harsh applications. The Brad family of rugged connectivity products is a leading product line provider of Ethernet infrastructure for Molex.

The Molex Direct-Link, harsh-duty, Ethernet switches have been developed to allow customers to convert from traditional in-cabinet to on-machine mounting, moving the switch closer to the machine and thereby reducing cabling.

The Molex Ultra-Lock® system of connectors and cordsets complete the Direct-Link Harsh-Duty Switches line.

Available in 5-port and 8-port versions, the Molex durable switches with push/pull connectors save cabling and reduce installation time and cost compared with existing cabinet installations. They provide easier system maintenance and produce a seal when connected regardless of labor skill. The connections are tested to IP69K ratings to ensure operation through dust, pressure-wash and immersion in water. Mechanical keying and radial seals eliminate the risk for operator error commonly found in other systems.

Narrow dimensions are sized to fit standard machine extrusions for easy mounting. Auto-learning features make each unit truly plug-and-play, suitable for both the novice and expert in network setup.

Operating temperature ratings of -20 to +75°C ensure that networks linked using the harsh-duty switches can run in extreme environments. Coupled with Class 1, Division 2 certification these switches can also be used in Oil and Gas, Mining and utility applications.

Features and Benefits

- Ultra-Lock® Connection system—faster, simpler and more secure connections than any other system on the market
- NEMA 6 and IP69k rated environmental Protection—withstands dust, pressure-wash and submersion in water
- Class 1, Division 2 rated—suitable for Oil and Gas markets where hazardous gases may be present
- Operating temperature -20 to +75°C enables installation in extreme temperature applications
- 30mm and 60mm formats with standard hole patterns—allows use of standard machine extrusion members
- Auto-learning with no software or configuration required—plug-and-play capabilities means less-skilled labor is able to install systems

Characteristics and Performance

Switch Type: Unmanaged (Store and Forward)
Ports: 10BaseT/100BaseTx M12
Latency (10Mb): 16µs + frame time
Latency (100Mb): 5µs + frame time
Duplex Operation: Full or half
Mounting: Screw mount
Power Input: Redundant input terminals
Input Power: 2.0W max. (DRL-750), 2.4W max. (DRL-78x)
Voltage: 9-36VDC (continuous)
Isolation: 1500 VRMS 1 minute
Dimensions: 176 x 30 x 34 (DRL-750)
220 x 60 x 37 (DRL-78x)
Weight: 230g (DRL-750)
580g (DRL-7Bx)

Environmental

Humidity: 5–95% RH non condensing

References

Vibration: 7g (IEC68-2-29)
Shock: 50g (IEC68-2-29)
Electrical Safety: EN61010-1 (IEC61010)
EMI Emissions: FCC part 15, ICES 003,
EN55011 Class A (DRL-78x),
Class B (DRL-750)
EMC Immunity: EN61326, EN61000-4-4,
EN61000-4-5,
EN61000-4-2;
8Kv contact/16Kv Air (DRL-750)
4Kv contact/8Kv Air (DRL-78x)
UL: File number pending
Hazardous Rating: Class 1, Division 2 certification

Physical

Operating Temperature: -20 to +75°C
Storage Temperature: -40 to +85°C

Engineering No.	Standard Order No.	Description	Ports	Power
DRL-750	112111-5001	IP67 Fast Ethernet Unmanaged Switch	5	M12
DRL-780	112105-5002	IP67 Fast Ethernet Unmanaged Switch	8	Mini-Change® (5-pin)
DRL-781	112105-5004	IP67 Fast Ethernet Unmanaged Switch	8	Mini-Change (4-pin)

Brad® Common Industrial Protocol (CIP*) Safety Software Kit (Stack)

112115/112116/112117
DeviceNet and EtherNet/IP* Stack Development Kits

Molex demonstrates market leadership with the comprehensive CIP* Safety Stack software solution, allowing industrial-device manufacturers to embed CIP Safety Stack technology quickly and economically within their products

Common Industrial Protocol (CIP) Safety is a protocol extension developed by the ODVA. The CIP Safety protocol offers a set of highly-integrated safety services which leverage the underlying communications stacks of the standard CIP networks to transport data from a source to a destination. CIP Safety allows end-users to implement safety systems in a more integrated, cost-effective manner. The Molex CIP Safety Software Kit (also called Stack) is offered as a tool kit, with the stack provided as modular "C" code that is pre-tested. The software allows a manufacturer of intelligent industrial products to implement the necessary safety-application layer that enables products to comply with the CIP Safety specification (Edition 2.1) from ODVA. The CIP Safety Stack is available for both DeviceNet* and EtherNet/IP*, and both are endorsed by Rockwell Automation under the Value Added Design Partner program.

The CIP Safety Stack is approved by TUV for SIL3 applications and it has been conformance tested using the ODVA Conformance Test. Molex can support customers that request assistance with design implementation and/or guidance through TUV approval.

Features and Benefits

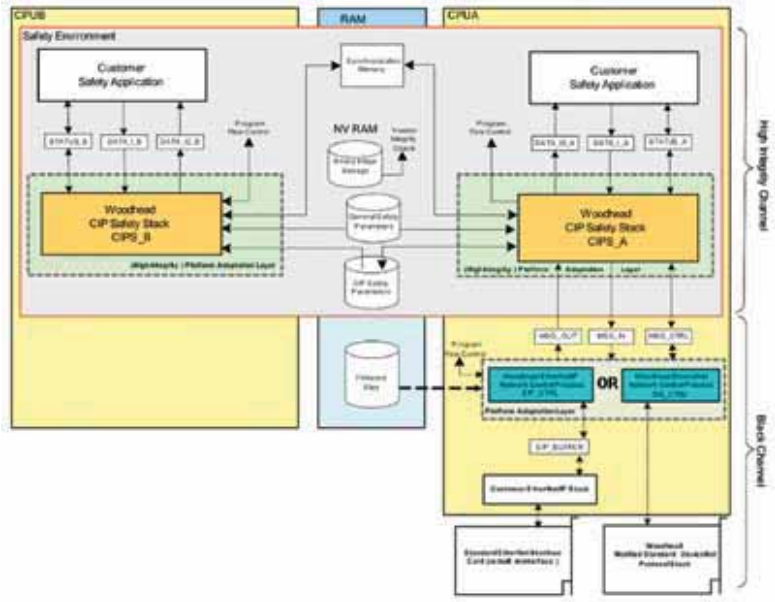
- Meets IEC 61508, SIL3 ensuring international market acceptance
- Approved by TUV and tested by ODVA means a high-quality solution for minimal project risk and faster time-to-market
- Pre-tested modular ANSI C code is easy to compile using standard compilers; faster time-to-market
- Molex engineers can support protocol-integration requests minimizing investment required for in-house resources
- Designed for use with other Molex/Brad offerings: Hardware (DN4 network interface cards), Software (DeviceNet or EtherNet/IP software stacks) which results in a complete CIP communication solution

Specifications

- ANSI C code is provided for the safety portion of the Stack (Compliant with CIP Safety Specification 2.1)
- ANSI C code for black-channel components (NET_CTRL_IO)
- Interface specification for high-integrity and black-channel environments
- Safety integration manual (including safety measure requirements)
- Optionally, modified standard CIP stacks (software/firmware) for DeviceNet (Slave) or EtherNet/IP (Adapter)
- Optionally, ANSI C code for the Platform Adaptation Layers (both safety and non-safety)
- Documentation required by certification bodies (TÜV, ODVA)
- Support during certification process of vendor's final product

Markets and Applications

- Industrial Device Manufacturers
  - I/O blocks
  - Valves
  - Drives
  - Complex machines (OEM)
- End-Users
  - Automotive
  - Consumer goods
  - Heavy industries



*CIP Safety Software Stack Concept for a Slave (Adapter) Application

Engineering No.	Standard Order No.	Device Type	Network	Description
SDK-DNS-SAF	112115-0001	Slave	DeviceNet	Stack Development Kit (Standard Source Code)
SDK-DNS-SAF-O	112115-0002			Stack Development Kit (Source Code Obfuscation†)
SDK-DNS-SAF-L	112116-0001			Royalty (per device)
SDK-EIP-ADP-SAF	112117-0001	Adapter	EtherNet/IP	Stack Development Kit (Standard Source Code)
SDK-EIP-ADP-SAF-O	112117-0002			Stack Development Kit (Source Code Obfuscation†)
SDK-EIP-ADP-SAF-L	112116-0002			Royalty (per device)
SDK-DEP-SAP-SAF	112115-0003	Slave and Adapter	DeviceNet and EtherNet/IP	Stack Development Kit (Standard Source Code)
SDK-DEP-SAP-SAF-O	112115-0004			Stack Development Kit (Source Code Obfuscation†)
SDK-CIP-EDS-SAF	112115-0005	N/A	N/A	Engineering Support

*CIP, DeviceNet and EtherNet/IP are trademarks of ODVA, Inc.
†Note: Source code obfuscation means that the "C" code is protected, but the compiler can process it.

Brad® Direct-Link® In-Cabinet Ethernet Switches

112036
Series 200 and 300

A complete line of industrial Ethernet switches for managed or unmanaged applications.

Features and Benefits

- 5-, 8- and 9-port configurations support both Copper and fiber wiring
- Unique ergonomic design with DIN rail or panel mount option using a dual-clip system for quick and easy installation
- Small footprint in IP30 industrial package
- Supports all standard IEEE 802.3 protocols
- Redundant, dual-DC power inputs

Series 200—Unmanaged Switches

- Direct-Link Industrial Ethernet unmanaged switches provide enhanced performance allowing you to achieve real-time deterministic operation of your Ethernet network
- Plug-and-play—no configuration required
- Best value for reducing network collisions

Series 300—Managed Switches

- Direct-Link Industrial Ethernet managed switches offer many features to meet your network management and diagnostic needs
- Advanced Network Management
  - Rapid Spanning Tree Protocol (RSTP) for fault-tolerant loops
  - VLAN (port and tag based) for traffic segregation
  - Message filtering to stop multi-cast storms (IGMP snooping)
  - Priority queuing for real-time performance (QoS)
  - Web-browser interface
- Comprehensive Network Diagnostics
  - RMON and port mirroring
  - SNMP agent v1, v2 and v3 (for extra security)

Specifications

Ethernet protocols supported:
IEEE 802.3 protocols (IEEE 802.3, 802.3u, 802.3x)
10/100BaseT(x) Ports: Shielded RJ45
Auto-negotiating:
10/100 Mbps auto-negotiation
UL Approval:
- UL 508 (E205563)
- UL 1604 (E314891)
Class 1, Div 2
Group A, B, C, D hazardous locations

Auto-crossover (Auto-mdi/mdi-x): Supported on all ports
Flow Control: Half or full duplex
Ethernet Isolation: 1500 VRMS 1 minute
Forwarding Mode: Store and forward
Latency (Typical): 5 usec (time to route a message from one port to another internally at 100 Mps)
MAC Addresses: 1K or 2K
Address Learning: Automatic
Illegal Frames: Dropped per 802.3
Late Collisions: Dropped after 512 bit times
Supply Voltage: 10–30V DC
Power Consumption (Typical): 2–5 W (dependent on model)
Power Saving: Automatic
Mounting: DIN rail or panel direct
Dimensions: Height—142.24mm (5.60")
Depth—102.36mm (4.03")
Width—5-port: 27.18mm (1.07")
8- and 9-port: 38.74mm (1.525")

Environmental

Humidity: 5 to 95% (non-condensing)

Certification

Vibration: IEC68-2-6
Electrical Safety: EN61010-1
EMI Emissions: FCC part 15, ICES 003, EN55011 (Class A)
EMC Immunity: EN61326
Packaging: IP30 protection

Physical

Operating Temperature: -10 to +60°C
Storage Temperature: -40 to +85°C

Engineering No.	Standard Order No.	Product Description
DRL-241-MSC	112036-0006	Industrial 5-port Ethernet switch, unmanaged, 4 RJ-45, 1 fiber, multi-mode, SC connector
DRL-241-MST	112036-0007	Industrial 5-port Ethernet switch, unmanaged, 4 RJ-45, 1 fiber multi-mode, ST connector
DRL-250	112036-0010	Industrial 5-port Ethernet switch, unmanaged, 5 RJ-45
DRL-280	112036-0011	Industrial 8-port Ethernet switch, unmanaged, 8 RJ-45
DRL-281-MST	112036-0013	Industrial 9-port Ethernet switch, unmanaged, 8 RJ-45, 1 fiber multi-mode, ST connector
DRL-332-MSC	112036-0016	Industrial 5-port Web-managed Ethernet switch, 3 RJ-45, 2 fiber, multi-mode, SC connector
DRL-332-MST	112036-0017	Industrial 5-port Web-managed Ethernet switch, 3 RJ-45, 2 fiber, multi-mode, ST connector
DRL-350	112036-0020	Industrial 5-port Ethernet switch, managed, 5 RJ-45, redundant power supply
DRL-362-MSC	112036-0021	Industrial 8-port Web-managed Ethernet switch, 6 RJ-45, 2 fiber, multi-mode, SC connector
DRL-362-MST	112036-0022	Industrial 8-port Web-managed Ethernet switch, 6 RJ-45, 2 fiber, multi-mode, ST connector
DRL-362-SSC	112036-0023	Industrial 8-port Web-managed Ethernet switch, 6 RJ-45, 2 fiber, single-mode, SC connector
DRL-380	112036-0025	Industrial 8-port Ethernet switch, managed, 8 RJ-45
DRL-3F0	112036-0026	Industrial 16-port Ethernet Switch, RJ-45, Managed, Redundant Power
DRL-3H0	112036-1127	Industrial 18-port Ethernet Switch, RJ-45, Managed, Redundant Power

Industrial Ethernet Brad® RJ-Lnxx® RJ-45 Single-Ended Cordsets

130050
Male, Pigtail Straight

Features and Benefits

- RJ-45 plug, combined with industrially proven form factor provides a secure robust connection that protects against the effects of vibration and accidental disconnection
- Category 5e compliant
- Several cable options available

ENS—Solid Core Cable

Physical

Cable: Solid core
Conductors: 24 AWG solid bare Copper, 0.020" (0.510 mm)
Insulation: 0.009" (0.229 mm) of Cellular Polyethylene 0.04" (1.00mm) nominal diameter
Pair: Two insulated conductors twisted together, lay lengths varied between pairs to minimize cross talk
Core: Four pairs cabled together
Binder: Polyester tape, 20% overlay minimum
Shield: Aluminum/Polyester tape, 20% overlay minimum
Drain Wire: 24 AWG stranded (7/32") Tin-plated Copper
Jacket: Black Polyurethane 0.025" (.635 mm) nominal thickness
Operating Temperature: -20 to +80°C
Wiring Sequence: Choice of TIA/EIA, 568A/B, or 10 Base-T

Electrical at 20°C

TIA/EIA Rating: Category 5e

ENP—Kevlar Wrapped Cable

Physical

Cable: Proplex Kevlar wrapped
Conductors: 26 AWG stranded bare Copper
Insulation: Color coded HFFR, halogen free, 0.035" (0.90mm) nominal diameter
Pair: Cabled with Kevlar strength member and tape wrapped
Core: Four pairs cabled together
Shield: Inner—Aluminum mylar, 100% coverage
Outer—Tinned Copper
Operating Temperature: -70 to +105°C
Jacket: Black Urethane 0.059" (1.50mm) nominal thickness
Diameter: 0.287" (7.30 mm) nominal
Wiring Sequence: Choice of TIA/EIA, 568A/B, or 10 Base-T

Electrical at 20°C

TIA/EIA Rating: Category 5

Male Straight Single-Ended

Cable Type	Cable Jacket	Wiring	Length	Engineering No.	Standard Order No.
Shielded Stranded Proplex™ Kevlar* Wrapped (ENP)	PUR	10 Base-T (4 wire)	1.0m	ENP1305M010	130050-0105
Shielded Solid Core (ENS)	PVC	568A (8 wire)	1.0m	ENS2305M010	130050-0392
		568B (8 wire)		ENS3305M010	130050-0436

Note: Sales drawings for all standard order numbers are available on molex.com
*Kevlar is a trademark of DuPont

Configuration Code†
Build-a-Part Number

	Length	Code
Meters	2	M020
	5	M050
	10	M100

ENP1305M010
Wiring Option
Cable Option

†Once an engineering number is created using the configuration code, consult Molex tech support for information regarding any part numbers.

Industrial Ethernet Brad® RJ-Lnxx RJ-45 Double-Ended Cordsets

130050
Male-Male Straight Standard RJ-45

Features and Benefits
- RJ-45 plug, combined with industrially proven form factor provides a secure robust connection that protects against the effects of vibration and accidental disconnection
- Category 5e compliant
- Several cable options available

ENS—Shielded Solid Core Cable

Physical

Cable: Solid core
Conductors: 24 AWG solid bare Copper, 0.020" (0.510mm)
Insulation: 0.009" (0.229mm) of cellular polyethylene 0.04" (1.0mm) nominal diameter
Pair: Two insulated conductors twisted together, lay lengths varied between pairs to minimize cross talk
Core: Four pairs cabled together
Binder: Polyester tape, 20% overlay minimum
Shield: Aluminum/polyester tape, 20% overlay minimum
Drain Wire: 24 AWG stranded (7/32") Tin-plated Copper
Jacket: Black polyurethane 0.025" (.635mm) nominal thickness
Operating Temperature: -20 to +80°C
Diameter: 0.245" (6.223mm) nominal
TIA/EIA Rating: Category 5e

ENQ—Unshielded Stranded Cable

Physical

Cable: Stranded
Conductors: 24 AWG stranded tinned Copper
Insulation: Polyolefin 0.037" (0.94mm) nominal diameter
Pair: Two insulated conductors twisted together, lay lengths varied between pairs to minimize cross talk
Core: Four pairs cabled together
Binder: Polyester tape, 20% overlay minimum
Operating Temperature: -20 to +80°C
Jacket: PVC 0.025" (0.635mm) nominal thickness
Diameter: 0.220" (5.588mm) nominal
TIA/EIA Rating: Category 5e

ENP—Shielded Standard Proplex™ Kevlar Wrapped Cable

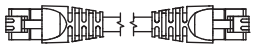
Physical

Cable: Proplex Kevlar wrapped
Conductors: 26 AWG stranded bare Copper
Insulation: Color coded HFFR, halogen free, 0.035" (0.90mm) nominal diameter
Pair: Cabled with Kevlar strength member and tape wrapped
Core: Four pairs cabled together
Shield: Inner—Aluminum mylar, 100% coverage
Outer—Tinned Copper braid, 80% coverage
Operating Temperature: -70 to +105°C
Jacket: Black urethane 0.059" (1.5mm) nominal thickness
Diameter: 0.287" (7.3mm) nominal
TIA/EIA Rating: Category 5e

ENV—Shielded Solid Core

Physical

Cable: Solid core
Conductors: 24 AWG solid bare Copper, 0.020" (0.510mm)
Insulation: Polyethylene, 0.042" (1.07mm) nominal diameter
Pair: Two insulated conductors twisted together, lay lengths varied between pairs to minimize cross talk
Core: Four pairs cabled together
Binder: Polyester tape, 20% overlay minimum
Shield: Aluminum/polyester tape
Drain Wire: 24 AWG Tin Copper matt polyurethane
Jacket: Black Polyurethane UV stable, 0.0244" (0.620mm) nominal thickness
Diameter: 0.244" (6.200mm) nominal
Operating Temperature: -20 to 60°C
Wiring Sequence: Choice of TIA/EIA 568A/B or 10 Base-T
TIA/EIA Rating: Category 5e



Cable Type	Cable Jacket	Wire Size AWG	Wiring	Length	Male Straight-to-Male Straight	
					Engineering No.	Standard Order No.
Shielded Stranded Proplex™ Kevlar Wrapped (ENP)	PUR With Kevlar Wrap	26	10 Base-T (4 wire)	1.0m	ENP1335M010	130050-0107
			568A (8 wire)		ENP2335M010	130050-0150
			568B (8 wire)		ENP3335M010	130050-0457
Shielded Solid Core (ENS)	PUR	24	10 Base-T (4 wire)	1.0m	ENS1335M010	130050-0324
			568A (8 wire)		ENS2335M010	130050-0394
			568B (8 wire)		ENS3335M010	130050-0503
Shielded Solid Core (ENV)	PUR	24	568B (8 wire)	1.0m	ENV3335M010	130050-0512
Unshielded Stranded (ENQ)	PVC	24	568B (8 wire)	1.0m	ENQ3335M010	130050-0507

Note: Sales drawings for all standard order numbers are available on molex.com

Configuration Code*
Build-a-Part Number

	Length	Code
Meters	2	M020
	5	M050
	10	M100

ENP1335M010
Wiring Option
Cable Option

*Once an engineering number is created using the configuration code, consult Molex tech support for information regarding any part numbers.

Industrial Ethernet Brad® Standard RJ-45 to RJ-45 Cable Assembly Unshielded PVC

130048

Male Plug-to-Male Plug Straight-Wired

Features and Benefits

- RJ-45 plug combined with industrially proven form factor provides a secure robust connection that protects against the effects of vibration and accidental disconnection
- Category 5e compliant

Reference Information

UL File No.: E200650

Physical

RJ-45 Plug: Clear Polycarbonate
Boot: PVC
Operating Temperature: -20 to +75°C

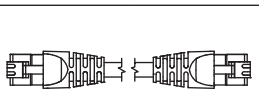
Environmental

Protection: IP20

Cable

03—Unshielded PVC

Conductors: 24 AWG stranded tinned Copper wire
Pair: Two pair UTP patch cable
Outside Diameter: 0.250" (5.60mm) nominal
Jacket Material: Teal PVC
Cable Properties: Sun and oil resistant
Inner Material Insulation: HDPE
Certification: UL type CMR, Cec C(UL) type CMR
TIA/EIA Rating: Category 5e
Operating Temperature: -40 to +75°C



					Male Straight-to-Male Straight	
Wiring	**Cable Type**	**Cable Jacket**	**Wire Size AWG**	**Length**	**Engineering No.**	**Standard Order No.**
10 Base-T (4 wire)	Unshielded Stranded	PVC	4/24	1.0m (3.28')	E66A06003M010	130048-0031

Note: Sales drawings for all standard order numbers are available on molex.com

Configuration Code*
Build-a-Part Number

	Length	Code
Meters	2	M020
	5	M050
	10	M100

E66A06003M010
Cable Option
Wiring Option

*Once an engineering number is created using the configuration code, consult Molex tech support for information regarding any part numbers.

Industrial Ethernet Brad® RJ-Lnxx® RJ-45 Single-Ended Cordsets

130050
Threaded
Male
Straight

Features and Benefits

- RJ-45 plug, combined with industrially proven form factor provides a secure robust connection that protects against the effects of vibration and accidental disconnection
- Category 5e compliant
- Several cable options available
- Achieves IEC IP67 rates seal when mated with an RJ-Lnxx® receptacle

ENS—Shielded Solid Core Cable

Physical

Cable: Solid Core
Conductors: 24 AWG solid bare Copper, 0.020" (0.510mm)
Insulation: 0.009" (0.229mm) of cellular polyethylene 0.04" (1.0mm) nominal diameter
Pair: Two insulated conductors twisted together, lay lengths varied between pairs to minimize cross talk
Core: Four pairs cabled together
Binder: Polyester tape, 20% overlay minimum
Shield: Aluminum/Polyester tape, 20% overlay minimum
Drain Wire: 24 AWG stranded (7/32") Tin-plated Copper
Jacket: Black Polyurethane 0.025" (.635mm) nominal thickness
Operating Temperature: -20 to +80°C
Diameter: 0.245" (6.223mm) nominal
TIA/EIA Rating: Category 5e

ENQ—Unshielded Stranded Cable

Physical

Cable: Stranded
Conductors: 24 AWG stranded tinned Copper
Insulation: Polyolefin 0.037" (0.94mm) nominal diameter
Pair: Two insulated conductors twisted together, lay lengths varied between pairs to minimize cross talk
Core: Four pairs cabled together
Binder: Polyester tape, 20% overlay minimum
Operating Temperature: -20 to +80°C
Jacket: PVC 0.025" (0.635mm) nominal thickness
Diameter: 0.220" (5.588mm) nominal
TIA/EIA Rating: Category 5e

ENP—Shielded Standard Proplex™ Kevlar Wrapped Cable*

Physical

Cable: Proplex Kevlar wrapped
Conductors: 26 AWG stranded bare Copper
Insulation: Color coded HFFR, Halogen free, 0.035" (0.90mm) nominal diameter
Pair: Cabled with Kevlar strength member and tape wrapped
Core: Four pairs cabled together
Shield: Inner—Aluminum Mylar, 100% coverage
Outer—Tinned Copper braid, 80% coverage
Operating Temperature: -70 to +105°C
Jacket: Black Urethane 0.059" (1.50mm) nominal thickness
Diameter: 0.287" (7.30mm) nominal
TIA/EIA Rating: Category 5e

ENV—Shielded Solid Core

Physical

Cable: Solid core
Conductors: 24 AWG solid bare Copper, 0.020" (0.510mm)
Insulation: Polyethylene, 0.042" (1.07mm) nominal diameter
Pair: Two insulated conductors twisted together, lay lengths varied between pairs to minimize cross talk
Core: Four pairs cabled together
Binder: Polyester tape, 20% overlay minimum
Shield: Aluminum/Polyester tape
Drain Wire: 24 AWG Tin Copper matt Polyurethane
Jacket: Black Polyurethane UV stable, 0.0244" (0.620mm) nominal thickness
Diameter: 0.244" (6.200mm) nominal
Operating Temperature: -20 to 60°C
Wiring Sequence: Choice of TIA/EIA 568A/B or 10 Base-T
TIA/EIA Rating: Category 5e

Cable Type	Cable Jacket	Wire Size AWG	Wiring	Length	Male Straight	
					Engineering No.	Standard Order No.
Shielded Stranded Proplex™ Kevlar Wrapped (ENP)	PUR Kevlar Wrapped	26	10 Base-T (4 wire)	1.0m	ENP1105M010	130050-0071
			568A (8 wire)		ENP2105M010	130050-0112
			568B (8 wire)		ENP3105M010	130050-0162
Shielded Solid Core (ENS)	PUR	24	10 Base-T (4 wire)	1.0m	ENS1105M010	130050-0277
			568A (8 wire)		ENS2105M010	130050-0328
			568B (8 wire)		ENS3105M010	130050-0408
Shielded Solid Core (ENV)	PUR	24	568B (8 wire)	1.0m	ENV3105M010	130050-8023
Unshielded Stranded (ENQ)	PVC	24	568B (8 wire)	1.0m	ENQ3105M010	130050-0506

Note: Sales drawings for all standard order numbers are available on molex.com
*Kevlar is a trademark of DuPont

Configuration Code†
Build-a-Part Number

	Length	Code
Meters	2	M020
	5	M050
	10	M100

ENP1105M010
Wiring
Cable Code

†Once an engineering number is created using the configuration code, consult Molex tech support for information regarding any part numbers.

Industrial Ethernet Brad® RJ-Lnxx® RJ-45 Double-Ended Cordsets

130050
Threaded Male-Male Straight RJ-45 (Industrial)-to-RJ-45 (Industrial) and RJ-45 (Industrial)-to-RJ-45 (Standard)

Features and Benefits
- RJ-45 plug, combined with industrially proven form factor provides a secure robust connection that protects against the effects of vibration and accidental disconnection
- Category 5e compliant
- Several cable options available
- Achieves IEC IP67 rates seal when mated with an RJ-Lnxx® receptacle

ENS—Shielded Solid Core Cable

Physical

Cable: Solid Core
Conductors: 24 AWG solid bare Copper, 0.020" (0.510mm)
Insulation: 0.009" (0.229mm) of cellular polyethylene 0.04" (1.0mm) nominal diameter
Pair: Two insulated conductors twisted together, lay lengths varied between pairs to minimize cross talk
Core: Four pairs cabled together
Binder: Polyester tape, 20% overlay minimum
Shield: Aluminum/Polyester tape, 20% overlay minimum
Drain Wire: 24 AWG stranded (7/32") Tin-plated Copper
Jacket: Black Polyurethane 0.025" (.635mm) nominal thickness
Operating Temperature: -20 to +80°C
Diameter: 0.245" (6.223mm) nominal
TIA/EIA Rating: Category 5e

ENQ—Unshielded Stranded Cable

Physical

Cable: Stranded
Conductors: 24 AWG stranded tinned Copper
Insulation: Polyolefin 0.037" (0.94mm) nominal diameter
Pair: Two insulated conductors twisted together, lay lengths varied between pairs to minimize cross talk
Core: Four pairs cabled together
Binder: Polyester tape, 20% overlay minimum
Operating Temperature: -20 to +80°C
Jacket: PVC 0.025" (0.635mm) nominal thickness
Diameter: 0.220" (5.588mm) nominal
TIA/EIA Rating: Category 5e

ENP—Shielded Standard Proplex™ Kevlar Wrapped Cable*

Physical

Cable: Proplex Kevlar wrapped
Conductors: 26 AWG stranded bare Copper
Insulation: Color coded HFFR, Halogen free, 0.035" (0.90mm) nominal diameter
Pair: Cabled with Kevlar strength member and tape wrapped
Core: Four pairs cabled together
Shield: Inner—Aluminum Mylar, 100% coverage
Outer—Tinned Copper Braid: 80% coverage
Operating Temperature: -70 to +105°C
Jacket: Black Urethane 0.059" (1.5mm) nominal thickness
Diameter: 0.287" (7.3mm) nominal
TIA/EIA Rating: Category 5e

ENV—Shielded Solid Core

Physical

Cable: Solid core
Conductors: 24 AWG solid bare Copper, 0.020" (0.510mm)
Insulation: Polyethylene, 0.042" (1.07mm) nominal diameter
Pair: Two insulated conductors twisted together, lay lengths varied between pairs to minimize cross talk
Core: Four pairs cabled together
Binder: Polyester tape, 20% overlay minimum
Shield: Aluminum/Polyester tape
Drain Wire: 24 AWG Tin Copper matt Polyurethane
Jacket: Black Polyurethane UV stable, 0.0244" (0.620mm) nominal thickness
Diameter: 0.244" (6.200mm) nominal
Operating Temperature: -20 to 60°C
Wiring Sequence: Choice of TIA/EIA 568A/B or 10 Base-T
TIA/EIA Rating: Category 5e

RJ-Lnxx-to-RJ-45 RJ-Lnxx RJ-45 Male, Double-Ended

Cable Type	Cable Jacket	Wire Size AWG	Wiring	Length	Male Straight Industrial-to-Industrial		Male Straight Industrial-to-Standard	
					Engineering No.	Standard Order No.	Engineering No.	Standard Order No.
Shielded Stranded Proplex™ Kevlar Wrapped (ENP)	PUR Kevlar Wrapped	26	10 Base-T (4 wire)	1.0m	ENP1115M010	130050-0076	ENP1135M010	130050-0093
			568A (8 wire)		ENP2115M010	130050-0122	ENP2135M010	130050-0140
			568B (8 wire)		ENP3115M010	130050-0170	ENP3135M010	130050-8036
Shielded Solid Core (ENS)	PUR	24	10 Base-T (4 wire)	1.0m	ENS1115M010	130050-0284		
			568A (8 wire)		ENS2115M010	130050-0336	ENS2135M010	130050-0371
			568B (8 wire)		ENS3115M010	130050-0412	ENS3135M010	130050-0429
Shielded Solid Core (ENV)	PUR	24	568B (8 wire)	1.0m	ENV3115M010	130050-8025	ENV3135M010	130050-8029
Unshielded Stranded (ENQ)	PVC	24	568B (8 wire)	1.0m	ENQ3115M010	130050-0251	ENQ3135M010	130050-0262

Note: Sales drawings for all standard order numbers are available on molex.com
*Kevlar is a trademark of DuPont

Configuration Code†
Build-a-Part Number

	Length	Code
Meters	2	M020
	5	M050
	10	M100

ENP1115M010
- Wiring Option
- Cable Option

†Once an engineering number is created using the configuration code, consult Molex tech support for information regarding any part numbers.

Industrial Ethernet Brad® RJ-Lnxx® RJ-45 Sealed Receptacles

130053/130055

Female
Panel Mount
External Thread
Straight

Features and Benefits

- Simple field termination of cable using a standard punchdown tool
- Category 5e compliant
- Can be used with TIA 568A or 568B wiring sequences
- Color-coded block simplifies field wiring
- Achieves IEC IP67 rated seal when mated with RJ-Lnxx cordset—but also compatible with commercial RJ-45 patch cords

Environmental

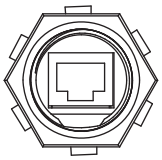
Protection: IEC IP67
TIA/EIA Rating: Category 5e compliant

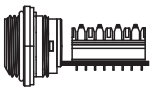
Physical

O-Ring Material: Viton
Insert Material: Acrylonitrile-Butadiene-Styrene (ABS)
Overmold Material: Polyurethane
Coupling Nut Material: Acrylonitrile-Butadiene-Styrene (ABS)
Shell Material: Acrylonitrile-Butadiene-Styrene (ABS)
Knockout Hole: 1.063
Thread Size: UNC 1"—14
Panel Thickness: .125" maximum with gasket,
.187" maximum without gasket,
.062" minimum
Operating Temperature: -20 to +80°C
Return Loss: 5 dB at 100 MHz

RJ-45 Jack

Plating: 50 µm of Gold over 100 µm of Nickel
Current Rating: 1.5A
Voltage Rating: 125V DC

Face View	Description	Female Straight	
		Engineering No.	Standard Order No.
	RJ-45 Receptacle W/110 Punchdown Termination	ENDR2FB5	130053-0002



Note: Sales drawings for all standard order numbers are available on molex.com

Industrial Ethernet Brad® RJ-Lnxx® RJ-45 Sealed Receptacles

130053/130055
Male
Straight
Panel Mount
External Thread

Features and Benefits
- Ideal for OEMs looking to incorporate a sealed, robust connection into their field device
- Category 5 compliant
- Short depths for space constrained applications
- Achieves IEC IP67 rated seal when mated with an RJ-Lnxx cordset—but also compatible with commercial RJ-45 patch cords

Environmental
Protection: IEC IP67
TIA/EIA Rating: Category 5 compliant

Physical
O-Ring Material: Viton
Insert Material: Acrylonitrile-Butadiene-Styrene (ABS)
Overmold Material: Polyurethane
Coupling Nut Material: Acrylonitrile-Butadiene-Styrene (ABS)
Shell Material: Acrylonitrile-Butadiene-Styrene (ABS)
Knockout Hole: 1.063
Thread Size: UNC 1"—14
Panel Thickness: .125" maximum with gasket,
.187" maximum without gasket,
.062" minimum
Operating Temperature: -20 to +80°C
Return Loss: 5 dB at 100 MHz

RJ-45 Jack
Plating: 50 µm of Gold over 100 µm of Nickel
Current Rating: 1.5A
Voltage Rating: 125V DC

Face View	Description	Female Straight	
		Engineering No.	Standard Order No.
	Direct PC Board Mount Receptacle	ENPR1FF5	130053-0004

Note: Sales drawings for all standard order numbers are available on molex.com

Industrial Ethernet Brad® RJ-Lnxx® RJ-45 Sealed Receptacles

130053/130055

Female, Male
Straight
Panel Mount
External Thread

Features and Benefits

- Highly flexible solution for OEMs or end users looking to incorporate a sealed, robust receptacle into their field device or control panel
- Achieves IEC IP67 rated seal when mated with RJ-Lnxx cordset—but also compatible with commercial RJ-45 patch cords

Environmental

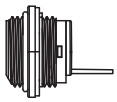
Protection: IEC IP67
TIA/EIA Rating: Not rated as additional customer termination is required

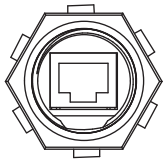
Physical

O-Ring Material: Viton
Insert Material: Acrylonitrile-Butadiene-Styrene (ABS)
Overmold Material: Polyurethane
Coupling Nut Material: Acrylonitrile-Butadiene-Styrene (ABS)
Shell Material: Acrylonitrile-Butadiene-Styrene (ABS)
Knockout Hole: 1.063
Thread Size: UNC 1"—14
Panel Thickness: .125" maximum with gasket,
.187" maximum without gasket,
.062" minimum
Operating Temperature: -20 to +80°C
Return Loss: 5 dB at 100 MHz

RJ-45 Jack

Plating: 50 µm of Gold over 100 µm of Nickel
Current Rating: 1.5A
Voltage Rating: 125V DC



Face View	Description	Female Straight	
		Engineering No.	Standard Order No.
	Receptacle with PC Board	ENSR1FB5	130055-0016
	Receptacle with PC and 12" of Cable (10 Base-T)	ENSR1FB5M010	130055-0020

Note: Sales drawings for all standard order numbers are available on molex.com

Configuration Code*
Build-a-Part Number

	Length	Code
Meters	2	M020
	5	M050
	10	M100

ENSR1FB5M010

*Once an engineering number is created using the configuration code, consult Molex tech support for information regarding any part numbers.

Industrial Ethernet Brad® RJ-Lnxx® RJ-45 Sealed Receptacles

130055/130058

Female
Bulkhead Pass-Through
Straight
External Thread

Features and Benefits

- Easy method for bringing an Ethernet connection in from a harsh environment to an industrial enclosure
- Category 5e compliant
- Achieves IEC IP67 rated seal when mated with RJ-Lnxx cordset—but also compatible with commercial RJ-45 patch cords

Environmental

Protection: IEC IP67
TIA/EIA Rating: Category 5e

Physical

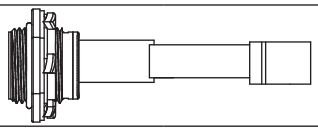
O-Ring Material: Viton
Insert Material: ABS
Overmold Material: Polyurethane
Coupling Nut Material: ABS
Shell Material: ABS
Knockout Hole: 1.063
Thread Size: UNC 1"—14"
Panel Thickness: .125" max. with gasket,
.187" max. without gasket,
.062" min.
Operating Temperature: -20 to +80°C
Return Loss: 5 dB at 100 Mhz

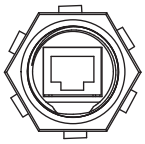
RJ-45 Jack

Plating: 50 µm of Gold over 100 µm of Nickel
Current Rating: 1.5A
Voltage Rating: 125V DC

RJ-11 Jack

Plating: 50 µm of Gold over 100 µm of Nickel
Current Rating: 1.5A
Voltage Rating: 125V DC



Face View	Description	Female Straight	
		Engineering No.	Standard Order No.
	RJ-11 Bulkhead Pass-Through Receptacles with Backside Jack	ENSP6F5	130055-0014
	RJ-11 Bulkhead Pass-Through Receptacles with 12" Male RJ-45 Patch Cord	ENSP1F5M010	130055-0005
	RJ-11 Bulkhead Pass-Through Receptacles with Backside Jack	ENSP1F5	130055-0001

Note: Sales drawings for all standard order numbers are available on molex.com

Configuration Code*
Build-a-Part Number

	Length	Code
Meters	2	M020
	5	M050
	10	M100

ENSP1F5M010

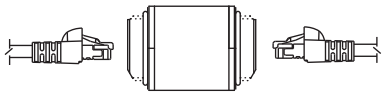
*Once an engineering number is created using the configuration code, consult Molex tech support for information regarding any part numbers.

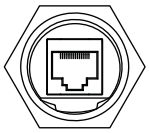
Industrial Ethernet Brad® RJ-Lnxx® RJ-45 Sealed Receptalces

130058
Threaded Interconnect

Features and Benefits

- Allows either molded or field attachable male connectors to be mated together, extending overall system length
- Two M40 nylon lock nuts and threaded barrel allow the interconnected to be positively fixed to a panel or enclosure wall



Face View (Female)	Description	Female Straight	
		Engineering No.	Standard Order No.
	In-Line—Interconnect	RJBG16821	130058-0057
	Threaded—Interconnect	RJBG16821	130058-0059

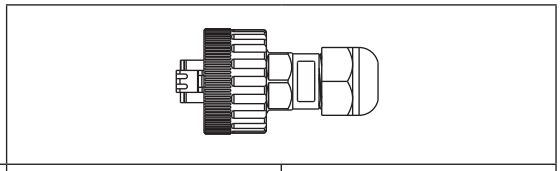
Industrial Ethernet Brad® RJ-Lnxx® RJ-45 Sealed Field Attachable Connectors

130057
Female Straight

Features and Benefits
- Create an industrial Ethernet cordset in the field using standard crimp tools
- Achieves IEC IP67 rated seal when mated with an RJ-Lnxx receptacle

Physical
O-Ring Material: Viton
Insert Material: Acrylonitrile-Butadiene-Styrene (ABS)
Overmold Material: Polyurethane
Coupling Nut Material: Acrylonitrile-Butadiene-Styrene (ABS)
Shell Material: Acrylonitrile-Butadiene-Styrene (ABS)
Thread Size: UNC 1.00–14.00"
Operating Temperature: -20 to +80°C

Environmental
Protection: IEC IP67



Description	Engineering No.	Standard Order No.
RJ-45 Connector (for Stranded Cable)	ENQAM315	130057-0001
RJ-45 Connector (for Solid Cable)	ENSAM315	130057-0003

Note: Sales drawings for all standard order numbers are available on molex.com

Industrial Ethernet Brad® RJ-Lnxx® RJ-45 Sealed Accessories

130058
Female, Male Closure Caps

Features and Benefits
- Attaches to RJ-Lnxx receptacles to provide an IEC IP65 rated seal for instances when a cordset is not mated

Physical
Material: Protective Cap—PA6 Nylon GF (UV Stabilized)
Lanyard—EPDM Rubber
Thread Size: UNC 1.00–14.00"
Operating Temperature: -20 to +80°C

Environmental
Protection: IEC IP65 (65-0300), IP67 (67-0300)

Type	Description	Female		Male	
		Engineering No.	Standard Order No.	Engineering No.	Standard Order No.
Cap	IP65 Rated	65-0300	130058-0033	65-0301	130058-0034
Cap and Lanyard	IP67 Rated	67-0300	130058-0035	67-0301	130058-0036

Note: Sales drawings for all standard order numbers are available on molex.com

Industrial Ethernet Brad® Sealed RJ-45 Overmolded Single-Ended Cordsets

84702

Bayonet Style RJ-45 Plug

Features and Benefits

- One sealing surface reduces chance of failure
- IP67 and NEMA 6P ratings ensure cable assemblies for water and dust tight functional integrity
- Bayonet style latching provides audible and tactile confirmation of positive mating
- Category 5e specified provides high data transmission speeds
- Overmolded cable assemblies allow for faster installation

Reference Information

Packaging: Bag
Mates With: 84700 and 84702
Designed In: Inches

Electrical

Voltage: 150V AC
Current: 1.5A
Contact Resistance: 20 milliohms max.
Dielectric Withstanding Voltage:
Adjacent Contacts—1000V AC
Contacts to Ground—1500V AC
Insulation Resistance: 500 Megohms min.
Type: Category 5e
Transmission Performance: Category 5e
RJ-45 Connection Interface: TIA/EIA-568-B
Shielding Effectiveness: 20 dB min.

Mechanical

Durability: 200 mating cycles min.
Coupling Ring Destructive Torque: 2.26Nm (20 in. lb) or more

Physical

Overmolded Body: PVC, black
Coupling Ring: PBT, black
Holder: PBT, black
Wedge: PBT, black
Gasket Seal: Nitrile, black
Contact: Phosphor Bronze
Plating: Contact Area—1.27µm (50µ") Gold
Underplating—Nickel
Operating Temperature: -40 to +85°C

Standard Order No.	Length	Lead-free
84702-3001	0.30m (1.00')	Yes
84702-3003	0.91m (3.00')	
84702-3006	1.83m (6.00')	
84702-3009	2.74m (9.000')	
84702-3012	3.66m (12.00')	
84702-3020	6.10m (20.00')	
84702-3050	15.20m (50.00')	
84702-3100	30.50m (100.00')	

Industrial Ethernet Brad® Sealed RJ-45 Overmolded Double-Ended Cordsets

84702

Bayonet Style RJ-45 Plug-to-Bayonet Style RJ-45 Plug

Order No.	Length	Lead-free
84702-1001	0.30m (1.00')	Yes
84702-1003	0.91m (3.00')	
84702-1006	1.83m (6.00')	
84702-1007	2.13m (7.00')	
84702-1009	2.74m (9.000')	
84702-1010	3.00m (10.00')	
84702-1012	3.66m (12.00')	
84702-1015	4.57m (15.00')	
84702-1020	6.10m (20.00')	
84702-1021	6.40m (21.00')	
84702-1030	9.14m (30.00')	

Features and Benefits

- One sealing surface reduces chance of failure
- IP67 and NEMA 6P ratings ensure cable assemblies are water and dust tight for functional integrity
- Bayonet style latching provides audible and tactile confirmation of positive mating
- Category 5e specified provides high data transmission speeds
- Overmolded cable assemblies allow for faster installation

Reference Information

Packaging: Bag
Mates With: 84700 and 84702
Designed In: Inches

Electrical

Voltage: 150V AC
Current: 1.5A
Contact Resistance: 20 milliohms max.
Dielectric Withstanding Voltage:
Adjacent Contacts—1000V AC
Contacts to Ground—1500V AC
Insulation Resistance: 500 Megohms min.
Transmission Performance: Category 5e
RJ-45 Connection Interface: TIA/EIA-568-B
Shielding Effectiveness: 20 dB min.

Mechanical

Durability: 200 mating cycles min.
Coupling Ring Destructive Torque: 2.26Nm (20 in. lb) or more

Physical

Overmolded Body: PVC, black
Coupling Ring: PBT, black
Holder: PBT, black
Wedge: PBT, black
Gasket Seal: Nitrile, black
Contact: Phosphor Bronze
Plating: Contact Area—1.27µm (50µ") Gold
Underplating—Nickel
Operating Temperature: -40 to +85˚C

Industrial Ethernet Brad® Sealed RJ-45 Overmolded Double-Ended Cordsets

84702

Bayonet Style RJ-45 Plug-to-Standard RJ-45 Plug

Order No.	Length	Lead-free
84702-2001	0.30m (1.00')	Yes
84702-2003	0.91m (3.00')	
84702-2006	1.83m (6.00')	
84702-2007	2.13m (7.00')	
84702-2009	2.74m (9.000')	
84702-2010	3.00m (10.00')	
84702-2012	3.66m (12.00')	
84702-2015	4.57m (15.00')	
84702-2020	6.10m (20.00')	
84702-2021	6.40m (21.00')	
84702-2030	9.14m (30.00')	

Features and Benefits

- One sealing surface reduces chance of failure
- IP67 and NEMA 6P ratings ensure cable assemblies are water and dust tight for functional integrity
- Bayonet style latching provides audible and tactile confirmation of positive mating
- Category 5e specified provides high data transmission speeds
- Overmolded cable assemblies allow for faster installation

Reference Information

Packaging: Bag
Mates With: 84700 and 84702
Designed In: Inches

Electrical

Voltage: 150V AC
Current: 1.5A
Contact Resistance: 20 milliohms max.
Dielectric Withstanding Voltage:
Adjacent Contacts—1000V AC
Contacts to Ground—1500V AC
Insulation Resistance: 500 Megohms min.
Transmission Performance: Category 5e
RJ-45 Connection Interface: TIA/EIA-568-B
Shielding Effectiveness: 20 dB min.

Mechanical

Durability: 200 mating cycles min.
Coupling Ring Destructive Torque: 2.26Nm (20 in. lb) or more

Physical

Overmolded Body: PVC, black
Coupling Ring: PBT, black
Holder: PBT, black
Wedge: PBT, black
Gasket Seal: Nitrile, black
Contact: Phosphor Bronze
Plating: Contact Area—1.27µm (50µ") Gold
Underplating—Nickel
Operating Temperature: -40 to +85°C

Industrial Ethernet Brad® Sealed RJ-45 Receptacles

84702

Bayonet Style PCB Mount and Punchdown Panel Mount

PCB Mount

Punchdown Panel Mount

Features and Benefits

- One sealing surface reduces chance of failure
- Bayonet style latching provides audible and tactile confirmation of positive mating
- Punchdown version supports simple IDC termination

Reference Information

Packaging: Bag
Mates With: 84700 and 84702
Designed In: Inches

Electrical

Voltage: 150V AC
Current: 1.5A
Contact Resistance: 20 milliohms max.
Dielectric Withstanding Voltage:
Adjacent Contacts—1000V AC
Contacts to Ground—1500V AC
Insulation Resistance: 500 Megohms min.
Transmission Performance: Category 5e
RJ-45 Connection Interface: TIA/EIA-568-B
Shielding Effectiveness: 20 dB min.

Mechanical

Durability: 200 mating cycles min.
Lock Nut Destructive Torque: 2.71Nm (24 in. lb)

Physical

Receptacle Housing: PBT, black
Lock Nut: Polyamide 6/6, black
Panel Gasket: Neoprene, black
Punchdown Block: Thermoplastic, white
Wire Range (Punchdown Receptacle):
22 to 26 AWG solid and stranded, limiting outside diameter 1.40mm (.055")
Operating Temperature: -40 to +85°C

Standard Order No.	Description	Lead-free
84702-0005	PCB Mount Receptacle	Yes
84702-0006	Punchdown Panel Mount Receptacle	
84702-0007	PCB Mount Receptacle, Potted	
84702-0008	Punchdown Panel Mount Receptacle, Potted	
84702-0009	Punchdown with 100 Ohm Resistors	

Industrial Ethernet Brad® Sealed RJ-45 Bulkhead Pass-Through Receptacle

84700

Bayonet Style Panel Mount

Features and Benefits

- Back-to-back RJ-45 pass-through brings ethernet connectivity into a control cabinet and eliminates need for conduit entry
- Bayonet style latching provides audible and tactile confirmation of positive mating
- Meets ODVA/EtherNet™ IP specification

Reference Information

Packaging: Bag
Designed in: Inches
Mates With: 84700 and 84702
Waterproof: Meets requirements of IP67 and NEMA 6P for water tightness

Electrical

Voltage: 150V AC
Current: 1.5A
Contact Resistance: 20 milliohms max.
Insulation Resistance: 500 Megohms min.
Transmission Performance: Category 5e
RJ-45 Connection Interface: TIA/EIA-568-B
Shielding Effectiveness: 20 dB min.
Return Loss: 5 dB at 100MHz

Mechanical

Durability: 500 mating cycles min.

Physical

Receptacle Housing: PBT, black
Panel Gasket: Neoprene, black
Lock Nut: Steel
Plating: Lock Nut—Zinc
Operating Temperature: -40 to +85°C

Standard Order No.	Description	Lead-free
84700-0001	Panel Mount Receptacle	Yes

*EtherNet IP and DeviceNet are trademarks of the Open DeviceNet Vendor Association.

Industrial Ethernet Brad® Sealed RJ-45 Field Wireable Connectors

84700

Standard Order No.	Description	Lead-free
84700-0002	Field Attachable Plug	Yes

*EtherNet IP is a trademark of the Open DeviceNet Vendor Association.

Features and Benefits

- One sealing surface reduces chance of failure
- IP67 and NEMA 6P ratings ensure cable assemblies are water and dust tight for functional integrity
- Bayonet style latching provides audible and tactile confirmation of positive mating
- Superior strain relief
- Easy termination allows custom length cable to be made in the field
- Compatible with shielded and unshielded cable
- Meets ODVA/EtherNet™ IP* specification

Reference Information

Packaging: Bag
Mates With: 84700 and 84702
Designed In: Inches
Waterproof: Meets requirements of IP67 and NEMA 6P for water tightness

Electrical

Voltage: 56.5V DC
150V RMS AC (ringing voltage only)
Current: 1.5A at 25°C (77°F)
Contact Resistance: 20 milliohms max.
Insulation Resistance: 500 Megohms min.
Transmission Performance: Category 5e
RJ-45 Connection Interface: TIA/EIA-568-B
Shielding Effectiveness: 20 dB min.

Mechanical

Durability: 500 mating cycles min.

Physical

Coupling Ring: PBT, black
O-Ring: Nitrile
Gasket Seal: Nitrile, black
Plug Holder: PBT, black
Retainer Wedge: PBT, black
Wire Gauge: 24 AWG (stranded or solid conductors)
Operating Temperature: -40 to +85°C
Cable Seal Assembly: Polyamide, TPE Gland, black

Industrial Ethernet Brad® Sealed RJ-45 Tethered Dust Cap

84700

Bayonet Style

Standard Order No.	Description	Lead-free
84700-0003	Dust Cover	Yes

Features and Benefits

- One sealing surface means less likelihood of failure
- Attachable tether so cap never gets lost
- Maintains IP67 and NEMA 6P ratings for functional integrity when connector is not mated
- IP67 and NEMA 6P ratings ensure cable assemblies are water and dust tight for functional integrity

Reference Information

Packaging: Bag
Use With: 84700, 84702, 84729, 84730
Designed In: Inches

Physical

Dust Cap: PBT, black
Tether: PE or PP, black
Gasket Seal: Nitrile, black
Screw: Brass, #8-32
Plating: Screw—Nickel
Operating Temperature: -40 to +85°C

Industrial Ethernet Brad® Micro-Change® (M12) Single-Ended Cordsets

130048
Male
Threaded

Features and Benefits
- Familiar, proven M12 form factor provides robust connection
- Category 5e compliant
- IP67 rated, perfect for harsh industrial environments
- D-Code to ensure proper alignment/mating

Reference Information
UL File No.: E200650

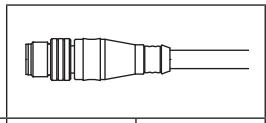
Cables

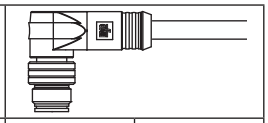
03—Unshielded PVC
Conductors: 24 AWG stranded tinned Copper wire
Pair: Two pair UTP patch cable
Outside Diameter: 0.250" (5.6mm) nominal
Jacket Material: Teal PVC
Cable Properties: Sun and oil resistant
Inner Material Insulation: HDPE
Certification: UL Type CMR, CEC C(UL) Type CMR
TIA/EIA Rating: Category 5e
Operating Temperature: -40 to 75°C

05—Shielded TPE
Conductors: 22 AWG stranded tinned Copper wire
Pair: Two pair UTP patch cable
Outside Diameter: 0.236" (5.90mm) nominal
Jacket Material: Teal TPE
Cable Properties: Sun and oil resistant
Inner Material Insulation: HDPE
Shield Type: Foil shield, 100% coverage, 25% minimum overlap
Flex Rating: Trailing cable, 5 million bending cycles
Certification: UL Type CMR, CEC C(UL) Type CMR
TIA/EIA Rating: Category 5e
Operating Temperature: -20 to 75°C

10—Shielded PUR
Conductors: 22 AWG stranded tinned wire
Pair: Two pair UTP patch cable
Outside Diameter: 0.255" (6.50mm) nominal
Jacket Material: Green PUR
Cable Properties: Sun resistant
Inner Material Insulation: FRNC
Shield Type: Foil Shield—100% coverage
Braid Shield—85% coverage
Flex Rating: Trailing cable, 5 million bending cycles
Certification: UL Listed CMX
TIA/EIA Rating: Category 5e
Operating Temperature: -40 to 70°C

15—Shielded PVC
Conductors: 26 AWG stranded tinned Copper wire
Pair: Two pair UTP patch cable
Outside Diameter: 0.236" (5.99mm) nominal
Jacket Material: Teal PVC
Cable Properties: Sun and oil resistant
Inner Material Insulation: Foamed polypropylene
Shield Type: Foil shield, 100% coverage, 25% min. overlap
Certification: UL Type CMR, CEC C(UL) type CMR
TIA/EIA Rating: Category 5e
Operating Temperature: -20 to 75°C





Face View	Max. Current per Contact	Max. Voltage	Cable Type	Cable Jacket	Wire Size AWG	Length	Engineering No.	Standard Order No.	Engineering No.	Standard Order No.
4 Pole 1 - Orange (TD+) 2 - Blue (RD+) 3 - Orange/White (TD-) 4 - Blue/White (TD-)	1.5A	30V	Unshielded	PVC	24	1.0m (3.37')	E10A00603M010	130048-0038	E10A00703M010	130048-0062
			Shielded	PVC	22		E10A00610M010	130048-0046	E10A00710M010	130048-0070
			Shielded	PUR	24		E10A00615M010	130048-0054	E10A00715M010	130048-0078
			Shielded High-Flex	TPE	26		E10A00605M010	120108-0186		
			Shielded High-Flex				E10A00705M010	120108-0187		

Note: Sales drawings for all standard order numbers are available on molex.com

Configuration Code*
Build-a-Part Number

	Length	Code
Meters	2	M020
	5	M050
	10	M100

E10A00610M010
Cable Options

*Once an engineering number is created using the configuration code, consult Molex tech support for information regarding any part numbers.

Industrial Ethernet Brad® Micro-Change® (M12) Double-Ended Cordsets

120049/120108/130048

Male-to-Male Straight, Right Angle Threaded

Features and Benefits

- Familiar, proven M12 form factor provides robust connection
- Category 5e compliant
- D-Coded to ensure proper alignment/mating
- IP67 rated for harsh environments

Reference Information

UL File No.: E200650

Physical

Connector Body: PUR
O-Ring: Viton
Coupling Nut: Nickel-plated Brass
Contacts: Copper alloy with Gold over Nickel plating

Environmental

Protection: IP67
NEMA Rating: NEMA 6
Operating Temperature: -20 to +75°C

Cables

03—Unshielded PVC

Conductors: 24 AWG stranded tinned Copper wire
Pair: Two pair UTP patch cable
Outside Diameter: 0.250" (5.6mm) nominal
Jacket Material: Teal PVC
Cable Properties: Sun and oil resistant
Inner Material Insulation: HDPE
Certification: UL Type CMR, CEC C (UL) Type CMR
TIA/EIA Rating: Category 5e
Operating Temperature: -40 to +75° C

04—Unshielded TPE

Conductors: 24 AWG stranded tinned Copper wire
Pair: Two pair UTP patch cable
Outside Diameter: 0.210" (5.3mm) nominal
Jacket Material: Teal TPE
Cable Properties: Sun, oil and weld slag resistant
Inner Material Insulation: HDPE
Flex Rating: rolling band and torsional flex, 10 million cycles
Certification: UL Type CMX, CEC C (UL) Type CMR
TIA/EIA Rating: Category 5e
Operating Temperature: -20 to +75° C

10—Unshielded PUR

Conductors: 22 AWG stranded tinned Copper wire
Pair: Two pair UTP patch cable
Outside Diameter: 0.255" (6.5mm) nominal
Jacket Material: Green PUR
Cable Properties: Sun and oil resistant
Inner Material Insulation: FRNC
Sheild Type: Foil Sheild—100% Coverage
Braid Sheild—85% Coverage
Flex Rating: Trailing cable, 5 million bending cycles
Certification: UL Listed CMX
TIA/EIA Rating: Category 5e
Operating Temperature: -40 to +70° C

05—Shielded TPE

Conductors: 26 AWG stranded tinned Copper wire
Pair: Two pair UTP patch cable
Outside Diameter: 0.236" (5.99mm) nominal
Jacket Material: Teal TPE
Cable Properties: Sun and oil resistant
Inner Material Insulation: HDPE
Shield Type: Foil shield, 100% coverage, 25% minimum overlap
Certification: UL Type CMR, CEC C(UL) Type CMR
TIA/EIA Rating: Category 5e
Operating Temperature: -20 to +75° C

15—Shielded PVC

Conductors: 26 AWG stranded tinned Copper wire
Pair: Two pair UTP patch cable
Outside Diameter: 0.236" (5.99mm) nominal
Jacket Material: Teal PVC
Cable Properties: Sun and oil resistant
Inner Material Insulation: Foamed polypropylene
Shield Type: Foil shield, 100% coverage, 25% minimum overlap
Certification: UL Type CMR, CEC C(UL) Type CMR
TIA/EIA Rating: Category 5e
Operating Temperature: -20 to +75° C

Face View	Max. Current Per Contact	Max. Voltage	Cable Type	Cable Jacket	Wire Size AWG	Length	Male Straight-to-Male Straight		Male Straight-to-Male Right Angle		Male Right Angle-to-Male Right Angle	
							Engineering No.	Standard Order No.	Engineering No.	Standard Order No.	Engineering No.	Standard Order No.
4 Pole 2, 3, 5, 1, 4 1 - Yellow (TD+) 4 - Blue (RD-) 2 - White (RD+) 5 - D-Code 3 - Orange (TD-)	1.5A	30V	Unshielded	PVC	24	1.0 m	E11A06003M010	130048-0088	E11A06203M010	130048-0137	E11A06303M010	130048-0161
			Unshielded High Flex	TPE	24		E11A06004M010	130048-0095			E11A06304M010	120108-0167
			Shielded	PUR	22		E11A06010M010	130048-0114	E11A06210M010	130048-0145	E11A06310M010	130048-0170
			Shielded	PVC	26		E11A06015M010	130048-0122	E11A06215M010	130048-0153	E11A06315M010	130048-0179
			Shielded	TPE	26		E11A06005M010	120108-0188	E11A06205M010	120108-0189	E11A06305M010	120108-0174

Note: Sales drawings for all standard order numbers are available on molex.com

Configuration Code*
Build-a-Part Number

	Length	Code
Meters	2	M020
	5	M050
	10	M100

E11A06003M010
Cable Option
Wiring Option

Industrial Ethernet Brad® Micro-Change® (M12) Double-Ended Cordsets

130048
Female-to-Male Straight Threaded

Features and Benefits
- Familiar, proven M12 form factor provides robust connection
- Category 5e compliant
- D-Coded to ensure proper alignment/mating
- IP67 rated for harsh environments

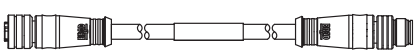
Reference Information
UL File No.: E200650

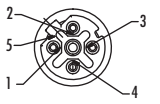
Physical
Connector Body: PUR
O-Ring: Viton
Coupling Nut: Nickel-plated Brass
Contacts: Copper alloy with Gold over Nickel plating

Environmental
Protection: IP67
NEMA Rating: NEMA 6
Operating Temperature: -20 to 75°C

Cables
03—Unshielded PVC
Conductors: 24 AWG stranded tinned Copper wire
Pair: Two pair UTP patch cable
Outside Diameter: 0.250" (5.6mm) nominal
Jacket Material: Teal PVC
Cable Properties: Sun and oil resistant
Inner Material Insulation: HDPE
Certification: UL Type CMR, CEC C(UL) Type CMR
TIA/EIA Rating: Category 5e
Operating Temperature: -40 to +75°C

15—Shielded PVC
Conductors: 26 AWG stranded tinned Copper wire
Pair: Two pair UTP patch cable
Outside Diameter: 0.236" (5.99mm) nominal
Jacket Material: Teal PVC
Cable Properties: Sun and oil resistant
Inner Material Insulation: Foamed Polypropylene
Shield Type: Foil Shield, 100% coverage, 25% min. overlap
Certification: UL Type CMR, CEC C(UL) Type CMR
TIA/EIA Rating: Category 5e
Operating Temperature: -20 to +75°C



Face View	Max. Current Per Contact	Max. Voltage	Cable Type	Cable Jacke	Wire Size AWG	Length	Female Straight-to-Male Straight	
							Engineering No.	Standard Order No.
4 Pole  1 - Yellow (TD+) 4 - Blue (RD-) 2 - White (RD+) 5 - D-Code 3 - Orange (TD-)	1.5A	30V	Unshielded	PVC	24	1.0 m	E11B03003M002	130048-0193
			Shielded	PVC	26		E11B03015M002	130048-0195

Note: Sales drawings for all standard order numbers are available on molex.com

Configuration Code*
Build-a-Part Number

	Length	Code
Meters	1	M010
	2	M020
	5	M050
	10	M100

E11B03003M002
Cable Option
Wiring Option

Industrial Ethernet Brad® Micro-Change®-to-RJ-45 Standard Plug Double-Ended Cordsets

130048

Female-to-Male Straight Threaded to RJ-45

Features and Benefits

- Familiar, proven M12 form factor provides robust connection
- Category 5e compliant
- D-Coded to ensure proper alignment/mating
- IP67 rated for harsh environments

Connectors

M12

Reference Information

UL File No.: E200650

Physical

Connector Body: PUR
O-Ring: Viton
Coupling Nut: Nickel-plated Brass
Contacts: Copper alloy with Gold over Nickel plating
Operating Temperature: -25 to +75°C

Environmental

Protection: IP67
NEMA Rating: NEMA 6

RJ-45

Reference Information

UL File No.: E200650

Physical

RJ-45 Plug: Polycarbonate, clear
Boot: PVC
Operating Temperature: -20 to +75°C

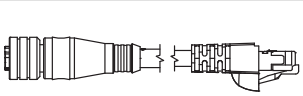
Environmental

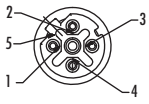
Protection: IP20

Cables

03—Unshielded PVC

Conductors: 24 AWG stranded tinned Copper wire
Pair: Two pair UTP Patch cable
Outside Diameter: 0.250" (5.6 mm) nominal
Jacket Material: Teal PVC
Cable Properties: Sun and oil resistant
Inner Material Insulation: HDPE
Certification: UL Type CMR, CEC C(UL) Type CMR
TIA/EIA Rating: Category 5e
Operating Temperature: -40 to +75°C



Face View	Max. Current Per Contact	Max. Voltage	Cable Type	Cable Jacket	Wire Size AWG	Length	Female Straight-to-Male Straight	
							Engineering No.	Standard Order No.
4 Pole  1 - Yellow (TD+) 4 - Blue (RD-) 2 - White (RD+) 5 - D-Code 3 - Orange (TD-)	1.5A	30V	Unshielded	PVC	24	1.0 m	E16A03003M010	130048-0197

Note: Sales drawings for all standard order numbers are available on molex.com

Configuration Code*
Build-a-Part Number

	Length	Code
Meters	2	M020
	5	M050
	10	M100

E16A03003M010
Cable Option
Wiring Option

Industrial Ethernet Brad® Micro-Change® (M12) Field Attachable Connectors

130047
Female, Male Straight Threaded

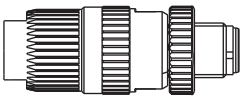
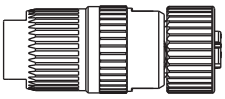
Features and Benefits
- Fast field termination without special tooling
- D-Code to ensure proper alignment/mating

Mechanical
Coupling Nut: Zinc diecast
Shell Material: Zinc diecast
Contacts: Gold-plated Palladium Nickel

Cable
22 to 24 AWG
0.25 to 0.34mm²
Cable Diameter: 5.50 to 7.20mm

Environmental
Protection: IP67

Physical
Operating Temperature: -25 to +85°C

							
Poles (Female View)	Max. Current per Contact	Max. Voltage	Cable Diameter Range	Male Straight		Female Straight	
				Engineering No.	Standard Order No.	Engineering No.	Standard Order No.
4 Pole  1 - Yellow (TD+) 3 - Orange (TD-) 2 - White (RD+) 4 - Blue (RD-)	4.0A	32V	5.50-7.20mm	E1AS06-52	130047-0018	E1AS00-52	130047-0017

Note: Sales drawings for all standard order numbers are available on molex.com

Industrial Ethernet Brad® Ultra-Lock® (M12) Double-Ended Cordsets

120108

Male-to-Male Straight, Right Angle Push-to-Lock

Features and Benefits

- Push-to-Lock technology assures fast, reliable connections every time
- Reliable performance in high vibration environments due to positive locking mechanism
- Ideal for wash-down and temporary submersion applications due to improved sealing design
- Ergonomic push to lock mechanisms reduce fatigue and user errors when a high number of connections need to be made
- Category 5e compliant
- D-Code to ensure proper alignment/mating
- IP67/68/69K rated for harsh environments

Refernce Information

UL File No.: E200650

Physical

Connector Body: PUR
O-Ring: Viton
Coupling Nut: Nickel-plated Brass
Contacts: Copper alloy with Gold over Nickel plating
Operating Temperature: -20 to +75°C

Environmental

Protection: IP67/ P68/IP69K
NEMA Rating: NEMA 6

Cables

03—Unshielded PVC

Conductors: 24 AWG stranded tinned Copper wire
Pair: Two pair UTP patch cable
Outside Diameter: 0.250" (5.60mm) nominal
Jacket Material: Teal PVC
Cable Properties: Sun and oil resistant
Inner Material Insulation: HDPE
Certification: UL type CMR, CEC C(UL) type CMR
TIA/EIA Rating: Category 5e
Operating Temperature: -40 to +75°C

04—Unshielded TPE

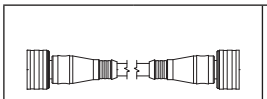
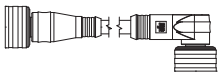
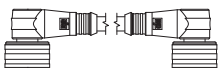
Conductors: 24 AWG stranded tinned Copper wire
Pair: Two pair UTP patch cable
Outside Diameter: 0.210" (5.30mm) nominal
Jacket Material: Teal TPE
Cable Properties: Sun, oil and weld slag resistant
Inner Material Insulation: HDPE
Flex Rating: Rolling band and torsional flex, 10 million cycles
Certification: UL type CMX, CEC C(UL) type CMR
TIA/EIA Rating: Category 5e
Operating Temperature: -20 to +75°C

10—Shielded PUR

Conductors: 22 AWG stranded tinned wire
Pair: Two pair UTP patch cable
Outside Diameter: 0.255" (6.50mm) nominal
Jacket Material: Green PUR
Cable Properties: Sun resistant
Inner Material Insulation: FRNC
Shield Type: Foil Shield—100% coverage
Braid Shield—85% coverage
Flex Rating: Trailing cable, 5 million bending cycles
Certification: UL Listed CMX
TIA/EIA Rating: Category 5e
Operating Temperature: -40 to 70° C

15—Shielded PVC

Conductors: 26 AWG stranded tinned copper wire
Pair: Two pair UTP patch cable
Outside Diameter: 0.236" (5.99mm) nominal
Jacket Material: Teal PVC
Cable Properties: Sun and oil resistant
Inner Material Insulation: Foamed polypropylene
Shield Type: Foil shield, 100% coverage, 25% min. overlap
Certification: UL type CMR, CEC C(UL) type CMR
TIA/EIA Rating: Category 5e
Operating Temperature: -20 to +75°C

Face View (Male)	Max. Current per Contact	Max. Voltage	Cable Type	Cable Jacket	Wire Size AWG	Length	Male Straight-to-Male Straight		Male Straight-to-Male Right Angle		Male Right Angle-to-Male Right Angle	
							Engineering No.	Standard Order No.	Engineering No.	Standard Order No.	Engineering No.	Standard Order No.
 1 - White/Orange 3 - Orange 2 - White/Green 4 - Green	1.5A	30V	Unshielded	PVC	24	1.0m	EWWA06003M010	120108-0066	EWWA06203M010	120108-0074	EWWA06303M010	120108-0082
			Unshielded High Flex	TPE	24						EWWA06304M010	120108-5020
			Shielded	PUR	22		EWWA06010M010	120108-0090	EWWA06210M010	120108-0098	EWWA06310M010	120108-0106
			Shielded	PVC	26		EWWA06015M010	120108-0042	EWWA06215M010	120108-0050	EWWA06315M010	120108-0058

Note: Sales drawings for all standard order numbers are available on molex.com

Configuration Code*
Build-a-Part Number

	Length	Code
Meters	1	M010
	2	M020
	5	M050
	10	M100

EWWA06003M010
Cable Option
Wiring Option

*Once an engineering number is created using the configuration code, consult Molex tech support for information regarding any part numbers.

Industrial Ethernet Brad® Ultra-Lock® (M12) Double-Ended Cordset

130048

Female-to-Male Straight Push-to-Lock Crossover-Wired

Features and Benefits

- Brad M12 Micro-Change® Threaded to Push-to-Lock Ultra-Lock® technology assures fast, reliable connections every time
- Reliable performance in high vibration environments due to positive locking mechanism
- Ergonomic push to lock mechanisms reduce fatigue and user errors when a high number of connections need to be made
- Category 5e compliant
- D-Code to ensure proper alignment/mating
- IP67 rated for harsh environments

Reference Information

UL File No.: E200650

Physical

Connector Body: PUR
O-Ring: Viton
Coupling Nut: Nickel-plated Brass
Contacts: Copper alloy with Gold over Nickel plating
Operating Temperature: -20 to +75°C

Environmental

Protection: IP67
NEMA Rating: NEMA 6

Cables

03—Unshielded PVC

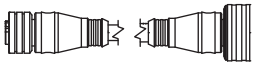
Conductors: 24 AWG stranded tinned Copper wire
Pair: Two pair UTP patch cable
Outside Diameter: 0.250" (5.60mm) nominal
Jacket Material: Teal PVC
Cable Properties: Sun and oil resistant
Inner Material Insulation: HDPE
Certification: UL type CMR, CEC C(UL) type CMR
TIA/EIA Rating: Category 5e
Operating Temperature: -40 to +75°C

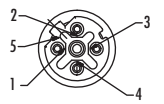
10—Shielded PUR

Conductors: 22 AWG stranded tinned wire
Pair: Two pair UTP patch cable
Outside Diameter: 0.255" (6.50mm) nominal
Jacket Material: Green PUR
Cable Properties: Sun resistant
Inner Material Insulation: FRNC
Shield Type: Foil Shield—100% coverage
Braid Shield—85% coverage
Flex Rating: Trailing cable, 5 million bending cycles
Certification: UL Listed CMX
TIA/EIA Rating: Category 5e
Operating Temperature: -40 to +70°C

15—Shielded PVC

Conductors: 26 AWG stranded tinned Copper wire
Pair: Two pair UTP patch cable
Outside Diameter: 0.236" (5.99 mm) nominal
Jacket Material: Teal PVC
Cable Properties: Sun and oil resistant
Inner Material Insulation: Foamed polypropylene
Shield Type: Foil Shield, 100% coverage, 25% min. overlap
Certification: UL type CMR, CEC C(UL) type CMR
TIA/EIA Rating: Category 5e
Operating Temperature: -20 to +75°C



Face View	Max. Current per Contact	Max. Voltage	Cable Type	Cable Jacket	Wire Size AWG	Length	M12 Micro-Change Female Straight-to-M12 Ultra-Lock Male Straight	
							Engineering No.	Standard Order No.
4 Pole  1 - Yellow (TD+) 4 - Blue (RD-) 2 - White (RD+) 5 - D-Code 3 - Orange (TD-)	1.5A	30V	Unshielded	PVC	24	1.0m	E1WB03003M002	130048-0207
			Shielded	PUR	22		E1WB03010M002	130048-0208
			Shielded	PVC	26		E1WB03015M002	130048-0209

Note: Sales drawings for all standard order numbers are available on molex.com

Configuration Code*
Build-a-Part Number

	Length	Code
Meters	2	M020
	5	M050
	10	M100

E1WB03003M002
→ Cable Option
→ Wiring Option

*Once an engineering number is created using the configuration code, consult Molex tech support for information regarding any part numbers.

Industrial Ethernet Brad® Ultra-Lock® (M12) Receptacles

120109

Female
Front Panel Mount
Back Panel Mount
Internal Thread

Features and Benefits

- Mates with both threaded M12 and Ultra-Lock® M12 cordsets
- Category 5e compliant
- IP67 rated, perfect for harsh industrial environments
- D-Code to ensure proper alignment/mating

Reference Information

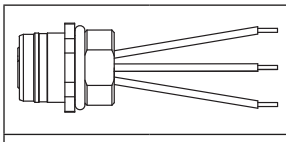
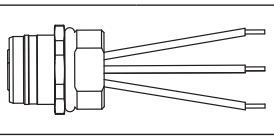
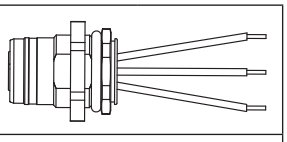
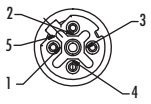
UL File No.: E200650

Physical

Shell: Nickel-plated Brass
Insert: PUR
Conductors: Brass Gold plated/Bronze selective Gold plated
O-Ring: Viton
Operating Temperature: -20 to +80°C

Environmental

Protection: IP67
NEMA Rating: NEMA 6

								
		Configuration	**Front-Panel Mount/ PG9 with 50.00mm Wire Leads**		**Front-Panel Mount/ M16 with 50.00mm Wire Leads**		**Back-Panel Mount/ M16 with 50.00mm Wire Leads**	
		Wire Type	PVC Leads, UL 1061					
		Wire Size (AWG)	22 AWG					
		Length	0.5m					
Pole (Female View)	**Max. Current per Contact**	**Max. Voltage**	**Engineering No.**	**Standard Order No.**	**Engineering No.**	**Standard Order No.**	**Engineering No.**	**Standard Order No.**
4 Pole  1 - Yellow (TD+) 4 - Blue (RD-) 2 - White (RD+) 5 - D-Code 3 - Orange (TD-)	1.5A	125V	ERWAAJ3000C050	120109-0004	ERWAAU3000C050	120109-5001	ERWAAU7000C050	120109-5002

Note: Sales drawings for all standard order numbers are available on molex.com

Configuration Code*
Build-a-Part Number

	Length	Code
Centimeters	5	C050
Meters	0.3	M003
	1	M010
	2	M020

ERWAAJ3000C050

*Once an engineering number is created using the configuration code, consult Molex tech support for information regarding any part numbers.

Industrial Ethernet Brad® Ultra-Lock® (M12) Receptacles

120109

Female
Back Panel Mount
Front Panel Mount

Features and Benefits

- Mates with both threaded M12 and Brad Ultra-Lock® M12 cordsets
- Category 5e compliant
- IP67 rated, perfect for harsh industrial environments
- D-Coded to ensure proper alignment/mating

Mechanical

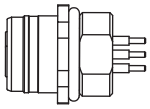
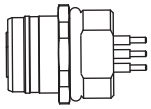
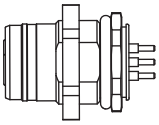
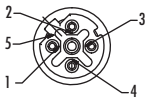
Shell: Nickel-plated Brass
Insert: PUR
Conductors: Brass Gold plated/Bronze selective Gold plated
O-Ring: Viton

Electrical

TIA/EIA Rating: Category 5e

Environmental

Protection: IP67
NEMA Rating: NEMA 6

								
		Configuration	Front Panel Mount, PG9 Thread		Front Panel Mount, M16 Thread		Back-Panel Mount, M16 Thread	
			PCB Mount		PCB Mount		PCB Mount	
Poles	Max. Current per Contact	Max. Voltage	Engineering No.	Standard Order No.	Engineering No.	Standard Order No.	Engineering No.	Standard Order No.
4 Pole  1 - Yellow (TD+) 4 - Blue (RD-) 2 - White (RD+) 5 - D-Code 3 - Orange (TD-)	1.5A	125V	ERWD2J30	120109-5003	ERWD2U30	120109-5004	ERWD2U70	120109-5005

Note: Sales drawings for all standard order numbers are available on molex.com

Industrial Ethernet Brad® Ultra-Lock® (M12) Receptacles

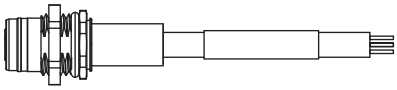
120109
Female Straight Back Panel Mount

Features and Benefits
- Mates with both threaded M12 and Ultra-Lock® M12 cordsets
- Category 5e compliant
- IP67 rated, perfect for harsh industrial environments
- D-Coded to ensure proper alignment/mating

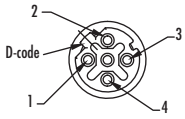
Mechanical
Shell: Nickel-plated Brass
Insert: PUR
Conductors: Brass Gold plated/Bronze selective Gold plated

Electrical
TIA/EIA Rating: Category 5e

Environmental
Protection: IP67
NEMA Rating: NEMA 6



Straight, Back Panel Mount

Poles	Max. Current per Contact	Max. Voltage	Engineering No.	Standard Order No.
4 Pole  1 - Yellow (TD+) 3 - Orange (TD-) 2 - White (RD+) 4 - Blue (RD-)	1.5A	125V	ERWAAJ4002M002	130054-0012
			ERWAAJ4002M020	130054-0013

Note: Sales drawings for all standard order numbers are available on molex.com

Configuration Code*
Build-a-Part Number

	Length	Code
Centimeters	200	C200
Meters	2	M020
	5	M050
	10	M100

ERWAAU3000C200

*Once an engineering number is created using the configuration code, consult Molex tech support for information regarding any part numbers.

Industrial Ethernet Brad® Ultra-Lock® (M12) Double-Ended Receptacles

120109

M12 Panel Mount Female Receptacle-to-RJ-45 Male Plug

Features and Benefits

- Mates with both threaded M12 and Ultra-Lock M12 cordsets
- Category 5e compliant
- IP67 rated, perfect for harsh industrial environments
- D-Coded to ensure proper alignment/mating

Reference Information

UL File No.: E200650

Mechanical

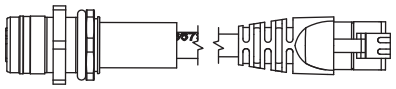
Shell: Nickel-plated Brass
Insert: Nylon
Conductors: Brass Gold plated/Bronze selective Gold plated
O-Ring: Viton
Cable: PVC Jacket

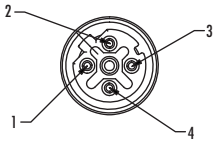
Electrical

TIA/EIA Rating: Category 5E

Environmental

Protection: IP67



Pole (Female View)	Max. Current per Contact	Max. Voltage	Straight, Back Panel Mount, M16 Thread	
			Engineering No.	Standard Order No.
 1 - (TD+) 3 - (TD-) 2 - (RD+) 4 - (RD-)	1.5A	125V	ERWPAU7003M006	120109-0005

Note: Sales drawings for all standard order numbers are available on molex.com

Configuration Code*
Build-a-Part Number

	Length	Code
Meters	2	M020
	5	M050
	10	M100

ERWPAU7003M006

*Once an engineering number is created using the configuration code, consult Molex tech support for information regarding any part numbers.

Industrial Ethernet Brad® Micro-Change® (M12) Bulkhead Pass-Through Adapters

130054

Female Straight, Female Straight-to-Right Angle Threaded Back Panel Mount

Features and Benefits

- Mates with both threaded M12 and (M12) cordsets
- Category 5e compliant
- IP67 rated, perfect for harsh industrial environments
- D-Coded to ensure proper alignment/mating

Mechanical

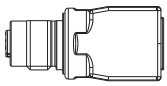
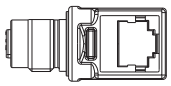
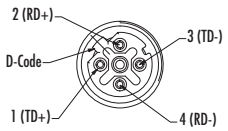
Shell: Nickel-plated Brass
Insert: PUR
Conductors: Brass Gold plated/Bronze selective Gold plated
O-Ring: Viton

Electrical

Voltage Rating: 215V
Current: 4.0A
TIA/EIA Rating: Category 5e

Environmental

Protection: IP67

				
	M12-to-RJ-45 Adapter with M16 Mounting Thread			
Poles	Female Straight		Female-Straight-to-Right Angle	
	Engineering No.	Standard Order No.	Engineering No.	Standard Order No.
4 Pole  1 - Yellow (TD+) 3 - Orange (TD-) 2 - White (RD+) 4 - Blue (RD-)	ER1PADAPTER	130054-0009	ER1PADAPTER90	130054-0010

Note: Sales drawings for all standard order numbers are available on molex.com