

Summary of Changes

This publication contains updated nominal outer diameter specifications on pages [6](#), [7](#), [8](#), [9](#), [11](#), [12](#), and [13](#).

Additional Resources

These documents contain additional information concerning related products from Rockwell Automation.

Resource	Description
Industrial Ethernet Media Brochure, publication 1585-BR001	Provides an overview of Ethernet Media products that Rockwell Automation offers.

You can view or download publications at <http://www.rockwellautomation.com/global/literature-library/overview.page>. To order paper copies of technical documentation, contact your local Allen-Bradley distributor or Rockwell Automation sales representative.

Introduction

As Ethernet is increasingly used in industrial control, survival of physical media in rugged or harsh environments is becoming a necessity. The high speed of network protocol allows it to be used in applications where other networks fall short. EtherNet/IP™ uses both standard Ethernet and TCP/IP technologies and an open application layer protocol that is called the Control and Information Protocol (CIP). This application layer is the same as used in DeviceNet™ and ControlNet™ networks.

Rockwell Automation® Cat 5e Ethernet cables are designed to supply a network connection with excellent reliability in harsh surroundings. By optimizing the balance of twisted-pair conductors inside a robust Thermoplastic Elastomer (TPE) jacket, data is protected from noise, chemicals, and mechanical issues to M₃I₃C₃E₃ environmental protection levels. The cable is available in RJ45 patchcords for IP20 applications or in four-pin D-coded M12 patchcords for IP67 applications where high vibration, fluids, and other contaminants can threaten the reliability of a network.

M12 D-code field attachable insulation displacement connectors (IDC) are available in both shielded and unshielded housings with male or female connectors. Male eight-pin RJ45 connectors are available in both a crimp termination and a toolless IDC connector for custom cabling.

Rockwell Automation M12 to RJ45 bulkhead connectors provide an elegant transition for network architecture from an IP20 setting to an IP67 environment. The adapter can be used to connect remote junction boxes or implement an On-Machine™ solution with Armor™ I/O products.

The Rockwell Automation Ethernet media portfolio provides connectivity with excellent reliability to maintain network integrity and reduces costly downtime from troubleshooting.

Cable Spools

Unshielded Twisted Pair

Features

- 4- and 8-conductor styles
- Unshielded cable types, Cat 5e
- 24 AWG conductors
- Twisted pairs maintain signal balance through cable to provide high noise immunity and return loss
- Designed to ODVA EtherNet/IP specifications and ISO IEC 24702
- Suitable for high noise environments M₃I₃C₃E₃
- Riser PVC cables are used for general-purpose environments
- TPE robotic cable is used for flex applications, transmission-tested to 10 million cycles
- Plenum PVC cable is used for air duct applications
- TPE cable meets channel transmission performance to 10 million flexes

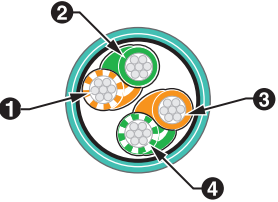
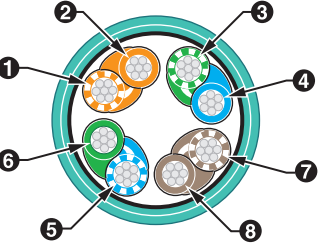


Unshielded Ethernet Cable Spool

Specifications

Attributes	Bulletin 1585
Certifications	UL Listed and CEC
Cable Type	Unshielded 2- and 4-pair, Cat 5e
Conductor Material	Tinned copper stranded
Bend Radius	10 million cycles at 20 x diameter (TPE cable)
Data Rate	Up to 1 GB/s
Operating Temperature	-40...+75 °C (-40...+167 °F)
Voltage	300V

Cable and Color Code

Two-pair	Four-pair																								
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White/Brown																									
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Shielded Twisted Pair (Foil and Braided Shield)

Specifications

Attributes	Bulletin 1585
Certifications	UL Listed and CEC
Conductor Material	Tinned copper stranded
Insulation Material	High-density polyethylene
Bend Radius	10 million cycles at 20 x diameter (TPE cable)
Data Rate	Up to 1 GB/s, Cat 5e
Voltage	300V



Shielded Ethernet Cable Spool

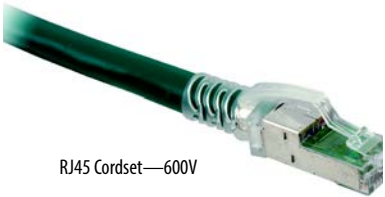
Cable and Color Code

Two-pair	Four-pair																								
<table><tr><td>White/Orange</td><td></td></tr><tr><td>White/Green</td><td></td></tr><tr><td>Orange</td><td></td></tr><tr><td>Green</td><td></td></tr></table>	White/Orange		White/Green		Orange		Green		<table><tr><td>White/Orange</td><td></td></tr><tr><td>Orange</td><td></td></tr><tr><td>White/Green</td><td></td></tr><tr><td>Blue</td><td></td></tr><tr><td>White/Blue</td><td></td></tr><tr><td>Green</td><td></td></tr><tr><td>White/Brown</td><td></td></tr><tr><td>Brown</td><td></td></tr></table>	White/Orange		Orange		White/Green		Blue		White/Blue		Green		White/Brown		Brown	
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600V Ethernet Cable

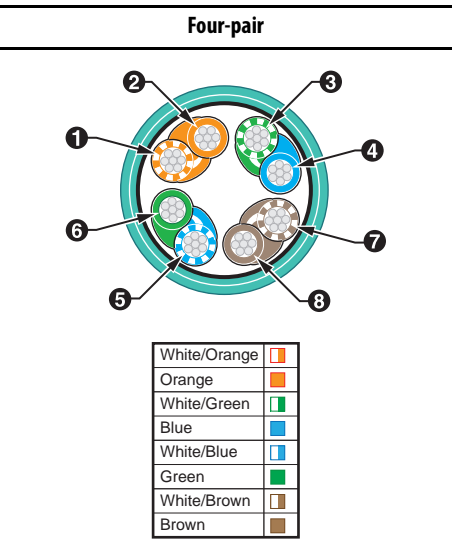
Specifications

Attributes	Bulletin 1585
Certifications	UL and c-UL Listed
Conductor Material	Thin copper stranded
Insulation Material	Perfluoroalkoxy copolymer and polyolefin
Diameter	8.13 ± 0.38 mm (0.32 ± 0.015 in.)
Cable Rating	UL, c-UL TYPE CMG; UL PLTC or UL AWM 2570 80C 600V, TIA 568B



RJ45 Cordset—600V

Cable and Color Code



Pinout

Color Code	Face View RJ45 Pinout	
	8-Pin	
A	1 White/Orange	TxData +
	2 Orange	TxData -
	3 White/Green	Recv Data +
	4 Blue	Unused
	5 White/Blue	Unused
	6 Green	Recv Data -
	7 White/Brown	Unused
	8 Brown	Unused

Approximate Dimensions

Dimensions are in mm (in.). Illustrations are not drawn to scale.

Figure 1 - RH45 IDC Connector

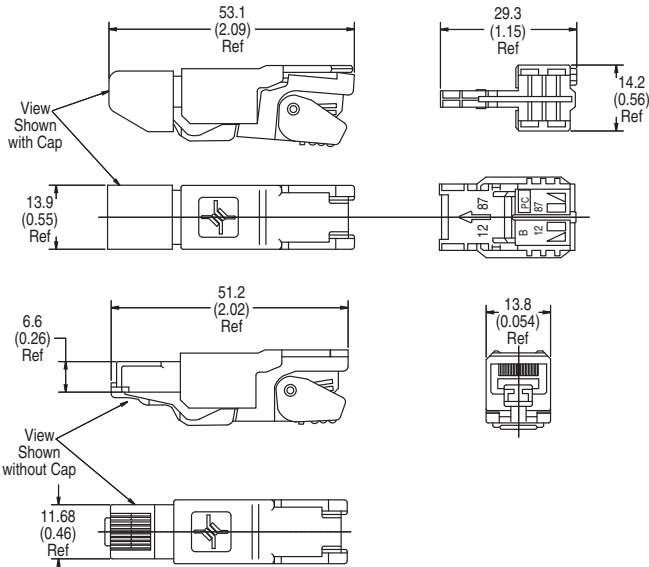


Figure 2 - RJ45 90° Left and Right Angle Patchcord

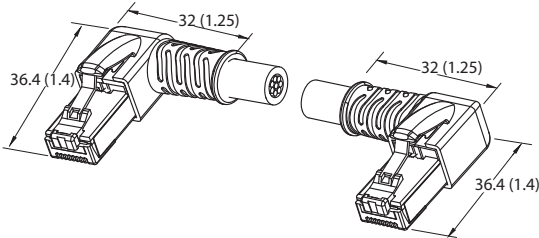
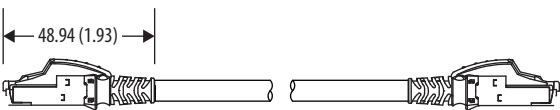


Figure 3 - RJ45 Cordset and Patchcord



Cordsets and Patchcords

RJ45

Features

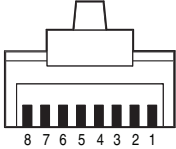
- Flex-rated TPE, PVC, and plenum cables for various applications
- Teal cable jacket
- Rugged strain relief and hitch mechanism to maintain network integrity
- Suitable environments M₃I₃C₃E₃



Specifications

Attributes	Bulletin 1585J
Certifications	UL Listed
Connectors	RJ45 Male to RJ45 Male, Cat 5e
Cable Type	Unshielded 4- and 8-conductor, 24 AWG, Industrial Cat 5e Shielded 8-conductor 26 AWG Industrial Cat 5e
Enclosure Type Rating	IP20
Nominal Outer Diameter	5.84 mm (0.23 in.) ±10%
Operating Temperature	-20...+60 °C (-4...+140 °F)
Voltage	300V

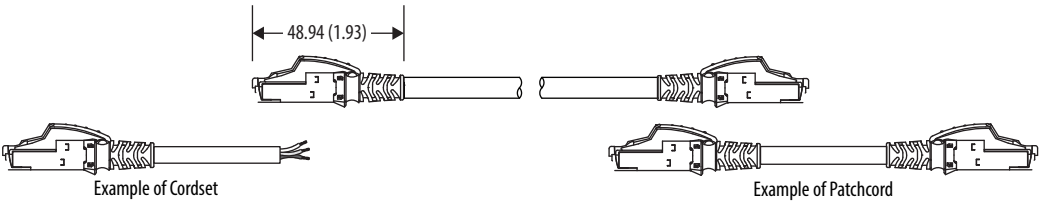
Pinout

Color Code	Face View RJ45 Pinout			
	8-Pin			
				
A	8-Pin		4-Pin	
	1 White/Orange	TxData +	1 White/Orange	TxData +
	2 Orange	TxData -	2 Orange	TxData -
	3 White/Green	Recv Data +	3 White/Green	Recv Data +
	4 Blue	Unused	4 —	—
	5 White/Blue	Unused	5 —	—
	6 Green	Recv Data -	6 Green	Recv Data -
	7 White/Brown	Unused	7 —	—
	8 Brown	Unused	8 —	—

Approximate Dimensions

Dimensions are in mm (in.). Illustrations are not drawn to scale.

Figure 4 - Cordsets/Patchcords



RJ45 Gigabit

Features

- Flex-rated TPE cables for various applications
- Teal cable jacket
- Rugged strain relief and latch mechanism to maintain network integrity
- Suitable environments M₁I₁C₂E₂



RJ45 Cordset, Cat 6

Specifications

Attributes	Bulletin 1585J
Certifications	UL Listed
Connectors	RJ45 Male to RJ45 Male, Cat 6
Cable Type	Shielded, 8-conductor, 24 AWG, Industrial Cat 6
Enclosure Type Rating	IP20
Nominal Outer Diameter	5.84 mm (0.23 in.) ±10%
Operating Temperature	-20...+60 °C (-4...+140 °F)
Voltage	300V

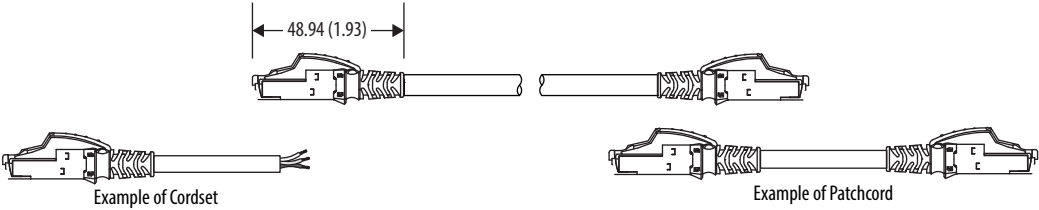
Pinout

Face View RJ45 Pinout			
8-Pin			
Color Code			
Side A Plug Pin	T568B	Side B Plug Pin	1000BASE-T
1	White/Orange	1	BI_DA+ (Bi-directional pair 1+)
2	Orange	2	BI_DA- (Bi-directional pair 1-)
3	White/Green	3	BI_DB+ (Bi-directional pair 2+)
4	Blue	4	BI_DC+ (Bi-directional pair 3+)
5	White/Blue	5	BI_DC- (Bi-directional pair 3-)
6	Green	6	BI_DB- (Bi-directional pair 2-)
7	White/Brown	7	BI_DD+ (Bi-directional pair 4+)
8	Brown	8	BI_DD- (Bi-directional pair 4-)

Approximate Dimensions

Dimensions are in mm (in.). Illustrations are not drawn to scale.

Figure 5 - Cordsets/Patchcords



RJ45 Red

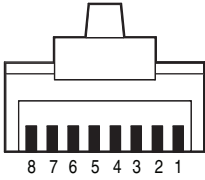
Specifications

Attributes	Bulletin 1585J
Certifications	UL Listed
Connectors	RJ45 Male to RJ45 Male, Cat 5e
Cable Type	Unshielded, 4- and 8-conductor, 24 AWG, Industrial Cat 5e Shielded, 8-conductor, 26 AWG, Industrial Cat 5e
Enclosure Type Rating	IP20
Nominal Outer Diameter	5.84 mm (0.23 in.) ±10%
Operating Temperature	-20...+60 °C (-4...+140 °F)



RJ45 Red Cordset

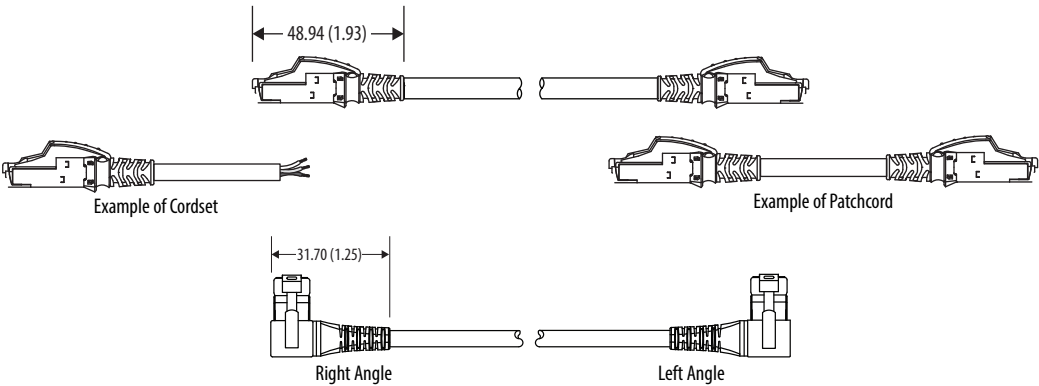
Pinout

Color Code	Face View RJ45 Pinout			
	8-Pin			
				
A	8-Pin		4-Pin	
	1 White/Orange	TxData +	1 White/Orange	TxData +
	2 Orange	TxData -	2 Orange	TxData -
	3 White/Green	Recv Data +	3 White/Green	Recv Data +
	4 Blue	Unused	4 —	—
	5 White/Blue	Unused	5 —	—
	6 Green	Recv Data -	6 Green	Recv Data -
	7 White/Brown	Unused	7 —	—
	8 Brown	Unused	8 —	—

Approximate Dimensions

Dimensions are in mm (in.). Illustrations are not drawn to scale.

Figure 6 - Cordsets/Patchcords



M12 Flex-rated

Features

- Over molded housing suitable for IP67 applications and harsh industrial environments where extreme vibration, shock, chemicals, and temperature are found.
- Flex-rated cable (must be tied down and not flexed within 6 in. of the connector).
- Custom termination of single-ended cordsets with one of several field attachable connectors.
- Designed to ODVA EtherNet/IP specifications and ISO IEC 24702, IEC 61918.
- Twisted pairs maintain signal balance through cable to provide high noise immunity and return loss.
- Suitable for noise environments $M_3I_3C_3E_3$.

4-Pin M12
D-Code Cordset



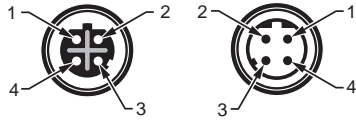
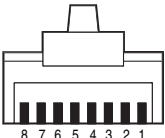
General Specifications

Attributes	Bulletin 1585D
Coupling Nut Material	Nickel-plated brass
Housing Material	Polyurethane (PUR)
Contact Material	Gold-plated brass
Enclosure Type Rating	IP67
Nominal Outer Diameter	5.84 mm (0.23 in.) $\pm 10\%$
Bend Radius	10 x cable diameter
Operating Temperature	-40...+75 °C (-40...+167 °F)

Cable Specifications

Cable Style	Cable Type	Wire Size [AWG]	Cable O.D. [mm (in.)]	Cable Rating
TPE, high flex, unshielded	4 conductor, unshielded twisted pair (UTP), teal	24	5.6 (0.22)	Weld splatter, sunlight, and oil resistant; UL CM, CMX; c-UL CM; TIA 568B
PUR, foil and braided shield, high flex, halogen free	4 conductor, shielded twisted pair (STP), teal	26	5.84 (0.23)	C(ETL)US TYPE CMX; TIA 568B
PVC, 600V rated, foil shield	4 conductor, shielded twisted pair (STP), teal	22	8.13 (0.32)	(UL) CMX, CMR; c-UL CMG; (UL) PLTC or AWM 2570 80C 600V; TIA 568B

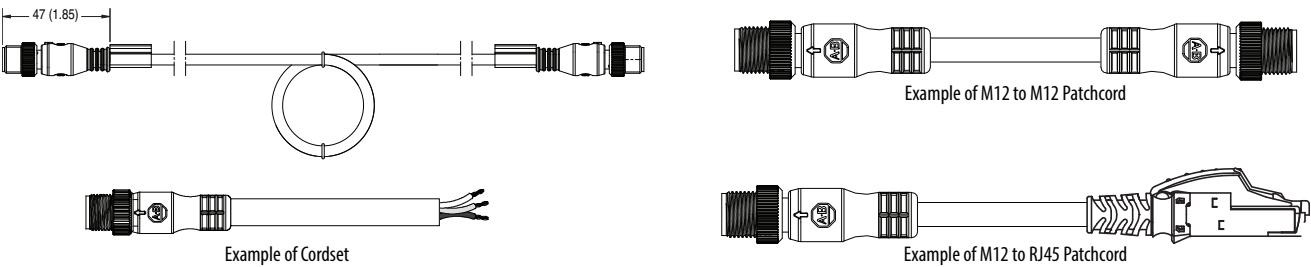
Pinout

Color Code	Face View Pinout Face View RJ45 Pinout		Face View RJ45 Pinout	
	4-Pin		8-Pin	
				
A	1 White-Orange 2 White-Green 3 Orange 4 Green		8-Pin	4-Pin
			1 White/Orange TxData + 2 Orange TxData - 3 White/Green Recv Data + 4 Blue Unused 5 White/Blue Unused 6 Green Recv Data - 7 White/Brown Unused 8 Brown Unused	1 White/Orange TxData + 2 Orange TxData - 3 White/Green Recv Data + 4 — 5 — 6 Green Recv Data - 7 — 8 —


Approximate Dimensions

Dimensions are in mm (in.). Illustrations are not drawn to scale.

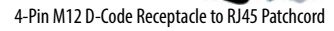
Figure 7 - Cordsets/Patchcords


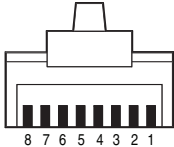


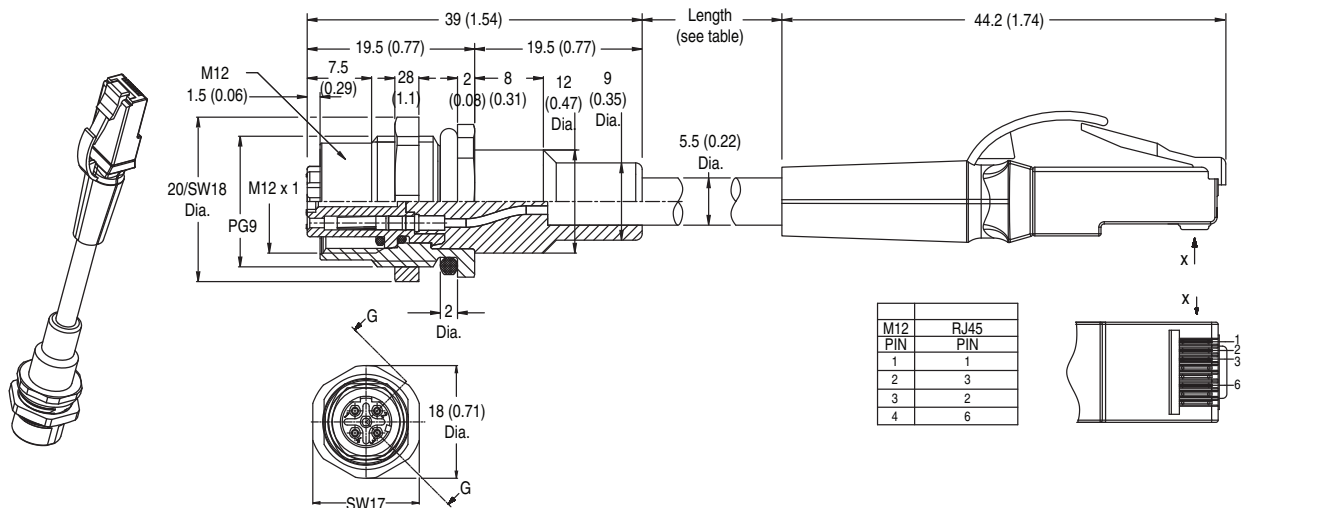
Attribute	Bulletin 1585D
Coupling Nut Material	Nickel-plated brass
Contact Material	Gold-plated brass
Cable Type	Unshielded teal TPE, 4-conductor, stranded tinned wire, Industrial Cat 5e
Enclosure Type Rating	IP67
Nominal Outer Diameter	5.84 mm (0.23 in.) $\pm 10\%$
Mounting	Front-mount
Operating Temperature	-40...+75 °C (-40...+167 °F)
Cable Rating	TIA 568B, flex-rated, 24 AWG, UL, c-UL
Voltage	300V



4-Pin M12 D-Code Receptacle to RJ45 Patchcord



Color Code	Face View Pinout (Female)	Face View RJ45 Pinout
	4-Pin	
		
A	1 White/Orange 2 White/Green 3 Orange 4 Green	1 White/Orange TxData + 2 Orange TxData - 3 White/Green Rcv Data + 4 Blue Unused 5 White/Blue Unused 6 Green Rcv Data - 7 White/Brown Unused 8 Brown Unused



M12 X-code Flex-rated Gigabit

Features

- Over-molded housing suitable for IP67 applications and harsh industrial environments where extreme vibration, shock, chemicals, and temperature are found.
- Flex-rated cable (must be tied down and not flexed within 6 in. of the connector).
- Designed to EtherNet/IP specifications and ISO IEC 11801, IEC 61918.
- Twisted pairs maintain signal balance through cable to provide high noise immunity and low return loss.
- Suitable for noise environments $M_3I_3C_3E_3$.

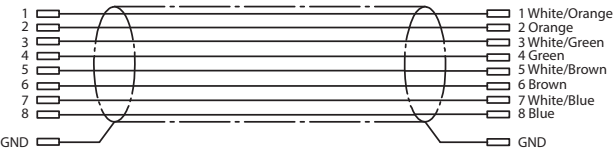


8-Pin M12 X-code Cordset, Cat 6

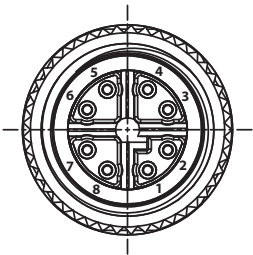
Specifications

Attributes	Bulletin 1585D
Coupling Nut Material	Nickel-plated brass
Housing Material	Polyurethane (PUR)
Contact Material	Gold-plated brass
Cable Type	Shielded teal PUR, 4 twisted pairs, 26 AWG, Industrial Cat 6, sun light and oil resistant
Nominal Outer Diameter	5.84 mm (0.23 in.) ±10%
Bend Radius	10 x cable diameter
Cable Rating	Shielded: Standard TIA 568-B, ISO/IEC 11801, flex-rated, 26 AWG, halogen-free, Type CMX
Enclosure Type Rating	IP67
Operating Temperature	-40...+80 °C (-40...+176 °F)

Wiring Diagram



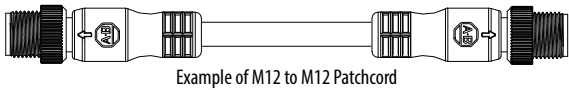
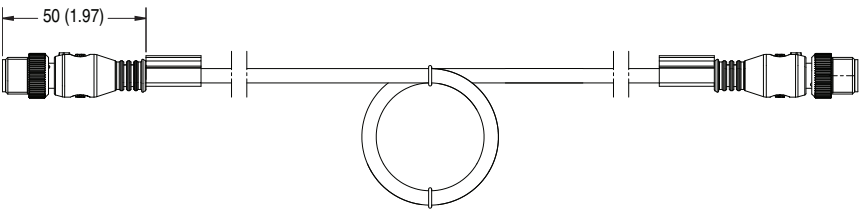
Connector pin assignment
plug M12 Cat 6_A
pin side view



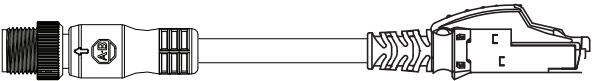
Approximate Dimensions

Dimensions are in mm (in.). Illustrations are not drawn to scale.

Figure 9 - Cordsets/Patchcords



Example of M12 to M12 Patchcord



Example of M12 to RJ45 Patchcord

M12 Red

Specifications

Attributes	Bulletin 1585D
Coupling Nut Material	Nickel-plated brass
Housing Material	Polyurethane (PUR)
Contact Material	Gold-plated brass
Nominal Outer Diameter	5.84 mm (0.23 in.) ±10%
Enclosure Type Rating	IP67
Bend Radius	10 x cable diameter



4-Pin M12 D-Code Cordset

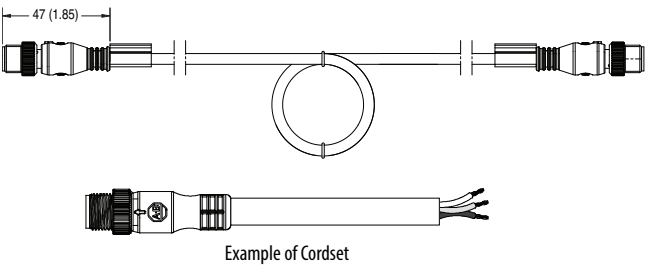
Pinout

Color Code	Face View Pinout Face View RJ45 Pinout		Face View RJ45 Pinout	
	4-Pin		8-Pin	
A	1 White-Orange 2 White-Green 3 Orange 4 Green		8-Pin	4-Pin
			1 White/Orange TxData + 2 Orange TxData - 3 White/Green Recv Data + 4 Blue Unused 5 White/Blue Unused 6 Green Recv Data - 7 White/Brown Unused 8 Brown Unused	1 White/Orange TxData + 2 Orange TxData - 3 White/Green Recv Data + 4 — 5 — 6 Green Recv Data - 7 — 8 —

Approximate Dimensions

Dimensions are in mm (in.). Illustrations are not drawn to scale.

Figure 10 - Cordsets/Patchcords



Example of M12 to M12 Patchcord

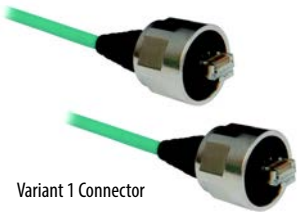
Example of M12 to RJ45 Patchcord

Patchcords and Field Attachable

Die-cast Zinc RJ45 Connector, Variant 1

Specifications

Attributes	Bulletin 1585BX and 1585BZ
Certifications	UL Listed and c-UL
Contact Material	Copper alloy
Housing Material	Die-cast zinc
Cable Diameter	4.0...8.0 mm (0.157...0.315 in.)
Cable Rating	22...26 AWG, 0.40...0.64 mm (0.016...0.025 in.)
Assembly Rating	150V, 1.5 A
Mating Cycles	750
Voltage	300V
Enclosure Type Rating	IP67
Operating Temperature	-40...+70 °C (-40...+158 °F)



Variant 1 Connector

Approximate Dimensions

Dimensions are in mm (in.). Illustrations are not drawn to scale.

Figure 11 - Die-cast Zinc RJ45 Connector, Variant 1 Dimensions

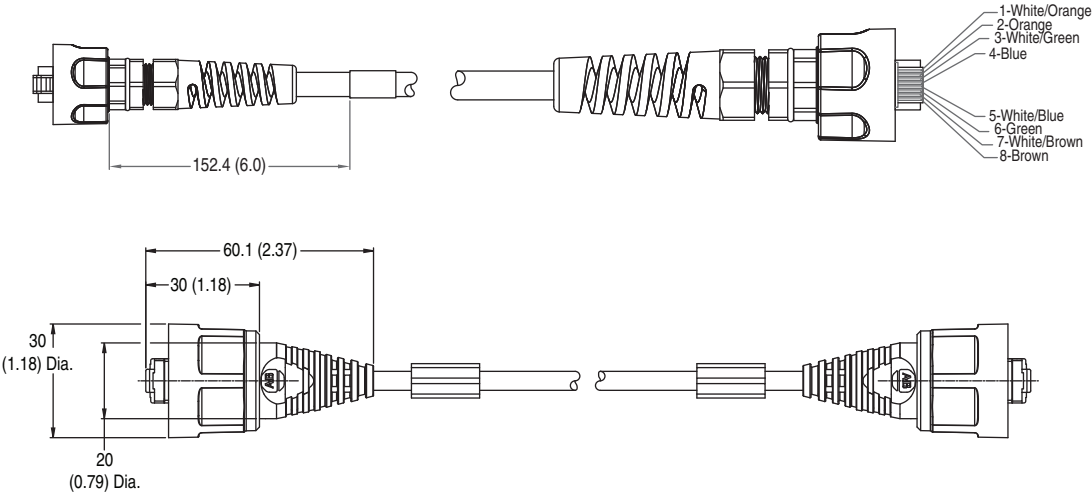


Figure 12 - Male Housing

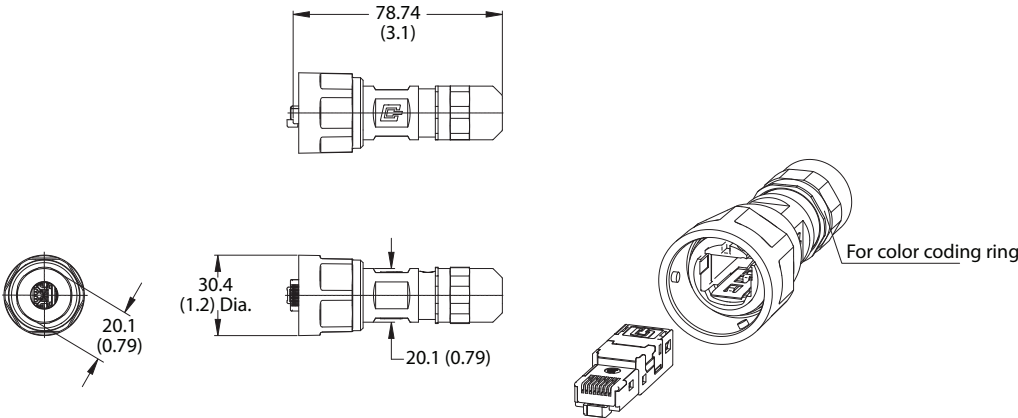


Figure 13 - Female Receptacle

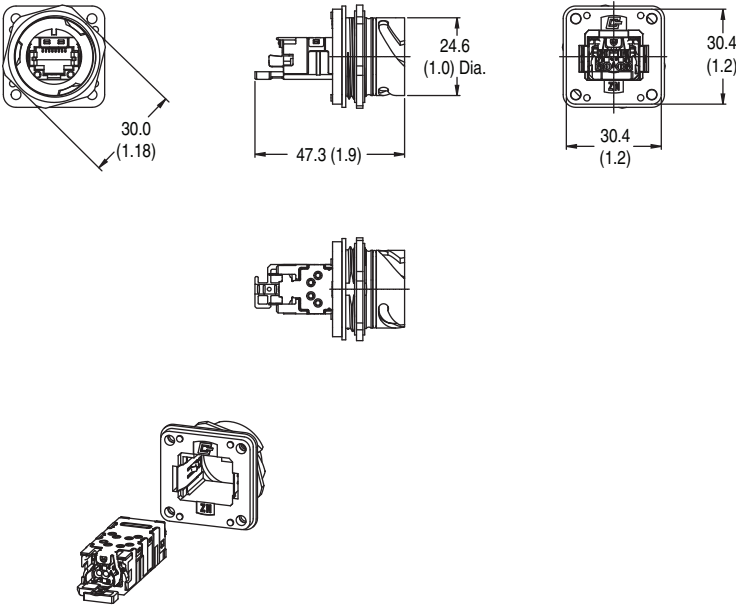
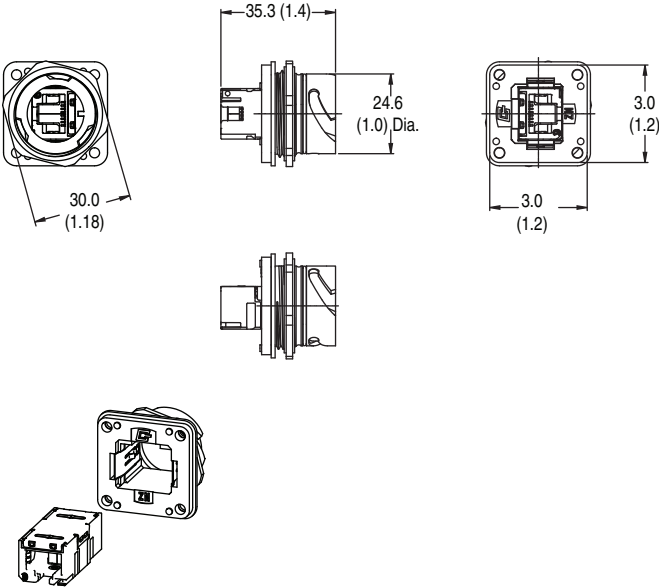


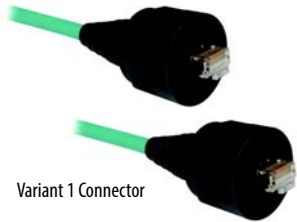
Figure 14 - Female Receptacle



Thermoplastic RJ45 Connector, Variant 1

Specifications

Attributes	Bulletin 1585BP and 1585BT
Certifications	UL Listed and c-UL
Contact Material	Copper alloy
Housing Material	Polybutylene terephthalate (PBT)
Cable Diameter	4.0...8.0 mm (0.157...0.315 in.)
Cable Rating	22...26 AWG, 0.40...0.64 mm (0.16...0.025 in.)
Assembly Rating	150V, 1.5 A
Voltage	300V
Mating Cycles	750
Enclosure Type Rating	IP66, IP67, NEMA 6
Operating Temperature	-25...+75 °C (-13...+167 °F)



Approximate Dimensions

Dimensions are in mm (in.). Illustrations are not drawn to scale.

Figure 15 - Thermoplastic RJ45 Connector, Variant 1 Dimensions

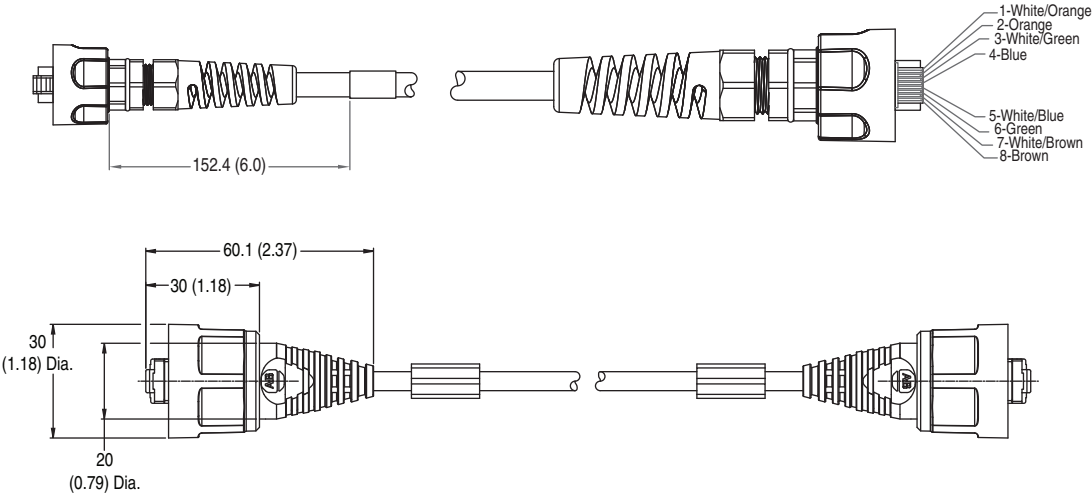


Figure 16 - Male Housing

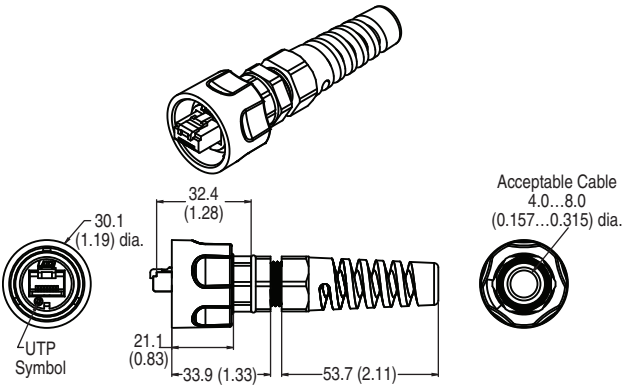


Figure 17 - Female Receptacle

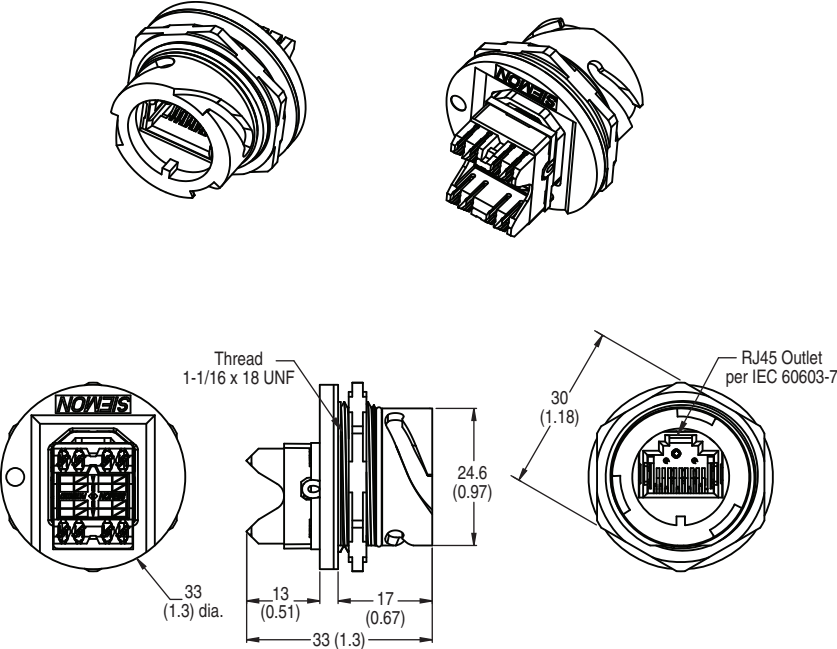
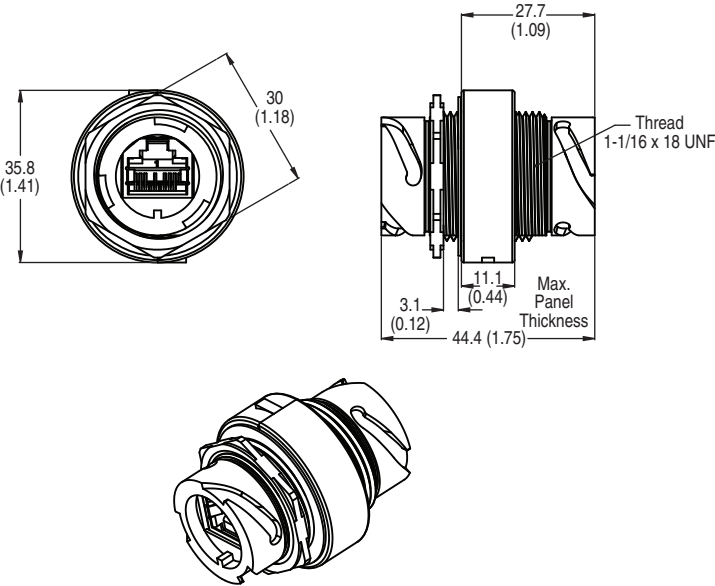


Figure 18 - Female to Female Coupler



Field Attachable

RJ45 Connector

Features

- IDC Connector**

 - 26...22 AWG Conductors
 - 360° shielding
 - Reuse IDC connector up to five times
 - No tools or conductor stripping required
 - Cat 6
- Crimp Connector**

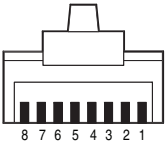
 - 26...24 AWG
 - Standard crimp connector with rugged boot
 - Cat 5e



Specifications

Attribute	Bulletin 1585J
Certifications	UL Listed
Connector Type	RJ45 male
Enclosure Type Rating	IP20
Operating Temperature	-40...+70 °C (-40...+158 °F)

Pinout

Color Code	Face View RJ45 Pinout			
	8-Pin			
				
A	8-Pin		4-Pin	
	1 White/Orange	TxData +	1 White/Orange	TxData +
	2 Orange	TxData -	2 Orange	TxData -
	3 White/Green	Recv Data +	3 White/Green	Recv Data +
	4 Blue	Unused	4 —	Unused
	5 White/Blue	Unused	5 —	Unused
	6 Green	Recv Data -	6 Green	Recv Data -
	7 White/Brown	Unused	7 —	Unused
	8 Brown	Unused	8 —	Unused

Approximate Dimensions

Dimensions are in mm (in.). Illustrations are not drawn to scale.

Figure 19 - RJ45 Insulation Displacement Connector (IDC)

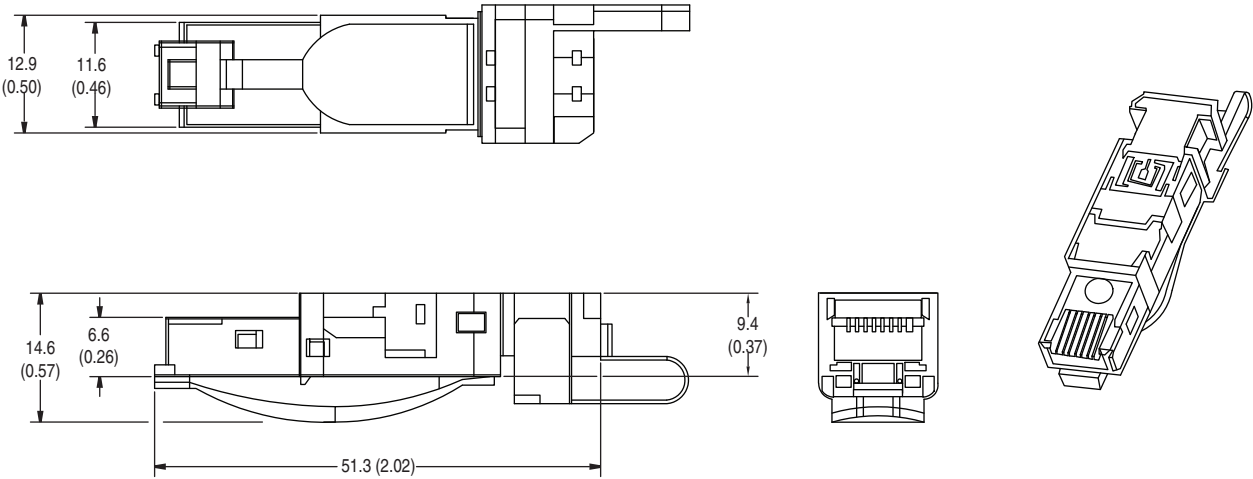
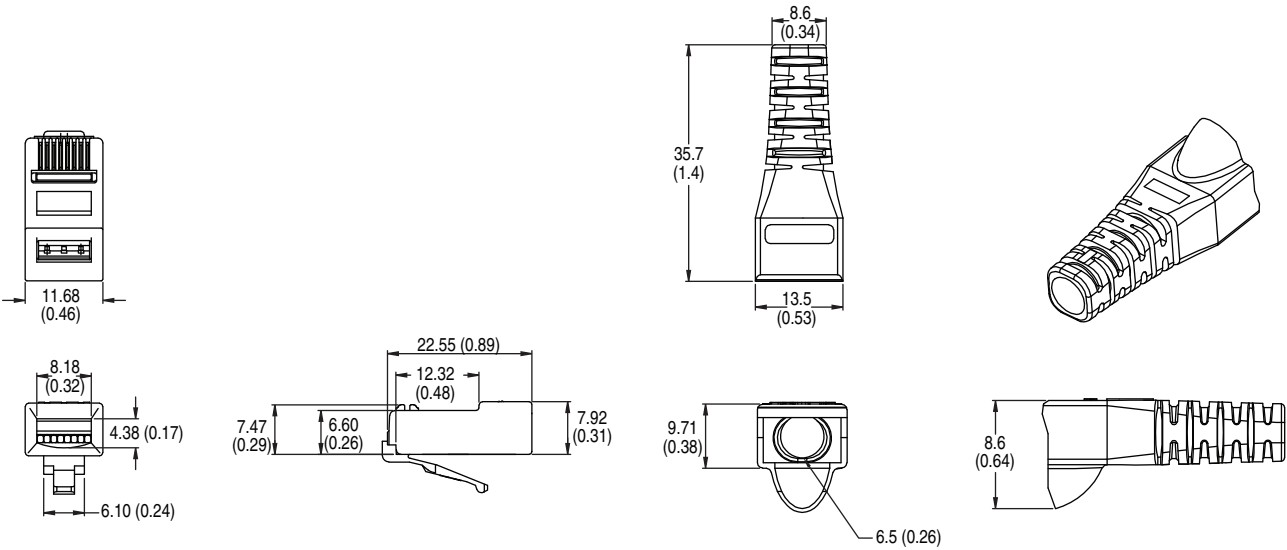


Figure 20 - RJ45 Crimp Connector



M12 Insulation Displacement Connectors (IDC)

Features

- Field installable with no hand tools needed
- Straight male or female shielded versions
- Allows easy modification of existing cable installations
- Insulation displacement technology for secure installation with excellent reliability
- Metal body unit excellent in shielding applications



Specifications

Attribute	Bulletin 1585D
Coupling Nut Material	Zinc die-cast
Connector Shell Material	Zinc die-cast or polyamide
Contact Material	Gold-plated brass
IDC Installations	10x, max.
Conductor OD	Unshielded: 26...22 AWG: 1.0...1.6 mm (0.04...0.063 in.); Shielded: 24...22 AWG: 1.2...1.6 mm (0.04...0.063 in.)
Assembly Rating	32V, 4 A
Enclosure Type Rating	IP67
Operating Temperature	-25...+85 °C (-13...+185 °F)
Installation Temperature	-5...+50 °C (23...185 °F)

Pinout

Color Code	Face View Pinout Face View M12 Pinout	
	4-Pin	
A	1 White-Orange 2 White-Green	3 Orange 4 Green

Approximate Dimensions

Dimensions are in mm (in.). Illustrations are not drawn to scale.

Figure 21 - M12 Insulation Displacement Connectors Dimensions

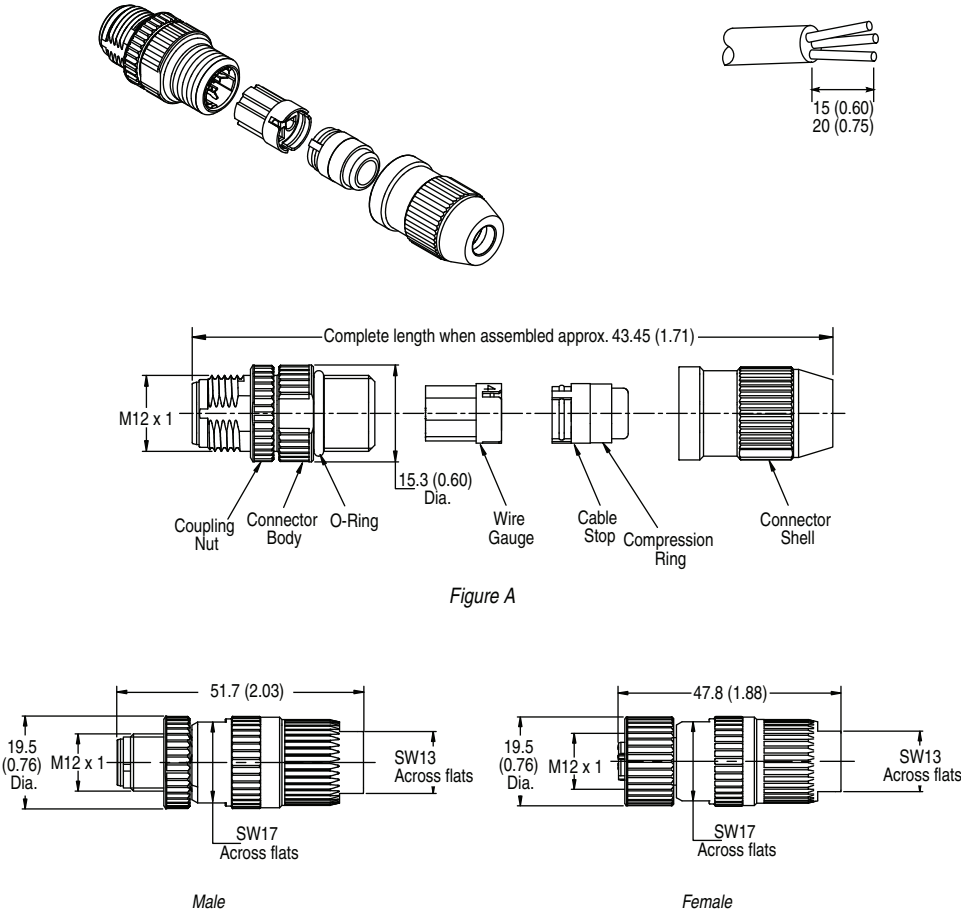


Figure A

Figure B

M12 to RJ45 Bulkhead Connector

Specifications

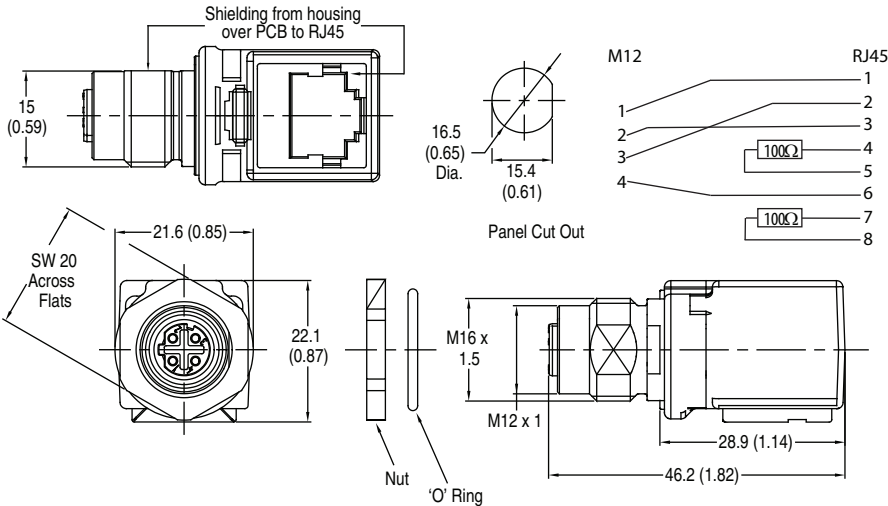
Attributes	Bulletin 1585A
Certifications	UL Recognized for Canada and USA
Receptacle Shell Material	Nickel-plated brass
Contact Material	Brass with nickel plating
Wire Insulation	Oil-resistant PVC, 22 AWG stranded copper, 300V, UL recognized
Assembly Rating	32V, 4 A
Enclosure Type Rating	IP67, 1200 psi (8270 kPa) washdown
Operating Temperature	-20...+85 °C (-4...+185 °F)



Approximate Dimensions

Dimensions are in mm (in.). Illustrations are not drawn to scale.

Figure 22 - M12 to RJ45 Bulkhead Connector Dimensions



Notes:

Rockwell Automation Support

Use the following resources to access support information.

Technical Support Center	Knowledgebase Articles, How-to Videos, FAQs, Chat, User Forums, and Product Notification Updates.	www.rockwellautomation.com/knowledgebase
Local Technical Support Phone Numbers	Locate the phone number for your country.	www.rockwellautomation.com/global/support/get-support-now.page
Direct Dial Codes	Find the Direct Dial Code for your product. Use the code to route your call directly to a technical support engineer.	www.rockwellautomation.com/global/support/direct-dial.page
Literature Library	Installation Instructions, Manuals, Brochures, and Technical Data.	www.rockwellautomation.com/literature
Product Compatibility and Download Center (PCDC)	Get help determining how products interact, check features and capabilities, and find associated firmware.	www.rockwellautomation.com/global/support/pcdc.page

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Rockwell Otomasyon Ticaret A.Ş., Kar Plaza İş Merkezi E Blok Kat:6 34752 İçerenköy, İstanbul, Tel: +90 (216) 5698400

www.rockwellautomation.com

Power, Control and Information Solutions Headquarters

Americas: Rockwell Automation, 1201 South Second Street, Milwaukee, WI 53204-2496 USA, Tel: (1) 414.382.2000, Fax: (1) 414.382.4444
Europe/Middle East/Africa: Rockwell Automation NV, Pegasus Park, De Kleetlaan 12a, 1831 Diegem, Belgium, Tel: (32) 2 663 0600, Fax: (32) 2 663 0640
Asia Pacific: Rockwell Automation, Level 14, Core F, Cyberport 3, 100 Cyberport Road, Hong Kong, Tel: (852) 2887 4788, Fax: (852) 2508 1846

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