Industrial Ethernet Media
Complete Solution for Ethernet Networks and Integrated Architecture
Ethernet networking is a growing solution for industry applications, and Rockwell Automation® offers a full suite of Ethernet-enabled products, ranging from Armor I/O, safety and PLCs to HMI, motion and drives. To complement this constantly growing line of industrial Ethernet products, Rockwell Automation® introduces a complete portfolio of industrial-grade Ethernet physical media, including M12 Connectivity, industry standard Variant 1 Connectivity, and RJ45 Connectivity products. More robust than standard, off-the-shelf Ethernet cabling, Allen-Bradley® Ethernet media is specifically designed for use in harsh industrial environments, combining a specially-designed cable with rugged connector construction to ensure reliability, flexibility and low noise.

**600V Ethernet Cable** — Bulletin 1585B
- Specially designed to support high voltage applications
- 600V On-Machine rated shielded Ethernet jacket for use in a cable tray shared with high-voltage power cables
- Recommended with MCC, Kinetix, and Motion Control
- Suitable for M1I3C3E3
- Cat 5e

**M12 D Code Connectivity** — Bulletin 1585D
- Overmolded IP67 connector resistant to vibration, shock, and chemicals
- On-Machine and robotic applications
- High Flex to 10 million cycles
- Variety of connector options
- Suitable for M1I1C2E2
- Cat 5e

**Variant 1 Connectivity** — Bulletin 1585B
- RJ45 connector with protective Thermoplastic or Die Cast Zinc housing providing an IP67 solution
- On-Machine and robotic applications
- High Flex to 10 million cycles
- Variety of connector options
- Overmolded patchcords and field attachable connectors
- Suitable for M1I1C3E3
- Cat 5e

**RJ45 Connectivity** — Bulletin 1585J
- Straight, left and right angles available
- Durable network solution with a secure connection and rugged strain relief provides proper bend radius, maximizes flexibility and ensures dependable boot retention
- Angled connector will create more flexibility for daisy chaining products
- Minimizes the overall bend radius that is applied on the cable compared to straight connector versions
- Variety of cable options: Unshielded available in TPE, PVC, and Plenum. Shielded available in PVC and PUR, and 600V
- 600V Ethernet patchcords for high-voltage applications
- Suitable for M1I1C3E3
- Cat 5e
1. RJ45 to RJ45 Patchcord
2. M12 to RJ45 Bulkhead Connector
3. M12 to M12 Patchcord
4. Stratix™ Ethernet Switch
5. ArmorBlock® Ethernet Module
6. ArmorPoint® Ethernet Module
7. Auxiliary Power Mini Receptacle
8. Auxiliary Power Mini Patchcord
9. Auxiliary Power Mini T-Port
10. DC Micro Patchcord
11. M23 Pigtail
12. DC Micro Distribution Box
13. PowerFlex® Drive
14. MultiSight™

**ProposalWorks®**
- Access to information on a broad range of Allen-Bradley® products and services
- Easy-to-use product selection interface makes it a snap to determine the exact catalog number for the item you need and to access current list pricing
- Software automatically selects the appropriate informational documents, photos, etc.

**Integrated Architecture Builder™**
- Configure and generate bills of material for NetLinx-based networks
- Define automation system components easily
- Specify the right equipment

**Ethernet Media Website**
www.ab.com/networks/media/ethernet
- **Catalog Pages**
- **Cable Selection Guide**
- **White Paper** – Benefits of Industrial Connectivity in Industrial Applications
- **White Paper** – Guidance for Selecting Cables for EtherNet/IP Networks

**E-TOOLS** Simplify the Configuration and Design of Your Complete Ethernet Solution
When it comes to the performance of your Ethernet network, selection of the proper cable type is crucial. The 5-step process below outlines important considerations to help you select the right cable for your architecture.

1. Determine the channel bandwidth requirements to suit the application. For example, Channel Class or Category.

<table>
<thead>
<tr>
<th>Data Rate</th>
<th>Minimum Category to support data rate TIA 568.B.1</th>
<th>Channel Class ISO/IEC 11801</th>
<th>Recommended Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>10Mb/s</td>
<td>Cat 3</td>
<td>Class C</td>
<td>Cat 5*</td>
</tr>
<tr>
<td>100Mb/s, 1Gb/s</td>
<td>Cat 5e</td>
<td>Class D</td>
<td>Cat 5e and Cat 6</td>
</tr>
<tr>
<td>1Gb/s, 10Gb/s</td>
<td>Cat 6</td>
<td>Class E</td>
<td>Cat 6 and Cat 6a</td>
</tr>
</tbody>
</table>

*Cat 5 cables are no longer supported by the standards. All Rockwell Automation® cables are Cat 5e.

2. Choose cable type: Shielded or Unshielded

There are a number of factors in determining if shielded or unshielded cabling should be used. Some geographical areas mandate Shielded Twisted Pairs (STP) cables be used, while some companies have policies regarding the use of STP or Unshielded Twisted Pair (UTP) cabling.

<table>
<thead>
<tr>
<th>Unshielded Cable (UTP)</th>
<th>Shielded Cable (STP)</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Specially designed unshielded pressure extruded cable maintains maximum balance during flexing – suitable for high-flex applications.</td>
<td>• High-noise environments</td>
</tr>
<tr>
<td>• Twisted-pair design preserves signal balance through cable to provide noise immunity and return loss, therefore shields are not needed in harsh industrial applications and environments.</td>
<td>• Shielded cables will help to reduce noise ingress in extremely high-noise environments or applications where extremely low BERs are necessary.</td>
</tr>
<tr>
<td>• Simplify installation and reduce costs.</td>
<td>• Shielded cables may require equipotential grounding systems to prevent ground loops in the cabling.</td>
</tr>
<tr>
<td>• Recommended with: Stratix Switches, PLCs, HMI, In-Cabinet environments.</td>
<td>• Helps reduce noise coupled to the balanced cables by providing a shield around the conductors.</td>
</tr>
<tr>
<td></td>
<td>• Recommended with: Drives, MCC, Kinetix</td>
</tr>
</tbody>
</table>

3. Decide whether additional electrical attributes are needed based on MICE.

MICE is a method of measuring the harshness of your environment. There are 3 levels – Office/Commercial Grade, Light Industrial, and Industrial.
4. Select 2-Pair or 4-Pair

2-Pair Cabling
- 10/100BaseT applications
- M12 D Code connectors
- On-Machine applications
- Limited-panel space – M12 D coding connectors are smaller in form

4-Pair Cabling
- Applications where wire space is limited – 2-pair cable is smaller than 4-pair cable
- Field termination is less complicated

White-Orange
White-Green
Orange
Green

Shielded
Unshielded

Rockwell Automation cables are available in 2-pair and 4-pair designs for shielded and unshielded applications.

5. Determine additional attributes for cabling.

Unshielded
- PVC Cable – General Purpose Applications
- TPE Cable – High-Flex Applications
- Plenum Cable – Air Handling Applications

Shielded
- PVC Cable – General Purpose Applications
- PUR Cable – High Flex, Halogen Free
- PVC Cable – 600V

Cable Length Rating
- Cables comply to EtherNet/IP Standards, ODVA, EIA/TIA 569B ISO/IEC Standards
- Lengths based on patchcord derating and equivalencies with solid core horizontal cables.
  - Formula in ODVA installation specification
  - Maximum cable length may be derated based on stranding of cable and environmental factors

<table>
<thead>
<tr>
<th>Cable Type</th>
<th>Conductor</th>
<th>Max Length*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unshielded Twisted Pair (UTP), TPE, Flex</td>
<td>2-pair</td>
<td>82 meters</td>
</tr>
<tr>
<td>UTP, TPE, Flex</td>
<td>4-pair</td>
<td>79 meters</td>
</tr>
<tr>
<td>UTP, Riser PVC</td>
<td>4-pair</td>
<td>85 meters</td>
</tr>
<tr>
<td>UTP, Plenum</td>
<td>4-pair</td>
<td>85 meters</td>
</tr>
<tr>
<td>Shielded Twisted Pair (STP), Riser, PVC</td>
<td>4-pair</td>
<td>85 meters</td>
</tr>
<tr>
<td>STP, PUR Flex</td>
<td>4-pair</td>
<td>83 meters</td>
</tr>
<tr>
<td>STP, PUR Flex</td>
<td>2-pair</td>
<td>83 meters</td>
</tr>
<tr>
<td>STP, 600V</td>
<td>4-pair</td>
<td>85 meters</td>
</tr>
<tr>
<td>STP, 600V</td>
<td>2-pair</td>
<td>85 meters</td>
</tr>
</tbody>
</table>

*Calculated at room temperature. Additional length derating is required for ambient temperatures above 60 degrees Celsius (140 degrees Fahrenheit).
## RJ45 Connectivity – 1585J

### RJ45 Patchcords

<table>
<thead>
<tr>
<th>Conductors, Jacket Material and Color</th>
<th>Cable Type</th>
<th>Straight to Straight</th>
<th>Right Angle to Straight</th>
<th>Left Angle to Straight</th>
<th>Left Angle to Left Angle</th>
<th>Right Angle to Right Angle</th>
</tr>
</thead>
</table>

### RJ45 Insulation Displacement Connector (IDC)

- Die Cast Zinc Housing
- AWG 26–22
- Secure and reliable connection with insulation displacement technology
- No conductor stripping required

**Recommended RJ45 connector:**

- Stratix Switches - Straight
- ControlLogix - Left Angle or Straight
- CompactLogix - Right Angle or Straight
- MicroLogix 1100 - Right angle (cable will go downwards) Left angle (cable will go upwards)
- MicroLogix 1400 - Left Angle, Right Angle, or Straight
- PanelView - Left Angle, Right Angle, or Straight
- Kinetix - Left Angle, Right Angle, or Straight
- PowerFlex - Left Angle, Right Angle, or Straight

### RJ45 Crimp Connector

- Standard crimp connectors with rugged boot
- Crimp tool kit available with crimpers, cable stripper/cutter, conductor separator

**Recommended RJ45 connector:**

- Stratix Switches - Straight
- ControlLogix - Left Angle or Straight
- CompactLogix - Right Angle or Straight
- MicroLogix 1100 - Right angle (cable will go downwards) Left angle (cable will go upwards)
- MicroLogix 1400 - Left Angle, Right Angle, or Straight
- PanelView - Left Angle, Right Angle, or Straight
- Kinetix - Left Angle, Right Angle, or Straight
- PowerFlex - Left Angle, Right Angle, or Straight

### IP20 to IP67

- Transition from IP20 environment to IP67 environment
- In-cabinet connectivity with RJ45 connector providing On-Machine solution with M12 D Code connector
- Differential 100 ohm terminators used for unused pairs

**Recommended RJ45 connector:**

- Stratix Switches - Straight
- ControlLogix - Left Angle or Straight
- CompactLogix - Right Angle or Straight
- MicroLogix 1100 - Right angle (cable will go downwards) Left angle (cable will go upwards)
- MicroLogix 1400 - Left Angle, Right Angle, or Straight
- PanelView - Left Angle, Right Angle, or Straight
- Kinetix - Left Angle, Right Angle, or Straight
- PowerFlex - Left Angle, Right Angle, or Straight

*Available in 0.3, 0.6, 1, 2, 5, 10, 15, and increments of 5 meters up to 100 meters

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**Unshielded Twisted Pair (UTP) Ethernet Cable**

<table>
<thead>
<tr>
<th>Jacket Material/Application</th>
<th>Number of Conductors</th>
<th>Wire Size, AWG</th>
<th>Product Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Riser PVC – General Purpose†</td>
<td>4-Pair</td>
<td>24</td>
<td>1585-C8PB-JL-*</td>
</tr>
<tr>
<td>- Robotic TPE – High Flex†</td>
<td>2 and 4-Pair</td>
<td>24</td>
<td>1585-C4TB-JL-*</td>
</tr>
<tr>
<td>- Flex rated to 10 million cycles†</td>
<td>4-Pair</td>
<td>24</td>
<td>1585-C8TB-JL-*</td>
</tr>
</tbody>
</table>

**Shielded Twisted Pair (STP) Ethernet Cable**

<table>
<thead>
<tr>
<th>Jacket Material/Application</th>
<th>Number of Conductors</th>
<th>Wire Size, AWG</th>
<th>Product Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Riser PVC – General Purpose†</td>
<td>4-Pair</td>
<td>26</td>
<td>1585-C8CB-JL-*</td>
</tr>
<tr>
<td>- PUR – High Flex – Halogen Free†</td>
<td>2 and 4-Pair</td>
<td>26</td>
<td>1585-C4UB-JL-*</td>
</tr>
<tr>
<td>- Cable flex rated to 10 million cycles†</td>
<td>2 and 4-Pair</td>
<td>22</td>
<td>1585-C8HB-JL-*</td>
</tr>
</tbody>
</table>

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**RJ45 Patchcords & Cordsets IP20**

- RJ45 Insulation Displacement Connector (IDC)
- RJ45 Crimp Connector
- IP20 to IP67

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**Cable Spools – 1585-C**

<table>
<thead>
<tr>
<th>Jacket Material/Application</th>
<th>Number of Conductors</th>
<th>Wire Size, AWG</th>
<th>Product Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Riser PVC – General Purpose†</td>
<td>4-Pair</td>
<td>24</td>
<td>1585-C8PB-JL-*</td>
</tr>
<tr>
<td>- Robotic TPE – High Flex†</td>
<td>2 and 4-Pair</td>
<td>24</td>
<td>1585-C4TB-JL-*</td>
</tr>
<tr>
<td>- Flex rated to 10 million cycles†</td>
<td>4-Pair</td>
<td>24</td>
<td>1585-C8TB-JL-*</td>
</tr>
</tbody>
</table>

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**Recommended RJ45 connector:**

- Stratix Switches - Straight
- ControlLogix - Left Angle or Straight
- CompactLogix - Right Angle or Straight
- MicroLogix 1100 - Right angle (cable will go downwards) Left angle (cable will go upwards)
- MicroLogix 1400 - Left Angle, Right Angle, or Straight
- PanelView - Left Angle, Right Angle, or Straight
- Kinetix - Left Angle, Right Angle, or Straight
- PowerFlex - Left Angle, Right Angle, or Straight

*Available in 100, 300, 600 meters ↑ Available in red cable jacket
# Ethernet Connectivity Solutions

### M12 D Code Connectivity – 1585D

<table>
<thead>
<tr>
<th>M12 D Code</th>
<th>Connector Type</th>
<th>Unshielded</th>
<th>Shielded</th>
<th>600V</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male Straight to Male Straight†</td>
<td>1585D-M4TBDM-*</td>
<td>1585D-M4UBDM-*</td>
<td>1585D-M4HBDM-*</td>
<td></td>
</tr>
<tr>
<td>Male Straight to Male Right Angle†</td>
<td>1585D-M4TBDDE-*</td>
<td>1585D-M4UBDDE-*</td>
<td>1585D-M4HBDDE-*</td>
<td></td>
</tr>
<tr>
<td>Male Right Angle to Male Right Angle†</td>
<td>1585D-E4TBDDE-*</td>
<td>1585D-E4UBDDE-*</td>
<td>1585D-E4HBDDE-*</td>
<td></td>
</tr>
<tr>
<td>Male Straight to Female Straight†</td>
<td>1585D-M4TBD0F-*</td>
<td>1585D-M4UBD0F-*</td>
<td>1585D-M4HBD0F-*</td>
<td></td>
</tr>
</tbody>
</table>

### Front Mount Receptacle

- Female Front Mount to RJ45†: 1585D-D4TBJM-* 1585D-D4UBJM-* 1585D-D4HBJM-*

### Transition Cable

- Male Straight to RJ45†: 1585D-M4TBJM-* 1585D-M4UBJM-* 1585D-M4HBJM-*

### Insulation Displacement Connector (IDC)

- Male, Unshielded: 1585D-M4DC-H
- Male, Shielded: 1585D-M4DC-SH
- Female, Shielded: 1585D-F4DC-SH
- Female, Shielded, 600V Cable Only: 1585D-M4HC-SH
  - Male & Female
  - Shielded: AWG 22-24
  - Unshielded: AWG 26-22
  - Field installable with no hand tools needed
  - Secure and reliable connection with insulation displacement technology
  - Provides quick assembly when configuring custom length patchcords

### Variant 1 Products – 1585B

<table>
<thead>
<tr>
<th>Product Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>1585BT-M4UBBM-*</td>
</tr>
<tr>
<td>1585BT-M4HBBM-*</td>
</tr>
</tbody>
</table>

- Overmolded RJ45 with thermoplastic housing
- Cat 5e
- Cable flex rated to 10 million cycles

### Variant 1 Overmolded Male Patchcords

- Available in 0.3, 0.6, 1, 2, 5, 10, 15, and increments of 5 meters up to 100 meters
- Available in red cable jacket

### Variant 1 Field Attachable Connectors – Thermoplastic, IP67 – 1585BP

- Female receptacle outlet: 1585BP-F8CC
- Female to female RJ45: 1585BP-F8BF
- Protective cap for housing and outlet: 1585BP-FCAP, 1585BP-MCAP
- Cat 5e: 1585BP-M8CC

### Variant 1 Overmolded Connectivity – Thermoplastic, IP67 – 1585BT

- Male housing
- Overmolded RJ45 with thermoplastic housing
- RJ45 connector with protective diecast zinc shell
- Crimp RJ45 insert providing reliable connection
- Cat 5e

### Variant 1 Field Attachable Connectors – Thermoplastic, IP67 – 1585BP

- Male Housing
- RJ45 connector with protective diecast zinc shell
- Crimp RJ45 insert providing a rugged connection
- Cat 6

### Variant 1 Overmolded Connectivity – Diecast Zinc, IP67 – 1585BX

- Male Straight to Male Straight†: 1585BX-M4TBDM-* 1585BX-M4UBDM-* 1585BX-M4HBDM-*
- Male Straight to Male Right Angle†: 1585BX-M4TBDE-* 1585BX-M4UBDE-* 1585BX-M4HBDDE-*
- Male Right Angle to Male Right Angle†: 1585BX-E4TBDE-* 1585BX-E4UBDE-* 1585BX-E4HBDDE-*
- Male Straight to Female Straight†: 1585BX-M4TBD0F-* 1585BX-M4UBD0F-* 1585BX-M4HBD0F-*

### Variant 1 Field Attachable Connectors – Diecast Zinc, IP67 – 1585BZ

- Female receptacle outlet: 1585BZ-F8CC
- Female to female RJ45: 1585BZ-F8BF
- Protective cap for housing and outlet: 1585BZ-FCAP, 1585BZ-MCAP
- Cat 6: 1585BZ-M8CC

### M12 D Code Connectivity – 1585D

- Male Straight to Male Straight†: 1585D-M4TBDM-* 1585D-M4UBDM-* 1585D-M4HBDM-*
- Male Straight to Male Right Angle†: 1585D-M4TBDDE-* 1585D-M4UBDDE-* 1585D-M4HBDDE-*
- Male Right Angle to Male Right Angle†: 1585D-E4TBDDE-* 1585D-E4UBDDE-* 1585D-E4HBDDE-*
- Male Straight to Female Straight†: 1585D-M4TBD0F-* 1585D-M4UBD0F-* 1585D-M4HBD0F-*

### Insulation Displacement Connector (IDC)

- Male, Unshielded: 1585D-M4DC-H
- Male, Shielded: 1585D-M4DC-SH
- Female, Shielded: 1585D-F4DC-SH
- Male, Shielded, 600V Cable Only: 1585D-M4HC-SH
  - Male & Female
  - Shielded: AWG 22-24
  - Unshielded: AWG 26-22
  - Field installable with no hand tools needed
  - Secure and reliable connection with insulation displacement technology
  - Provides quick assembly when configuring custom length patchcords

### Insulation Displacement Connector (IDC)

- Female, Shielded, 600V Cable Only: 1585D-M4HC-SH
  - Male & Female
  - Shielded: AWG 22-24
  - Unshielded: AWG 26-22
  - Field installable with no hand tools needed
  - Secure and reliable connection with insulation displacement technology
  - Provides quick assembly when configuring custom length patchcords

*Available in 0.3, 0.6, 1, 2, 5, 10, 15, and increments of 5 meters up to 100 meters
† Available in red cable jacket
Rockwell Automation® offers a complete portfolio of network media to help connect your Ethernet enabled components with ease. From switches and controllers to I/O and drives, Allen-Bradley® Ethernet connectivity products provide a dependable solution for any application.

Note: Red cables identify safety applications

Red Ethernet cables provide a complete solution and integration with Rockwell Automation Ethernet/IP safety products.

Rockwell Automation® offers a breadth of quality Allen-Bradley® components to fit your specific needs. In order to assist you with your component selection, we offer a variety of configuration and selection tools.

Local Distributor
- Call 1.800.223.3354 to contact your local Distributor today.

Ethernet Website
- Check out our Website at www.ab.com/networks/media/ethernet
to learn how our Industrial Ethernet Media products can help you.
- With our online catalog, you can perform product searches, download pages in pdf format, receive helpful installation tips and so much more.

Product Selection Toolbox – Integrated Architecture Builder and ProposalWorks
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- Configure and generate bills of material for NetLinx-based networks with Integrated Architecture Builder
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- Software automatically selects the appropriate informational documents, photos, etc.

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