PRODUCT SPOTLIGHT

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

- 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 $M_3I_3C_3E_3$
- 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 $M_3I_3C_3E_3$
- 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 $M_3I_3C_3E_3$
- 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 $M_1I_1C_2E_2$
- Cat 5e

ETHERNET MEDIA
SELECTION GUIDE

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.

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

***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.

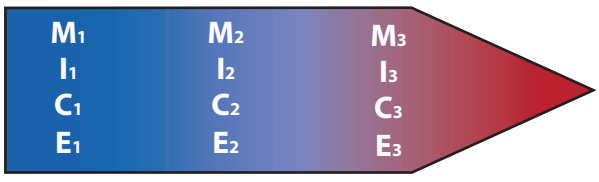
Unshielded Cable (UTP)	Shielded Cable (STP)
• Specially designed unshielded pressure extruded cable maintains maximum balance during flexing – suitable for high-flex applications. • Twisted-pair design preserves signal balance through cable to provide noise immunity and return loss, therefore shields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

3. Decide whether additional electrical attributes are needed based on MICE$_{123}$.

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

- **M** Mechanical — Shock, Vibration, Crush, Impact
- **I** Ingress — Liquid, Particles
- **C** Climatic Chemical — Temperature, Humidity, Contaminants – (dry and liquid), Solar Radiation
- **E** EMI — ESD, Radiated and Conducted Transients, Magnetic fields

Rockwell Automation Ethernet Media	
Cable Spools	$M_3I_3C_3E_3$
M12 D Code Cables	
Variant 1 Cables	
RJ45 Cables	$M_1I_1C_2E_2$



ETHERNET MEDIA
SELECTION GUIDE

Rockwell Automation® offers a complete industrial Ethernet cabling solution that provides seamless connectivity for your Integrated Architecture and components. From raw cable and field-attachable connectors to RJ45 and M12 patchcords, Allen-Bradley® Ethernet connectivity enhances flexibility while ensuring network integrity and performance.

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

Shielded

Unshielded

White-Orange
White-Green
Orange
Green

4-Pair Cabling

- Backbone and uplink ports
- Areas where future requirements may require data rates greater than 100BaseT

Shielded

Unshielded

White-Orange
Orange
White-Green
Blue
White-Blue
Green
White-Brown
Brown

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

5. Determine additional attributes for cabling.

Unshielded	Shielded
• PVC Cable – General Purpose Applications	• PVC Cable – General Purpose Applications
• TPE Cable – High-Flex Applications	• PUR Cable – High Flex, Halogen Free
• Plenum Cable – Air Handling Applications	• 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

Cable Type	Conductor	Max Length*
Unshielded Twisted Pair (UTP), TPE, Flex	2-pair	82 meters
UTP, TPE, Flex	4-pair	79 meters
UTP, Riser PVC	4-pair	85 meters
UTP, Plenum	4-pair	85 meters
Shielded Twisted Pair (STP), Riser, PVC	4-pair	85 meters
STP, PUR Flex	4-pair	83 meters
STP, PUR Flex	2-pair	83 meters
STP, 600V	4-pair	85 meters
STP, 600V	2-pair	85 meters

***Calculated at room temperature. Additional length derating is required for ambient temperatures above 60 degrees Celsius (140 degrees Fahrenheit).**

ETHERNET CONNECTIVITY
SOLUTIONS

Cable Spools – 1585-C

Unshielded

Unshielded Twisted Pair (UTP) Ethernet Cable

Jacket Material/Application	Number of Conductors	Wire Size, AWG	Product Number
• Riser PVC – General Purpose†	4-Pair	24	1585-C8PB-S*
• Robotic TPE – High Flex† • Flex rated to 10 million cycles†	2 and 4-Pair	24	1585-C4TB-S* 1585-C8TB-S*
• Plenum PVC†	4-Pair	24	1585-C8MB-S*

Shielded

Shielded Twisted Pair (STP) Ethernet Cable

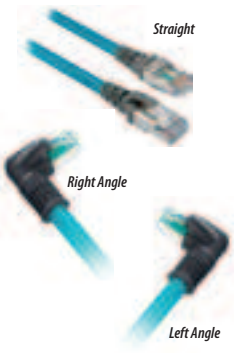
Jacket Material/Application	Number of Conductors	Wire Size, AWG	Product Number
• Riser PVC – General Purpose†	4-Pair	26	1585-C8CB-S*
• PUR – High Flex – Halen Free† • Cable flex rated to 10 million cycles†	2 and 4-Pair	26	1585-C4UB-S* 1585-C8UB-S*
• PVC – 600V†	4-Pair	22	1585-C8HB-S*
• PVC – 600V†	2-Pair	22	1585-C4HB-S*

*Available in 100, 300, 600 meters † Available in red cable jacket

RJ45 Connectivity – 1585J

Patchcords & Cordsets IP20

RJ45 Patchcords



Conductors, Jacket Material and Color	Cable Type	Straight to Straight	Right Angle to Straight	Left Angle to Straight	Right Angle to Left Angle	Left Angle to Left Angle	Right Angle to Right Angle
4-pair, Riser PVC, Teal	Unshielded Twisted Pair	1585J-M8PBJM-*	1585J-E8PBJM-*	1585J-L8PBJM-*	1585J-E8PBJL-*	1585J-L8PBJL-*	1585J-E8PBJE-*
4-pair, Riser PVC, Red		1585J-M4QBJM-*	1585J-E4QBJM-*	1585J-L4QBJM-*	1585J-E4QBJL-*	1585J-L4QBJL-*	1585J-E4QBJE-*
4-pair, High Flex TPE, Teal		1585J-M8TBJM-*	1585J-E8TBJM-*	1585J-L8TBJM-*	1585J-E8TBJL-*	1585J-L8TBJL-*	1585J-E8TBJE-*
2-pair, High Flex, TPE, Red		1585J-M4KBJM-*	1585J-E4KBJM-*	1585J-L4KBJM-*	1585J-E4KBJL-*	1585J-L4KBJL-*	1585J-E4KBJE-*
2-pair, High Flex TPE, Teal		1585J-M4TBJM-*	1585J-E4TBJM-*	1585J-L4TBJM-*	1585J-E4TBJL-*	1585J-L4TBJL-*	1585J-E4TBJE-*
4-pair, Riser PVC, Teal	Braid Over Foil Shield	1585J-M8CBJM-*	1585J-E8CBJM-*	1585J-L8CBJM-*	1585J-E8CBJL-*	1585J-L8CBJL-*	1585J-E8CBJE-*
4-pair, Halogen-free, High Flex PUR, Teal		1585J-M8UBJM-*	1585J-E8UBJM-*	1585J-L8UBJM-*	1585J-E8UBJL-*	1585J-L8UBJL-*	1585J-E8UBJE-*
2-pair, Halogen-free, High Flex PUR, Teal		1585J-M4UBJM-*	1585J-E4UBJM-*	1585J-L4UBJM-*	1585J-E4UBJL-*	1585J-L4UBJL-*	1585J-E4UBJE-*
4-pair, 600V, PVC, Teal	Foil Shield	1585J-M8HBJM-*	1585J-E8HBJM-*	1585J-L8HBJM-*	1585J-E8HBJL-*	1585J-L8HBJL-*	1585J-E8HBJE-*
2-pair, 600V, PVC, Teal	Foil Shield	1585J-M4HBJM-*	1585J-E4HBJM-*	1585J-E4HBJM-*	1585J-E4HBJL-*	1585J-L4HBJL-*	1585J-E4HBJE-*
4-pair, Riser PVC Teal	Crossover Cable	1585J-M8TBJM-*X	1585J-E8TBJM-*X	1585J-L8TBJM-*X	1585J-E8TBJL-*X	1585J-L8TBJL-*X	1585J-E8TBJE-*X

IP20 Field Attachable

RJ45 Insulation Displacement Connector (IDC)

- Die Cast Zinc Housing
- AWG 26-22
- Secure and reliable connection with insulation displacement technology 1585J-M8CC-H
- No conductor stripping required

RJ45 Crimp Connector

- Standard crimp connectors with rugged boot 1585J-M8CC-C
- Crimp tool kit available with crimper, cable stripper/cutter, conductor separator 1585A-JCRIMP

IP20 to IP67

M12 to RJ45 Bulkhead Adapter – 1585A

- 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

1585A-DD4JD

Recommended RJ45 connector:

• Stratix Switches	Straight
• ControlLogix	Left Angle or Staight
• 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