

# Industrial Ethernet Media

Complete Solution for Ethernet Networks  
and Integrated Architecture



LISTEN.  
THINK.  
SOLVE.™

 Allen-Bradley • Rockwell Software

**Rockwell  
Automation**

# 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<sub>3</sub>I<sub>3</sub>C<sub>3</sub>E<sub>3</sub>
- 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<sub>3</sub>I<sub>3</sub>C<sub>3</sub>E<sub>3</sub>
- Cat 5e



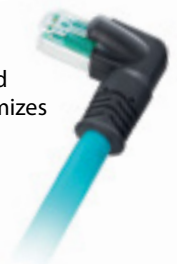
## Variant 1 Connectivity – Bulletin 1585B

- 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<sub>3</sub>I<sub>3</sub>C<sub>3</sub>E<sub>3</sub>
- Cat 5e



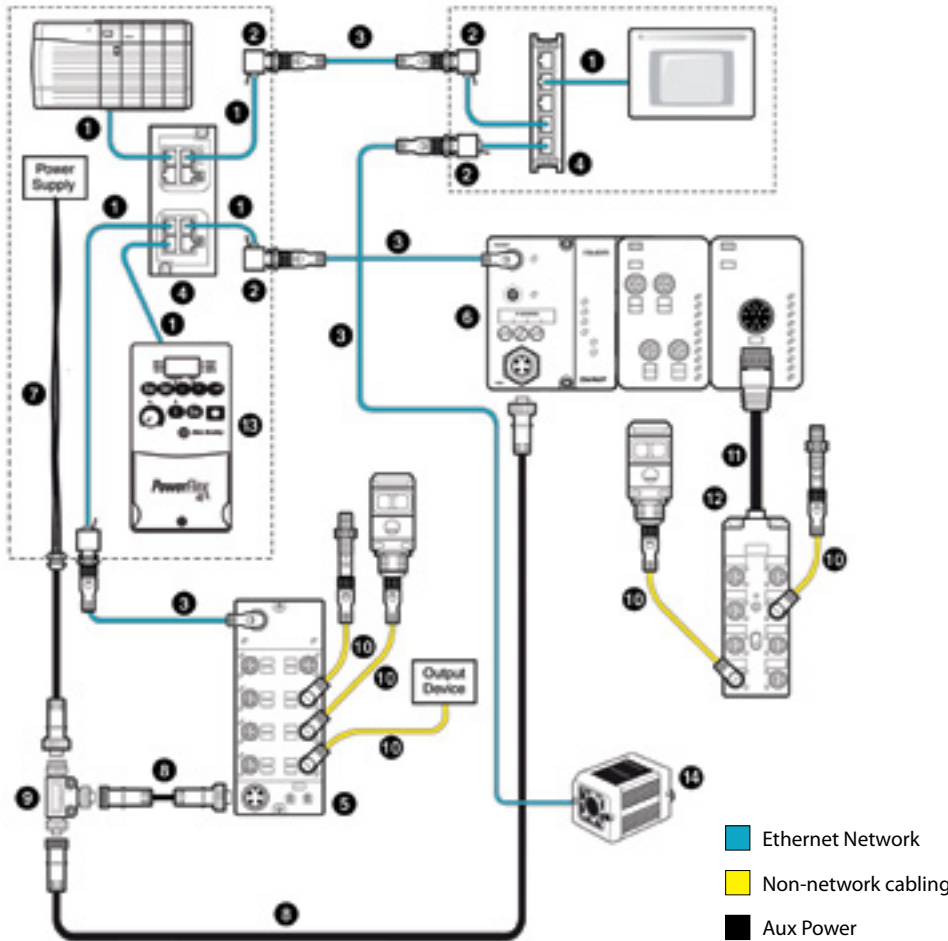
## RJ45 Connectivity – Bulletin 1585J

- 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<sub>1</sub>I<sub>1</sub>C<sub>2</sub>E<sub>2</sub>
- Cat 5e



# E-TOOLS

## Simplify the Configuration and Design of Your Complete Ethernet Solution



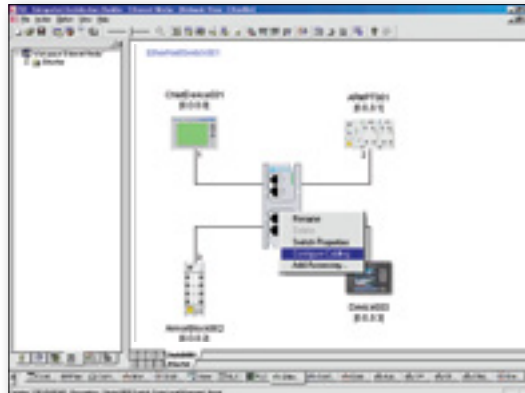
1. RJ45 to RJ45 Patchcord
2. M12 to RJ45 Bulkhead Connector
3. M12 to M12 Patchcord
4. Stratix™ Ethernet Switch
5. ArmorBlock® Ethernet Module
6. ArmorPoint® Ethernet Module
7. Auxiliary Power Mini Receptacle
8. Auxiliary Power Mini Patchcord
9. Auxiliary Power Mini T-Port
10. DC Micro Patchcord
11. M23 Pigtail
12. DC Micro Distribution Box
13. PowerFlex® Drive
14. MultiSight™



- 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.



- 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](http://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



# 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	<b>Cat 5*</b>
100Mb/s, 1Gb/s	Cat 5e	Class D	<b>Cat 5e and Cat 6</b>
1Gb/s, 10Gb/s	Cat 6	Class E	<b>Cat 6 and Cat 6a</b>

\*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)
<ul style="list-style-type: none"> <li>• Specially designed unshielded pressure extruded cable maintains maximum balance during flexing – suitable for high-flex applications.</li> <li>• 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.</li> <li>• Simplify installation and reduce costs.</li> <li>• Recommended with: Stratix Switches, PLCs, HMI, In-Cabinet environments.</li> </ul>	<ul style="list-style-type: none"> <li>• High-noise environments</li> <li>• Shielded cables will help to reduce noise ingress in extremely high-noise environments or applications where extremely low BERs are necessary.</li> <li>• Shielded cables may require equipotential grounding systems to prevent ground loops in the cabling.</li> <li>• Helps reduce noise coupled to the balanced cables by providing a shield around the conductors.</li> <li>• Recommended with: Drives, MCC, Kinetix</li> </ul>

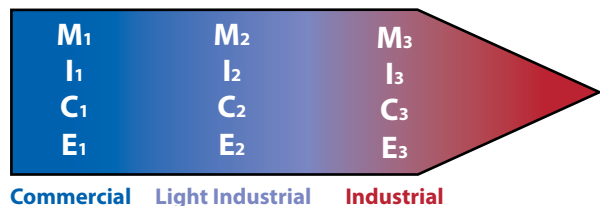
## 3. Decide whether additional electrical attributes are needed based on MICE<sub>123</sub>.

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

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

### Rockwell Automation Ethernet Media





Cable Spools	M <sub>3</sub> I <sub>3</sub> C <sub>3</sub> E <sub>3</sub>
M12 D Code Cables	
Variant 1 Cables	
RJ45 Cables	M <sub>1</sub> I <sub>1</sub> C <sub>2</sub> E <sub>2</sub>



# 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	4-Pair Cabling
<ul style="list-style-type: none"> <li>• 10/100BaseT applications</li> <li>• M12 D Code connectors</li> <li>• On-Machine applications</li> <li>• Limited-panel space – M12 D coding connectors are smaller in form</li> </ul>	<ul style="list-style-type: none"> <li>• Backbone and uplink ports</li> <li>• Areas where future requirements may require data rates greater than 100BaseT</li> </ul>
<div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">  <p>Shielded</p> </div> <div style="text-align: center;">  <p>Unshielded</p> </div> <div style="margin-left: 20px;"> <p>White-Orange White-Green Orange Green</p> </div> </div>	<div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">  <p>Shielded</p> </div> <div style="text-align: center;">  <p>Unshielded</p> </div> <div style="margin-left: 20px;"> <p>White-Orange Orange White-Green Blue White-Blue Green White-Brown Brown</p> </div> </div>

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
<ul style="list-style-type: none"> <li>• PVC Cable – General Purpose Applications</li> <li>• TPE Cable – High-Flex Applications</li> <li>• Plenum Cable – Air Handling Applications</li> </ul>	<ul style="list-style-type: none"> <li>• PVC Cable – General Purpose Applications</li> <li>• PUR Cable – High Flex, Halogen Free</li> <li>• PVC Cable – 600V</li> </ul>

### 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).


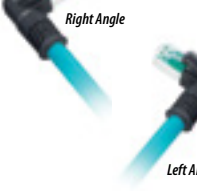



# ETHERNET CONNECTIVITY SOLUTIONS

## 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†	2 and 4-Pair	24	1585-C4TB-S*	
	• Flex rated to 10 million cycles†			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 – Halogen Free†	2 and 4-Pair	26	1585-C4UB-S*	
	• Cable flex rated to 10 million cycles†			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
				1585J-M8PBJM-*	1585J-E8PBJM-*	1585J-L8PBJM-*	1585J-E8PBJL-*	1585J-L8PBJL-*	1585J-E8PBJE-*
		4-pair, Riser PVC, Teal	Unshielded Twisted Pair	1585J-M4QBJM-*	1585J-E4QBJM-*	1585J-L4QBJM-*	1585J-E4QBJL-*	1585J-L4QBJL-*	1585J-E4QBJE-*
		4-pair, Riser PVC, Red		1585J-M8TBJM-*	1585J-E8TBJM-*	1585J-L8TBJM-*	1585J-E8TBJL-*	1585J-L8TBJL-*	1585J-E8TBJE-*
		4-pair, High Flex TPE, Teal		1585J-M4KBJM-*	1585J-E4KBJM-*	1585J-L4KBJM-*	1585J-E4KBJL-*	1585J-L4KBJL-*	1585J-E4KBJE-*
		2-pair, High Flex, TPE, Red		1585J-M4TBJM-*	1585J-E4TBJM-*	1585J-L4TBJM-*	1585J-E4TBJL-*	1585J-L4TBJL-*	1585J-E4TBJE-*
		2-pair, High Flex TPE, Teal		1585J-M8CBJM-*	1585J-E8CBJM-*	1585J-L8CBJM-*	1585J-E8CBJL-*	1585J-L8CBJL-*	1585J-E8CBJE-*
		4-pair, Riser PVC, Teal		1585J-M8UBJM-*	1585J-E8UBJM-*	1585J-L8UBJM-*	1585J-E8UBJL-*	1585J-L8UBJL-*	1585J-E8UBJE-*
		4-pair, Halogen-free, High Flex PUR, Teal	1585J-M4UBJM-*	1585J-E4UBJM-*	1585J-L4UBJM-*	1585J-E4UBJL-*	1585J-L4UBJL-*	1585J-E4UBJE-*	
		2-pair, Halogen-free, High Flex PUR, Teal	1585J-M8HBJM-*	1585J-E8HBJM-*	1585J-L8HBJM-*	1585J-E8HBJL-*	1585J-L8HBJL-*	1585J-E8HBJE-*	
		4-pair, 600V, PVC, Teal	1585J-M4HBJM-*	1585J-E4HBJM-*	1585J-L4HBJM-*	1585J-E4HBJL-*	1585J-L4HBJL-*	1585J-E4HBJE-*	
		2-pair, 600V, PVC, Teal	1585J-M8HBJM-*	1585J-E8HBJM-*	1585J-L8HBJM-*	1585J-E8HBJL-*	1585J-L8HBJL-*	1585J-E8HBJE-*	
4-pair, Riser PVC Teal		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)							
		<ul style="list-style-type: none"> <li>Die Cast Zinc Housing</li> <li>AWG 26-22</li> <li>Secure and reliable connection with insulation displacement technology</li> <li>No conductor stripping required</li> </ul>		1585J-M8CC-H					
IP20 to IP67	RJ45 Crimp Connector								
		<ul style="list-style-type: none"> <li>Standard crimp connectors with rugged boot</li> <li>Crimp tool kit available with crimper, cable stripper/cutter, conductor separator</li> </ul>		1585J-M8CC-C	1585A-JCRIMP				
IP20 to IP67	M12 to RJ45 Bulkhead Adapter – 1585A								
		<ul style="list-style-type: none"> <li>Transition from IP20 environment to IP67 environment</li> <li>In-cabinet connectivity with RJ45 connector providing On-Machine solution with M12 D Code connector</li> <li>Differential 100 ohm terminators used for unused pairs</li> </ul>		1585A-DD4JD					



### Recommended RJ45 connector:

- |                    |   |
|--------------------|---|
| • Stratix Switches | Straight  |
| • ControlLogix     | Left Angle or Straight  |
| • CompactLogix     | Right Angle or Straight   |
| • Micrologix 1100  | Right angle (cable will go downwards)<br>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

# ETHERNET CONNECTIVITY SOLUTIONS

## M12 D Code Connectivity – 1585D

Patchcords & Cordsets IP67	M12 D Code	Connector Type	Unshielded	Shielded	600V
		Male Straight to Male Straight†	1585D-M4TBDM-*	1585D-M4UBDM-*	1585D-M4HBDM-*
		Male Straight to Male Right Angle†	1585D-M4TBDE-*	1585D-M4UBDE-*	1585D-M4HBDE-*
		Male Right Angle to Male Right Angle†	1585D-E4TBDE-*	1585D-E4UBDE-*	1585D-E4HBDE-*
		Male Straight to Female Straight†	1585D-M4TBDF-*	1585D-M4UBDF-*	1585D-M4HBDF-*
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		
	Male, Shielded, 600V Cable Only		1585D-M4HC-SH		
	<ul style="list-style-type: none"> <li>• Male &amp; Female</li> <li>• Shielded: AWG 22-24</li> <li>• Unshielded: AWG 26-22</li> <li>• Field installable with no hand tools needed</li> <li>• Secure and reliable connection with insulation displacement technology</li> <li>• Provides quick assembly when configuring custom length patchcords</li> </ul>				

## Variant 1 Products – 1585B

		Product Number
Overmolded Male Patchcords	Variant 1 Overmolded Connectivity – Thermoplastic, IP67 – 1585BT	
		<ul style="list-style-type: none"> <li>• Overmolded RJ45 with thermoplastic housing</li> <li>• Cat 5e</li> <li>• Cable flex rated to 10 million cycles</li> </ul>
Female Outlet	Variant 1 Field Attachable Connectors – Thermoplastic, IP67 – 1585BP	
		<ul style="list-style-type: none"> <li>• Female receptacle outlet</li> <li>• Female to female RJ45 coupler</li> <li>• Protective cap for housing and outlet</li> <li>• Cat 5e</li> </ul>
Male Housing		
		<ul style="list-style-type: none"> <li>• Male housing – RJ45 connector with protective thermoplastic shell</li> <li>• RJ45 connector with protective thermoplastic shell</li> <li>• Crimp RJ45 insert providing reliable connection</li> <li>• Cat 5e</li> </ul>
Overmolded Male Patchcords	Variant 1 Overmolded Connectivity – Diecast Zinc, IP67 – 1585BX	
		<ul style="list-style-type: none"> <li>• Overmolded RJ45 with diecast zinc housing</li> <li>• Cat 5e</li> <li>• Cable flex rated to 10 million cycles</li> </ul>
Female Outlet	Variant 1 Field Attachable Connectors – Diecast Zinc, IP67 – 1585BZ	
		<ul style="list-style-type: none"> <li>• Female receptacle outlet</li> <li>• Female to female RJ45 coupler</li> <li>• Protective cap for housing and outlet</li> <li>• Resistant to welding applications</li> <li>• Cat 6</li> </ul>
Male Housing		
		<ul style="list-style-type: none"> <li>• Male Housing</li> <li>• RJ45 connector with protective diecast zinc shell</li> <li>• RJ45 IDC insert providing a rugged connection</li> <li>• Cat 6</li> </ul>

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

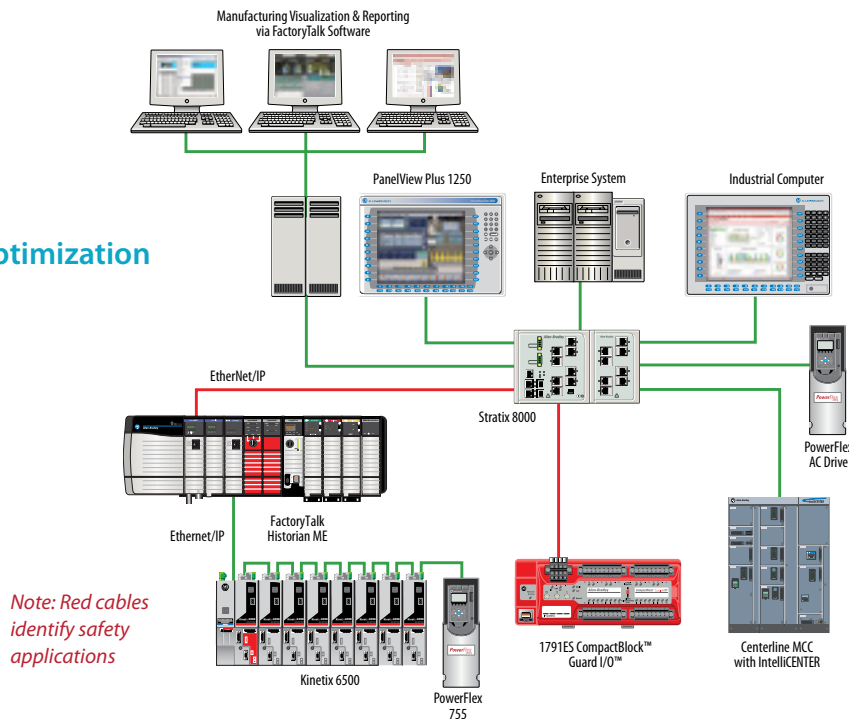
\*Available in 0.3, 0.6, 1, 2, 5, 10, 15, and increments of 5 meters up to 100 meters

† Available in red cable jacket

# ETHERNET CONNECTIVITY

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.

## Plant-Wide Optimization via Ethernet



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

*Note: Red cables identify safety applications*



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.  
<http://www.rockwellautomation.com/distributor/>

### Ethernet Website

- Check out our Website at [www.ab.com/networks/media/ethernet](http://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

- Our powerful range of product selection and system configuration tools assist you in choosing and applying our products. Go to <http://www.rockwellautomation.com/en/e-tools/>
- Configure and generate bills of material for NetLinx-based networks with Integrated Architecture Builder
- Easy-to-use ProposalWorks interface makes it a snap to determine the exact Allen-Bradley® products and services you need and current list pricing
- Software automatically selects the appropriate informational documents, photos, etc.

Allen-Bradley, ArmorBlock, ArmorPOINT, ControlLogix, Kinetix, MultiSight, PanelView, PowerFlex, Rockwell Automation, and Stratix are trademarks of Rockwell Automation, Inc.

**[www.rockwellautomation.com](http://www.rockwellautomation.com)**

### Power, Control and Information Solutions Headquarters

Americas: Rockwell Automation, 1201 South Second Street, Milwaukee, WI 53204 USA, Tel: (1) 414.382.2000, Fax: (1) 414.382.4444

Europe/Middle East/Africa: Rockwell Automation, Vorstlaan/Boulevard du Souverain 36, 1170 Brussels, 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