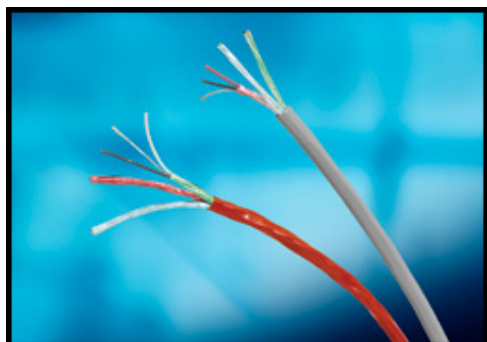


## MODBUS

Developed by Modicon, MODBUS is a master/slave serial line communication protocol is used to interconnect intelligent automation devices. This protocol operates at layer 2 of the OSI model.



In a master-slave type system, the "master" node issues explicit commands to one of the "slave" nodes and processes responses. Typically, slave nodes will not transmit data without a request from the master node, and they will not communicate with other slaves.

At the physical level, MODBUS systems may use different physical interfaces (EIA-485, RS-232). The TIA/EIA-485 (EIA-485) Two-Wire interface is, however, the most common. As an option, the EIA-485 Four-Wire interface may be implemented. And when the system only requires short point-to-point communication, the TIA/EIA-232-E (RS-232) serial interface may be used as an interface.

MODBUS application layer messaging protocol, positioned at layer 7 of the OSI model, provides client/server communication between devices connected on buses or networks. The client role is provided by the Master of the serial bus and the slave nodes act as servers.

For applications that require high uptime, MODBUS Plus cable redundancy is offered on the dual cable PCI interface. A redundant cable capability allows MODBUS Plus to communicate over two independent cables, testing the integrity of both cables with every message. Should a problem occur with one of the cables, the system automatically switches over to the other cable. The faulty cable is then flagged as a statistic and it is visually flagged on the interface card. This redundancy allows a network or a plant to continue operation even with a cable out of service.

Using a RS-232 physical interface, the maximum distance would be 50 ft. at 10kbps. Using a EIA-485 physical interface, the maximum distance would be 4,000 ft. at 100kbps. A maximum of 247 nodes are possible.

### MODBUS Cables

#### MODBUS RS-232 Shielded Twisted Pair Cables

[8777](#) 3 Pairs, 22 AWG Stranded (7x32) Tinned Copper Conductors, Datalene® Insulation, Individually Beldfoil Shielded (100% Coverage), 24 AWG Stranded Tinned Copper Drain Wire, Chrome PVC Jacket, 300V 90°C

[88777](#) 3 Pairs, Plenum-rated, 22 AWG Stranded (7x30) Tinned Copper Conductors, FEP Insulation, Individually Beldfoil Shielded (100% Coverage), , 22 AWG Stranded Tinned Copper Drain Wire, FEP Jacket, 300V 200°C

#### MODBUS II RG-6 Type Coaxial Cables

[3092A](#) RG-6, Quad Shield, PVC

[3093A](#) RG-6, Quad Shield, Plenum-rated

[3092F](#) RG-6, Quad Shield, PVC, Flexible Version

[123092A](#) RG-6, Quad Shield, Aluminum Armor  
133092A RG-6, Quad Shield, Steel Armor

## MODBUS Plus EIA-485 Paired Cables

	MODBUS Plus EIA-485 Cables				
	EIA-485	PLTC-rated	Hi-Flex	Plenum	Plenum, Hi-Temp
1 pair	<a href="#">9841</a>	<a href="#">3105A</a>	<a href="#">7200A</a>		
1.5 pair		<a href="#">3106A</a>		<a href="#">82841</a>	<a href="#">89841</a>
2 pair	<a href="#">9842</a>	<a href="#">3107A</a>	<a href="#">7201A</a>	<a href="#">82842</a>	
3 pair	<a href="#">9843</a>	<a href="#">3108A</a>	<a href="#">7202A</a>		
4 pair	<a href="#">9844</a>	<a href="#">3109A</a>	<a href="#">7203A</a>		

Custom cables are available upon request which can utilize any number of construction features such as:

- Armoring: Aluminum Interlock, Steel Interlock, and Continuous Corrugated Aluminum
- Armor Tapes: Corrugated Copper, Aluminum, and Steel
- Jackets: PVC, CPE, LDPE, TPE, HDPE, Fluorocopolymer, Oil Res II, Low Smoke Zero Halogen (LSZH), Haloarrest®, and Polyurethane
- Shielding: Overall Beldfoil®, Duofoil®, TC Braid, TC Double Braid, Individual Beldfoil Copper Tape Shields, and “French Braid”
- Insulations: Datalene®, XLPE, FEP, Polypropylene, Foam FEP, HDPE, PVC, TPE, and PVC-Nylon
- Conductors: Solid BC, Stranded BC, Solid Bare Copper-covered Steel, and Stranded TC

## Hirschmann Active Devices

Representing experience and expertise in automation technology, Hirschmann products have been designed to ensure hassle-free data communication under even the toughest conditions.

For MODBUS, Hirschmann provides the OZD 485 G12 series of industrial-grade fiber optic repeaters. This series offers both ring redundancy and predictive maintenance.

See also [Hirschmann](#).

## Lumberg Automation Connectivity

Lumberg, a leading name in industrial connectivity, offers the following connectivity products for MODBUS application:

- Centralized I/O distribution systems
  - e2c 20, IP20 rated
- Fieldbus I/O modules
  - LioN-S
- Field-attachable connectors
- Overmolded cordsets
  - Micro M12-M12/IP67
  - RJ45 to RJ45/IP20
  - RJ45 to Micro M12/IP20
- Ethernet switches

See also [Lumberg Automation](#).

For information on other protocols see our [Industrial PLC/DCS Cable Cross-reference](#).