Product Brochure - PB00002007

BELDEN Industrial Ethernet Cable, Connectivity and Switch

For reliable Ethernet signal transmission in industrial challenging applications. Designed for uncompromising reliability and flexibility.

Trend of Industrial Communication

Industrial Ethernet has been in effective use in plant environment for more than two decades. Slowly but surely, Ethernet has become the communication protocol of choice for machine, robot and other factory automation applications in the industrial/operational technology (OT) environment. Use of Ethernet is to escalating as users identify and implement new ways capitalize upon the protocol's potential advantages over traditional fieldbuses. These include faster speed, higher bandwidth, greater levels of deterministic performance, wide vendor compatibility and more.

Greater Speed & Bandwidth

Communicate significantly more data through the system.

Greater Determinism

Enable manufacturing directions down to milliseconds of accuracy can be a huge advantage on the OT plant or build floor.

Standardization

Allow users the purchasing flexibility to shop the best equipment for their specific purpose from a multitude of vendors, enjoy plug-and-play versatility and avoid being locked into the often proprietary systems of the past.

Industrial Ethernet Cable

General Features

- Industrial Ethernet and PROFINET includes Cat 5e, Cat 6, Cat 6A, Cat 7.
- PVC, polyethylene, FEP, FRNC/LSZH, PUR, or TPE jackets.
- Twisted Pair or Bonded-Pair™ technology.
- Shielded and unshielded designs.
- SWA and SWB Armors available.
- Torsion resistant guaranteed for more than 2 million cycles.
- Cables designed for trailing/drag chain applications tested for more than 2 million or up to 10 million bending cycles.
- Oil, abrasion and sunlight resistant designs.
- Direct burial and CMX/outdoor rated cables.
- Operation temperature from -70 °C up to +150 °C designs suitable for high/low temperature installations.
- Transmission speed ranges from 100Mbps to 10Gbps.
- Transmission bandwidth from 100MHz to 600MHz.
- Applicable transmission distance up to 100m.

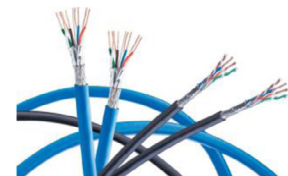### General Benefits

Broadest Portfolio on the Market
- Belden provides the most comprehensive portfolio of Industrial Ethernet cable and connectivity products.

Reliability
- Robust design: industrial grade jackets withstand exposure to oil, chemicals, rough handling, abrasion, UV and temperature variations etc.
- Product consistency: Manufactured in ISO certified manufacturing facilities, Belden's state-of-the-art processes ensure quality in each product. Product consistency for ease of termination and assembly is a mainstay of our products.

Future Proof
- Belden supports the migration of Ethernet networks to 10Gb/s.

General Compliances

- IEC 11801
  IEC 61156-5
  TIA/EIA 568C.2
- UL Certification available
- 100BaseTX
- 100BaseVG ANYLAN
- 155ATM
- 622ATM
- NTSC/PAL Component or Composite Video

- AES/EBU
- Digital Video
- RS-422
- Profinet, Ethernet/IP, CC-link IE, EtherCAT Compliance
- Flame Retardancy
  IEC 60332-1
  CEC: CMR/FT4
  IEC 60332-3-25/24/22
  IEC 61076-2
  10GBASE-T

General Applications

Primarily built and designed for harsh/mission-critical applications. The products are used in automation, machine building, food/beverage, petro-chemical and many more industrial markets.

Interconnect multi devices

- IP controllers
- Media convertors
- Distributed control system
- Programmable logic controller
- Transmitting industrial protocol data signals.
- Indoor/Outdoor use

Industrial Ethernet Connectivity

Product Features

- Complete product range, covering overmolded cordsets and receptacle connectors
- M12 D-Coding for Fast Ethernet, M12 X-Coding for Gigabit Ethernet as well as RJ45.
- M12 connectors meet industrial protection class IP67 up to 69K.
- Railway approvals
- Flexible customization for challenging applications.

Customers Benefits

- Connectivity total solution provider for Ethernet signal transmission, reduce operation cost.
- Ensure safe and reliable communication.

Key Verticals

- Machine Building
- Factory Automation
- Transportation
- Automotives

Industrial Ethernet I/O Module

Product Features

- Compact and Robust design metal housing with special coating
- Multiprotocol technology enables one module support more than one Ethernet protocol, such as Profinet, Ethernet/IP and EtherCAT
- Universal digital in/output channel
- I/O-Link Master and Hubs
- M12 L-Coded Power Connection, M12 Y-Coded Hybrid Connection (Power and Date)
- Distributed Control Unit (Field PLC)
- Integrated Webserver

Customers Benefits

- Multiprotocol and Universal I/O features reduce module variants and reduce stock.
- Easy monitoring and diagnosis via Internet Explorer.
- Robust for harsh environment, even welding immune.
- M12 L-Coded power connection carries much higher current up to 16A, more modules can be daisy chained.

Key Verticals

- Automotives
- Logistics
- Machine Building

Industrial Ethernet Switch

Product Features

- Up to 8 PoE+ ports, each with capacity of 30 W per port, for a total power budget of 120 W.
- Fast and full Gigabit Ethernet variants with jumbo frame support to meet high throughout requirements.
- Offers 5 ports for Fast Ethernet or up to 10 ports for Gigabit Ethernet including optional fiber-optic ports for fixed signal-mode and multi-mode fibers or small form-factor pluggable (SEP) slots.
- LEDs for monitoring network and device status, including power supply
- Extended operating temperature range (-40 ° to +70 °C).
- Withstands harsh environmental conditions due to IP30 metal enclosure.
- DIN rail mounting and fast startup via plug-and-play features features.

Customers Benefits

- Flexibility with configurable fiber and copper port options to meet specific industrial needs
- Future-proof design to keep up with technology trend.
- High power to drive more devices via PoE, reduce hardware cost.
- Robust design to reduce maintenance cost

Key Verticals

- Machine Building
- Factory Automation
- Video Surveillance

Industrial Ethernet Switch

Product Features

- Industrial design
- Redundancy power supply
- Extended operating temperature range (-40 °C to +70 °C).
- Offers 5 ports for Fast Ethernet or up to 10 ports for Gigabit Ethernet including optional fiber-optic ports for fixed single-mode and multi-mode fibers or small form-factor pluggable (SFP) slots.
- Up to 8 POE/POE+ ports, each with capacity of 30 W per port for a total power budget of 120 W.

Customers Benefits

- Design for APAC market, cost effective
- Easy installation increases efficiency
- Slim dimension saves space

Key Verticals

- Machine Building
- Robotics

Industrial Wireless LAN Access Points

Product Features

- High data rate with IEEE 802.11ac technology up to 867 Mbps
- Single radio supports dual bands 2.4GHz or 5GHz via 2x2 MIMO antennas
- Extensive management, redundancy and security functions with Hirschmann's operating system, HiLCOS
- M12 X-coded Ethernet port supports 10/100/1000 BASE-TX data rates
- Power input via 24VDC and PoE (802.3af)
- Operating temperature range from - 40 °C to +70 °C (extended temperature) IP65/67 metal housing
- Rail norm EN50121-4 compliance

Customers Benefits

- **Fast data speeds** on wireless communication through IEEE 802.11ac radio module.
- **Ruggedized and compact design** with IP65/67 protection rating to meet requirements of harsh environments and approvals of industrial markets.
- **Cost-effective solution** through PoE power input provides flexible deployment options to customers without an additional power supply.

Key Verticals

- Factory Automation
- Utility Tunnel
- Sewage Treatment
- Heavy Crane
- Rail Transportation (Metro, Railway, Tram)

Part Number Index - Industrial Ethernet Cable

Product Image	Part No.	Data Rates	Category	Conductor (Strands) Solid	Conductor (Strands) Stranded	No. of Pairs	PVC	LSZH	TPE	PUR	Shielded	Unshielded	Armor	Twisted Pair	Bonded Pair	Features
Permanent Installation																
	70006E	100 Mb/s	Cat 5e	AWG 22 (1)	–	Quad	✓	–	–	–	Foil+Braid	–	–	✓	–	PROFI NET, UL
	70006NH						–	✓								
	7923A	1 Gb/s	Cat 5e	AWG 24 (1)	–	4	✓	–	–	–	–	✓	–	–	✓	MSHA, EtherNet/IP
	7934A						–	✓								EtherNet/IP
	121700A	1 Gb/s	Cat 5e	AWG 24 (1)	–	4	✓	–	–	–	–	✓	AIA	–	✓	UL
	7919A	1 Gb/s	Cat 5e	AWG 24 (1)	–	4	✓	–	–	–	Foil	–	–	✓	–	MSHA, UL, IEC
	50105F															
	7921A	1 Gb/s	Cat 5e	AWG 24 (1)	–	4	✓	–	–	–	Foil+Braid	–	–	–	✓	UL, EtherNet/IP, CC-Link IE
	50105FS			AWG 23 (1)										✓	–	–
	7927A	1 Gb/s	Cat 6	AWG 23 (1)	–	4	✓	–	–	–	–	✓	–	–	✓	UL
	50106U	1 Gb/s	Cat 6	AWG 24 (1)	–	4	✓	–	–	–	–	✓	–	✓	–	IEC
	7953A	1 Gb/s	Cat 6	AWG 23 (1)	–	4	✓	–	–	–	Foil	–	–	–	✓	EtherNet/IP, CC-Link IE, UL
	50106F	1 Gb/s	Cat 6	AWG 23 (1)	–	4	✓	–	–	–	Foil	–	–	✓	–	IEC
	50106FA	1 Gb/s	Cat 6	AWG 23 (1)	–	4	✓	–	–	–	Foil	–	ATA	✓	–	IEC
	50106FLS	1 Gb/s	Cat 6	AWG 23 (1)	–	4	–	✓	–	–	Foil	–	SWA	✓	–	IEC
	50106FLB	1 Gb/s	Cat 6	AWG 23 (1)	–	4	–	✓	–	–	Foil	–	SWB	✓	–	IEC
	50106FS	1 Gb/s	Cat 6	AWG 23 (1)	–	4	✓	–	–	–	Foil+Braid	–	–	✓	–	–
	74004E	10 Gb/s	Cat 7	AWG 23 (1)	–	4	✓	–	–	–	Individual Foil+Braid	–	–	✓	–	UL
	74004NH						–	✓								
Moderate Flexing																
	7961A	100 Mb/s	Cat 5e	–	AWG 22 (7)	Quad	✓	–	–	–	Foil+Braid	–	–	✓	–	PROFI NET, UL
	BE43992				0.5mm2 (19)		–	✓								PROFI NET, RAIL
	70007E	100 Mb/s	Cat 5e	–	AWG 22 (7)	Quad	✓	–	–	–	Foil+Braid	–	–	✓	–	PROFI NET, UL
	70007NH						–	✓								
	BE43769	100 Mb/s	Cat 5e	–	AWG 22 (19)	Quad	–	✓	–	–	Foil+Braid	–	–	✓	–	PROFI NET, RAIL
	BE43800	1 Gb/s	Cat 5e	–	AWG 26 (19)	4	–	✓	–	–	Foil+Braid	–	–	✓	–	RAIL
	50106XU	1 Gb/s	Cat 6	–	AWG 24 (7)	4	✓	–	–	–	–	✓	–	✓	–	(chainflex)
	74011E	10 Gb/s	Cat 6A	–	AWG 23 (7)	4	✓	–	–	–	Foil+Braid	–	–	✓	–	PROFI NET, UL
	74011NH						–	✓								
	74005E	10 Gb/s	Cat 7	–	AWG 26 (7)	4	✓	–	–	–	Foil+Braid	–	–	✓	–	UL
	74005NH						–	✓								
	50007TSF	10 Gb/s	Cat 7	–	AWG 23 (7)	4	–	✓	–	–	Individual Foil+Braid	–	–	✓	–	ABS, DNV-GL, CC-Link IE Field, CC-Link IE TSN
	BE43802	10 Gb/s	Cat 7	–	AWG 24 (19)	4	–	✓	–	–	Individual Foil+Braid	–	–	✓	–	RAIL
Continuous Flexing																
	7938A	1 Gb/s	Cat 5e	–	AWG 24 (7)	4	–	–	✓	–	Foil+Braid	–	–	–	✓	UL
	70009PU	1 Gb/s	Cat 5e	–	AWG 22 (19)	Quad	–	–	–	✓	Foil+Braid	–	–	✓	–	UL, chainflex, PROFI NET
	74003PU				AWG 26 (19)	4										
	74009PU															
	50106HFP	1 Gb/s	Cat 6	–	AWG 26 (30)	4	–	–	–	✓	Foil+Braid	–	–	✓	–	chainflex, CC-Link IE Field, CC-Link IE TSN

AIA = Aluminum Interlock Armor
SWA = Steel Wire Armor
SWB = Steel Wire Armor
ATA = Aluminum Tape Armor

Part Number Index - Industrial Ethernet Connectivity & Industrial Ethernet Switch

Product Line	Classification	Product Picture	Features		Description	Belden PN
Connectivity	Cordsets		Cat 5e Profinet	M12-M12	Flexible, 4Q22 AWG, Profinet Type B, PUR Jacket	E5MSMSP60050100
				M12-RJ45		E5MSJSP60050100
				RJ45-RJ45		E5JSJSP60050100
Connectivity	Cordsets		Cat 5e Profinet	M12-M12	Flexible, 4Q22 AWG, Profinet Type B, PVC Jacket	E5MSMSP60060100
				M12-RJ45		E5MSJSP60060100
				RJ45-RJ45		E5JSJSP60050100
Connectivity	Cordsets		Cat 5e EtherNet/IP	M12-M12	Flexible, 2P24 AWG, EtherNet/IP, PU Jacket	E5MSMSE60250100
				M12-RJ45		E5MSJSE60250100
				RJ45-RJ45		E5JSJSE60250100
Connectivity	Cordsets		Cat 5e EtherNet/IP	M12-M12	Flexible, 2P24 AWG, EtherNet/IP, PVC Jacket	E5MSMSE90540100
				M12-RJ45		E5MSJSE90540100
				RJ45-RJ45		E5JSJSE90540100
Connectivity	Cordsets		Cat 6/6A	M12-M12	Double Ended, M12 (X-Coded) or RJ45, Foil/Braid Shield, 26 AWG, PUR Halogen-Free Jacket.	PSTS 8X-RSTS 8X-478/1M
				M12-RJ45		RSTS 8X-RJ45 G-478/1M
				RJ45-RJ45		RJ45 G-RJ45 G-478/1M
Connectivity	Field Attachable		Cat 5e	RJ45	Shielded Field Terminable Metallic Plug, AWG22-26	0986 EMC 800 MET
Connectivity	Field Attachable		Cat 6	RJ45	Shielded Field Terminable Metallic Plug, AWG22-26	0986 EMC 600 MET
Connectivity	Field Attachable		Cat 6A	RJ45	Shielded Field Terminable Metallic Plug, AWG22-26	0986 EMC 6A0 MET
Connectivity	Field Attachable		IDC	M12	D-Coded 4 Pin, Male, Straight, Screw Coupling, Shielded, Metal Housing.	RSCIS 4D/9
Connectivity	Field Attachable		Crimp	M12	D-Coding 4 Pin, Male, Straight/Angled, Screw Coupling, Metal Housing, Shielded.	RSCCS 4D/9 RSCCKS 4D/9
Connectivity	Field Attachable		Crimp	M12	X-Coding 8 Pin, Male, Straight, Screw Coupling, Metal Housing, Shielded.	BRSCCS 8X/9
Connectivity	Receptacle		Front Mounting	M12	D-Coded 4 Pin, Female, Assembled with Stranded Hook-up Wire AWG 22, Cu Terminal Area Potted, M16 x 1.5, Screw Coupling at Mounting Side.	0986 EFC 151 A
Connectivity	Adapter		Panel Mounting	RJ45-M12	RJ45 Female - M12 D-Coded Female Receptacle 90°, Chassis side thread, PG 9.	0981 ENC 100
Connectivity	IO Module		16DIO	Multi protocol	PROFINET, EtherNet/IP and EtherCAT, Industrial metal housing, 60 mm, up to IP69K, 16 DIO (universal, 2A), 8 x M12 A-coded I/O connection, 5-poles, 2 x M12 D-coded Ethernet connection, 4-poles; 2 x M12 L-coded power supply connection, 5-poles.	0980 ESL 390-121
Connectivity	IO Module		IO-Link Master	Multi protocol	PROFINET and EtherNet/IP, Industrial metal housing, 30 mm up to IP69K, 4 DI and 8 IOL Master; 8 x M12 A-coded I/O connection, 5-poles; 2 x M12 Y-coded Ethernet and power supply connection, 8-poles.	0980 ESL 199-331
Connectivity	Distributed Control Unit		16DIO	Multi protocol	LDmicro Programmable, Multiprotocol (PROFINET, EtherNet/IP and EtherCAT), Industrial metal housing, 60 mm, up to IP69K, 16 DIO (universal, 2A); 8 x M12 A-coded I/O connection, 5-poles; 2 x M12 D-coded Ethernet connection, 4-poles; 2 x M12 L-coded power supply connection, 5-poles.	0980 ESL 390-121-DCU1
Ethernet Switch	Unmanaged		Rail Mounted	PoE	Store & Forward Mode, 10/100/1000 Mbit/s Ethernet, 5 x GE TX ports, 1 x GE FX port, 4 x PoE+ ports according to IEEE802.3af/at, RJ45 and SFP sockets, Auto-Crossing, Auto-Negotiation, Auto-Polarity.	SPIDER-SL-44-05T1 O69999TZ9HHHH
Ethernet Switch	Unmanaged		Rail Mounted	/	Store & Forward Mode, 10/100 Mbit/s Ethernet, 5x10/100BASE-TX, TP Cable, RJ45 Sockets, Auto-Crossing, Auto-Negotiation, Auto-Polarity.	BN20-05TX-ULCA
Ethernet Switch	Unmanaged		Rail Mounted	/	Store & Forward Mode, 10/100 Mbit/s Ethernet, 8x10/100BASE-TX, TP Cable, RJ45 sockets, Auto-Crossing, Auto-Negotiation, Auto-Polarity.	BN20-08TX-ULCA
Wireless Access Point	WLAN		Wall Mounted	/	Ruggedized wireless LAN access point and client with IEEE 802.11ac, IP65/67 water and dust resistant, rugged metal housing deployment in the field	BAT867-F 942 276 999

www.belden.com