

PB 315

Belden® DataTuff® Industrial Ethernet Connectivity, Tools & Accessories

Belden DataTuff Cat 6 and 5e IP67/IP20 Cord Sets, IP67 Modular Jacks, IP67 Plug Kits, Cabling Accessories and Tools complement Belden's Bonded-Pair Industrial Ethernet Unshielded and Shielded Twisted Pair Cables.



Belden Adds Industrial Ethernet Category 6 Cord Sets, Category 6 Modular Jacks, Category 6 Field-Installable Plug, and a New Crimp Tool to Its Line of End-to-End Industrial Ethernet Cabling Solutions

Growing Use of Ethernet

Commercial Ethernet, which was developed well over 30 years ago, is today the most widely installed LAN standard since it is used in a majority of the world's LAN-connected PCs and workstations. As the technology has evolved in terms of better overall performance and faster speeds, so has the Ethernet's appropriateness for the industrial environment: Industrial Ethernet provides a common physical media among the various process/manufacturing devices, plus it seamlessly integrates the data flow between the front office and the plant floor.

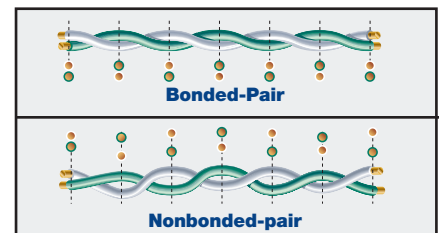
Why Use Industrial-Grade Ethernet Cabling and Connectivity?

Although Industrial Ethernet Cabling is based upon the same standards as commercial Ethernet technology (ANSI/TIA/EIA-568B), the two environments couldn't differ more. The office-type environment offers its cabling system a relatively safe harbor, but the industrial world can present very harsh and hazardous environmental conditions, meaning there's a real risk in bringing commercial-type cabling and connectivity products into the industrial landscape.

There's a better way — with cabling system components designed specifically for the industrial environment: Belden DataTuff Industrial Ethernet Cabling and Connectivity Solutions. Belden DataTuff products are also manufactured to the industry's highest standards of quality, utilizing the most advanced equipment, systems, controls and processes.

Belden DataTuff Industrial Ethernet Cables for Mission-Critical Applications

Belden's Bonded-Pair Technology is available on a full line of UTP and FTP DataTuff Cables. Bonded-Pair Technology affixes the conductor insulation of the cable pairs along their longitudinal axes to ensure that no performance-robbing gaps can develop between the conductor pairs. Since no gaps can occur, and the conductor-to-conductor spacing, or centricity, is always uniform, the cable offers excellent and consistently reliable electrical performance — even after the cable has been subjected to the bending, pulling and twisting that is inherent in the installation process, and the rigors of its use on the factory floor. Belden calls this unique after-installation performance capability **Installable Performance®**.



Installed and manipulated nonbonded-pairs (top) have a tendency to gap, varying the centricity of the two conductors. Belden Bonded-Pairs (bottom) do not gap so the physical integrity of the pair is maintained.

Belden IP67 and IP20 Products

Belden's sealed IP67-rated Cord Sets, Plug Kits, Stainless Steel Faceplates and Surface Mount Boxes are designed for use in factory and process areas in unprotected and outdoor environments. They are resistant to the ingress of dust, moisture, water and oil and they are impervious to chemical exposure.

Belden's non-sealed, IP20-rated Cord Sets are designed for use inside protected enclosures, control rooms, etc., but may be subjected to harsh conditions such as extreme temperatures, EMI/RFI and vibration. *(For an explanation of what the IP Codes signify, see IP Enclosure Ratings Table below.)*

IP Enclosure Ratings

The IP Code defined in International Standard IEC 60529 classifies a component's level of protection against the intrusion of solid objects or dust, accidental contact, and water. The rating consists of the letters IP (sometimes interpreted as "ingress protect rating" or "international protection rating"), followed by two numbers and an optional letter. The numbers indicate conformity with the conditions summarized in the tables below. Where there is no protection rating with regard to one of the criteria, the number is replaced with the letter X.

Level	Object Size Protected Against	Details
0	—	No protection against contact and ingress of objects.
1	>50 mm	Any large surface of the body, such as the back of a hand, but no protection against deliberate contact with a body part.
2	>12.5 mm	Fingers or similar objects.
3	>2.5 mm	Tools, thick wires, etc.
4	>1 mm	Most wires, screws, etc.
5	Dust protected	Ingress of dust is not entirely prevented, but it must not enter in sufficient quantity to interfere with the satisfactory operation of the equipment; complete protection against contact.
6	Dust tight	No ingress of dust; complete protection against contact.

First Number

The first number indicates the level of protection that the enclosure provides against access to hazardous parts (i.e., electrical conductors, moving parts) and the ingress of solid foreign objects.

Second Number

Protection of the equipment inside the enclosure against harmful ingress of water.

Level	Protected Against	Details
0	Not protected	—
1	Dripping water	Dripping water (vertically falling drops) shall have no harmful effect.
2	Dripping water when tilted up to 15°	Vertically dripping water shall have no harmful effect when the enclosure is tilted at an angle up to 15° from its normal position.
3	Spraying water	Water falling as a spray at any angle up to 60° from the vertical shall have no harmful effect.
4	Splashing water	Water splashing against the enclosure from any direction shall have no harmful effect.
5	Water jets	Water projected by a nozzle against enclosure from any direction shall have no harmful effects.
6	Powerful water jets	Water projected in powerful jets against the enclosure from any direction shall have no harmful effects.
7	Immersion up to 1m	Ingress of water in harmful quantity shall not be possible when the enclosure is immersed in water under defined conditions of pressure and time (up to 1m of submersion).
8	Immersion beyond 1m	The equipment is suitable for continuous immersion in water under conditions which shall be specified by the manufacturer. <i>Note: Normally, this will mean that the equipment is hermetically sealed. However, with certain types of equipment, it can mean that water can enter but only in such a manner that produces no harmful effects.</i>

DataTuff® Industrial Ethernet Cord Sets (RJ45). Cat 6 4-Pair, 23 AWG – Heavy Duty Oil- & Sunlight-Resistant Black Jackets

IP67 interface complies with the *EtherNet/IP* specification (IEC 61076-3-106 Variant 1)

Unshielded with Solid Conductors (ref: Belden Bonded-Pair Cable 7940A)

Cabling Rating NEC: CMR, CMX-Outdoor CEC: CMR FT4.

Belden Part No.	IP Rating	Length meters (Ft.)	Tethered Cap	Package Quantity
E600001 010S1	IP67	1 m (3.3 ft.)	Yes	1
E600002 010S1	IP67	2 m (6.6 ft.)	Yes	1
E600003 010S1	IP67	3 m (9.8 ft.)	Yes	1
E600005 010S1	IP67	5 m (16.4 ft.)	Yes	1
E600025 010S1	IP67	25 m (82 ft.)	Yes	1
E601001 010S1	IP20	1 m (3.3 ft.)	–	1
E601002 010S1	IP20	2 m (6.6 ft.)	–	1
E601003 010S1	IP20	3 m (9.8 ft.)	–	1
E601005 010S1	IP20	5 m (16.4 ft.)	–	1

Shielded with Solid Conductors (ref: Belden Bonded-Pair Cable 7953A)

Cabling Rating NEC: CMR, CMX-Outdoor CEC: CMR FT4.

Belden Part No.	IP Rating	Length meters (Ft.)	Tethered Cap	Package Quantity
E604001 010S1	IP67	1 m (3.3 ft.)	Yes	1
E604002 010S1	IP67	2 m (6.6 ft.)	Yes	1
E604003 010S1	IP67	3 m (9.8 ft.)	Yes	1
E604005 010S1	IP67	5 m (16.4 ft.)	Yes	1
E604025 010S1	IP67	25 m (82 ft.)	Yes	1
E605001 010S1	IP20	1 m (3.3 ft.)	–	1
E605002 010S1	IP20	2 m (6.6 ft.)	–	1
E605003 010S1	IP20	3 m (9.8 ft.)	–	1
E605005 010S1	IP20	5 m (16.4 ft.)	–	1

DataTuff Industrial Ethernet Ruggedized Cord Sets with Metal Body (RJ45). Cat6 4-Pair, 23 AWG – Heavy Duty Oil- & Sunlight-Resistant, Black Jackets

Unshielded with Solid Conductors (ref: Belden Bonded-Pair Cable 7940A)

Cable Rating NEC: CMR, CMX-Outdoor CEC: CMR FT4.

Belden Part No.	IP Rating	Length meters (Ft.)	Tethered Cap	Package Quantity
R601001 010S1	IP20	1 m (3.3 ft.)	–	1
R601002 010S1	IP20	2 m (6.6 ft.)	–	1
R601003 010S1	IP20	3 m (9.8 ft.)	–	1
R601005 010S1	IP20	5 m (16.4 ft.)	–	1

Shielded with Solid Conductors (ref: Belden Bonded-Pair Cable 7953A)

Cable Rating NEC: CMR, CMX-Outdoor CEC: CMR FT4.

Belden Part No.	IP Rating	Length meters (Ft.)	Tethered Cap	Package Quantity
R605001 010S1	IP20	1 m (3.3 ft.)	–	1
R605002 010S1	IP20	2 m (6.6 ft.)	–	1
R605003 010S1	IP20	3 m (9.8 ft.)	–	1
R605005 010S1	IP20	5 m (16.4 ft.)	–	1

Be Certain with Belden



DataTuff Industrial Ethernet Cord Sets (RJ45). Cat 5e 4-Pair, 24 AWG – Heavy Duty Oil- & Sunlight-Resistant Black Jackets

IP67 interface complies with the **EtherNet/IP** specification (IEC 61076-3-106 Variant 1)

Unshielded with Solid Conductors (ref: Belden Bonded-Pair Cable 7923A)

Cable Rating NEC: CMR, CMX-Outdoor CEC: CMR FT4. MSHA

Belden Part No.	IP Rating	Length meters (Ft.)	Tethered Cap	Package Quantity
E500001 010S1	IP67	1 m (3.3 ft.)	Yes	1
E500002 010S1	IP67	2 m (6.6 ft.)	Yes	1
E500003 010S1	IP67	3 m (9.8 ft.)	Yes	1
E500005 010S1	IP67	5 m (16.4 ft.)	Yes	1
E500025 010S1	IP67	25 m (82 ft.)	Yes	1
E501001 010S1	IP20	1 m (3.3 ft.)	–	1
E501002 010S1	IP20	2 m (6.6 ft.)	–	1
E501003 010S1	IP20	3 m (9.8 ft.)	–	1
E501005 010S1	IP20	5 m (16.4 ft.)	–	1

Unshielded with Stranded Conductors (ref: Belden Bonded-Pair Cable 7924A)

Cable Rating NEC: CMR, CMX-Outdoor CEC: CMR FT4

Belden Part No.	IP Rating	Length meters (Ft.)	Tethered Cap	Package Quantity
E502001 010S1	IP67	1 m (3.3 ft.)	Yes	1
E502002 010S1	IP67	2 m (6.6 ft.)	Yes	1
E502003 010S1	IP67	3 m (9.8 ft.)	Yes	1
E502005 010S1	IP67	5 m (16.4 ft.)	Yes	1
E502025 010S1	IP67	25 m (82 ft.)	Yes	1
E503001 010S1	IP20	1 m (3.3 ft.)	–	1
E503002 010S1	IP20	2 m (6.6 ft.)	–	1
E503003 010S1	IP20	3 m (9.8 ft.)	–	1
E503005 010S1	IP20	5 m (16.4 ft.)	–	1

Shielded with Solid Conductors (ref: Belden Bonded-Pair Cable 7929A)

Cable Rating NEC: CMR, CMX-Outdoor CEC: CMR FT4. MSHA

Belden Part No.	IP Rating	Length meters (Ft.)	Tethered Cap	Package Quantity
E504001 010S1	IP67	1 m (3.3 ft.)	Yes	1
E504002 010S1	IP67	2 m (6.6 ft.)	Yes	1
E504003 010S1	IP67	3 m (9.8 ft.)	Yes	1
E504005 010S1	IP67	5 m (16.4 ft.)	Yes	1
E504025 010S1	IP67	25 m (82 ft.)	Yes	1
E505001 010S1	IP20	1 m (3.3 ft.)	–	1
E505002 010S1	IP20	2 m (6.6 ft.)	–	1
E505003 010S1	IP20	3 m (9.8 ft.)	–	1
E505005 010S1	IP20	5 m (16.4 ft.)	–	1

Shielded with Stranded Conductors (ref: Belden Bonded-Pair Cable 7939A)

Cable Rating NEC: CMR, CMX-Outdoor CEC: CMR FT4

Belden Part No.	IP Rating	Length meters (Ft.)	Tethered Cap	Package Quantity
E506001 010S1	IP67	1 m (3.3 ft.)	Yes	1
E506002 010S1	IP67	2 m (6.6 ft.)	Yes	1
E506003 010S1	IP67	3 m (9.8 ft.)	Yes	1
E506005 010S1	IP67	5 m (16.4 ft.)	Yes	1
E506025 010S1	IP67	25 m (82 ft.)	Yes	1
E507001 010S1	IP20	1 m (3.3 ft.)	–	1
E507002 010S1	IP20	2 m (6.6 ft.)	–	1
E507003 010S1	IP20	3 m (9.8 ft.)	–	1
E507005 010S1	IP20	5 m (16.4 ft.)	–	1



Modular Jacks (RJ45). Cat 6. IP67

IP67 interface complies with the **Ethernet/IP** specification (IEC 61076-3-106 Variant 1)

Belden Part No.	Description	Tethered Cap	Package Quantity
E100601 010S1	UTP, Black	Yes	1
E100602 010S1	FTP, Black	Yes	1

Field-Installable Metal Body Ruggedized Plug (RJ45). Cat 6. IP20

Belden Part No.	Description	Package Quantity
R301601 000S1	UTP/STP, T568A Plug	1
R301602 000S1	UTP/STP, T568B Plug	1

Modular Jacks (RJ45). Cat 5e. IP67

IP67 interface complies with the **Ethernet/IP** specification (IEC 61076-3-106 Variant 1)

Belden Part No.	Description	Tethered Cap	Package Quantity
E100501 010S1	UTP, Black	Yes	1
E100502 010S1	FTP, Black	Yes	1

Plug Kits (RJ45). Cat 5e. IP67

IP67 interface complies with the **Ethernet/IP** specification (IEC 61076-3-106 Variant 1)

Belden Part No.	Description	Tethered Cap	Package Quantity
E300501 010S1	UTP, Black	Yes	1
E300502 010S1	FTP, Black	Yes	1

Stainless Steel Faceplates. IP67

Belden Part No.	Description	Package Quantity
E200001 000S1	Single gang, 1-port	1
E200002 000S1	Single gang, 2-port	1
E200004 000S1	Double gang, 4-port	1

Surface Mount Boxes. IP67

Surface Mount Box Dimensions: 12.8 x 12.8 x 6.7 cm deep (5.05" x 5.05" x 2.625" deep)

Belden Part No.	Description	Package Quantity
E200101 009S1	1-port, White/Stainless Steel Cover	1
E200102 009S1	2-port, White/Stainless Steel Cover	1
E200103 009S1	3-port, White/Stainless Steel Cover	1
E200104 009S1	4-port, White/Stainless Steel Cover	1

Tools

Belden Part No.	Description	Package Quantity
E400001 006S1	Hand tool to crimp unshielded (UTP) and shielded (FTP) RJ45 plugs. Black with Blue handle	1
E400003 008S1	Cable stripper, Gray	1
AX100749	Punch-down connecting tool	1
C0054642	Punch-down connecting tool pouch	1

FTP = Foil Shielded Twisted Pairs • UTP = Unshielded Twisted Pairs

Belden DataTuff Cabling and Connectivity products provide superior performance and are built-tough for use in either IP67 or IP20 environments.

Belden DataTuff Connectivity Solutions

Belden DataTuff Connectivity products are built specifically for use in mission-critical and harsh environments. They include:

- **Cord Sets (RJ45)**
Cat 6 or Cat 5e UTP or FTP with solid 24 AWG conductors and industrial-grade sunlight/oil resistant jackets. Suitable for use in IP67 or IP20 installations.
- **Modular Jacks (RJ45)**
Cat 6 or Cat 5e for UTP or FTP. Suitable for use in IP67 installations.
- **Plug Kits (RJ45)**
Cat 5e UTP or FTP. Suitable for use in IP67 installations.
- **Metal Body Field-Installable Plug**
Cat6 UTP or FTP.

Belden DataTuff Cabling Accessories

Belden offers industrial-grade faceplates and surface mount boxes:

- **Stainless Steel Faceplates**
1- or 2-Port single-gang or 4-Port double-gang. Suitable for use in IP67 installations.
- **Surface Mount Boxes**
1-, 2-, 3-, or 4-Port with Stainless Steel Covers. Suitable for use in IP67 installations.

Belden DataTuff Tools

Belden provides the following easy-to-use, highly durable tools:

- **Crimping Hand Tool**
(Black with Blue handle) that crimps either UTP or FTP RJ45 plugs.
- **Cable Strippers (Blue)**
- **Punch Down Connecting Tool and Punch**

Belden also offers a complete line of commercial Copper and Fiber cabling and connectivity solutions.

Complete information for the entire Belden DataTuff Industrial Ethernet line is available at www.belden.com

IP67 Cord Set



IP20 Cord Set



IP67 Modular Jack



IP67 Plug Kit



Metal Body Field-Installable Plug



IP67 Stainless Steel Faceplates



IP67 Surface Mount Box



Crimp Tool



Stripping Tool



Punch-down Connecting Tool

