Your Global Automation Partner

TURCK

Cable Installation Guide for Power and Control Cables

Guide G1037

A Global Leader in Industrial Automation

Turck's sensors, connectivity, and fieldbus technology products are built to be the best. As one of the most **prominent** sensor manufacturers **in the world**, we even back our sensors with a **lifetime warranty**. Turck works by bringing **rugged engineering** solutions to your industrial automation applications.

85,000+ SOLUTIONS

50+ YEARS OF INNOVATION

2,000+ EXPERIENCED SALES REPRESENTATIVES

Pioneer in non-contact **sensing** technology

Developed innovative **connectivity** solutions in response to our customers' needs

Recognized the need for advanced **I/O solutions** in harsh duty environments

SUPPORT & DEDICATED SERVICE

EXTENSIVE WARRANTY

4,800+ APPLICATION EXPERTS

RESPOND and SOLVE over **1,200** inquiries per day

Strategically placed manufacturing facilities in the **USA** with **30** GLOBAL SUBSIDIARIES

GLOBAL BUT LOCAL...

60 representations worldwide

Contents

Connectivity | Installation Guide

Introduction

Proper management of cabling systems can mean the difference between a dependable and smooth operating installation and costly reoccurring down-time. The suggestions outlined in this installation guide illustrate some of the common sources of problems and provide simple and effective solutions.

Note: Information within this document is based on Turck internal standards as well as NFPA 70 National Electrical Code. For complete installation guidelines, standards, and restrictions, please consult applicable electrical code for the region of installation.

General Use

- Connector assemblies are to be installed and protected in accordance to local electrical code.
- Evaluate extreme environmental chemicals, liquids, gases and contaminants prior to installation to ensure product suitability. Failure to do so may result in a chemical breakdown or corrosion of the product.
- Evaluate extreme shock and vibration requirements to ensure that product is suitable and will not become disconnected or damaged while in service.
- Should the connector face, housing, cable, or wires become damaged or frayed, remove from operation immediately and replace.

Maintenance

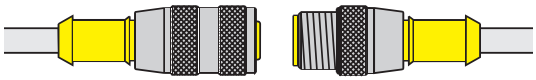
- Products should not need maintenance under normal operation within product specifications.
- If equipment maintenance or product change-out is necessary, it is required to do so only in the de-energized state.
- Unintentional activation or uncontrolled restart could cause loss or injury.
- Secure the system from unintentional activation per local electrical code requirements.
- Following equipment maintenance or product change-out, ensure a controlled restart.

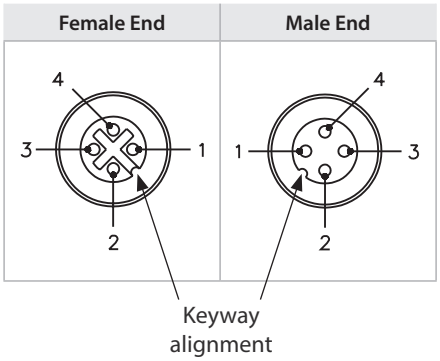
Connectivity | Installation Guide

Connector Installation

Connectors are designed with keyways that ensure proper orientation. With power disconnected, the connector keyway should be aligned with the keyway on the mating connector. The connector should then be pushed into the mating connector and the coupling nut turned until hand tight. The connector should then be pushed firmly a second time and the coupling nut hand tightened again. This generally allows an additional 1/8-1/4 turn and ensures that a tight, weatherproof connection is made. Connectors are designed to be connected by hand and meet the rated ingress protection for the product. It is not recommended to use a wrench or other tools with the products for tightening unless it is a torque wrench with the proper torque setting. See the table below for the recommended torque settings.

Product Family	Torque (Nm)
M8 (Picofast)	0.5
M12 (Eurofast)	0.8
1/2" (Microfast)	0.8
M16 (Versafast/Powerfast)	1
7/8", (Minifast - A)	2
1", 1 1/8" (Minifast - B/C)	3
D-Size (Powerfast)	4
M23 (Multifast)	2.5
M23 (Powerfast)	4
Valve Connector (screw)	0.7





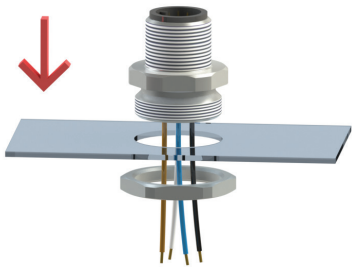
Receptacle Installation

Bulkhead receptacles provide quick disconnect capabilities to panels, enclosures, and instruments. They are available in front, rear or PCB styles for ease of installation in a variety of mounting threads such as: metric, PG, NPSM, or NPT. Receptacles are designed with complementary keyways to connectors allowing orientation flexibility for ease of installation.

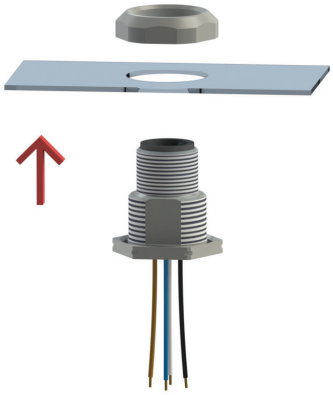
Front mounting receptacles with an o-ring come into the panel from the outside of the enclosure and are secured with a lock nut on the inside of the enclosure. The lock nut compresses the o-ring to provide a tight seal against dust and moisture.

Rear mounted receptacles are installed from the inside of the panel or enclosure and secured on the outside face with a mating locknut. When specifying a receptacle that contains an o-ring for sealing, the panel locknut should be tightened so that the o-ring is compressed. Under or over tightening can cause leakage to the panel.

Front Mounted

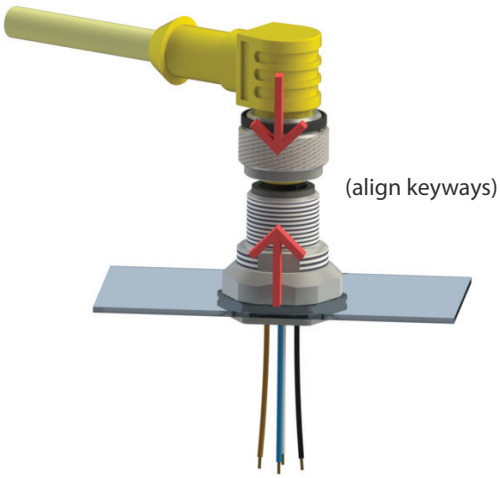


Rear Mounted



Receptacle Installation (continued)

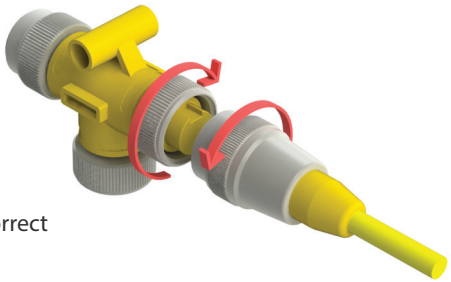
With power disconnected, align the connector keyway with the mating receptacle. The connector should then be pushed into the mating receptacle and the coupling nut turned until hand tight. The connector should then be pushed firmly a second time and the coupling nut hand tightened again to ensure a tight, weather-proof connection.



Tees and Splitters Installation

With power disconnected, hold or mount the tee/splitter in place and the align keyway with the mating connector. Hand tighten the coupling nuts. Avoiding applying side load or torsional force to the tee/splitter, which will put stress on the pins.

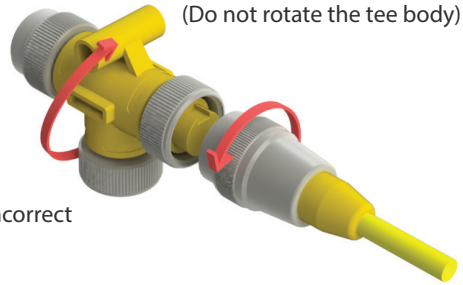
Rotating Coupling Nuts



Correct

Rotating Tee Body

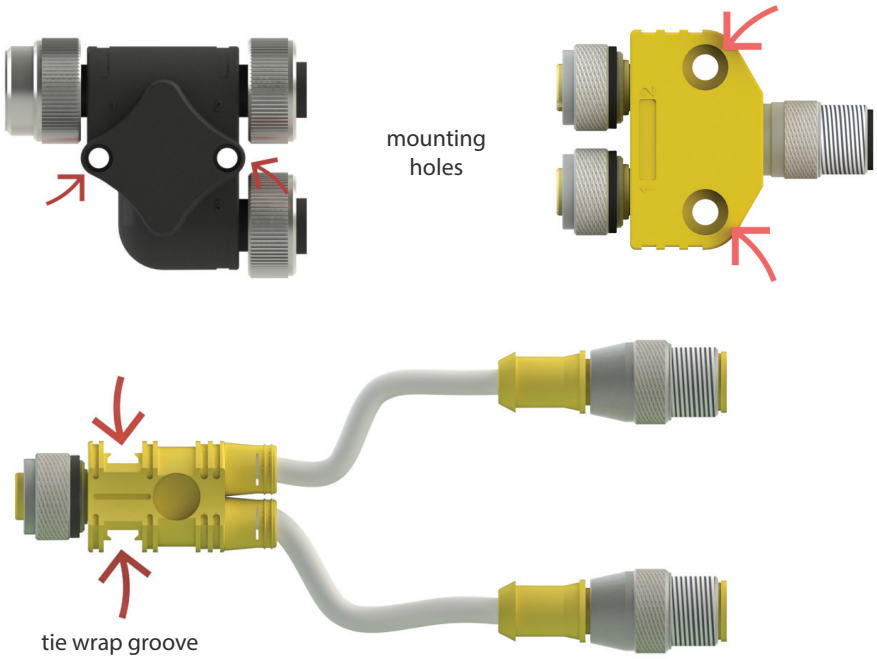
(Do not rotate the tee body)



Incorrect

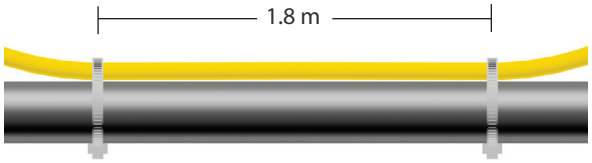
Product Mounting

All tees or splitters should be properly supported and secured using the mounting holes on the product or tie wrap grooves (where applicable).



Cable Support

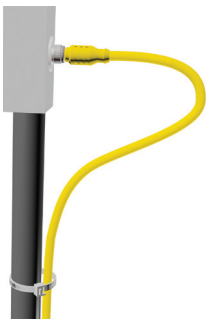
Cables should be supported to prevent movement on the equipment. Ideally the cable should be supported in a distance not to exceed 1.8 m (6 ft) without continuous support (2014 NFPA 70 §336.10(7)). The cable should also be supported at any connection points or terminations so that tension is not transmitted to joints or terminals (2014 NFPA 70 § 410.9).



Proper Bend Radius

Providing sufficient bend radius will allow the cable to absorb the energy of bending over a greater portion of its length, increasing its effective working life. Small increases in the radius of the bend can produce substantial increases in cable life.

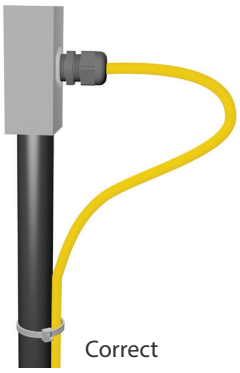
Minimum bend radius for Fixed Applications:
Standard cable - 5x cable diameter
Armorfast® cable - 12x cable diameter



Eliminating Stress Points in Cable Dress

Installing cables to allow for adequate stress loops and freedom of motion increases the life of the cables. Turck cordsets incorporate molded strain reliefs that will assist in preventing stress.

Tie Down Loops

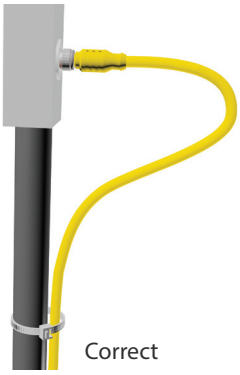


Correct

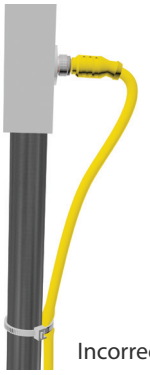
Incorrect

Strain Relief

Correct



Correct

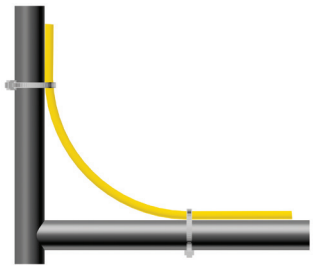


Incorrect

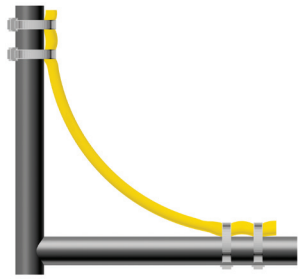
Tying Cables with Cable Ties

When tying cable with self locking cable ties, always leave the ties loose enough for the cables to slide freely under the tie. Over tightening will create stress concentrations that can cause the conductors to fail prematurely. Never tighten the tie to the point where the cable jacket becomes deformed or pinched.

Correct



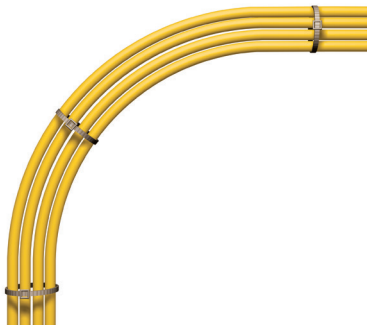
Incorrect



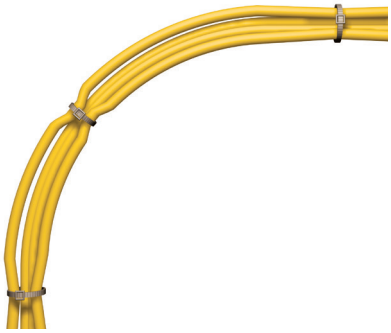
Cable Bundling

When attaching cable to machinery or bundling several cables together, always keep the cables loose enough to move within the securement. Cable compression and tension stresses individual conductors and can result in a lower installation life as well as signal and data degradation.

Correct



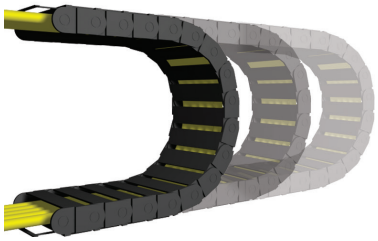
Incorrect



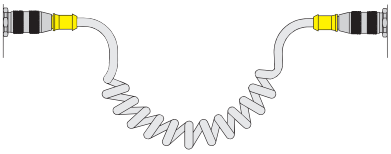
Cabling for Motion Applications

Where cabling is subjected to linear, angular, or rotational motion between two points, always allow adequate cable length to absorb the energy imparted by the motion. Use of flexrated cables, coiled cords, mechanical support mechanisms, or large well supported cable loops will maximize cable life.

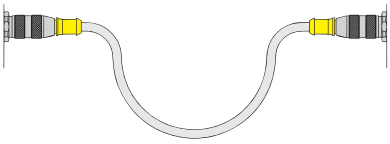
Minimum bend radius for Moving Applications:
Standard cable - 10x cable diameter
Armorfast® cable - 15x cable diameter



"C" Track



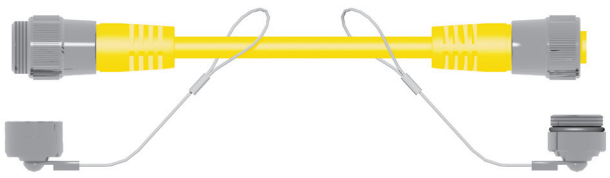
Coiled Cord



Cable Loop

Closure Caps

In the event that a connector will be unmated and exposed, it is best practice to use a closure cap to seal off the exposed contacts from the surrounding environment. This is especially relevant where foreign material has the potential to come into contact with the unprotected connector. Turck offers closure caps in a variety of materials and configurations to complement each connector type. Ensuring proper protection of the electrical contacts extends both product life and long term operating reliability.



Notes

Turck Inc. sells its products through authorized distributors. These distributors provide our customers with technical support, service and local stock. Turck distributors are located nationwide – including all major metropolitan marketing areas.

For application assistance or for the location of your nearest Turck distributor, call:

1-800-544-7769

Specifications in this manual are subject to change without notice. Turck also reserves the right to make modifications and makes no guarantee of the accuracy of the information contained herein.

Literature and media questions or concerns?
Contact Turck USA Marketing – tusa.marketing@turck.com

TURCK

30 subsidiaries and over
60 representations worldwide!

Printed in USA

G1037 B 07/21

www.turck.com