Industrial Ethernet Products

Tyco Electronics

TYCO ELECTRONICS "TECHNOLOGY PORTFOLIO"

- Connector Systems / Electromechanical Components
- Relays
- Wireless Products
- Sensors
- Fiber Optic Products
- Wire & Cable
- Application Tooling
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- Circuit Protection Devices
- Tubing & Harnessing Products
- Touch Screen Displays
- Power Systems
- Electronic Modules
- Resistors & Inductors
- Battery Connectors & Assemblies
- Heat Sinks & Thermal Solutions
- Switches and Knobs
- Identification Labeling Products
- Racks & Panels
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TYCO ELECTRONICS "AT YOUR SERVICE"

Tyco Electronics Online

The Tyco Electronics website is an innovative and interactive source for application information, product updates and technical solutions.
Our step-by-step software makes our website intuitive and user-friendly to better serve you!
Please contact us at:
www.tycoelectronics.com

Internet Homepage

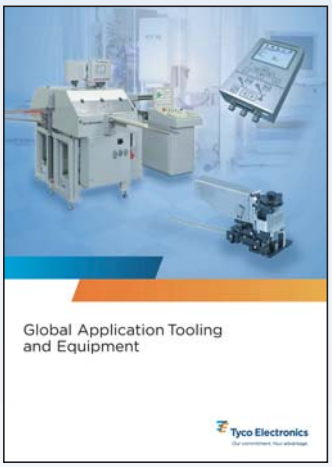
www.tycoelectronics.com

Electronic Internet Catalog

www.catalog.tycoelectronics.com

Product Information Center (PIC)

You can rely on Tyco Electronics PIC Team to provide you support for answers to your general information or technical questions in an efficient and effective manner.
To reach our PIC staff, please contact your local Tyco Electronics organization.



Product and Machine Literature

For more information about Tyco Electronics and its wide range of products we offer you a variety of literature such as product catalogs and a lot of product specific brochures.

For catalogs and product brochures please contact your local Tyco Electronics organization.

Verbindlich für Toleranzen der Abmessungen und technische Werte sind ausschließlich die neuesten Tyco Electronics Kundenzeichnungen bzw. Produkt-Spezifikationen, die Sie auf Anfrage erhalten.

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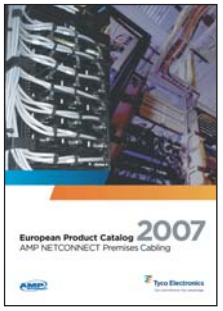
Further Industrial Ethernet Products

Modular Jacks and MRJ 21
Literature No. 82066

Modular Plugs
Literature No. 1307282

Heavy Duty Connectors
Literature No. 889745-2



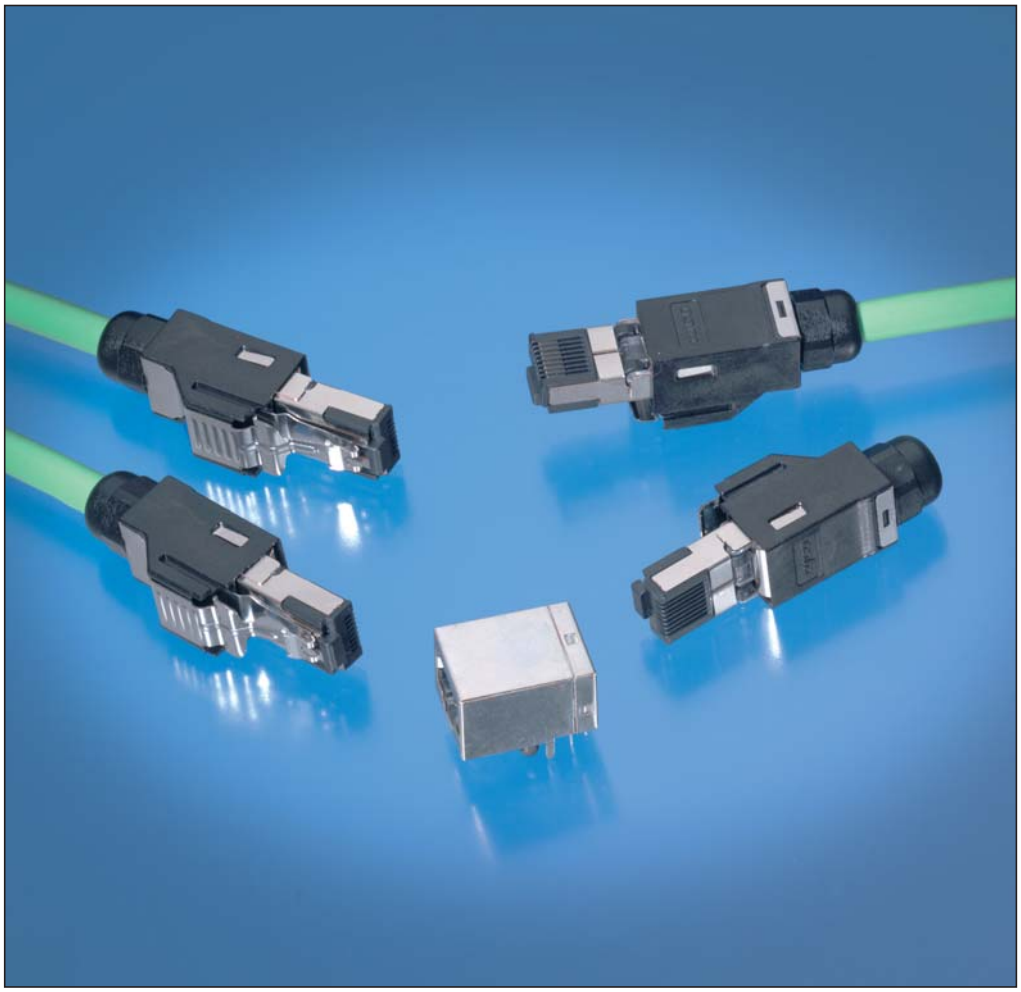
AMP NETCONNECT Products
Literature No. 1308800-2

All specifications subject to change. Consult Tyco Electronics for latest specifications.

Introduction

Industrial Ethernet

A broad product portfolio of RJ-45 Connectors and Ethernet Switches, Media Converters and Device Servers for Industrial Networks in the Machinery and Automation World.



Technical Features

- **Fast Ethernet and Gigabit Ethernet Capable**
- **Field Installation with Fast Termination Device**
- **Common Core Principle or Conventional Technology**
- **IP20 application with 2-Step Metal Spring for additional mounting device (housing – optional)**
- **IP67 application with Push-Pull-, Bajonet and Thread-Interlock**
- **According IEC 60603-7-1**
- **Contact Area: Multiple contacts per pin in combination with the "Specific RJ-45 Modular Jack" to avoid signal interruption (realtime capable) are in progress**
- **Industrial Ethernet cables and comfortable Stripping Tool**
- **Further products available soon**

Applications

Since Ethernet is more often used in Industrial Machinery Applications the integration of production equipment, components and drives is becoming more and more important and offers various opportunities. Thereby our customers are facing increasing requirements with regard to the capabilities of connectors and network components which are used in the harsh environments of manufacturing. Industrial Ethernet is already the platform for industrial controls and will even grow in the future.

Trends

Tyco Electronics will push these market trends by setting standards. With the new field installation RJ-45 Modular Plug Tyco Electronics present a high performance RJ-45 connector for Industrial Ethernet. This RJ-45 modular plug is capable of a data transmission rate of 100 Mbit/s (4 pos.) up to 1000 Mbit/s (8 pos.). The connector was developed for harsh industrial applications and is compatible with your existing data networks. The RJ-45 Plug is equipped with a fast termination technology and makes an easy and time-saving installation process possible.

Products

As the market leader for passive components Tyco Electronics offer a wide product portfolio and work furthermore on innovative solutions for your application. Tyco Electronics provide important, technical information for your product selection.

Industrial Ethernet IP20 Field Installation RJ-45 Modular Plug

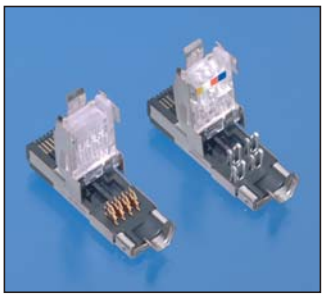
NEW PRODUCTS

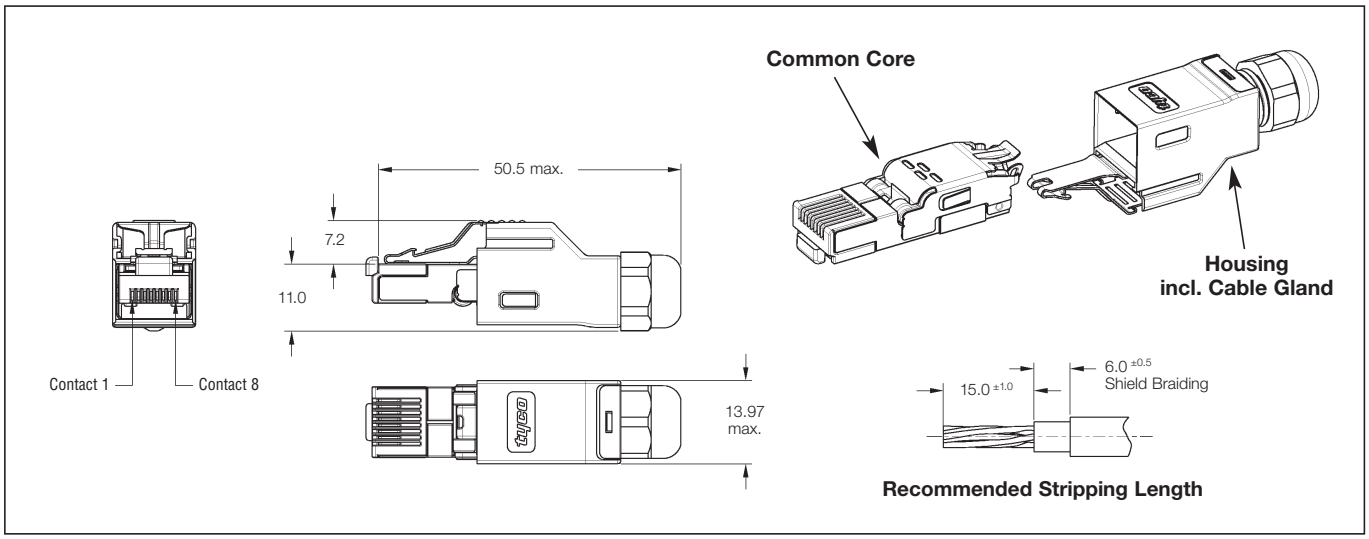
Industrial Ethernet IP20 Kit

4 Position:
Part No. **1903526-1**

8 Position:
Part No. **1903527-1**

Assembly Kit including:
- RJ-45 Modular Plug "Core"
- IP20 housing including cable gland





Technical Documentation

Product Specification:
108-78381

Application Specification:
114-5402

Standards:
Compliant to IEC 60603-7-1

Rated Voltage:
24 V DC

Rated Current:
500 mA per pin

Durability:
750 cycles

Cable Retention Force:
180° direction – 98 N
45° direction – 78.4 N

Material and Finish

Case Housing:
Polycarbonate

Terminal Housing:
Nylon

Terminal Contact:
Copper alloy

Shell:
Copper alloy

Finish

Contact:
Underplate nickel

Contact Area:
Gold plated

Shell:
Nickel

Cable

Capable for Part No. **1903526-1:**

Part No. **1939707-1**
4 wire AWG 22 solid

Part No. **1981897-1**
4 wire AWG 22 stranded

Capable for Part No. **1903527-1:**

Part No. **1939708-1**
8 wire AWG 26 stranded

Capable Cable Diameter:
6.3–6.7 mm

Receptacle Frame (optional)

- 3-D data available
- Parts upon request

All specifications subject to change. Consult Tyco Electronics for latest specifications.

Industrial Ethernet IP67 Field Installation RJ-45 Push-Pull Connector – Variant 14

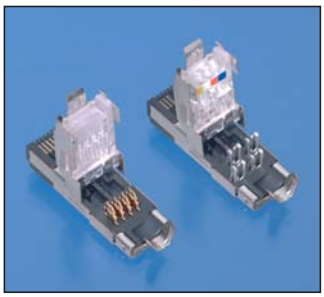
NEW PRODUCTS

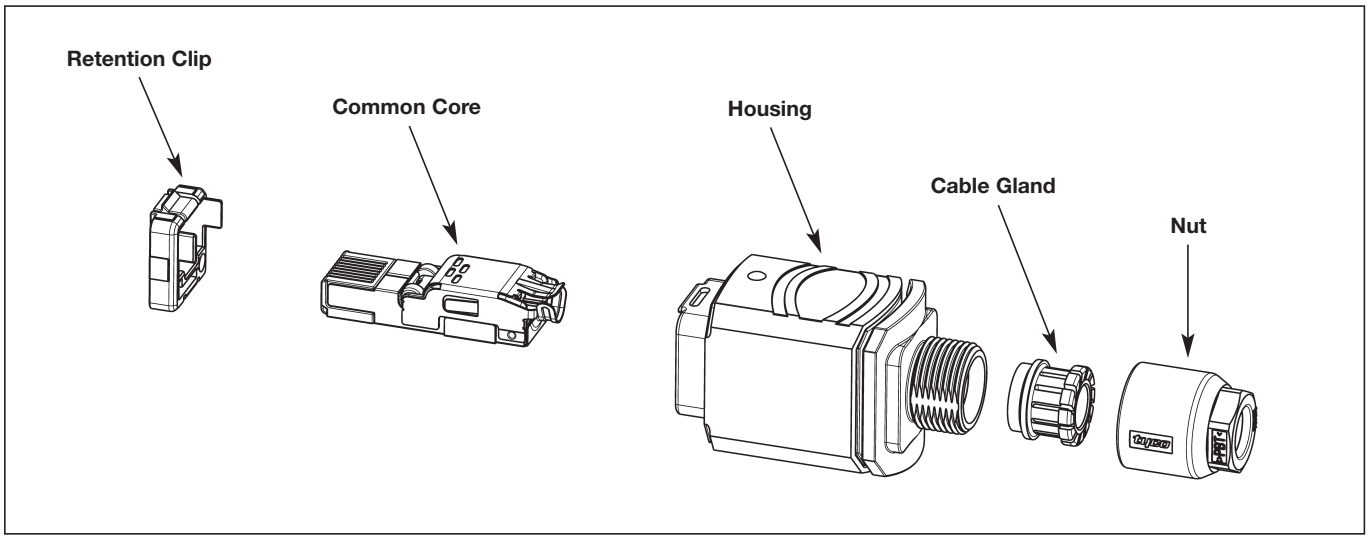
Industrial Ethernet IP67 Kit

4 Position:
Part No. **1987004-1**

8 Position:
Part No. **1987004-2**

Assembly Kit including:
- RJ-45 Modular Plug "Core"
- IP67 housing pre-mounted including cable gland





Technical Documentation

Product Specification:
108-78381 "Core"
108-xxx "Housing"

Application Specification:
114-xxx

Standards:
Compliant to IEC 60603-7-1
Compliant to IEC 61076-3-117 – Variant 14

Rated Voltage:
24 V DC

Rated Current:
500 mA per pin

Durability:
750 cycles

Material and Finish

Case Housing:
Ultradur / Lexans

Terminal Housing:
Nylon

Terminal Contact:
Copper alloy

Shell:
Copper alloy

Contact:
Underplate nickel

Contact Area:
Gold plated

Shell:
Nickel

Cable

Capable for Part No. **1987004-1:**

Part No. **1939707-1**
4 wire AWG 22 solid

Part No. **1981897-1**
4 wire AWG 22 stranded

Capable for Part No. **1987004-2:**

Part No. **1939708-1**
8 wire AWG 26 stranded

Capable Cable Diameter:
4.5–6.9 mm

Receptacle Frame

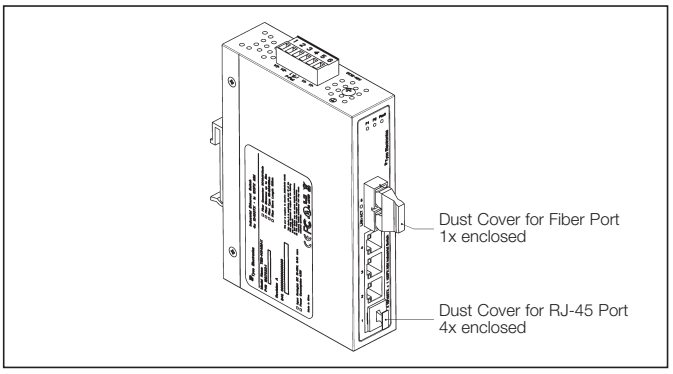
- 3-D data available
- Parts upon request

Industrial Ethernet Switches – TES Series

NEW PRODUCTS

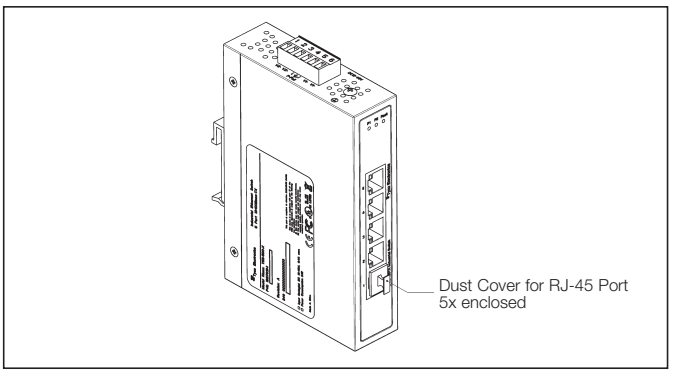
Technical Features

- Fast Ethernet Switch
- Compact housing
- Dimensions (W x H x D): 30 x 95 x 140 mm
- IP30 protection
- Relay output
- Store-and-Forward Switching Architecture
- RJ-45 port support MDI/ MDI-X auto-crossover
- Broadcast storm protection
- Embedded switch controller supports autonegotiation
- Redundant wide range power input +12–48 V DC
- Power polarity reverse protect
- Overload current re-settable fuse present
- Surge (EFT) protection 3000 V DC for power line
- 4000 V DC Ethernet ESD protection
- Flexible mounting: DIN-rail and panel mounting
- Operating Temperatures
  - from –10 °C up to +60 °C (standard model)
    e.g. TES-401-X
    TES-500-X
    TES-800-X
  - from –40 °C up to +75 °C (wide operating temperature model – E-Type)
    e.g. TES-401-XE
    TES-500-XE
    TES-800-XE



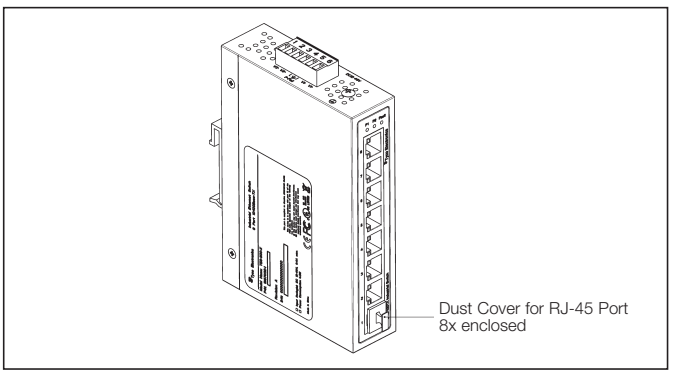
TES-401-X:
Part No. **1987033-1**

TES-401-XE:
Part No. **1987033-2**



TES-500-X:
Part No. **1987031-1**

TES-500-XE:
Part No. **1987031-2**



TES-800-X:
Part No. **1987032-1**

TES-800-XE:
Part No. **1987032-2**

All specifications subject to change. Consult Tyco Electronics for latest specifications.

Industrial Ethernet Switches – TES Series (continued)

NEW PRODUCTS

Technical Standard

- IEEE 802.3, 803.3u, 802.3x (Fiber)
- 10/100 Base TX 100FX (Fiber)
- UL, cUL, CE, FCC

Specific Features TES-401-X(E):

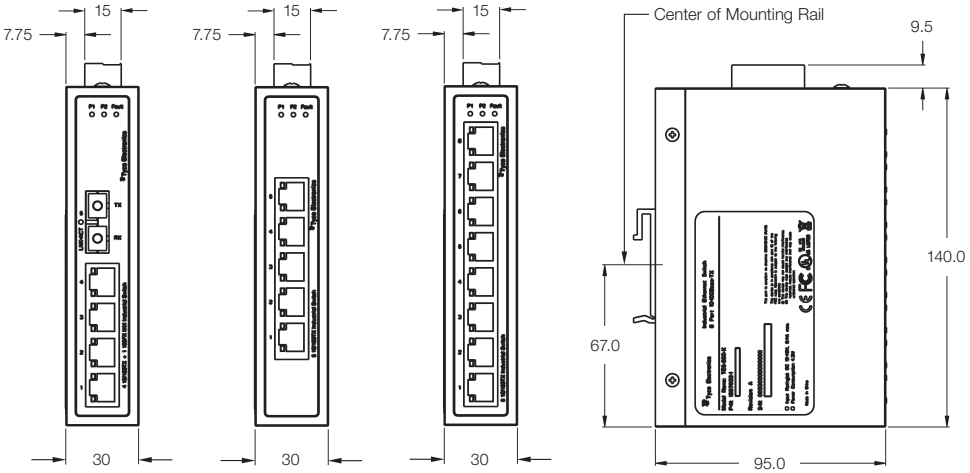
- 4-Port 10/100TX + 1-Port 100FX unmanaged Industrial Ethernet Switch
- 2K (wide operating temp. model) or 1K (standard model) MAC address table
- TX ports support full/ half duplex flow control
- Multimode Fibre 2 km SC Interface
- Embedded memory buffer
- Backplane (Switching Fabric) 1.0 Gbps

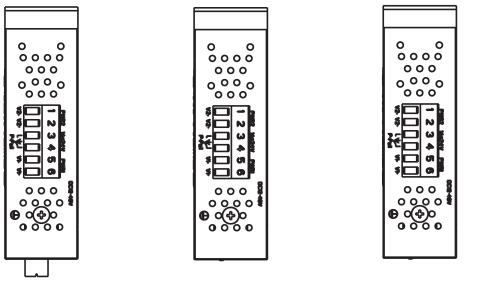
Specific Features TES-500-X(E):

- 5-Port 10/100TX unmanaged Industrial Ethernet Switch
- 2K MAC address table (wide and standard operating temp. model)
- Supports full/half duplex flow control
- Embedded memory buffer
- Backplane (Switching Fabric) 1.0 Gbps

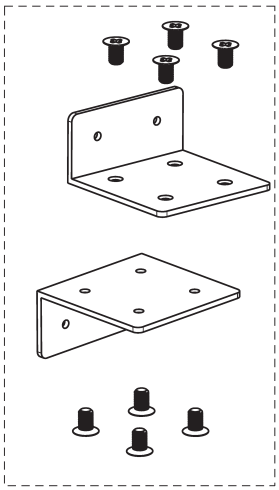
Specific Features TES-800-X(E):

- 8-port 10/100TX unmanaged Industrial Ethernet Switch
- 2K MAC address table (wide and standard operating temp. model)
- Supports full/half duplex flow control
- Embedded memory buffer
- Backplane (Switching Fabric) 1.6 Gbps





TES-401-X(E) TES-500-X(E) TES-800-X(E)



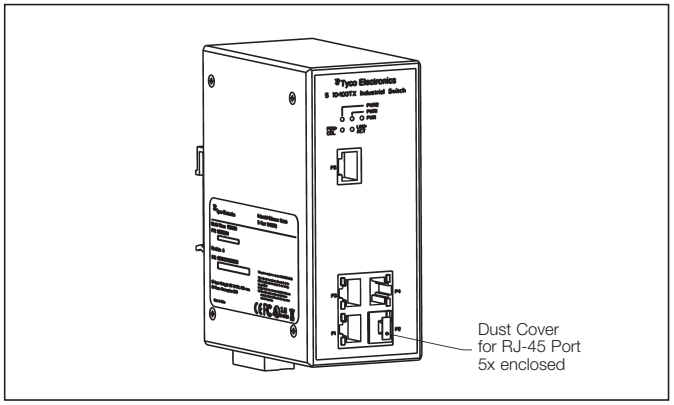
Wall Mounting Kit enclosed

Industrial Ethernet Switches – TES Series (continued)

NEW PRODUCTS

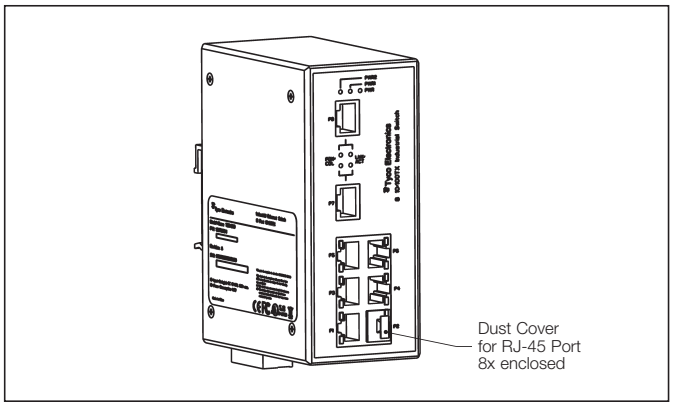
Technical Features

- Fast Ethernet Switch
- Robust housing
- Dimensions (W x H x D): 58 x 135 x 106 mm
- IP30 protection
- Store-and-Forward Switching Architecture
- RJ-45 port support MDI/MDI-X auto-crossover
- IEEE 802.3x Flow Control Support
  - Flow control on full-duplex
  - Back pressure on half-duplex
- Embedded switch controller supports autonegotiation
- Redundant wide range power input +12–48 V DC
- Power polarity reverse protect
- Flexible mounting: DIN-rail and panel mounting
- Operating temperatures
  - from –10 °C up to +60 °C (standard model)
    e.g. TES-500
    TES-800
  - from –40 °C up to +75 °C (wide operating temperature model – E-Type)
    e.g. TES-500-E
    TES-800-E



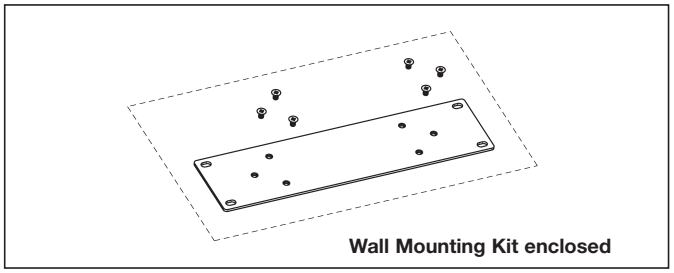
TES-500:
Part No. **1987029-1**

TES-500-E:
Part No. **1987029-2**



TES-800:
Part No. **1987030-1**

TES-800-E:
Part No. **1987030-2**



All specifications subject to change. Consult Tyco Electronics for latest specifications.

Industrial Ethernet Switches – TES Series (continued)

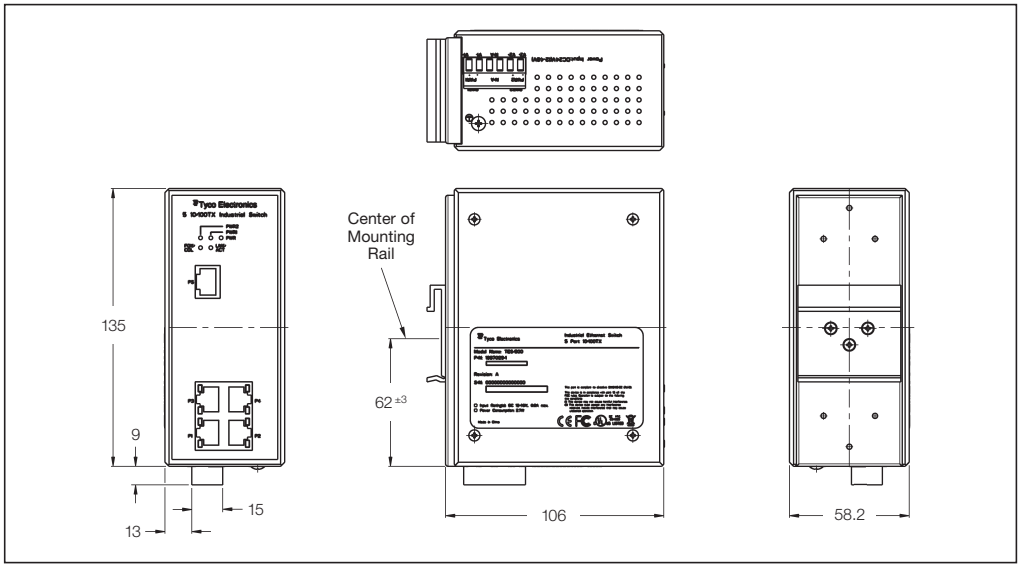
NEW PRODUCTS

Technical Standard

- IEEE 802.3, 803.3u, 802.3x
- 10/100 Base TX
- UL, cUL, CE, FCC

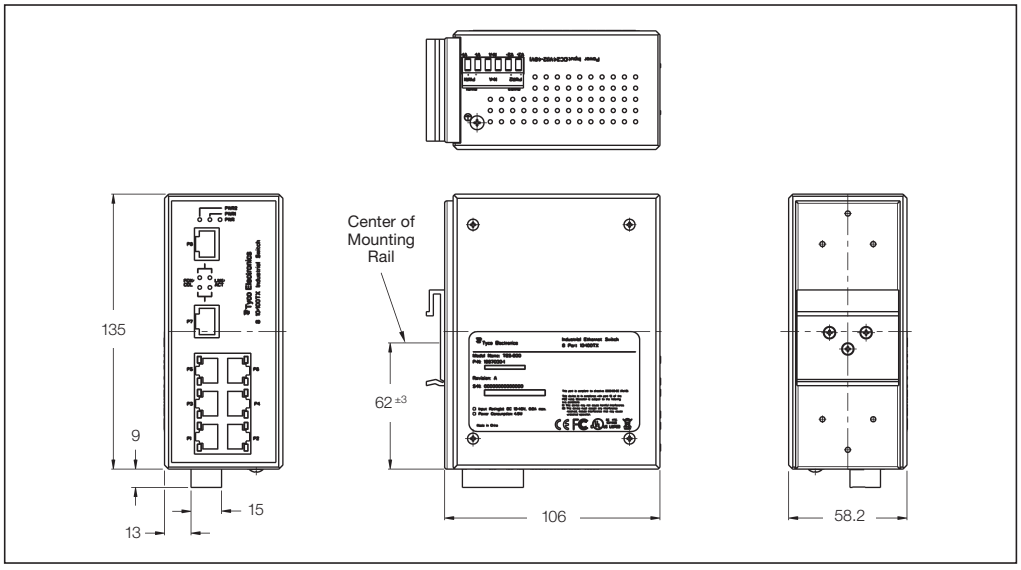
Specific Features TES-500(-E):

- 5-Port 10/100TX unmanaged Industrial Ethernet Switch
- 1K MAC address table
- 512 Kbits memory buffer
- Backplane (Switching Fabric) 1.0 Gbps



Specific Features TES-800(-E):

- 8-Port 10/100TX unmanaged Industrial Ethernet Switch
- 2K MAC address table
- 1 Mbits memory buffer
- Backplane (Switching Fabric) 1.6 Gbps

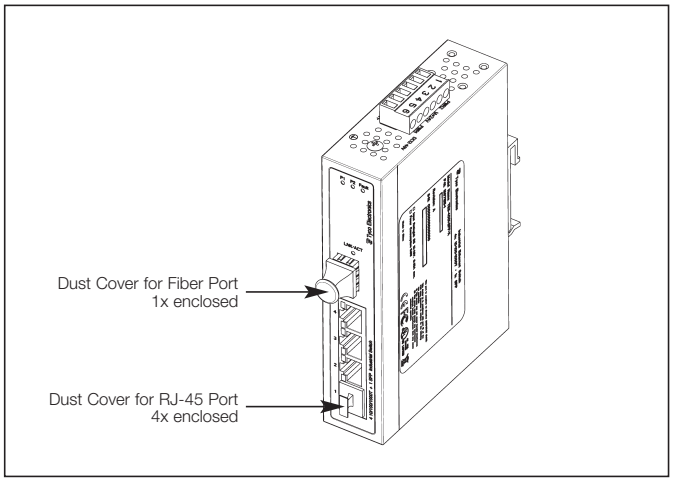


Industrial Ethernet Switches – TES Series – **Gigabit**

NEW PRODUCTS

Technical Features

- Gigabit Ethernet Switch
- Compact housing
- Dimensions (W x H x D): 30 x 95 x 140 mm
- IP30 protection
- Relay output
- Store-and-Forward Switching Architecture
- RJ-45 port support MDI/ MDI-X auto-crossover
- Broadcast storm protection
- Embedded switch controller supports autonegotiation
- Redundant wide range power input +12–48 V DC
- Power polarity reverse protect
- Overload current re-settable fuse present
- Surge (EFT) protection 3000 V DC for power line
- 4000 V DC Ethernet ESD protection
- Flexible mounting: DIN-rail and panel mounting
- Operating temperatures
  - from –10 °C up to +60 °C (standard model) e.g. TES-4001-SFP-X
  - from –40 °C up to +75 °C (wide operating temperature model – E-Type) e.g. TES-4001-SFP-XE

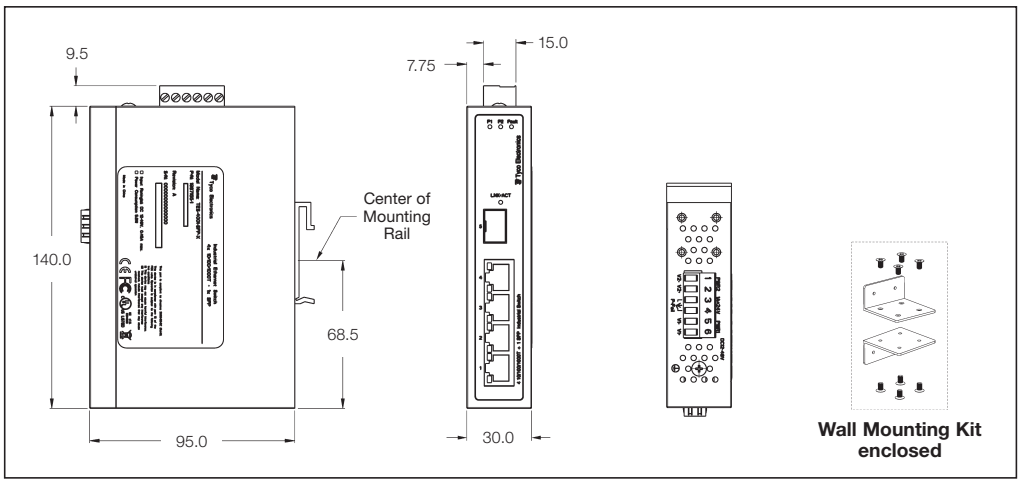


TES-4001-SFP-X:
Part No. **1987155-1**

TES-4001-SFP-XE:
Part No. **1987155-2**

Technical Standard

- IEEE 802.3, 803.3u, 802.3x, 802.3ab (fiber)
- UL, cUL, CE, FCC



Wall Mounting Kit enclosed

Specific Features TES-4001-SFP-X(E):

- 4-Port 10/100/1000TX + 1-Port SFP (Small Form factor Pluggable) unmanaged Industrial Ethernet Gigabit Switch
- 8K MAC address table
- Multimode and Singlemode Fibre 2 km/30 km (Wave-length 1310nm)
- Embedded memory buffer
- Backplane (Switching Fabric) 10.0 Gbps

SFP (Small Form factor Pluggable) Transceiver

Description	Type	Part Number
Fast Ethernet Transceiver	SFP-100-FX-MM	1987195-1
Gigabit Ethernet Transceiver	SFP-1000-SX-MM	3-1987195-3

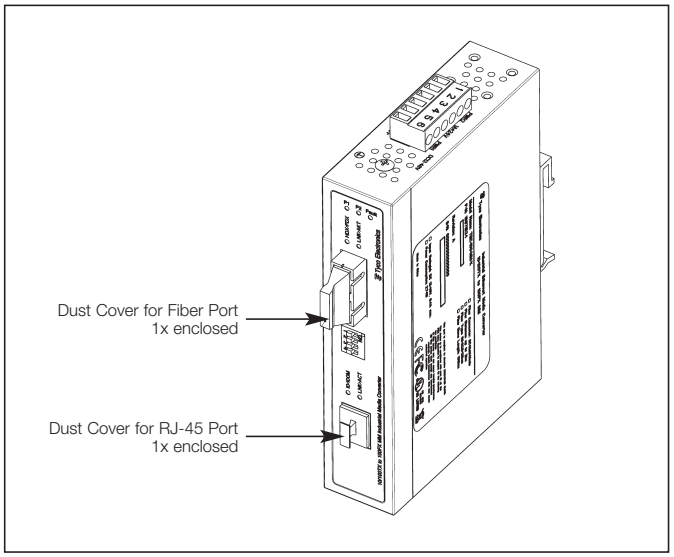
All specifications subject to change. Consult Tyco Electronics for latest specifications.

Industrial Ethernet Media Converters – TEC Series

NEW PRODUCTS

Technical Features

- Copper to Fibre Media Converter
- Compact housing
- Dimensions (W x H x D): 30 x 95 x 140 mm
- IP30 protection
- Store-and-Forward Switching Architecture
- RJ-45 port support MDI/ MDI-X auto-crossover
- Autonegotiation Speed, Half/Full Duplex
- DIP Switch for settings
- Built-In Link Lose Forwarding (LLF) & Link Fault Pass-Through (LFP) Technology
- Redundant wide range power input +12–48 V DC
- Power polarity reverse protect
- Overload current re-settable fuse present
- Surge (EFT) protection 3000 V DC for power line
- 4000 V DC Ethernet ESD protection
- Flexible mounting: DIN-rail and panel mounting
- Operating temperatures
  - from –10 °C up to +60 °C (standard model) e.g. TEC-100-MM-X
  - from –40 °C up to +75 °C (wide operating temperature model – E-Type) upon request



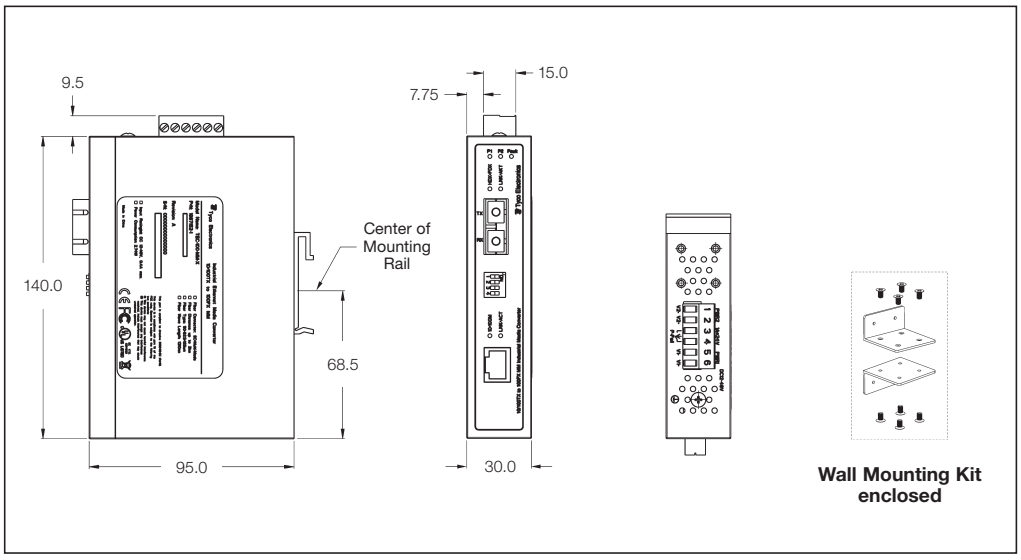
TEC-100-MM-X:
Part No. **1987152-1**

Technical Standard

- IEEE 802.3, 803.3u, 802.3x
- UL, cUL, CE, FCC

Specific Features TEC-100-MM-X:

- 1-Port 10/100TX to 1-Port SC Multi Mode Media Converter
- Fibre distance up to 2 km (Wave-length 1310 nm)



Wall Mounting Kit enclosed

Industrial Ethernet Device Server – TED Series

NEW PRODUCTS

Technical Features

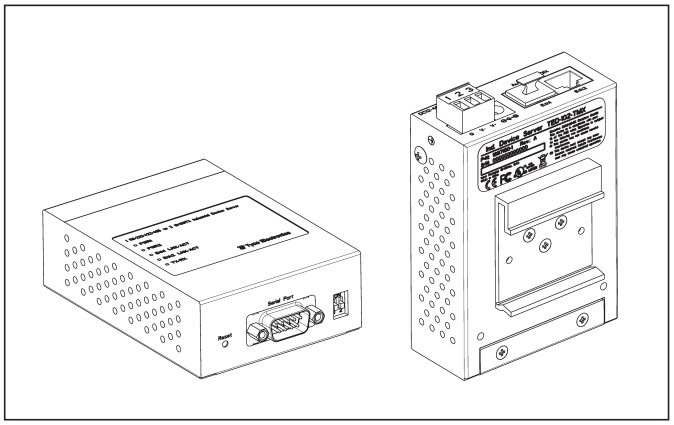
- 1-Port Sub-D to 2-Port RJ-45 Device Server
- Compact housing
- Dimensions (W x H x D): 72 x 100 x 32 mm
- IP30 protection
- DIP Switch for settings
- Wide range power input +12 – 48 V DC
- Burst (EFT) protection 1 kV DC and 0,5 kV Surge for power line
- Flexible mounting: DIN-rail and panel mounting
- Operating temperatures from –10 °C up to +60 °C

Technical Standard

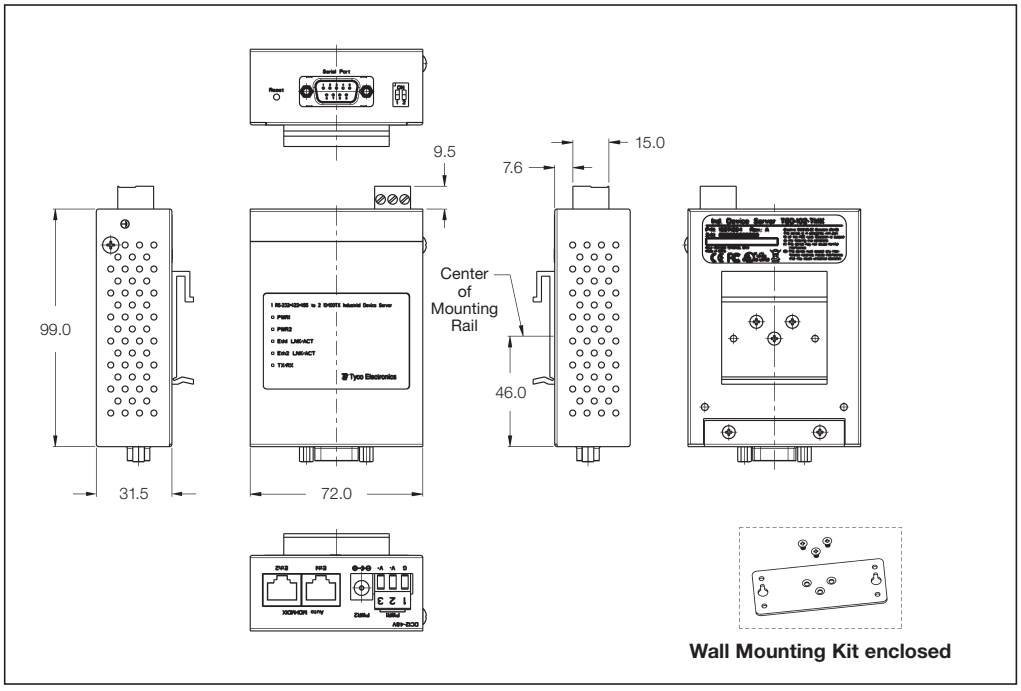
- UL, cUL, CE, FCC

Specific Features TED-102-TMX:

- 1 RS-232 / 422 / 485 port to 2 10/100TX Device Server
- Event Notifictaion by eMail, SNMP trap or Beeper
- Software, Web, SNMP and Telnet management



TED-102-TMX:
Part No. **1987150-1**



Wall Mounting Kit enclosed

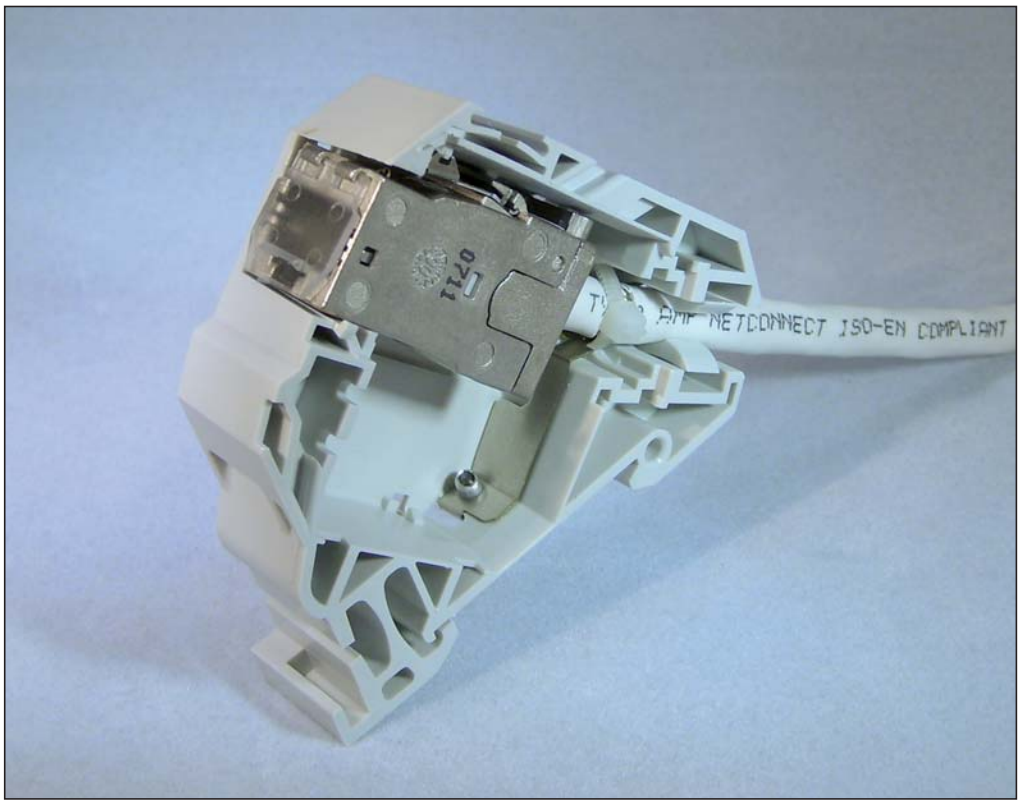
All specifications subject to change. Consult Tyco Electronics for latest specifications.

Outlet – C-Profile/DIN-Rail Adapter

NEW PRODUCTS

Technical Features

- IP20 protection class
- Fits on DIN-Rail TH35
- 1 TE (18 mm) width (DIN 43880)
- Integrated grounding tap
- Color: Light grey (RAL 7035)
- Optional colored dust covers
- For AMP-TWIST-6S SL Jack



Description

The AMP-TWIST-6S SL Jack DIN-Rail adapter hosts an AMP NETCONNECT AMP-TWIST-6S SL Jack. It allows the professional integration of the high performance AMP-TWIST-6S SL connector in home distribution centers and industrial distribution centers equipped with DIN-rail mounting frames.

After the cable termination, the Jack will be inserted in the adapter. A cable tie is used to ground the Jack with the integrated grounding tap. The complete kit can now be installed on DIN-rail mounting frames type C-Profile or TH35 acc. DIN EN60715.

A label field on the adapter (above the Jack) offers labeling possibilities using either a smear resistant pen or a customized label. The adapters can be stacked to a multi-adapter unit offering a high stability. As an option, colored dust covers can be used for color coding on port or application base.

DIN-Rail Adapter

- **Inclusive AMP-TWIST-6S SL Jack with Transparent Dust Cover**
  Part No. **1711501-1**

End Cover Set

- **Suitable for DIN-Rail Adapter**
  Part No. **1711658-1**

Colored Dust Covers (50 Pieces)
Part No. **1711511-X**

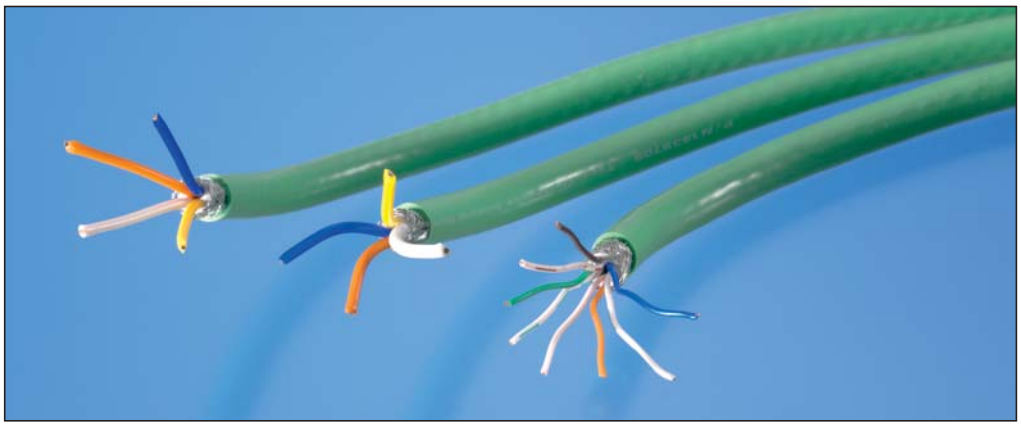
Suffix No. (for Color):
-2 = Black
-3 = White
-4 = Violet
-5 = Orange
-6 = Blue
-7 = Red
-8 = Green
-9 = Yellow

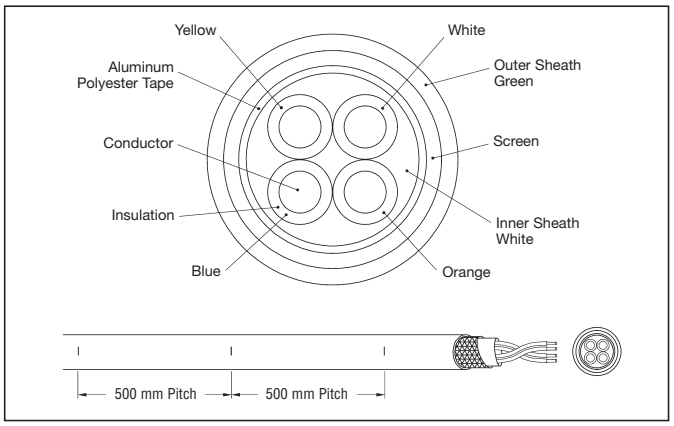
Industrial Ethernet Cable (Copper)

NEW PRODUCTS

Technical Features

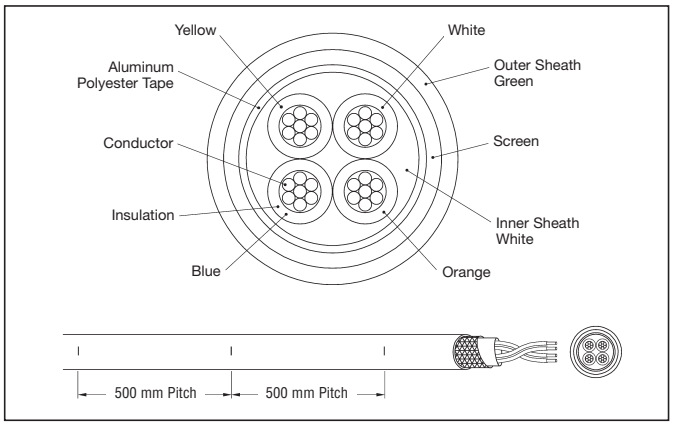
- Capable for Industrial Environment
- Easy to strip
- Cat 5e
- UL and CE declaration
- 100 Ohms characteristic impedanz
- PVC Jacket
- Outer diameter 6.5 $^{\pm 0.2}$ mm





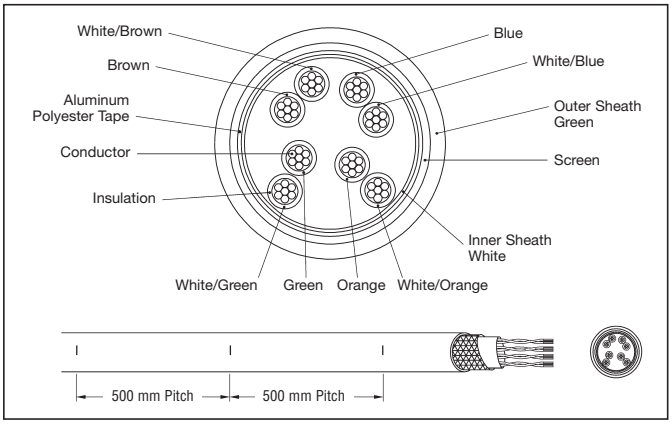
Industrial Ethernet Cable

ISO/IEC 11801 2nd. EIA/TIA 568B
2 x 2 x 0.34 mm^2
(AWG 22) solid
Bending radius 50 mm minimum
Cat 5e
Part No. **1939707-1**
100 m continuous



Industrial Ethernet Cable

ISO/IEC 11801 2nd. EIA/TIA 568B
2 x 2 x 0.34 mm^2
(AWG 22) 7-stranded
Bending radius 50 mm minimum
Cat 5e
Part No. **1981897-1**
100 m continuous



Industrial Ethernet Cable

ISO/IEC 11801 2nd. EIA/TIA 568B
2 x 2 x 2 x 0.14 mm^2
(AWG 26) 7-stranded
Bending radius 50 mm minimum
Cat 5e
Part No. **1939708-1**
100 m continuous

All specifications subject to change. Consult Tyco Electronics for latest specifications.

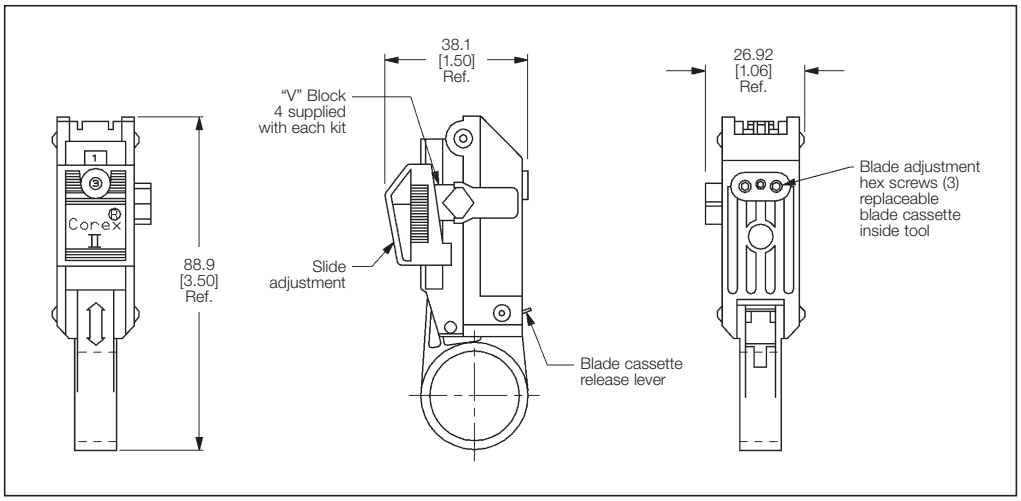
Industrial Ethernet Cable Stripper Kit

NEW PRODUCTS

Industrial Ethernet Cable Stripper Kit

Basic Tool:
Part No. **603995-2**

Advanced Tool with Cable Stop:
Part No. **1981944-1**
(soon available)



Technical Features

The AMP Cable Stripper Kit is capable for cutting and stripping five different sequential settings of Industrial Ethernet cable types.

Description

The AMP Cable Stripping Tool automatically strips cables with cable diameter range of 6.4 mm to 7.6 mm with minor adjustments.

For Industrial Ethernet Cable capable Part Numbers:

1939707-1 = 2 x 2 x 0.34 mm^2 (AWG 22) solid

1981897-1 = 2 x 2 x 0.34 mm^2 (AWG 22) 7-stranded

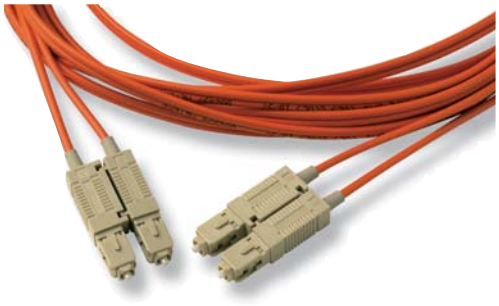
1939708-1 = 2 x 2 x 2 x 0.14 mm^2 (AWG 26) 7-stranded

Tool Kit including

- **AMP Cable Stripper**
- **Blade Cassette (double use)**
- **V-Block as cable guidance**
- **Hex wrench for blade adjustment**
- **Service gauge**
- **Instruction Sheet:** 411-78282

Fiber Patch Cable

SC Duplex/SC Duplex Patch Cords



Product Facts

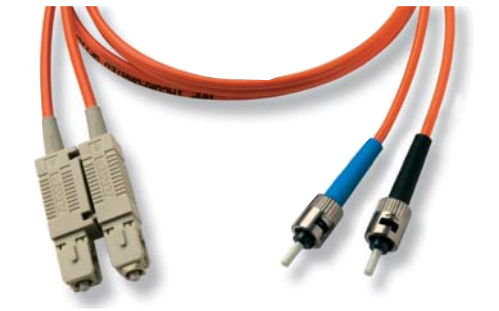
- Technical Specifications see Page 17.

Y- -X	Length
0- -1	1 m
0- -2	2 m
0- -3	3 m
0- -5	5 m
1- -0	10 m

Other lengths on request!

Description	Part Number
50/125 µm, MM	Y-5349565-X
62.5/125 µm, MM	Y-5349578-X
9/125 µm, SM	Y-6348260-X
10 GBit XG, 50/125 µm, OM3, MM	Y-6536464-X

SC Duplex/ST-Style Duplex Patch Cords



Product Facts

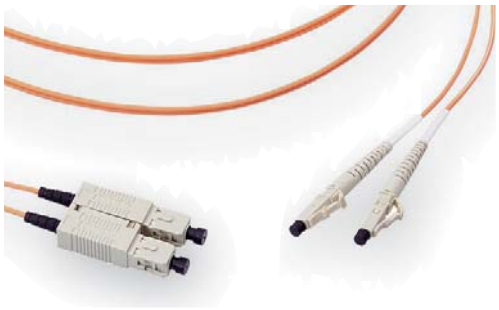
- Technical Specifications see Page 17.

Y- -X	Length
0- -1	1 m
0- -2	2 m
0- -3	3 m
0- -5	5 m
1- -0	10 m

Other lengths on request!

Description	Part Number
50/125 µm, MM	Y-5349567-X
62.5/125 µm, MM	Y-5349580-X

SC Duplex/LC Duplex Patch Cords



Product Facts

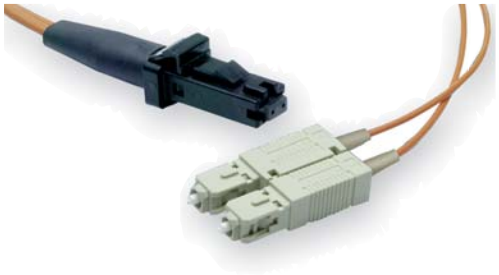
- Technical Specifications see Page 17.

Y- -X	Length
0- -1	1 m
0- -2	2 m
0- -3	3 m
0- -5	5 m
1- -0	10 m

Other lengths on request!

Description	Part Number
50/125 µm, MM	Y-6536509-X
62.5/125 µm, MM	Y-6536510-X
9/125 µm, SM	Y-6536508-X
10 GBit XG, 50/125 µm, OM3, MM	Y-6536967-X

MT-RJ/SC Duplex Patch Cords



Product Facts

- Technical Specifications see Page 17.

Y- -X	Length
0- -1	1 m
0- -2	2 m
0- -3	3 m
0- -5	5 m
1- -0	10 m

Other lengths on request!

Description	Part Number
Standard 50/125 µm Duplex, MM	Y-6206619-X
Standard 62.5/125 µm Duplex, MM	Y-6206615-X
Standard 9/125 µm Duplex, SM	Y-6206623-X
10 GBit XG Duplex, 50/125 µm, OM3, MM	Y-6536463-X

Part Numbers on Blue Background are Preferred Types

This patch cord type is also available as SECURE product, coded with 10 different mechanical keys and colors. To be used with SECURE Jacks.

All specifications subject to change. Consult Tyco Electronics for latest specifications.

Fiber Patch Cable (continued)

Technical Features

- All cable assemblies tested and with test protocol
- Machine polished connectors for constant high quality
- Semi-tight cable construction

Technical Data

SC and ST-Style Assemblies

Cable Sheath:	LSZH
Cable Diameter:	2.5 mm Twin Zip
Buffer:	0.9 mm EasyStrip
Ferrule:	Ceramic

MT-RJ Assemblies

Cable Sheath:	LSZH
Cable Diameter:	1.8 mm Mini Twin Zip
Buffer:	0.6 mm
Ferrule:	Thermoset

LC Assemblies

Cable Sheath:	LSZH
Cable Diameter:	1.8 mm Mini Twin Zip
Buffer:	0.6 mm
Ferrule:	Ceramic

For all OM3 XG cable assemblies

Singlemode Patch Cords and Pigtails

Connector Type	Tuned	Insertion Loss, typical	Insertion Loss, max.*	Return Loss, min.	Temperature Range
SC, PC	yes	0.15 dB	0.3 dB	> 45 dB	–25 °C to +70 °C
ST-Style, PC	no	0.15 dB	0.3 dB	> 45 dB	–25 °C to +70 °C
MT-RJ	no	0.30 dB	0.75 dB**	> 35 dB	–10 °C to +60 °C
LC, PC	yes	0.10 dB	0.3 dB	> 45 dB	–25 °C to +70 °C

*) against reference
**) random mated

Multimode Patch Cords

Connector Type	Insertion Loss, max.*	Return Loss, min.	Temperature Range
SC, PC	0.3 dB	> 20 dB	–10 °C to +60 °C
ST-Style, PC	0.3 dB	> 20 dB	–10 °C to +60 °C
MT-RJ	0.5 dB**	> 20 dB	–10 °C to +60 °C
LC, PC	0.3 dB	> 20 dB	–10 °C to +60 °C

*) against reference
**) random mated

Circular Plastic Connectors (CPC) Series 45 Ethernet

Technical Features

- For Category 5 and 5e cables
- Sealing performance per IP67
- Protective sealing cap available for the receptacles
- Positive lock coupling ring provides for reliable connections
- Available pass-through and field installable receptacle styles
- Unshielded and shielded product offerings

Description

This series of CPC products accepts RJ-45 inserts. The same CPC performance interface that is widely accepted in many markets has been expanded to handle Ethernet communications through Category 5 and 5e requirements.

Application

Industrial machinery, printers, communications equipment, diagnostic equipment and any potential application where Ethernet is used and where the connector requirements call for a sealed, rugged connector interface.

Technical Data

Mechanical

- Positive lock coupling ring
- Polarized for proper mating between the connector halves

Material

UV resistant and UL 94 V-0 housing material

Electrical

Meets TIA/EIA-56-B.2 Category 5 requirements

Operating Temperature

–55 °C to +105 °C

Standards & Specifications

Design Objective:
108-2203

Application Specification:
114-13137

Instruction Sheets:
408-8949,
408-8950,
408-8951,
408-10091

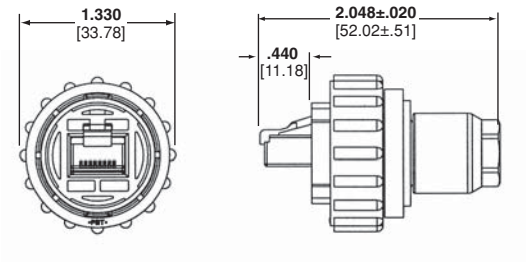
All specifications subject to change. Consult Tyco Electronics for latest specifications.

Circular Plastic Connectors (CPC) Series 45 Ethernet (continued)

Plug Kit, Shielded

Solid Wire:
Part No. **1546907-1**

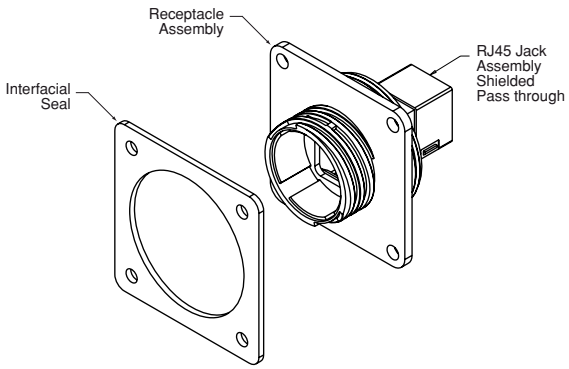
Stranded Wire:
Part No. **1546907-2**



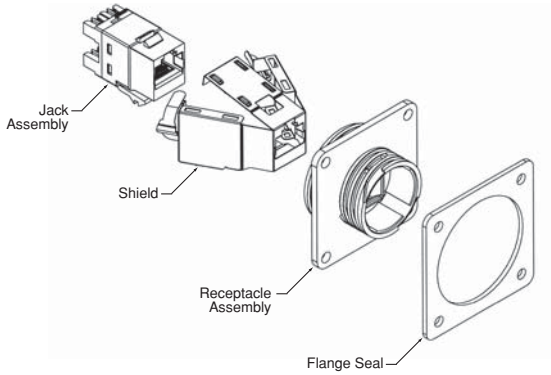
Plug Kit, Unshielded

Solid Wire:
Part No. **1546876-1**

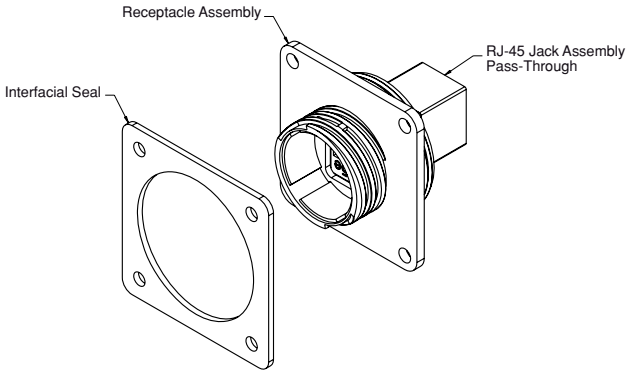
Stranded Wire:
Part No. **1546876-2**



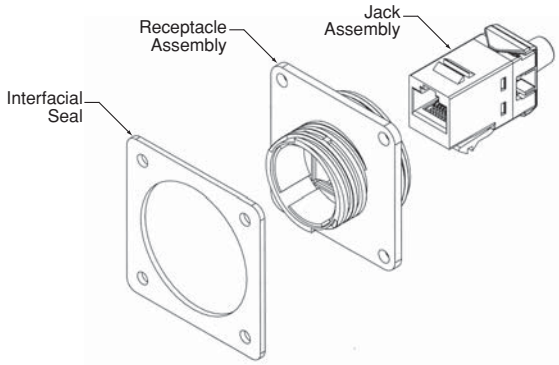
Receptacle Kit, Shielded, Pass-Through RJ-45/RJ-45
Part No. **1986172-1**



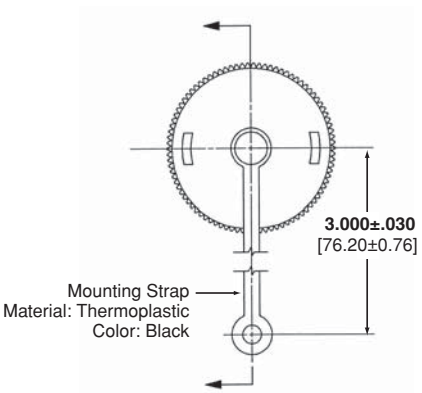
Receptacle Kit, Shielded, Wire Terminated
Part No. **1546908-1**



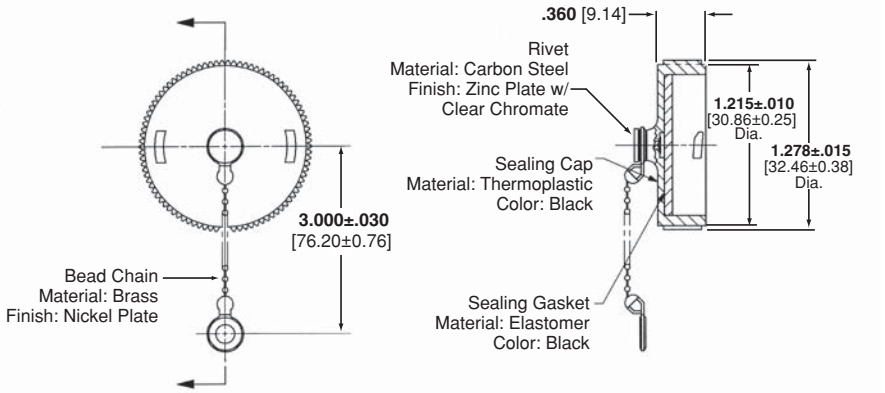
Receptacle Kit, Unshielded, Pass-Through RJ-45/RJ-45
Part No. **1776186-1**



Receptacle Kit, Unshielded, Wire Terminated
Part No. **1546877-1**



Receptacle Sealing Caps, Part No. **207445-1 (with Plastic Strap)**



Receptacle Sealing Caps, Part No. **208652-1 (with Beaded Chain)**

Industrial Circular Ethernet Connectors (ODVA) – Variant 1

Technical Features

- For Category 5e cables
- Sealing performance per IP67
- Protective cover available for the receptacles
- Positive lock coupling ring provides reliable connections in harsh environments
- Available pass-through receptacle style
- Bulkhead receptacle mounts to either outside or inside panel cutout
- Compliant to IEC 61076-3-106 – Variant 1

Description

This rugged RJ-45 connector meets the ODVA (Open Device Vendor Association) interoperability interface specification to support EtherNet/IP. It is designed for use in harsh environments, the connector features a quick-connect bayonet coupling mechanism.

Application

Industrial machinery, printers, communications equipment, diagnostic equipment and any potential application where Ethernet is used and where the connector requirements call for a sealed, rugged connector interface.

Technical Data

Mechanical

- Positive lock coupling ring
- Polarized for proper mating between the connector halves

Material

UV resistant housing material

Temperature Range:
–40 °C to +85 °C

Housings, Coupling Ring:
UL 94 V-0

Cable Fitting, Modular Plug, Tether:
UL 94 V-2

Gasket, Seal:
UL 94 HBF

Electrical

Meets TIA/EIA-568 Category 5e link requirements

Standards & Specifications

Design Objective:
108-2198

Application Specification:
114-13136

Industrial Circular Ethernet Connectors – Fiber

Connector Multi Mode:
Part No. **1828618-1**

Connector Single Mode:
Part No. **1828618-2**

Receptacle Multi Mode:
Part No. **1828619-1**

Receptacle Single Mode:
Part No. **1828619-2**

Connector Dust Cover:
Part No. **1828740-1**

Receptacle Dust Cover:
Part No. **1918177-1**

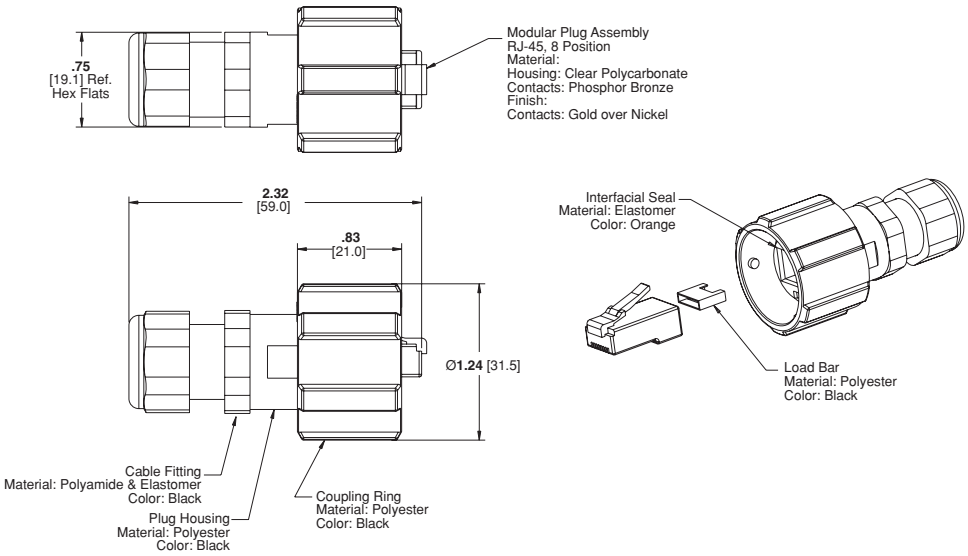
All specifications subject to change. Consult Tyco Electronics for latest specifications.

Industrial Circular Ethernet Connectors (ODVA) – Variant 1 (continued)

Plug Kit, Unshielded

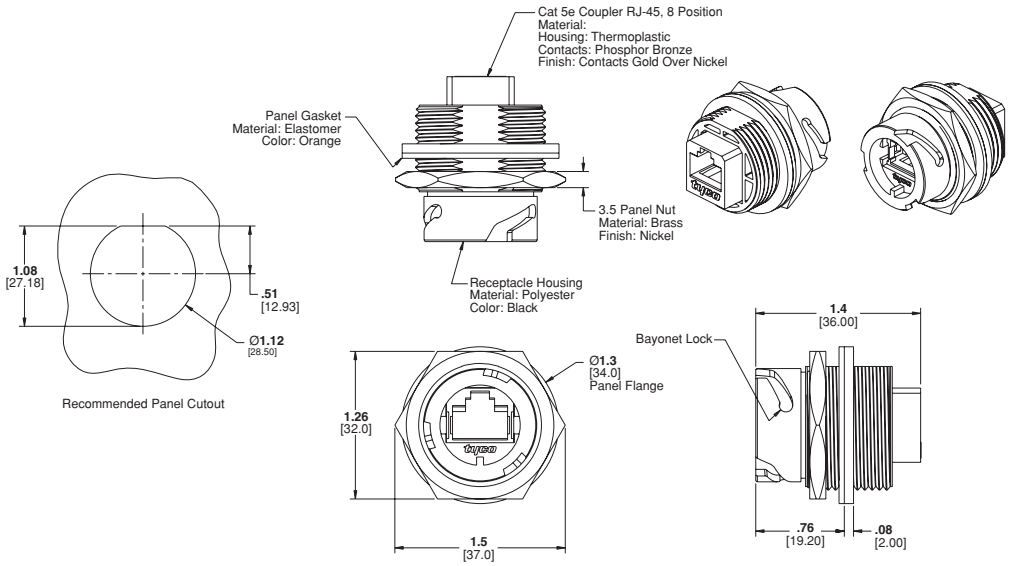
Solid Wire:
Part No. **1738607-1**

Stranded Wire:
Part No. **1738607-2**



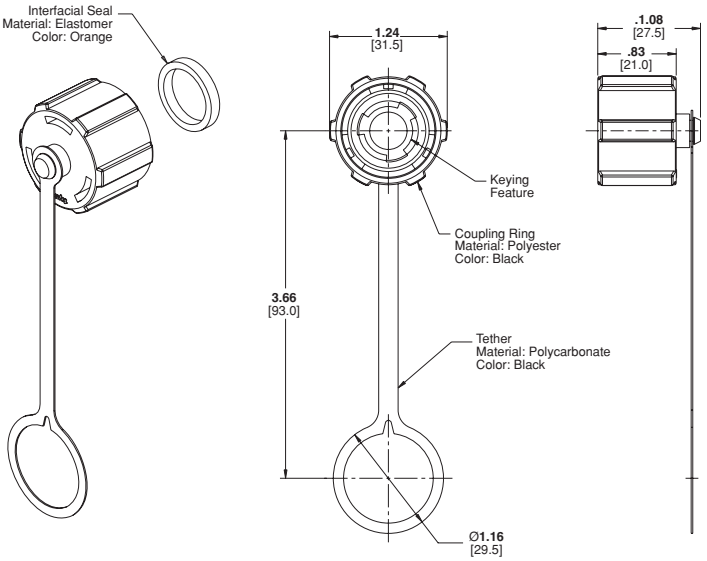
Receptacle Kit, Unshielded

Pass-Through:
Part No. **1738601-1**



Protective Cover Assembly

Receptacle:
Part No. **1738611-1**



Circular Sealed RJ-45 Connector – Variant 3

Technical Features

- Threaded outer connection contributes to:
  - Environmental sealing (IP67 rated)
  - Vibration resistance
  - Secure, robust connections
- Provided for reliable performance in electrical noisy conditions found on most factory floors
- Compatible with Category 5e cable
- Fully intermateable with unshielded products
- Compliant to IEC 61076-3-106 – Variant 3

Description

The Circular Sealed RJ-45 connector family of cable assemblies is designed to meet the various demanding manufacturing, processing, and commercial application requirements.

Combining the existing RJ-45 connector technology with the Industry's proven mini-circular format connectors, results in a series of products which greater protect the integrity of your data transmission – in different challenging operating environments.

The Circular Sealed RJ-45 connector line of receptacles offers a variety of packaging solutions: from widely accepted printed circuit board (PCB) mount configurations to bulkhead pass-through.

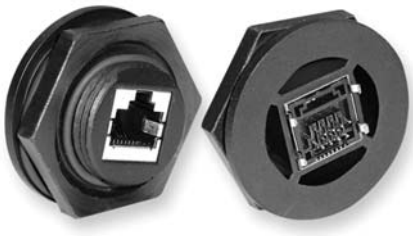
Plug assemblies are offered in complete overmolded cordsets in various lengths and configurations. A field-attachable Plug connector, that utilizes standard termination tooling, is available to produce custom cable lengths.

All specifications subject to change. Consult Tyco Electronics for latest specifications.

Circular Sealed RJ-45 Connector – Variant 3 (continued)

Introduction

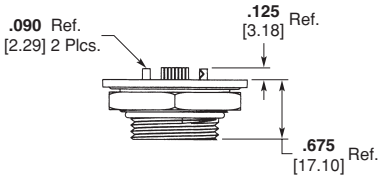
The Circular Sealed RJ-45 connector line of receptacles offers solutions for Ethernet field device connectivity in many challenging operating environments. All receptacles are compatible with standard commercial RJ-45 connectors, enabling a better solution for both harsh and benign environments.

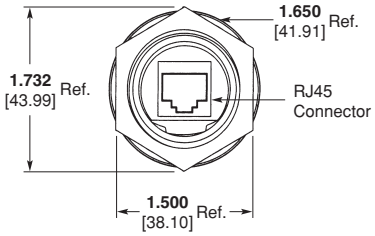


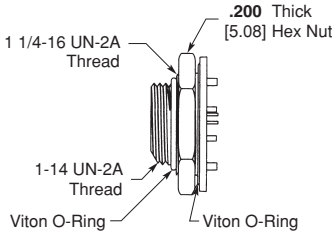
Description	Part Number
Direct PCB mount 8 pin through-hole receptacle, front coupling hex nut	1546405-1

Direct PCB Mount Receptacle

Low profile receptacle solders directly to a printed circuit board (PCB) – ideal for OEMs who wish to incorporate a robust, sealed connection into their field equipment. A sealed RJ-45 in the smallest possible package.



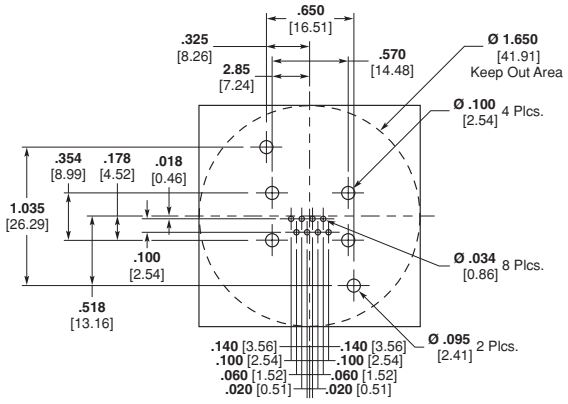




Material and Finish

Receptacle Shell:
Acrylonitrile-Butadiene-Styrene (ABS) in standard version; Acrylonitrile-Styrene-Acrylate in UV stabilized version

O-Ring: Vition Rubber



PCB Layout

Closure Cap

Maintains better sealing integrity when a connector is not mated with the receptacle.

Material

Closure Cap: Delrin (black)

Description	Part Number
Closure Cap for Receptacles, IP67 rated (with 3.63 [92.2] lanyard)	1-1546406-1
Closure Cap for Receptacles, IP65 rated	1-1546407-1
Closure Cap for Plug cordset, IP67 rated (with 3.63 [92.2] lanyard)	1-1546408-1

Related Product Data

Receptacles: Page 23–25
Adapters: Page 26
Overmolded Cordsets: Page 27
Field-Attachable Plug: Page 28

Circular Sealed RJ-45 Connector – Variant 3 (continued)

Standard Printed Circuit Board Receptacle

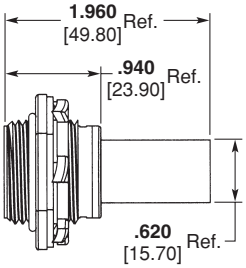
Highly flexible solution that enables an OEM or end-user to solder a cable lead to an internal Ethernet connection.

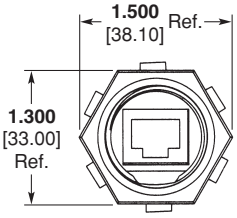
Description	Part Number
Receptacle with PC Board	1-1546409-1
Receptacle with PCB & 12" of cable (10 Base-T)	1-1546410-1
Receptacle with PCB & 12" of cable (568A)	1-1546411-1
Receptacle with PCB & 12" of cable (568B)	1-1546412-1

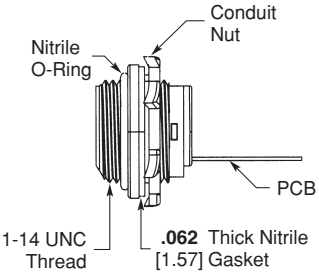
Material and Finish

Receptacle Shell:
Acrylonitrile-Butadiene-Styrene (ABS) in standard version; Acrylonitrile-Styrene-Acrylate in UV stabilized version

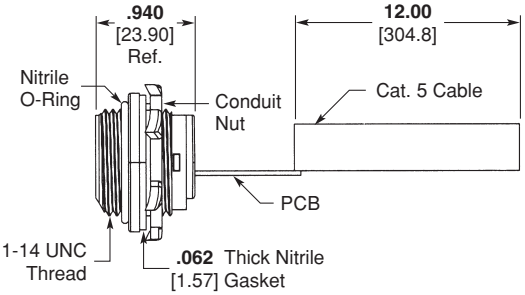
O-Ring: Nitrile Rubber



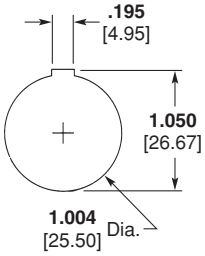




Receptacle with PCB



Receptacle with PCB and Cable



Backend Dimensions of Receptacle

Related Product Data

Mating Connectors

Overmolded Cordsets: Page 27
Field-Attachable Plug: Page 28
Closure Cap: Page 23

All specifications subject to change. Consult Tyco Electronics for latest specifications.

Circular Sealed RJ-45 Connector – Variant 3 (continued)

Bulkhead Pass-Through Receptacle

The perfect solution to bring Ethernet into a cabinet or control box. Simply mount the bulkhead product in a panel cutout, mate a sealed connector on the outside of the enclosure, and run a commercial patch cord from the back-side RJ-45 Jack to your PLC, I/O, or Ethernet Control Board. No conduit entry is required.

Description	Part Number
RJ-45 Bulkhead pass-through with backside RJ-45 jack	1546413-3
RJ-45 Bulkhead pass-through with backside jack and grounding strap	1546413-4
RJ-45 Bulkhead pass-through with 12" of patch cord	1546414-4
RJ-11 Bulkhead pass-through with backside RJ-11 jack	1-1546415-1

Material and Finish

Receptacle Shell: Acrylonitrile-Butadiene-Styrene (ABS) in standard version; Acrylonitrile-Styrene-Acrylate in UV stabilized version

O-Ring: Nitrile Rubber

Performance Characteristics

Operating Temperature: -4° to 176°F [-20° to 80°C]

Return Loss: 5 dB @ 100 MHz

Shock/Vibration: Per IEC 60068-2-6

Environmental Rating: IEC IP67

TIA/EIA Rating: Bulkhead Pass-Through are Category 5e compliant; Direct PCB Mount is Category 5 compliant; Standard PC board is not rated – additional customer termination is required

Knockout Hole for Receptacle: 1.031 [26.19 mm]

Mating Thread: UNC 1"–14

Related Product Data

Mating Connectors

Overmolded Cordsets: Page 27

Field-Attachable Plug: Page 28

Closure Cap: Page 23

Backside RJ-45 Jack Specifications

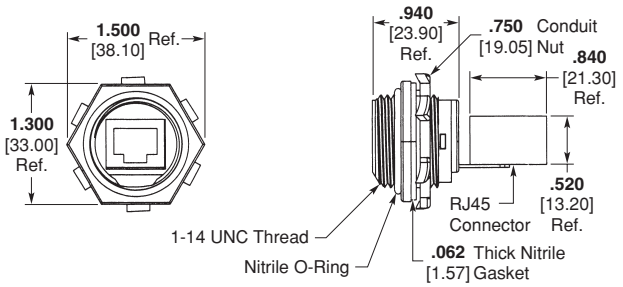
Base Material: Copper alloy w/30 µ-inches gold alloy

Underplating: 2.54 microns of nickel

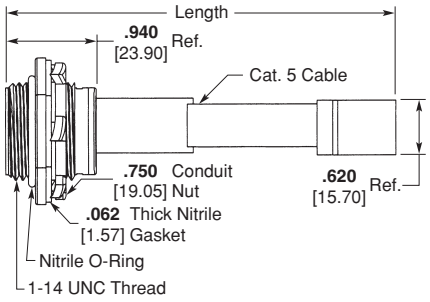
Mating Cycles: 250 min.

Current Rating: 1.5 Amp

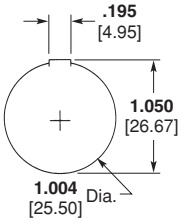
Voltage Rating: 125 V DC



Receptacle with Backside RJ-45 Jack



Receptacle with 12" Patch Cord

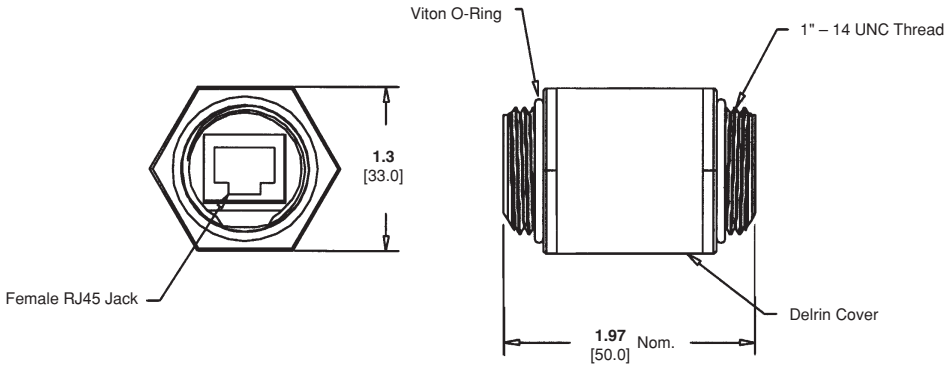


Backend of Receptacle

Circular Sealed RJ-45 Connector – Variant 3 (continued)

Female-to-Female Adapter

Description	Part Number
Female-to-Female Adapter	1546574-1



Material and Finish

Receptacle Shell:
Acrylonitrile-Butadiene-Styrene (ABS) in standard version; Acrylonitrile-Styrene-Acrylate in UV stabilized version

O-Ring:
Nitrile Rubber

Performance Characteristics

Operating Temperature:
-4° to 176°F [-20° to 80°C]

Shock/Vibration:
Per IEC 60068-2-6

Environmental Rating: IEC IP67

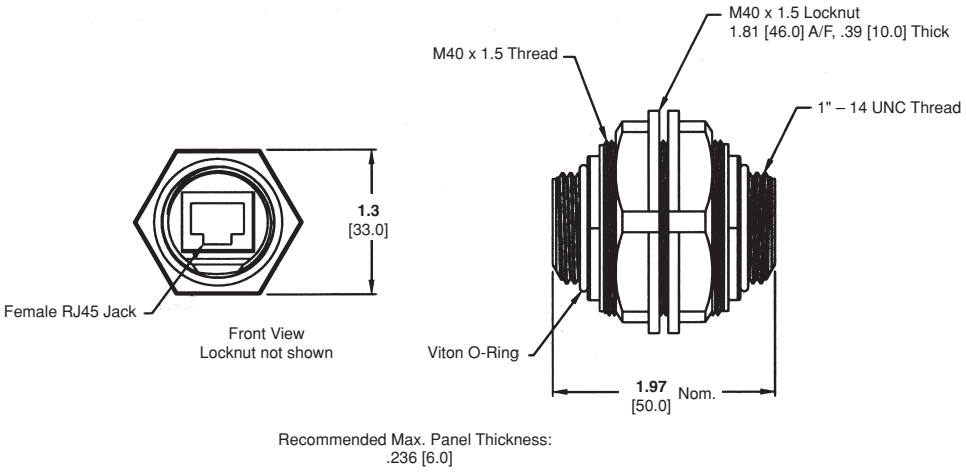
Mating Thread:
UNC 1"–14

Related Product Data

Closure Cap: Page 23

Threaded-Through Panel Interconnect (M40)

Description	Part Number
Threaded-Through Panel Interconnect M40 thread size	1546641-1



Material and Finish

Receptacle Shell:
Acrylonitrile-Butadiene-Styrene (ABS) in standard version; Acrylonitrile-Styrene-Acrylate in UV stabilized version

O-Ring:
Nitrile Rubber

Performance Characteristics

Operating Temperature:
-4° to 176°F [-20° to 80°C]

Shock/Vibration:
Per IEC 60068-2-6

Environmental Rating: IEC IP67

Mating Thread:
UNC 1"–14

Related Product Data

Closure Cap: Page 23

All specifications subject to change. Consult Tyco Electronics for latest specifications.

Circular Sealed RJ-45 Connector – Variant 3 (continued)

The cordsets utilize a standard RJ-45 plug, but add strain relief and a locking mechanism that creates a seal when mated with a receptacle.

Cordsets can be ordered in standard or custom lengths as an overmolded cordset or plug (see chart below).

Overmolded Cordsets, Double-Ended

Overmolded cordsets are available in two configurations.

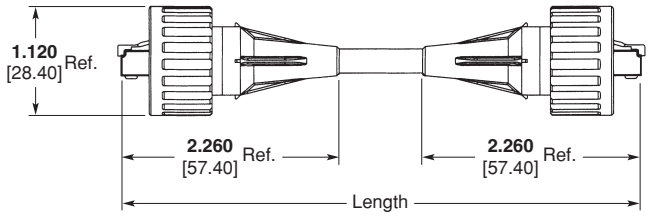
When both cord ends are in a harsh environment, order the double-ended configuration with two industrial sealed plug connectors; for a cable with one end in a harsh environment, and the other in a sealed or office area, order with one industrial plug connector and one commercial grade plug for a better fit into a standard patch panel. Various cable types are available to best match the requirements of the applications. Solid core shielded PUR cable is used for longer "horizontal cross connection runs", while stranded PVC is more appropriate for shorter "patch cord" applications where greater cable flexibility is desired. For extreme environmental conditions, Proplex™ cable provides a Kevlar inner wrap and an unmatched temperature range –94 °F to +221 °F [–70 °C to +105 °C]. Plugs are available in both RJ-45 and RJ-11 formats.

Material and Finish

Insert:
Acrylonitrile-Butadiene-Styrene (ABS)

Overmold:
Polyurethane (Solid Core & Proplex), PVC (Stranded)

Coupling Nut:
Acrylonitrile-Butadiene-Styrene (ABS) in standard version; Acrylonitrile-Styrene-Acrylate in UV stabilized version



Connector Specifications

Recommended Mating Torque:
12 inch-lbs. [1.36 Nm]

Double-Ended Cordsets

Cable	RJ-45 Plug Ends	Length		Part Number
		m	ft	
Solid core	Industrial (both ends)	1	[3.3]	1-1546451-1
Solid core	Industrial (both ends)	5	[16.4]	1-1546451-2
Solid core	Industrial (both ends)	10	[32.8]	1-1546451-3
Solid core	Industrial/Commercial	2	[6.6]	1-1546451-4
Proplex	Industrial (both ends)	2	[6.6]	1-1546452-1
Proplex	Industrial (both ends)	5	[16.4]	1-1546452-2
Stranded	Industrial (both ends)	2	[6.6]	1-1546453-1
Stranded	Industrial (both ends)	5	[16.4]	1-1546453-2

Related Product Data

Mating Connectors
Receptacles: Page 23–25
Adapters: Page 26
Closure Cap: Page 23

Circular Sealed RJ-45 Connector – Variant 3 (continued)

Field-Attachable RJ-45 Plug Connector

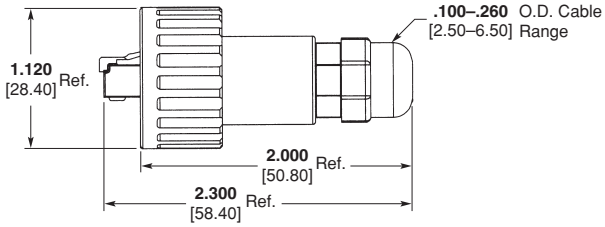
Assemble the connection in the field using a standard crimping tool, and still enjoy the same IP67 sealed connection as the overmolded cordset. Bulk cable (1,000 ft [304.8 m]) put-ups are available for both Solid Core PUR and Proplex cable.

Description	Part Number
Field-attachable RJ-45 Plug connector, 0.1–0.26 [2.5–6.5] acceptable cable diameter	1546440-1

Material and Finish

Receptacle Shell: Acrylonitrile-Butadiene-Styrene (ABS) in standard version; Acrylonitrile-Styrene-Acrylate in UV stabilized version

O-Ring: Nitrile Rubber



Related Product Data

Mating Connectors

Receptacles: Page 23–25
Adapters: Page 26
Closure Cap: Page 23

All specifications subject to change. Consult Tyco Electronics for latest specifications.

Circular Sealed RJ-45 Connector – Variant 3 (continued)

Bulk Cable Specifications

Solid Core Cable

Conductors:
24 AWG solid bare copper, .020 [0.51]

Insulation:
.009 [0.23] of cellular polyethylene; .040 [1.00] nominal dia.

Pair:
2 insulated conductors twisted together, lay lengths varied between pairs to minimize cross talk

Core: 4 pairs cabled together

Binder: Polyester tape, minimum 20% overlay min.

Shield:
Aluminum/polyester tape, 20% overlay min.

Drain Wire: 24 AWG stranded (7/32) tin plated copper

Jacket: Black polyurethane .025 [0.64] nom. thickness

Operating Temperature:
–4° to 176°F [–20°C to 80°C]

Diameter:
.245 [6.22] nom.

Wiring Sequence:
Choice of TIA/EIA 568A or 10 Base-T

Stranded Cable

Conductors:
24 AWG stranded tinned copper

Insulation:
Polyolefin .037 [0.94] nominal diameter

Pair:
2 insulated conductors twisted together, lay lengths varied between pairs to minimize cross talk

Core: 4 pairs cabled together

Binder: Polyester tape, minimum 20% overlay min.

Jacket: Black PVC .025 [0.64] nom. thickness

Operating Temperature:
-4° to 176°F [-20° to 80°C]

Diameter:
.220 [5.59] nom.

Wiring Sequence:
Choice of TIA/EIA 568A or 10 Base-T

Kevlar Wrapped Cable

Conductors:
26 AWG stranded bare copper

Insulation:
Color coded HFFR, halogen free, .035 [0.90] nominal dia.

Pair:
Cabled w/ Kevlar strength member and tape wrapped

Core: 4 pairs cabled together

Shield:
Inner: Aluminum mylar, 100% coverage;
Outer: Tinned copper braid, 80% coverage

Jacket: Black urethane .059 [1.50] nom. thickness

Operating Temperature:
-94° to 221°F [-70° to 105°C]

Diameter:
.287 [7.30] nom.

Wiring Sequence:
Choice of TIA/EIA 568A or 10 Base-T

Electrical @ 20°C

Capacitance:
5.6 nF/100 meter, max.

Velocity of Propagation:
72% nom.

Conductor DC Resistance:
9.38 Ω/100 meter, max.

Impedance:
100 Ω ±15 Ω

Delay Skew:
45 nS/100 meter, max.

TIA/EIA Rating:
Category 5e

Frequency (MHz)	Attenuation (dB/100 M nom.)	NEXT (dB nom.)
1	2.0	65.3
4	4.1	56.3
10	6.5	50.3
16	8.2	47.3
20	9.3	45.8
31.25	11.7	42.9
62.5	17.0	38.4
100	22.0	35.3

Electrical @ 20°C

Capacitance:
15 pF/FT

Velocity of Propagation:
70% nom.

Conductor DC Resistance:
9.0 Ω/100 meter, max.

Impedance:
100 Ω ±15 Ω

Delay Skew:
10 nS/100 m typ.; 25 nS/100 m max.

TIA/EIA Rating:
Category 5e

Frequency (MHz)	Attenuation (dB/100 M nom.)	NEXT (dB nom.)
1	1.9	76
4	3.9	72
16	7.9	61
20	9.0	60
31.25	11.0	55
62.5	15.9	53
100	20.7	50

Electrical @ 20°C

Capacitance:
4.6 nF/100 meters

Propagation Delay:
5.2 ns/m max.

Conductor DC Resistance:
15.0 Ω/100 meter, max.

Impedance:
100 Ω ± 15 Ω

Delay Skew:
20 nS/100 m typ.; 25 nS/100 m max.

TIA/EIA Rating:
Category 5

Frequency (MHz)	Attenuation (dB/100 M nom.)	NEXT (dB nom.)
1	3.15	62
4	6.45	53
16	12.3	44
20	13.8	42
31.25	17.7	40
62.5	25.6	35
100	33.0	32

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All specifications subject to change. Consult Tyco Electronics for latest specifications.

Restriction on the Use of Hazardous Substances (RoHS)

Restriction on the Use of Hazardous Substances (RoHS)

At Tyco Electronics, we're ready to support your RoHS requirements. We've assessed more than 1.5 million end items/components for RoHS compliance, and issued new part numbers where any change was required to eliminate the restricted materials. Part numbers in this catalog are identified as:

RoHS Compliant

Part numbers in this catalog are RoHS Compliant, unless marked otherwise.

These products comply with European Union Directive 2002/95/EC as amended 1 January 2006 that restricts the use of lead, mercury, cadmium, hexavalent chromium, PBB, and PBDE in certain electrical and electronic products sold into the EU as of 1 July 2006.

Note: For purposes of this Catalog, included within the definition of RoHS Compliant are products that are clearly "Out of Scope" of the RoHS Directive such as hand tools and other non-electrical accessories.

Non-RoHS Compliant

These part numbers are identified with a "♦" symbol. These products do not comply with the material restrictions of the European Union Directive 2002/95/EC.

5 of 6 Compliant

A "●" symbol identifies these part numbers. These products do not fully comply with the European Union Directive 2002/95/EC because they contain lead in solderable interfaces (they do not contain any of the other five restricted substances above allowable limits). However, these products may be suitable for use in RoHS applications where there is an application-based exception for lead in solders, such as the server, storage, or networking infrastructure exemption.

Note: Information regarding RoHS compliance is provided based on reasonable inquiry of our suppliers and represents our current actual knowledge based on the information provided by our suppliers. This information is subject to change. For latest compliance status, refer to our website referenced below.

Getting the Information You Need

Our comprehensive on-line RoHS Customer Support Center provides a forum to answer your questions and support your RoHS needs. A RoHS FAQ (Frequently Asked Questions) is available with links to more detailed information. You can also submit RoHS questions and receive a response within 24 hours during a normal work week. The Support Center also provides:

- Cross-Reference from Non-compliant to Compliant Products
- Ability to browse RoHS Compliant Products in our on-line catalog: http://ecommas.tycoelectronics.com/commerce/alt/RohsAltHome.do
- Downloadable Technical Data Customer Information Presentation
- More detailed information regarding the definitions used above

RoHS Customer Support Center

So whatever your questions when it comes to RoHS, we've got the answers at www.tycoelectronics.com/leadfree

Engineering Notes

All specifications subject to change. Consult Tyco Electronics for latest specifications.

Tyco Electronics

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Finland – Helsinki
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France – Cergy-Pontoise Cedex
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Cergy-Pontoise Cedex
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Hungary – Budapest
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Italy – Collegno (Torino)
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Fax: +39-011-4031-116
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Poland – Warsaw
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