3M Science. Applied to Life.™

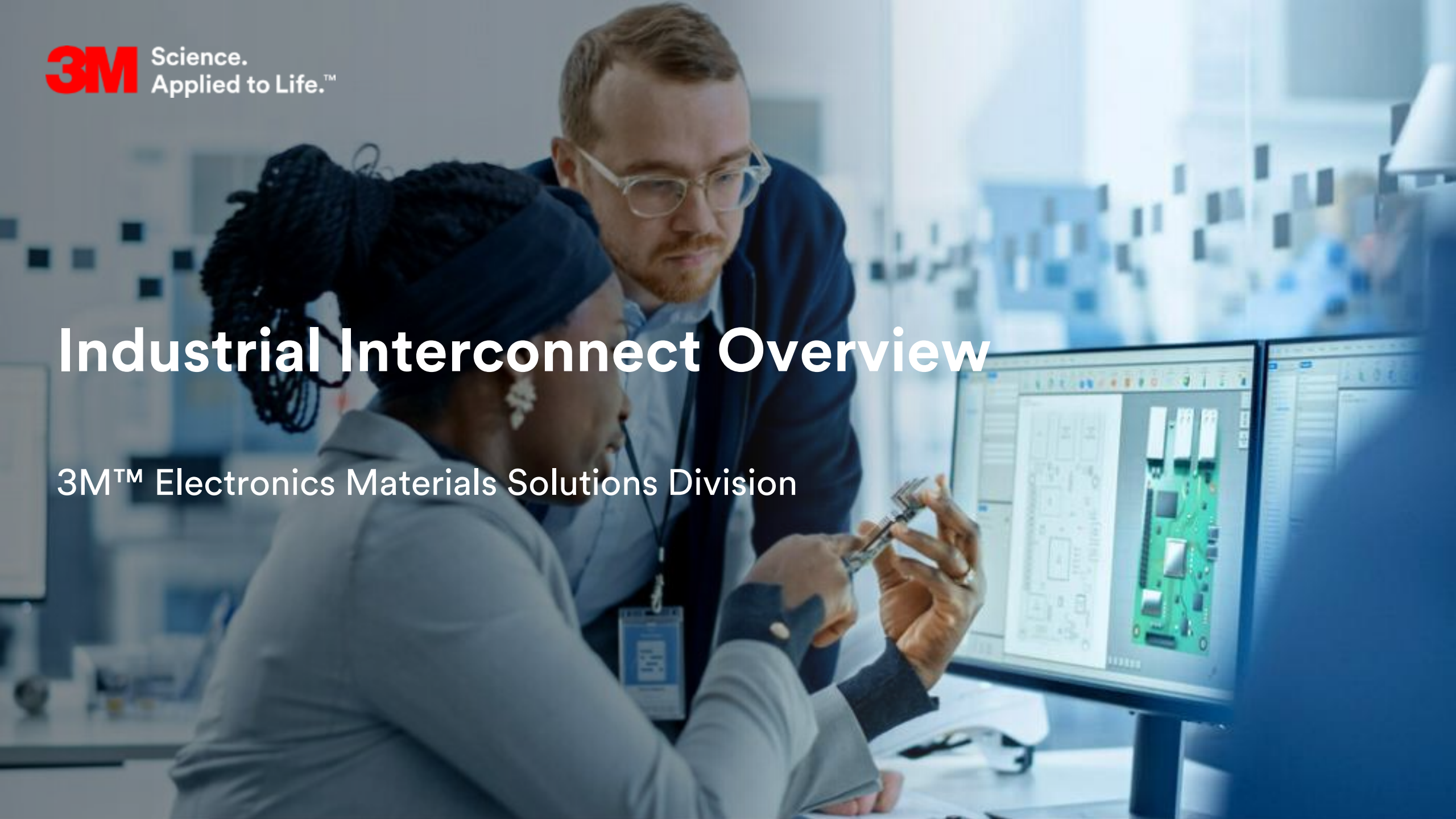# Industrial Interconnect Overview

3M™ Electronics Materials Solutions Division

3M™ Interconnect Product Portfolio

3M Input / Output Connectors

3M Wire- & Board-mount Connectors

3M Industrial Cables

3M Cable Assemblies

3M Memory Card Headers

Table of Contents

3M Wire- and Board-Mount Connectors

3M™ Connector and Cable Mating Guide

[Digital Cable Guide](#)

3M Science. Applied to Life.™

Cables and Accessories Selection guide. Power inside.

Connectors					
Connector Pitch	2.54mm x 2.54mm (0.100" x 0.100")	2.00mm x 2.00mm (0.079" x 0.079")	1.27mm x 2.54mm (0.050" x 0.100")	1.27mm x 1.27mm (0.050" x 0.050")	1.27mm x 1.27mm (0.050" x 0.050")
	3M™ Four-Wall Headers and PCB Connectors	3M™ Shrouded Boardmount Header	3M™ Tripolarized Header	3M™ Shrouded Boardmount Header	3M™ Mini Delta Ribbon (MDR) Connector
Header Series	2500, 3000, 4600, 78XX, 303XX	1552	810	452	101, 103 (Shell)
	3M™ Wiremount Socket	3M™ Ribbon Cable Socket	3M™ Tripolarized Wiremount Socket	3M™ Ribbon Cable Wiremount Socket	3M™ Mini Delta Ribbon (MDR) Connector
Socket Series	3000, 891, CHG, 7964	1522	820	451	102

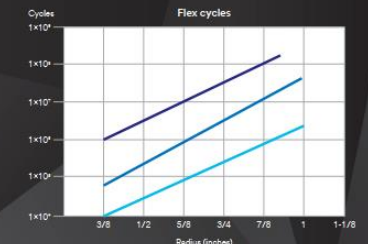| Cables					
Cable Pitch (if flat)	0.050"	1mm	0.025"	0.025"	0.025"
Basic Cable Series #	3365	3625	3754	3754	3600
3M™ Round Conductor Flat Cable	3365, 3667, 3539, 3319, 3801, 3355, 3770, HF365, 3601	3625, HF625, 3250	3754, 3447, 3756, 3749, 3609, 3604 HF447, 7700	3754, 3447, 3756, 3749, 3609, 3604, HF447, 7700	3754, 3447, 3756, 3749, 3609, 3604
3M™ Color Coded Flat Cable	3302, 3811				
3M™ Twisted Pair Flat Cable	1700, HF100				
3M™ Jacketed Flat Ribbon Cable	3603, 3602, 3517, 90104, 90204, HF017		90111, 90101, 90202, 90201, 90211, 93101	90111, 90101, 90202, 90201, 90211, 93101	90111, 90101, 90202, 90201, 90211, 93101
3M™ Round Jacketed Flat Cable	3759, 3758, 3659, HF759, HF659		3896	3896	3896
3M™ Twisted Pair Round Jacketed Cable	3600B, 3644, 3647, 3750 HF644				3600B, 3644, 3647B, 3750 HF644

3M™ Flex Cycles

Each of the three cables represented in this chart consist of 28 AWG stranded conductors on 0.050" (1.27mm) wire spacing.

The 3M 3319/HF319/3250 cable represents conductors which consist of 19 strands, in which each of the strands are 40 AWG silver plated high-strength copper alloy (ex. at 7/8" bended radius = ~100 million flexes cycles).

The 3M 3539/HF539 cable represents conductors which consist of 19 strands, in which each of the strands are 40 AWG tinned soft copper (ex. at 7/8" bended radius = ~10 million flexes cycles).

The 3M 3365/HF365 cable represents conductors which consist of 7 strands, in which each of the strands are 36 AWG tinned soft copper (ex. at 7/8" bended radius = ~1 million flexes cycles).
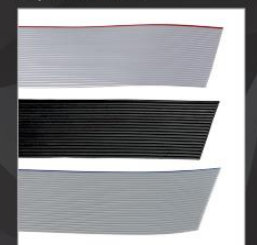
The "Rolling Flex Test" flexed the cable 180° around a radius closely resembling typical usage, as represented in the illustration to the right. For more details download the tech sheet TS-0732.

AWG conversion table

3M™ Flat Ribbon Cable
Ask your local 3M contact.

3M™ Wire- and Board-mount Connectors

Almost anywhere signal-based control is a requirement. Connecting two boards or board to peripheral device.

Applications/Wins:
- Test and measurement
- Factory/Industrial Automation
- Power to signal boards
- Robotics
- Appliances
- Communication equipment
- Office Equipment
- Patient monitoring
- In-vehicle entertainment
- HVAC
- Displays

Application Flyer

3M
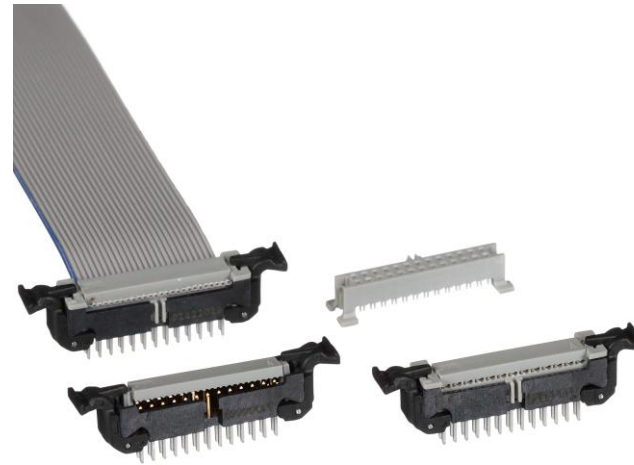
3M Board-mount Headers

3M™ Four-Wall Header 2500 Series (0.100" pitch)

Key Features:

- Low profile, space saving design
- High temperature insulator suitable for "no lead" soldering operations
- Center slot polarization prevents mis-insertions and reduces insertion time
- Dual slot polarization means broader compatibility with competitive polarization designs
- Suitable for reflow soldering using "paste in hole" techniques

3M Mating Socket	Note
3000	Premium socket
891	Cost competitive
CHG	Higher AWG discrete wire

2500 series Product Page

Cable Mating Guide

3M

3M™ Four-Wall Header 3000 Series (0.100" pitch)

Key Features:

- Military (with 3M's N3518 polarizing key) and center bump polarization
- Optional ejector latches – long / short
- Mounting holes for securing header to board
- Optional polarizing posts available
- High temperature insulator option suitable for "no lead" soldering operations
- Suitable for reflow soldering using "paste in hole" techniques
- Solder tail option

3M™ Four-Wall Header Straight and Right Angle 3000 Series

3M™ Four-Wall Condo Header 3000 Series

3M™ Four-Wall Header Straight Compliant Pin 3000 Series

[3000 Series Product Page](4 wall)
[3000 Series Product Page](4 wall Condo)
[3000 Series Product Page](4 wall Pin Compliant)

3M Mating Socket	Note
3000	Premium socket
891	Cost competitive
CHG	Higher AWG discrete wire
	Cable Mating Guide

3M

3M™ Three-Wall Header 3000 Series (0.100" pitch)

Key Features:

- Military (with 3M's N3518 polarizing key) and center bump polarization
- Optional ejector latches – long / short
- Mounting holes for securing header to board
- Optional polarizing posts available
- High temperature insulator option suitable for "no lead" soldering operations
- Suitable for reflow soldering using "paste in hole" techniques
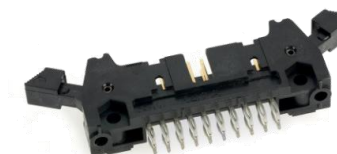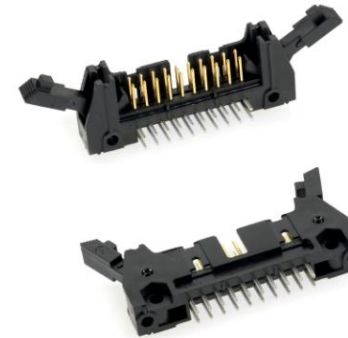- Solder tail option

3M™ Three-Wall Header 3000 Series

3M™ Three-Wall Condo Header, 3000 Series

3M Mating Socket	Note
3000	Premium socket
891	Cost competitive
CHG	Higher AWG discrete wire
	Cable Mating Guide

3000 Series Product Page (3 wall)
3000 Series Product Page (3 wall condo)

3M

3M™ Wiremount Plug 4600 Series (.100" pitch)

Key Features:

- Military (with 3M's N3518 polarizing key) and centerbump polarization
- Shrouded to protect against physical and chemical pin damage
- Open or closed end covers available
- Optional ejector latches
- Accepts flat cable or discrete wire
- Optional mounting flanges
- Optional metal strain relief

3M Mating Socket	Note
3000	Premium socket
891	Cost competitive
CHG	Higher AWG discrete wire

4600 Series Product Page

Cable Mating Guide

3M™ PCB, 78XX Series (.100" pitch)
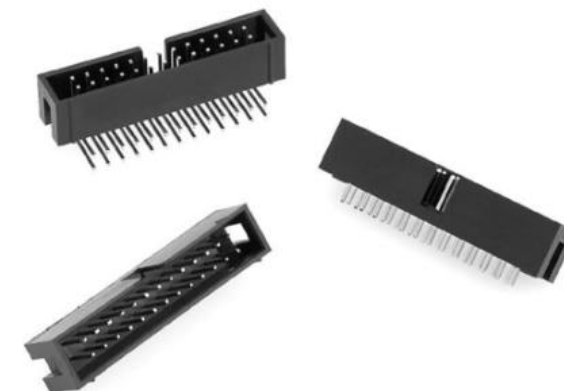
<u>Key Features:</u>

- Low profile, space saving design
- Single connector termination reduces overall connector cost
- 7.3 mm terminated height for applications requiring low-profile off the board
- Solder bumps facilitate board cleaning
- Fits standard .100" x .100" header layout

3M Mating Socket	Note
N/A	Direct to board

[78XX Series Product Page](#)

[Cable Mating Guide](#)
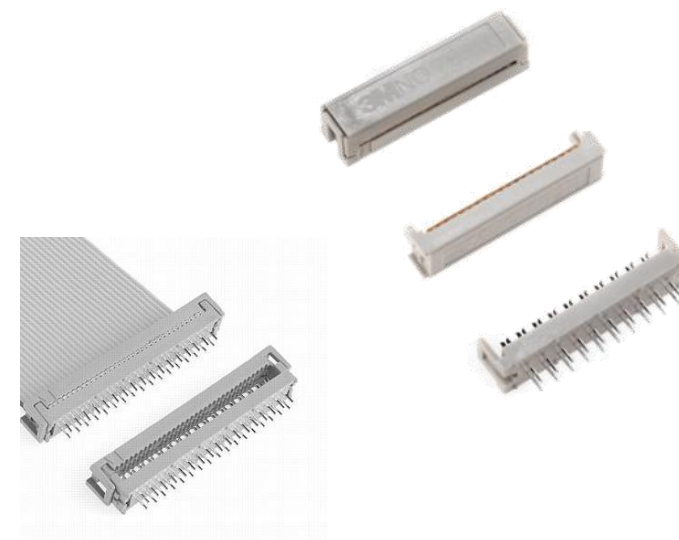
3M™ Low Profile Header, 303 Series (0.100" pitch)

Key Features:

- Low profile sturdy body

- Gold Flash

- End Windows

- Straight or right angle

- Ejector latch option

3M Mating Socket	Note
3000	Premium socket
891	Cost competitive
CHG	Higher AWG discrete wire

303 Series Product Page

Cable Mating Guide

3M™ Latch/Eject Header, 1552 Series (2mm pitch)

Key Features:

- 14 pin counts ranging from 6 to 50 positions

- Latch/eject mechanism securely latches to socket

- Roll pins retain latches to body in shipping and high vibration environments

- High temperature insulators suitable for "lead free" processing and meet JEDEC J-STD-020

- Robust system solution when used with 3M™ IDC Wiremount Sockets or 3M™ Molded Cable Assemblies

- SMT latch/eject headers are available in tape and reel with vacuum cap for automatic placement
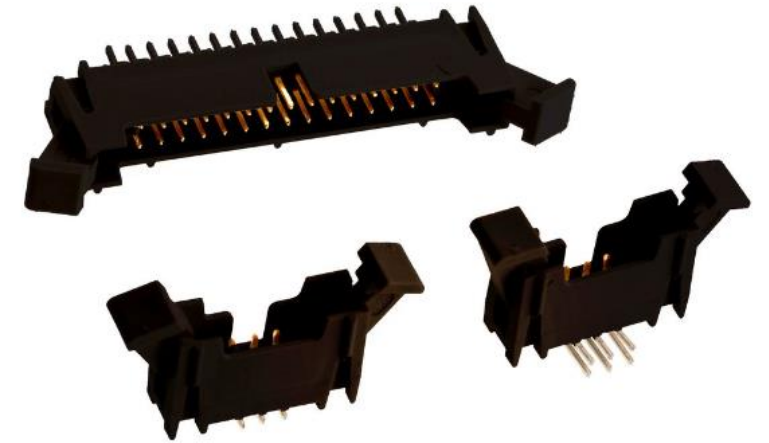
3M Mating Socket	Note
1522	Industry Standard Compatible

3M™ 4-Wall Header, Tripolarized Header 810 Series (0.05" pitch)

Key Features:

- Tripolarized to mating socket

- 50 mil x 100 mil halves the connector length

- Latch and eject for rugged high-performance applications

- Available for through hole or surfacemount attachment

- High temperature plastic

- Straight and right-angle

- Contacts: 20, 26, 36, 40, 50, 60, 68, 80 and 100

Right-angle   Straight
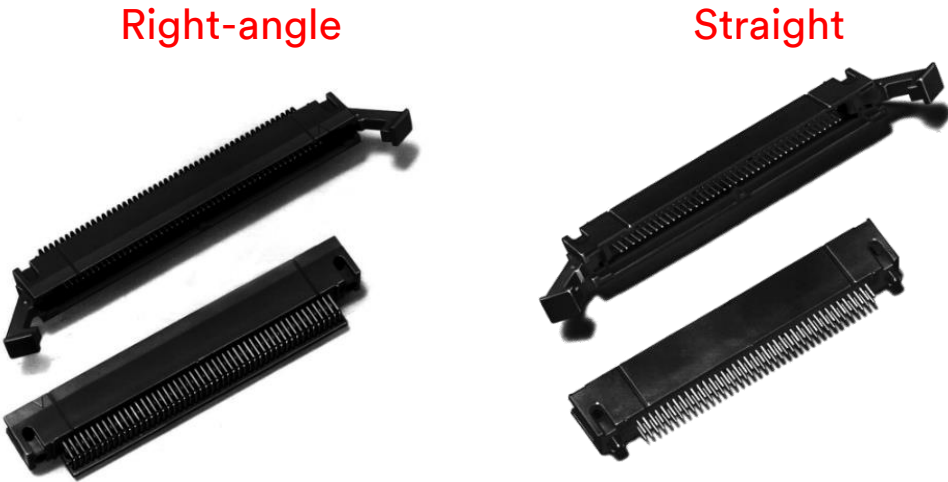
3M Mating Socket	Note
820	Tripolarized wiremount socket

810 Series Product Page   Cable Mating Guide

3M™ Shrouded Boardmount Header 1.27 mm (0.050 in) Pitch Latch and Eject 452 Series

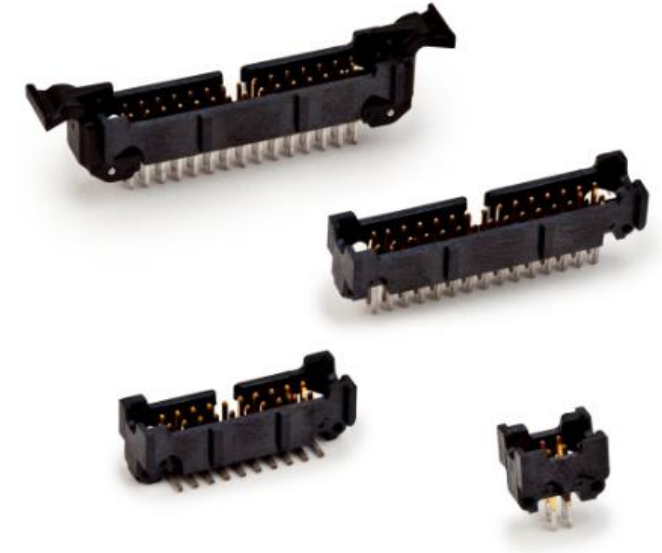## Key Features:

- Delivers high connection density for ribbon cable applications

- Extremely small 1.27mm (0.050") pitch saves space

- Available friction latching and ejection system enables reliable connections in challenging environments

- UL and CUL Listed

- Low profile latch/eject allows dual sided PCB reflow

Applications/Wins:

- Almost anywhere signal-based control is a requirement and space is at a premium

- Application flyer

3M Mating Socket	Note
451	Space saving wire-to-board system

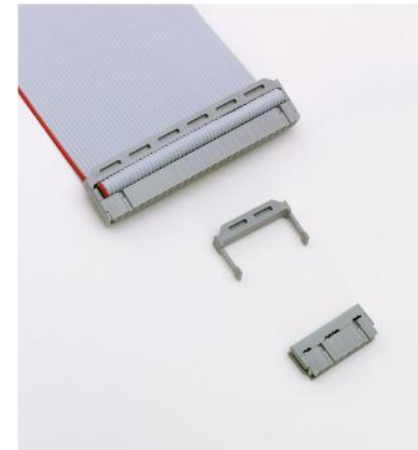452 Series Product Page

Cable Mating Guide

16

3M Wire-mount Sockets

3M™ Wiremount Socket, 3000 Series (.100" pitch)

Key Features:

- Industry standard IDC socket

- Positive locking metal "J" clips provide high cover retention

- Quick connect/disconnect capability, fast termination

- Open or closed end covers available

- Accepts flat cable or discrete wire

- Military polarization, with or without centerbump

- Strain relief options

- RoHS compliant

3000 Series Product Page (Preassembled)
3000 Series Product Page (Standard)

3M™ Wiremount Socket
Preassembled 3000 Series

3M™ Wiremount Socket, w/
Optional Plastic or Metal
Strain Relief, 3000 Series

3M Mating Header	Note
2500	Low profile header
3000 (4 wall)	Latch eject system
3000 (3 wall)	Latch eject system, design flexibility
4600	Wiremount plug
303	Cost effective

Cable Mating Guide

# 3M™ IDC Ribbon Cable Socket, 891 Series (0.100" pitch)

Key Features:

- Wiremount socket, IDC, preassembled

- Preassembled, terminates faster than two-piece sockets

- Sword packaging makes easy loading of manual and semi-automatic assembly equipment

- Bumps prevent premature latch locking during shipment

- Optional double-sided adhesive pull tab for easy unplugging

- Double-recessed cover for cable terminating from either side eliminates need for single-recessed cover connectors

3M™ IDC Ribbon Cable Socket, 891 Series

3M™ Wiremount Socket 79 Series
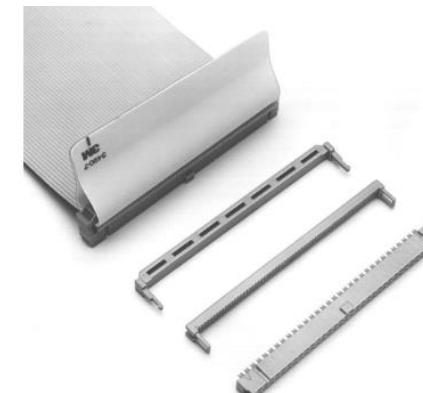
3M Mating Header	Note
2500	Low profile header
3000 (4 wall)	Latch eject system
3000 (3 wall)	Latch eject system, design flexibility
4600	Wiremount plug
303	Cost effective

7964 Series Product Page (64 position)

891 Series Product Page

Cable Mating Guide

3M™ Wiremount Socket, CHG Series (0.100" pitch)

Key Features:

- Twin slot IDC provides four points of contact

- Exclusive L/H 4-wipe contact

- 3435-0 keying plug is optional - order separately

- Mates to 3M pin strip headers

3M™ Pak 100 Polarized Wiremount Socket, CHG Series

3M™ Wiremount Socket .100" X .100" , CHG-10XX-001010-KXX, CHG Series

3M™ Wiremount Socket CHG-20XX-001010-KXX CHG Series

3M Mating Header	Note
2500	Low profile header
3000 (4 wall)	Latch eject system
3000 (3 wall)	Latch eject system, design flexibility
4600	Wiremount plug
303	Cost effective
	Cable Mating Guide

CHG Pak 100 Product Page (2 row polarized body, Military/DIN 41612)

CHG-20 Product Page (2 row, side-to-side stackable)
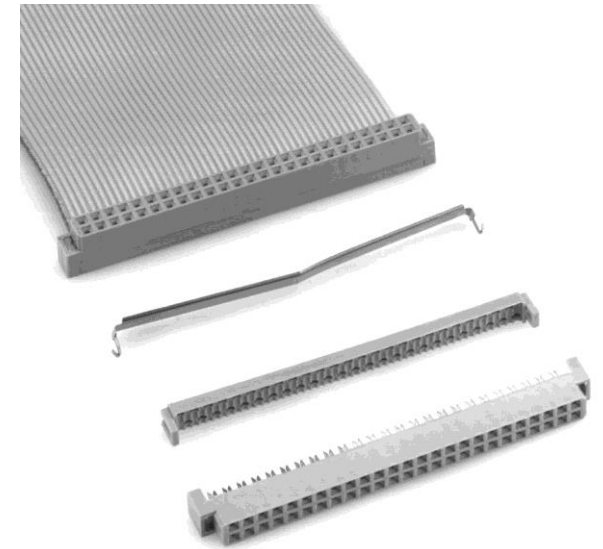
CHG-10 Product Page (1 row, side-to-side stackable)

3M

3M™ Wiremount Socket, 1522 Series (2mm pitch)

Key Features:

- Industry standard compatible
- Mates with Pak 20 (2 mm x 2 mm) grid pin strips
- Low profile
- Preassembled covers
- Available with or without strain relief
- Available with optional centerbump polarity feature

3M Mating Header	Note
1552	Industry Standard Compatible

[1522 Series Product Page](#)

[Cable Mating Guide](#)

3M™ Tripolarized Wiremount Socket, 820 Series (0.050" X 0.100")

Key Features:

- Tripolarized to help prevent damage when mating to 810 Series Header

- 50 mil x 100 mil halves the connector length vs. traditional 100 mil x 100 mil products

- Hill-n-dale design provides a high-performance IDC termination and improved signal integrity vs. planar terminated connectors

- Beryllium Copper alloy contacts for superior strength and reliability

- Metal cover latch for positive cover retention and long term reliability

- Metal strain relief for increased reliability and durability

- Contacts: 20, 26, 36, 40, 50, 60, 68, 80 and 100
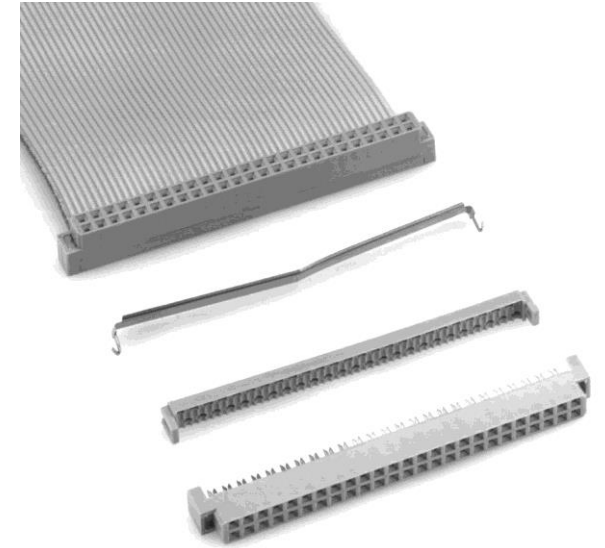
3M Mating Header	Note
810	Tripolarized wiremount header

[820 Series Product Page](#)

[Cable Mating Guide](#)

3M™ Ribbon Cable Wiremount Socket 1.27 mm (0.050 in) Pitch 451 Series

Key Features:

- Delivers high connection density to ribbon cable applications

- Extremely small .050"/1.27mm pitch saves space

- Enables cable end and feed through termination as well as mass termination

- Available friction latching and ejection system enables reliable connections in challenging environments

- UL & CUL Listed

- Available position counts: 4, 6, 8, 10, 12, 14, 16, 20, 26, 30, 40, 50

Applications/Wins:

- Almost anywhere signal-based control is a requirement and space is at a premium

- Application flyer

3M Mating Header	Note
452	Space saving wire-to-board system

451 Series Product Page

Cable Mating Guide

3M™ Mini-Clamp Connectors

3M™ Mini-Clamp Connectors

3M Mini-Clamp Connectors are designed to provide connection reliability and cost performance in I/O applications commonly found in a wide range of sensor control systems, including Factory Automation and Industrial Controls
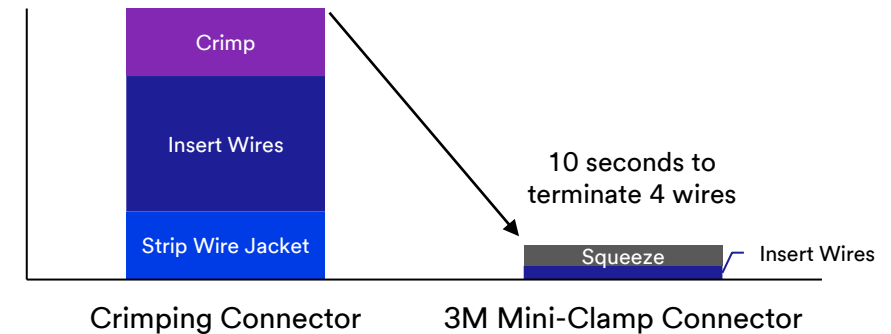
Benefits:
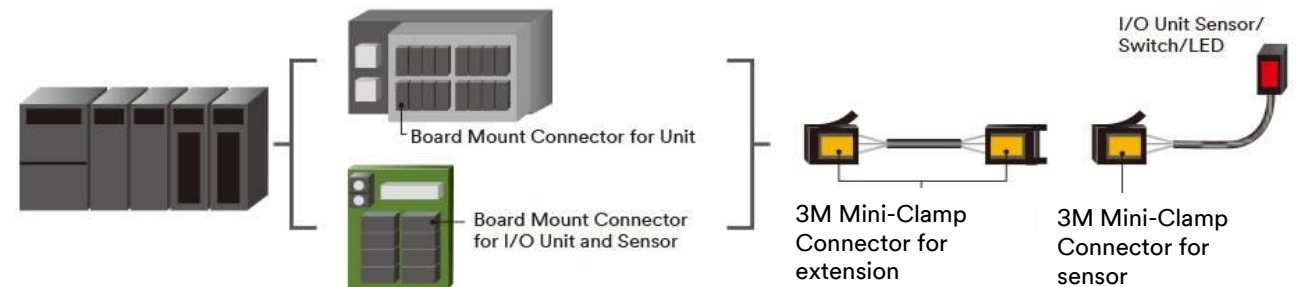- Labor savings
- Easy field termination

Wins/Applications:
- Industrial controls
- Packaging/Conveyor Systems
- Test and measurement
- Elevator controls
- LED lighting

Time Savings

Crimp

Insert Wires

Strip Wire Jacket

10 seconds to terminate 4 wires

Squeeze

Insert Wires

Crimping Connector

3M Mini-Clamp Connector

Application Example

I/O Unit Sensor/Switch/LED

Board Mount Connector for Unit

Board Mount Connector for I/O Unit and Sensor

3M Mini-Clamp Connector for extension

3M Mini-Clamp Connector for sensor

3M™ Mini-Clamp Connectors

Key Features:

- Compact design saves board and panel space

- Reduces maintenance work by providing higher connection reliability

- Easy, quick, and reliable IDC termination using a standard pliers

- Offers time and labor savings - 10 seconds to terminate 4 wires

- Enables easy field termination

- No need to strip wire insulation; Less waste, saves time and helps prevent wire damage

- High number of mating cycles

3M™ Mini-Clamp Plug   3M™ Mini-Clamp Socket   3M™ Mini-Clamp Common Socket

IP67

3M™ Water-Resistant Boot (IP67)   3M™ Mini-Clamp Socket

Termination Process

Insert wires with insulation   Squeeze with pliers

[3M™ Mini-Clamp Connector Products](#)
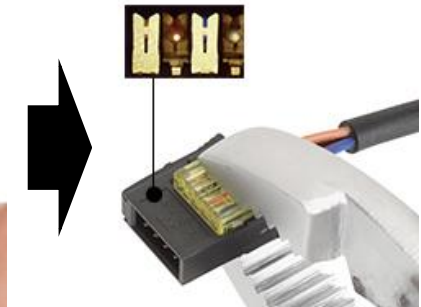
3M™ Link Connectors

3M™ Link Connectors

3M™ Link Connectors offer a simple, single-action IDC termination for T-branching and splicing of sensor and field networks. Available in standard detachable, One Piece, and Branch Mini-Clamp versions.
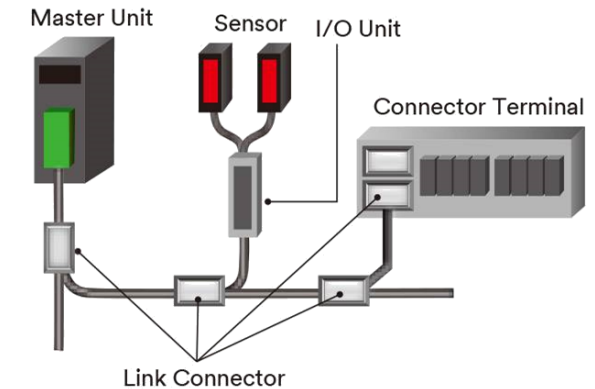
Benefits:
- Enables branched networks and splicing into and existing network
- Provides networking efficiency by optimizing signal and power line routing to terminal
- Allows installation of additional small devices without adding signal and power lines from controls

Wins/Applications:
- Parking Garage Sensors

Serial Sensor Network Example

Power Supply Example
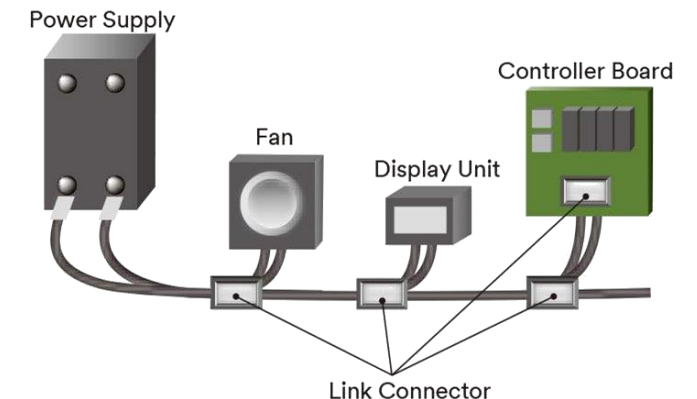
3M™ Link Connectors

Key Features:

- Enables branching from main wire to branch wire in the field with no special equipment

- Easy, labor saving and reliable IDC termination

- Single-action IDC termination connector for T-branching and splicing of sensor and field networks

- Easy field termination with no special wire preparation – no stripping, tinning or special tooling

- Ability to install wire-saving system

- Simple, reliable connection

3M™ Link Connector Products

3M™Link Connector, 381 Series

3M™ Link Connectors, 382 Series

3M™ One Piece Branch Link Connector, 387 Series

3M™ Branch Mini-Clamp Link Connectors, 38A Series

Termination Process

Just insert wires with insulation and squeeze with a pair of pliers

T branch by connector

3M™ Power Clamp Connectors

3M™ Power Clamp Connectors

3M™ Power Clamp Connector is a quick-termination connector for field networking applications and protocols. The simple IDC installation process allows for labor savings and high connection reliability. It is compatible with CLPA's CC-Link open technology.

Benefits:
- Splicing adaptor with fast, reliable installation
- Smaller connector size than most standard screw-type alternatives
- Supports 250Volts, 10A (1 line), 7A max (all lines)
- Supports 20 to 18 AWG wire
- Compatible with CC-Link Communication Interconnect Standard

Example

3M™ Power Clamp Connectors

Key Features:

- Utilizes IDC technology

- Easy, labor saving, and reliable IDC termination

- Easy field termination with no special tooling or wire preparation – no stripping or tinning

- Robust latching mechanism maintains a reliable interconnection in demanding field applications

- Requires only one hand to mate and unmate for field maintenance ease

- Polarization ensures proper interconnecting of mated pairs

- CC-Link Communication Interconnect Standard

3M™ Power Clamp
Wiremount Socket

3M™ Power Clamp
Wiremount Plug

3m™ Power Clamp Header
(Straight or R/A)

3M™ Power Clamp
Branch Connector
(H & Y Type)

3M™ Power Clamp
Terminator

Termination Process

Just insert wires with insulation

Squeeze with a pair of standard pliers

[3M™ Power Clamp Connector Products](#)

3M™ Mini Stack Connectors

3M™ Mini Stack Connectors

The 3M™ Mini Stack Connector provides a reliable connection with a simple termination process while reducing the required board footprint.

Benefits:

- Space-saving: Saves 30% more board space in comparison with 3M™ Mini-Clamp Connectors
- Time-saving: Reduces wiring time by approx. 60% compared to crimping connectors*
- Compact with simple termination
- Compact with easy mating/unmating

* Compared to similar sized crimped connector with 3 pins (based on 3M evaluation and while using 3M™ Mini Stack Hand Tool)
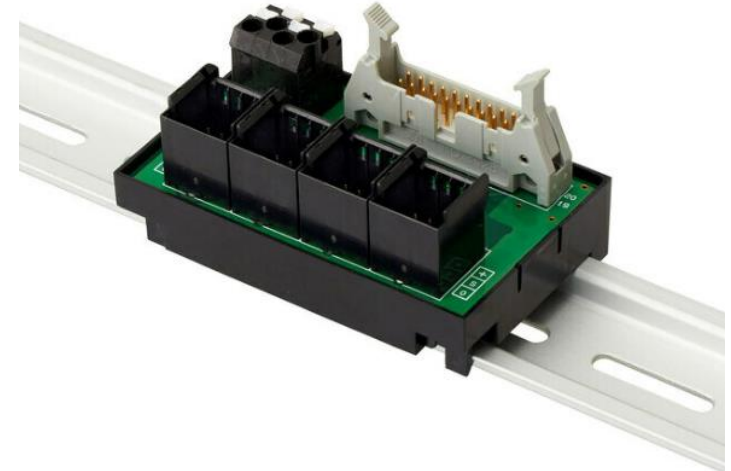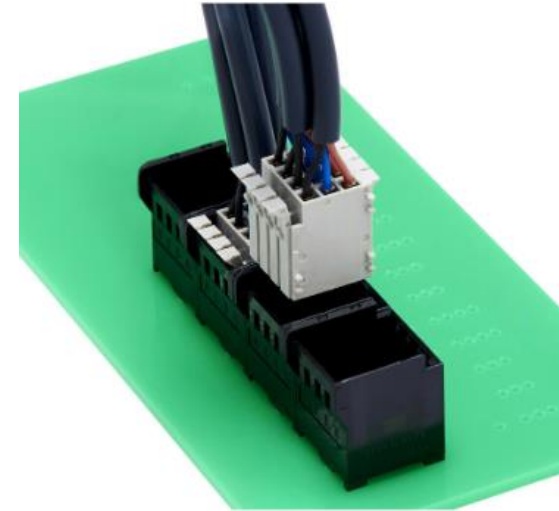
3M™ Mini Stack Connectors

Key Features:

- Provides excellent wire connections in a compact form

- No pre-treatment of wire needed with IDC technology

- Terminates 2 or 4 wires in single action

- Integrated terminals and housing make handling easy

- Wide range of wire compatibility (AWG#22-30) with highly reliable double IDC termination

- Handling stacked connectors as a block offers easy mating and unmating

- Wiremount connector can be unplugged by gripping the center latch

- Fixed tabs prevent lifting and secure fixation of the board during soldering

[Boardmount Connector Product Page](#)
[Wiremount Connector Product Page](#)

3M™ Mini Stack Connector Wiremount Socket

3M™ Mini Stack Connector Junction Header

3M™ Mini Stack Connector Dust Cover

3M™ Mini Stack Connector Boardmount Header
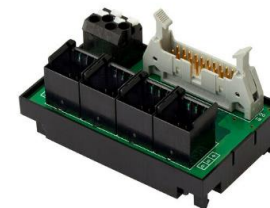
3M™ Mini Stack Connector Interface Unit

3M™ Ministack Connector Hand Tool

Termination Process

Work Steps

Crimp Connector 3pins		3M™ Mini Stack Connector 3pins	
Strip wire	x3		
Set terminal in tool	x3	Set connector into tool	x1
Set wire and crimp terminal	x3	Set wires into tool and crimp terminals simultaneously	x1
Insert terminated wire into housing	x3	Insert terminated wires into housing simultaneously	x1
Total 12 steps		**Total 3 steps**	

Work Time

(Sec.)
70sec. → 25sec.

Crimp Connector / 3M™ Mini Stack Connectors

3M Industrial Cable Portfolio

3M™ Round Conductor Flat Cable

Basic ○

Cable feature options:

Cost effective cable

Color coded ○

- Pitch: 0.100", 0.05", 1mm and 0.025"

- Conductor stranding: solid or stranded

Jacketed ○

- Conductor color: gray, dark gray, black, opaque white

Cross talk protection ○

- Conductor Insulation: PVC, TPE, FEP, LSHF EVA/PO or Halogen Free

EMI protection options ○

- Flex: 1 million, 10 million or 100 million flex cycles

- Zippable for branching or discrete termination
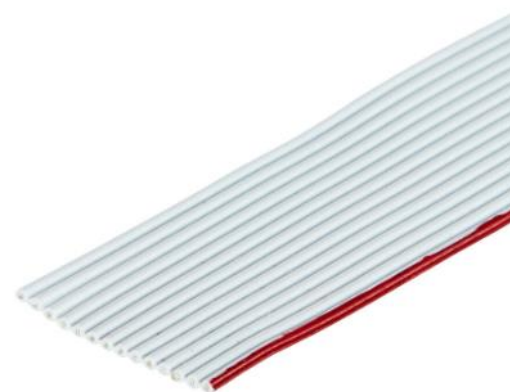
[Round Conductor Flat Cable Product Pages](#)

[Cable Mating Guide](#)

3M

3M™ Color Coded Flat Cable

Basic ○

Color coded ○

Jacketed ○

Cross talk protection ○

EMI protection options ○

Cable feature options:

Cost effective cable with multiple color conductor

- Pitch: 0.05"

- Conductor stranding: stranded

- Conductor size: 26 and 28 AWG

- Conductor color: 10 color repeat

- Conductor Insulation: PVC

- Zippable for branching or discrete termination

Color Coded Flat Cable, 3811 Series Product Page (26 AWG)

Color Coded Flat Cable, 3302 Series Product Page (28 AWG)

Cable Mating Guide

3M™ Twisted Pair Flat Cable

Cable feature options:

Twisted Pairs reduces crosstalk for balanced applications

- Pitch: 0.05"
- Conductor stranding: Stranded
- Conductor size: 28 AWG
- Conductor color: Blue/White or 10 color repeat
- Conductor Insulation: PVC or Halogen Free
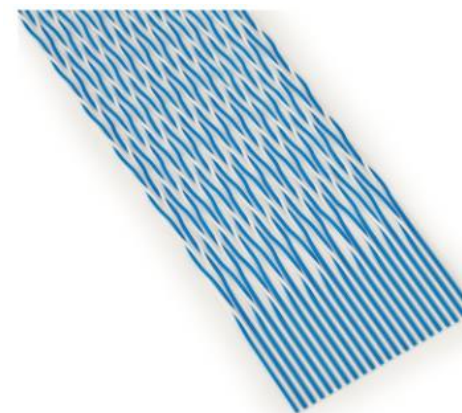
Basic ◯

Color coded ◯

Jacketed ◯

Cross talk protection ◯

EMI protection options ◯

[Twisted Pair Flat Cable, 1700 Series Product Page](#) (PVC)
[Twisted Pair Flat Cable, HF100 Series Product Page](#) (Halogen Free)

[Cable Mating Guide](#)

3M™ Jacketed Flat Ribbon Cable

Cable feature options:

Jacket provides protection from environmental damage

Shielding provides protection against EMI

- Pitch: 0.05", 1mm and 0.025"
- Conductor stranding: Solid or Stranded
- Conductor size: 28 and 30 AWG
- Conductor color: Gray, dark gray translucent, Silver,
- Conductor Insulation: PVC, TPE, Polyolefin, or Halogen Free
- Shielding: None, Cu Braid, Pleated Cu Foil, Expanded Cu, Al Foil
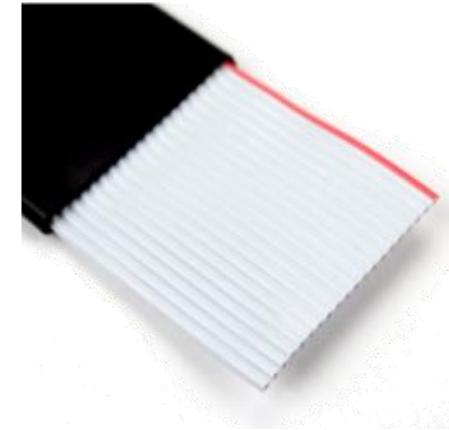
Basic ○

Color coded ○

Jacketed ◉

Cross talk protection ○

EMI protection options ◉

[Jacketed Flat Ribbon Cable Product Pages](#)

[Cable Mating Guide](#)

3M™ Round Jacketed Flat Cable

Cable feature options:

Jacket provides protection from environmental damage

Shielding provides protection against EMI

- Pitch: 0.05" and 0.025"
- Conductor stranding: Stranded
- Conductor size: 26, 28 and 30 AWG
- Conductor color: Gray, dark gray
- Conductor Insulation: PVC or PO
- Shielding: None, Cu Braid or Al Foil/Cu Braid
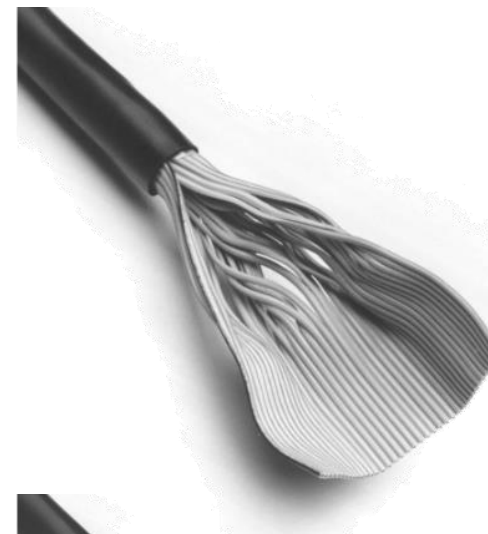
Basic ○

Color coded ○

Jacketed ◉

Cross talk protection ○

EMI protection options ◉

[Round Jacketed Flat Ribbon Cable Product Pages](#)   [Cable Mating Guide](#)

3M™ Twisted Pair Round Jacketed Cable

Basic

Cable feature options:

Jacket provides protection from environmental damage

Shielding provides protection against EMI

Twisted Pairs reduces crosstalk for balanced applications

- Pitch: 0.05" and 0.025"
- Conductor stranding: Stranded
- Conductor size: 26, and 28 AWG
- Conductor color: Color Coded
- Conductor Insulation: PVC or Halogen Free
- Shielding: None, Cu Braid or Al Foil/Cu Braid

Color coded

Jacketed

Cross talk protection

EMI protection options

[Round Jacketed Twisted Cable Product Pages](#)

[Cable Mating Guide](#)

3M™ Input/Output Connectors

3M ™ D Sub Connectors

3M™ D Sub Connectors

Key Features:

- Available in either open or closed end cover

- Available with dimples to aid in EMI/ESD protection

- Improved metal strain relief hooks directly to metal shell

- Low profile

- Four mounting options

- Position options: 09, 15, 25, 37 & 50

- RoHS compliant

Applications/Wins:

- IDC termination over solder cup – labor savings, mass terminations

Plug (50 position)

Socket (25 position)

3M™ D Sub Plug, 8200 Series Product Page (09, 15, 25 & 37 position plug)
3M™ D Sub Plug, 8250 Series Product Page (50 position plug)
3M™ D Sub Socket, 8300 Series Product Page (09, 15, 25 & 37 position socket)
3M™ D Sub Socket, 8350 Series Product Page (50 position socket)

3M

3M™ Mini Delta Ribbon (MDR) Cable Components

3M™ MDR Connector Selection Guide

MDR Selection Guide

3M™ Mini Delta Ribbon (MDR) I/O-Interface

Key Features:

- I/O connector and assembly platform
- Industry-proven interface
- Excellent electrical and EMI / ESD characteristics
- Camera Link™ standard compliant Ribbon contact design is highly reliable for mating and un-mating

Markets:

Machine Vision, Inspection, LVDS, Medical, Surveillance, Communication Systems, Imaging Systems, Instrumentation, Baggage scanning, MRI equipment

3M™ Mini Delta Ribbon (MDR), 101XX-3000PX, 101 Series

Key Features:

- Wiper-on-wiper contact for reliable repetitive plugging

- Solder cup termination requires no special tooling

- Accepts a wide variety of discrete wire (24 to 30 AWG) cable construction

- Contacts: 14, 20, 26, 36, 40 and 50

3M™ Mini Delta Ribbon (MDR), 101XX-60XOEC, 101 Series

Key Features:

- Wiper-on-wiper contact for reliable repetitive plugging

- MDR digital LCD interface as a 20 or 26 contact connector

- IEEE 1284C Interface as a 36-contact connector

- Accepts a wide variety of cable constructions including flat, round, twisted pair and twinax cables

- Wiremount plug, IDC, Shielded

- Contacts: 14, 20, 26, 36, 40, 50, 68, 80 and 100

101XX-60X Series Product Page

MDR Selection Guide

3M

3M™ Mini Delta Ribbon (MDR), 101 Series

Other options:

- Wiper-on-wiper contact for reliable repetitive plugging
- Boardmount, straddlemount or wiremount
- Screw and ground lock
- Solder tails

3M™ Mini Delta Ribbon (MDR), 101XX-8X00EE, 101 Series

3M™ Mini Delta Ribbon (MDR), 101XX-X2X2XC, 101 Series

3M™ Mini Delta Ribbon (MDR), 101XX-4CZ3 PL, 101 Series

3M™ Mini Delta Ribbon (MDR) 101XX-900AXX 101 Series

3M™ Mini Delta Ribbon (MDR), 102XX-1020EC, 102 Series

Key Features:

- Wiper-on-wiper contact for reliable repetitive plugging

- IEEE 1284C Interface as a 36-contact connector

- Interface latch design for connection stability

- Accepts a wide variety of cable constructions including flat, shielded flat and twisted pair cables

- Contacts: 20, 26, 36, 40, 50 and 68

- RoHS compliant and UL94V-0

102XX-0210EC Product Page

MDR Selection Guide

3M™ Mini Delta Ribbon (MDR), N102XX-52XXXC, 102 Series

Key Features:

- Boardmount receptacle

- Wiper-on-wiper contact for reliable repetitive plugging

- Rugged die cast metal case construction

- SMT compatible PCT insulator material

- Screw or ground lock for reliable PCB retention

- Interface latch design for connection stability

- IEEE 1284C Interface as a 36 contact connector

- Contacts: 14, 20, 26, 36, 40, 50, 68, 80 and 100

N102XX-52XXXC Product Page

MDR Selection Guide
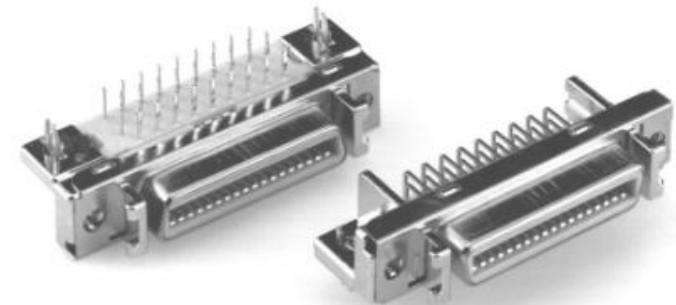
3M™ Mini Delta Ribbon (MDR), 102 Series

Other options:

- Wiper-on-wiper contact for reliable repetitive plugging

- Boardmount, panelmount, wiremount

- Screw and ground lock

- Solder tails and press fit

3M™ Mini Delta Ribbon (MDR), 10268-5JBEPC, 102 Series

3M™ Mini Delta Ribbon (MDR) Connectors, 102 Series

3M™ Mini Delta Ribbon (MDR), 102XX-M218XE, 102 Series

3M™ Mini Delta Ribbon (MDR) Connectors, 102 Series

3M™ Mini Delta Ribbon (MDR), 102XX-R2XXS 102 Series

3M™ Mini Delta Ribbon (MDR) Connectors, 102 Series

3M™ Mini Delta Ribbon (MDR), 102XX-22X0XE, 102 Series

3M™ Mini Delta Ribbon (MDR) Connectors, 102 Series
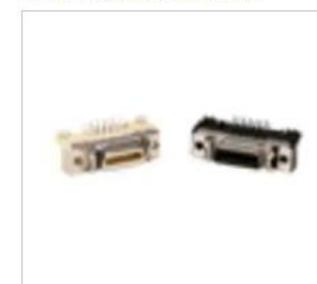
3M™ Mini Delta Ribbon (MDR), X102XX-55X3XX, 102 Series

3M™ Mini Delta Ribbon (MDR) Connectors, 102 Series

[MDR 102 Series Product Pages](#)

[MDR Selection Guide](#)

3M™ Mini Delta Ribbon (MDR) Junction Shell, 103 Series (Shell)

Available options:

- Rugged metal or plastic

- Strain relief

- EMI/ESD protection

- Quick release latching

- Straight or 60º exit

- RoHS compliant

3M™ Mini Delta Ribbon (MDR) Junction Shell 103XX-52F0-008

3M™ Mini Delta Ribbon (MDR), 103XX-C200-00, 103 Series

3M™ Mini Delta Ribbon (MDR) Junction Shell 103XX-3280-000-X

3M™ Mini Delta Ribbon (MDR) Junction Shell 103XX-1230-00

3M™ Mini Delta Ribbon (MDR), 103XX-C500-00, 103 Series

3M™ Mini Delta Ribbon (MDR) Connectors, 103 Series

3M™ Mini Delta Ribbon (MDR) Junction Shell 103XX-12R1-00

3M™ Mini Delta Ribbon (MDR) Junction Shell 103XX-3210-00X

[MDR 103 Series Product Pages](#)

[MDR Selection Guide](#)

3M™ Shrunk Delta Ribbon (SDR) Connectors

3M™ Shrunk Delta Ribbon (SDR) Connectors

Key Features:

- Wiper on wiper contact for reliable repetitive mating

- Full metal face for better EMI shielding effectiveness

- On-board jacksockets maintains a secure connection

- Screw lock option

- Option: Ground lock for reliable PCB retention

3M™ Shrunk Delta Ribbon (SDR) Connectors, 122XX-8250-00FR, 122 Series

3M™ Shrunk Delta Ribbon (SDR) Connectors, 122XX-5150-00FR, 122 Series

Applications/Wins:

- Camera Link applications

3M™ Shrunk Delta Ribbon (SDR) Connectors, 122XX-1150-00FR, 122 Series

122XX-1150-00FR Series Product Page (Boardmount Straight)
122XX-5150-00FR Series Product Page (Boardmount Right Angle)
122XX-8250-00FR Series Product Page (Surfacemount)

SDR Selection Guide

3M™ Shielded Compact Ribbon (SCR) Connectors

3M™ SCR Connectors, Series 361

Key Features:

- Polarized to provide proper cable insertion

- Robust ribbon style contact for reliable, repetitive plugging

- 360° shielding for excellent EMI protection

- 10 contacts can carry signal or power (up to one ampere per pin)

- Vibration resistant

- Solder termination for quick assembly with no dedicated tooling

Applications/Wins:

- Basic power and signal I/O in a unique form factor

- Mistake proofing (Error prevention)

36110-3000XX Series Product Page   (Wiremount Plug)
36110-1110XX Series Product Page   (Boardmount Straight Plug)
36110-2220XX Series Product Page   (Boardmount Right Angle Plug)
36310-F200-008 Series Product Page (Shell Kit - Wiremount Plug)

3M™ Shielded Compact Ribbon
(SCR) Connectors, 361 Series
(Wiremount)

3M™ Shielded Compact Ribbon
(SCR) Connectors, 361 Series
(Shell Kit – Wiremount plug)

3M™ Shielded Compact Ribbon
(SCR) Connectors, 361 Series
(Boardmount R/A)

3M™ Shielded Compact Ribbon
(SCR) Connectors, 361 Series
(Boardmount Straight)

3M™ SCR Connectors, Series 362

Key Features:

- Mates to all 3M™ Shielded Compact Ribbon (SCR) Boardmount and Wiremount Plugs

- Polarized to provide proper insertion

- Robust ribbon style contact for reliable, repetitive plugging

- 10 contacts can carry signal or power (up to one ampere per pin)

- Vibration resistant

- Solder termination for quick assembly with no dedicated tooling

- Accommodates up to 18 AWG wire

3M™ Shielded Compact Ribbon (SCR) Connectors, 362 Series (Wiremount Plug)
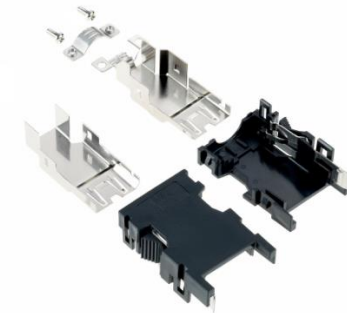
3M™ Shielded Compact Ribbon (SCR) Connectors, 363 Series (Shell Kit – Wiremount plug)

36210-0100XX Series Product Page   (Wiremount Receptacle)
36310-3200-008 Series Product Page   (Shell Kit - Wiremount Receptacle)

3M™ 2mm IEEE 1394 Connectors

3M™ 2mm IEEE1394 , Series 3E106

Key Features:

- Robust ribbon style contact for reliable, repetitive plugging

- Body tabs provide lateral support to solder joints and help enable shield grounding

- $360°$ shielding for excellent EMI protection

- Six contacts can carry signal or power (up to one amp per pin)

- Polarized to provide proper cable insertion

Applications/Wins:

- Firewire

- Competitors exiting the business
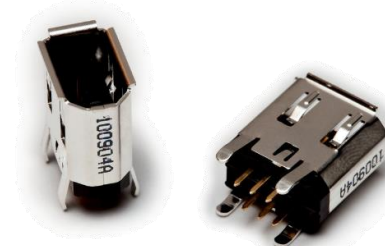
3M™ I/O Interconnect System 2.0 mm for IEEE 1394 3E106 Series (Boardmount Straight Plug)
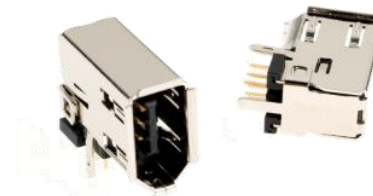
3M™ I/O Interconnect System 2.0 mm for IEEE 1394 3E106 Series (Boardmount Right Angle, Upright Plug)

3M™ I/O Interconnect System 2.0 mm for IEEE 1394 3E106 Series (Boardmount Right Angle, Horizontal Plug)

3E106-1230 KV Product Page   (Boardmount Straight Plug)
3E106-22X0XX Product Page   (Boardmount Right Angle, Upright Plug)
3E106-0220XX Product Page   (Boardmount Right Angle, Horizontal Plug)

3M™ 2mm IEEE1394 , Series 3E206

Key Features:

- Designed to mate to all 3M I/O Interconnect System 2.0 mm for IEEE 1394 Boardmount Plugs

- Polarized to provide proper insertion

- Robust ribbon style contact for reliable, repetitive plugging

- Six Contacts can carry signal or power (up to one amp per pin)

- Vibration resistant (Snap latch shell)

- Solder termination for quick assembly with no dedicated tooling

- Accommodates up to AWG 18 wire

3M™ I/O Interconnect System 2.0 mm for IEEE 1394, 3E206 Series (Wiremount Receptacle)
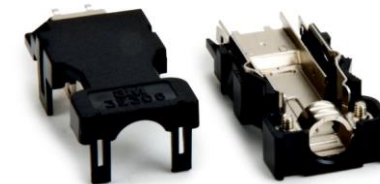
3M™ I/O Interconnect System 2.0 mm for IEEE 1394 3E306 Series (Shell Kit - Wiremount Receptable)

3E206-0100XX Product Page   (Wiremount Receptacle)
3E306-3200-008 Product Page   (Shell Kit – Wiremount Receptacle)

3M

3M™ Memory Card Headers

3M™ Memory Card Connectors

Options:

1. MicroSD™
2. CFast™
3. CompactFlash™

Applications/Wins:

- Competitors exiting the business

3M™ Card Connector
microSD™

3M™ Ejector for
CFast™, 7G24 Series

3M™ Connector for
CFast™, 7G24 Series

3M™ CF Card Header,
7E50 Series (Type I)

3M™ CF Card Header,
7E50 Series (Type II)

[Memory Card Connectors Product Pages](#)

MICROSD is a trademark of SD-3C, LLC.
CFAST is a trademark of CompactFlash Association.
CF is a trademark of CompactFlash Association.

3M
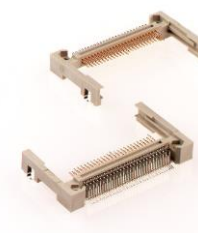
3M Cable Assemblies

3M™ Molded Assemblies

3M™ Molded Assembly, 1M & 2M Series

Key Features:

- One-piece design shields against elements

- Excellent for robust long-term connections in high-vibration environments

- Available in multiple pin counts and orientations for versatility

- Cables are available for use in high flex applications

- Molded-in strain relief creates low height profile for space savings

- PCB connector available

Applications/Wins:

- Network and telecommunications

- Test and measurement

- Data processing equipment

The entire gas-tight insulation displacement contact area is encased in insulation material

During the molding process, the cable insulation is thermally fused to the surrounding connector body plastic to provide exceptional strain relief

The cable is concealed inside the connector body

All cable assemblies use industry-standard .050" (1.27 mm) or 1 mm pitch round conductor flat ribbon cable

Sockets mate with industry-standard .100" x .100" or 2 mm x 2 mm headers and plugs

Individual contacts are isolated by thermoplastic cell walls

Recesses accommodate adjacent posts in continuous rows

3M™ Molded Assembly 1M Product Page (0.100"/2.54mm pitch)
3M™ Molded Assembly 2M Product Page (2mm pitch)
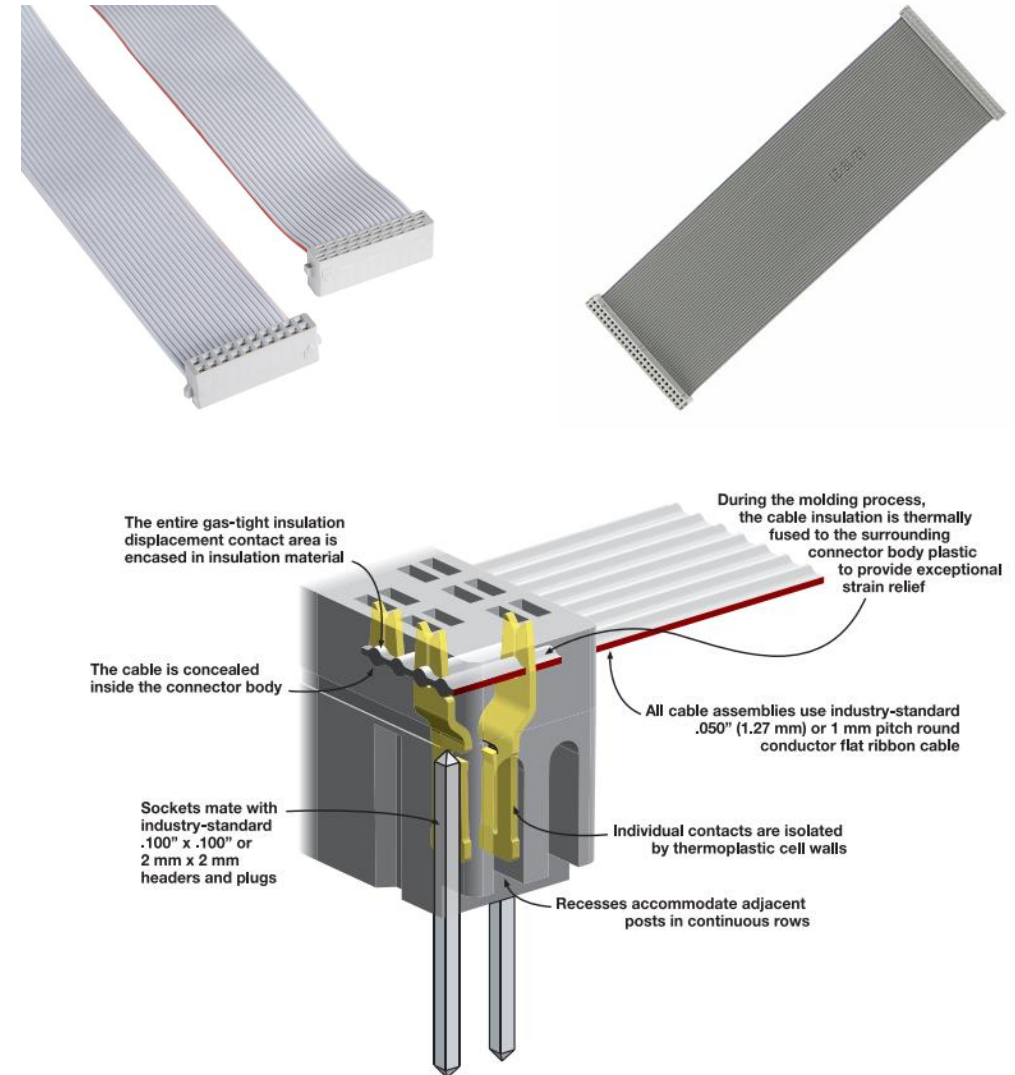
3M™ USB3 Vision Industrial Camera Cable Assembly

3M™ USB3 Vision Cable Assembly, 1U30A Series

Key Features:

- Non-repetitive motion applications

- Excellent transmission up to at least 7m

- Flexible 6.2mm outside diameter cable for easy routing

- Straight, upward/downward, left-hand/right-hand configurations

- Reliable connection with locking screws available on USB3 and Micro B ends

- USB3.0 compatible

- RoHS2 and CE compliant

Applications/Wins:

- Machine Vision

Functional cable length for 1U30A series

	3 m	5 m	7 m	10 m
	OK			

*Tested in 3M test condition

[1U30A Series Product Page](#)

3M™ USB3 Vision Cable Assembly, 1U30S Series

Key Features:

- Excellent transmission characteristics enables >5M connection[1]

- Repeated bending durability >10million cycles[2]

- Reliable connection with locking screw (Available on USB3 and Micro B ends)

- Excellent U-shaped sliding durability and maintains same high transmission characteristics

- USB3.0 compatible

- USB3 Vision® compliant screw locking feature

- RoHS2 and CE compliant

1: Tested in 3M test condition; functionality >5M depends on camera/host combination
2: NO open/no significant degradation in electrical characteristics after 10 million cycles of R50 drag-chain bending

Applications/Wins:

- Machine vision with repeated motion

Functional cable length for 1U30S series

3 m	5 m	7 m
OK ▶ ›››		

*Tested in 3M test condition

[1U30S Series Product Page](#)

3M™ Mini Delta Ribbon (MDR) Cable Assemblies

3M™ Mini Delta Ribbon (MDR) Cable Assemblies (Transmission)

Key Features:

- Several shielded differential pairs (according to application)

- Supports VESA/DFP standard for 20-position MDR at host device

- LCD monitor assembly for Panel Link™/TMDS interface

- Supports LVDS FP Link, Flat Link™, Channel Link™, Panel Link™/TMDS electrical interfaces

- Each differential twin-ax pair has foil shield and drain wire

- Entire cable bundle is shielded with foil and braid for additional signal protection

- Rugged MDR ribbon type contact

- Quick release latches or thumbscrews

- RoHS* compliant

Applications/Wins:

- Solution for Digital Displays, Datacom and Telecom applications

[MDR Cable Assembly Product Page](.)   [MDR Selection Guide](.)

3M™ Mini Delta Ribbon (MDR) Cable Assemblies (Machine Vision)

Key Features:

- Supports the Automated Imaging Association's Camera Link Standard for industrial camera to frame grabber communications

- 11 shielded twisted pairs and four drain wires

- Entire cable bundle is shielded with foil and braid for additional signal protection

- Rugged MDR ribbon type contact

- Rugged thumbscrew retention

- EMI shielded junction shell in either plastic or overmolded construction

- RoHS* compliant

Applications/Wins:

- Camera Link, machine vision applications

[MDR Cable Assembly Product Page](#)

[MDR Selection Guide](#)

3M™ Shrunk Delta Ribbon (SDR) Cable Assemblies

3M™ Shrunk Delta Ribbon (SDR) Cable Assemblies (Machine Vision)

Key Features:

- Supports AIA Industrial Mini Camera Link Standard for Mini C/L camera to frame grabber applications

- 11 shielded twisted pairs with four drain wires

- Entire cable bundle is shielded with foil and braid for additional signal protection

- Rugged ribbon contact type

- Rugged thumbscrew retention

- Available right angle overmolded SDR backshells eliminate bend radius

- EMI shielded cable assembly

Applications/Wins:

- Mini Camera Link and Camera Link products

SDR Cable Assembly Product Page

SDR Selection Guide

3M™ Internal Twin Axial Cable Assemblies

3M™ Twin Axial Cable Overview

3M employs a unique precision-formed continuously <u>laminated shield</u> over entire cable, to deliver:

- Precision and control
- Thinness & flexibility
- Tight folding/creasing virtually without loss of performance

Competition uses spiral/longitudinal <u>wrapped shield</u> around individual pairs, optionally further laminated together:

- Thicker, less flexible
- Performance degrades in tight bends
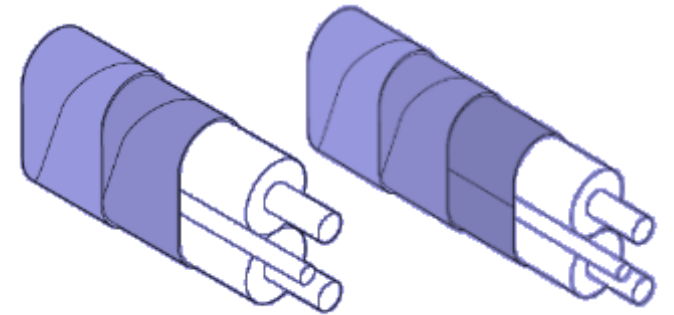
3M™ Internal Twin Axial Cable Assemblies

Key Features:

- Routability enabled by:

  - High cable foldability

  - Low-profile (thin)

- Maintains Signal Integrity performance when folded

- Helps improved cable management

- Helps improved thermal management
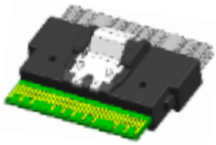
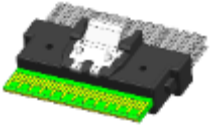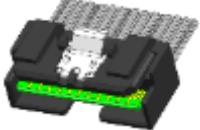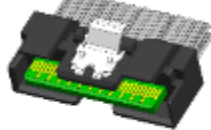 (better airflow in the system)

Applications/Wins:

- High density system architectures

- Server

- PC Gaming

- High performance computing

- High performance test equipment

In general, cables replace PCB traces to help reduce loss and cost

3M™ Internal Twin Axial Cable Assemblies

	3M™ SlimLine assembly	3M™ Mini-SlimLine assembly	3M™ Compact SlimLine assembly	3M™ Low Profile I/O assembly	3M™ Multi-Channel I/O assembly	3M™ Scalable High-Speed assembly	3M™ PCIe Extenders and Jumper assembly
# of Lanes	4, 6, 8 or 12	8, 12	8, 12	8, 12	8, 12	4, 8 or 16 (1C, 2C, or 4C)	8, 16
Protocol	SATA, SAS, PCIe®	SATA, SAS, PCIe®	SATA, SAS, PCIe®	SAS, PCIe®	SAS, PCIe®	SAS, PCIe®	PCIe®
Speeds	SAS 3.0: 12 Gbps PCIe® 4.0: 16 Gbps PCIe® 5.0: 32 Gbps	SAS 3.0: 12 Gbps PCIe® 4.0: 16 Gbps PCIe® 5.0: 32 Gbps	SAS 3.0: 12 Gbps PCIe® 4.0: 16 Gbps PCIe® 5.0: 32 Gbps	SAS 3.0: 12 Gbps PCIe® 4.0: 16 Gbps	SAS 4.0: 24 Gbps PCIe® 5.0: 32 Gbps	SAS 4.0: 24 Gbps PCIe® 5.0: 32 Gbps	PCIe® 3.0: 8 Gbps PCIe® 4.0: 16 Gbps PCIe® 5.0: 32 Gbps
Types of Application	Motherboard or controller to drive backplane	Motherboard or controller to drive backplane	Motherboard or controller to drive backplane	Motherboard or controller to drive backplane	Motherboard or controller to drive backplane, midboard	Motherboard or controller to drive backplane, midboard	Ext: Flexible "riser" Jmp: Motherboard to motherboard
Specification	SFF-8654	SFF-8654	SFF-8654	Industry compatible	SFF-TA-1016	SFF-TA-1020	PCIe® -CEM

Internal TwinAx Cable Assemblies Product Page

TwinAx Selection Guide

3M™ External Twin Axial Cable Assemblies

3M™ External Twin Axial Cable Assemblies

Key Features:

- Efficient routing of cables
- Virtually no min bend radius
- Maintains Signal Integrity performance when folded
- Helps improve thermal management (better airflow in the system)
- Requires less space in front of port
- Improved serviceability
- Space saving

Applications/Wins:

- Server to switch
- Server to Storage
- Other high speed test equipment
- Top of rack to server

Tight bends at the connector allowing for efficient routing in space constrained applications

3M

3M™ Twin Axial External Cable Assembly Portfolio

	3M™ 400G QSFP-DD Direct Attach Copper Cable Assemblies	3M™ 100G QSFP28 Direct Attach Copper Cable Assemblies	3M™ 100G QSFP28 Direct Attach Copper Cable Assemblies	3M™ 100G QSFP28 Direct Attach Copper Cable Assemblies	3M™ Twin Axial Cable Assemblies for QSFP+ Applications, 40GbE
Form Factor	QSFP-DD	QSFP28 Q28-Q28[1]	QSFP28 Q28-1Q28[2]	QSFP28 Q28-4SFP28[2]	QSFP+
Aggregate Data Rate	400G	100G	100G	100G	40G
Channel Data Rate	56G/channel (8x50)	25G/channel (4x25)	25G/channel (4x25)	25G/channel (4x25)	10G/channel (4x10)
Lengths	30 AWG: 0.50 - 2.0 m 26 AWG[3]: 2.25 - 3.50 m	30 AWG: 0.5 to 2.0m 26 AWG: 2.0 to 4.0m	30 AWG: 0.5 to 2.0m 26 AWG: 2 to 4.0m	30 AWG: 0.5 to 2.0m 26 AWG: 3.0 to 4.0m	30 AWG: 0.25 to 3.0m
Series	9V	9QJ0, 9QH6, 9QN0, 9QM6	9SR-Bxx	9SR-Axx	9QA0
Standards	QSFP-DD MSA IEEE 802.3 cd	SFF-8436, 8661 8665, 8661, 8662 IEEE 802.3bj	SFF-8661, 8662, 8665 IEEE 802.3bj	SFF-8661-8662,8665,8431 IEEE 802.3bj	SFF-8436 IEEE 802.3ba

Additional products available in:
- 25G, 10G and miniSAS

1: Q28-Q28 cable assembly - Cable and PCB are halogen free
2: Q-2Q and Q-4S - Cable is halogen free, PCB is not halogen free, CL2 Flame Rated
3: QSFP-DD - 3.25meter meets 802.3cd,3.50meter does not meet 802.3cd standard, however, passes COM

[External TwinAx Cable Assemblies Product Page](#)

[TwinAx Selection Guide](#)

3M

IMPORTANT NOTICE

Safety Data Sheet: Consult Safety Data Sheet before use.

Regulatory: For regulatory information about this product, contact your 3M representative.

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