

# 3M MDR/SDR Connector Selection Guide



# 3M MDR Connectors

## 3M™ Mini Delta Ribbon (MDR) Connectors

The 3M Mini Delta Ribbon (MDR) is a half pitch interconnect system for high speed/density input/output applications. With decades on the market, the 3M provides its MDR system as an established and well-proven solution for high density I/O. Features include:

- Shielded shells for EMI/ESD protection
- Pre-loaded ribbon contacts for proven reliable connections
- IDC U-shaped contacts allowing for mass termination
- Wide range of pin counts and form factors for design flexibility



## The MDR connector system includes:

- Ribbon-style contact based on 0.050" centerlines
- Pre-loaded contacts (receptacle and the mating plug) for reliable contact during insertion and withdrawal
- U-contact strips insulation while connecting to cable conductor wires
- High performance copper alloy delivers mechanical strength, electrical conductivity and corrosion resistance

# 3M™ Mini Delta Ribbon (MDR) Connectors, 0.050" x 0.050"



Pincount	IDC Wiremount Plug, Shielded	Solder Plug, Shielded	Non-Shielded IDC Plug	IDC Wiremount Receptacle	Straddlemount Plug	Through-Hole Plug, Right Angle, Shielded	Through-Hole Plug, Straight
14	10114-6000 EX	10114-3000 PX					
20	10120-6000 EX	10120-3000 PX		10220-0210 EC		10120-x22 PC	
26	10126-6000 EX	10126-3000 PX		10226-0210 EC	10126-900x PL (PC)	10126-x22 PC	
36	10136-6000 EX	10136-3000 PX		10236-0210 EC		10136-x22 PC	
40	10140-6000 EX	10140-3000 PX		10240-0210 EC			
50	10150-6000 EX	10150-3000 PX	10150-8x00 EE	10250-0210 EC	10150-900x PL (PC)	10150-x22 PC	10150-4CZ3 PL
68	10168-60x0 EX		10168-8x00 EE	10268-0210 EC	10168-900x PL (PC)		
72							
80	10180-6000 EX						
100	101A0-6000 EX				101A0-900x PL (PC)		101A0-4CZ3 PL
	Wire Accommodation: X = 0 Black Cover: 28 AWG Stranded, 30 AWG Solid (Standard) X = 1 Gray Cover: 26 AWG Solid (Available in 68 Contact only) Assembly Press 10960 Handtool 3829		x = 0 with Strain Relief (Standard) X = 1 without Strain Relief (Special Order)		PC = 30µ" (0.76 µm) Gold PL = 8µ" Flash Gold  X: A = Compatible Board thickness 1 mm (Standard)  0 = 1.6 mm (Special Order)  Solder Tail-Gold Flash	X = 5 normal type X = 7 reverse type Panel/Board Retention Feature y: 1 = M2.5 panel/M2.5 screw lock B = M25 panel/ground lock 4 = # 4-40 panel/4-40 screw lock E = # 4-40 panel/ground lock	
Plating Wiping Area	EC = 30µ" (0.76 µm) Gold EL=(0.20 µm) Gold	PC = 30µ" (0.76 µm) Gold PE = 20µ" (0.50 µm) Gold	30µ" (0.76 µm) Gold	30µ" (0.76 µm) Gold	30µ" (0.76 µm) Gold 8µ" (0.20 µm) Gold	30µ" (0.76 µm) Gold	8µ" (0.20 µm) Gold
UL File	E68080	E68080	E68080	E68080	E68080	E68080	
UL Flammability	UL 94V-0	UL 94V-0	UL 94V-0	UL 94V-0	UL 94V-0	UL 94V-0	UL 94V-0
Temp. Range	-20°C to +85°C	-55°C to +105°C	-20°C to +85°C	-20°C to +85°C	-20°C to +85°C	-20°C to +85°C	-20°C to +85°C
Tech Sheet No.	TS-0423	TS-0669	TS-0514	TS-0425	TS-0698	TS-0620	TS-0716



# 3M™ Mini Delta Ribbon (MDR) Connectors, 0.050" x 0.050"

## Specialties

## Through-Hole Receptacle Connectors



Pincount	Right Angle Condo Receptacle	Receptacle, Right Angle, SCSI-2 Layout	Receptacle, Straight, Through-Hole, Solder Tails	Receptacle, Right Angle, Through-Hole Solder Tails, Shielded, Diecast	Receptacle, Right Angle, Through-Hole, Solder Tails, Shielded	Receptacle, Straight, Through-Hole, Compliant Pin, Shielded		
14			x10214-62y2 PC	x10214-52y2 PC	x10214-52y3 PC	10214-55x3 PC	10214-R2xTS	10214-R2xCs
20			x10220-62y2 PC	x10220-52y2 PC	x10220-52y3 PC	10220-55x3 PC		10220-R2xCs
26			x10226-62y2 PC	x10226-52y2 PC	x10226-52y3 PC	10226-55x3 PC	10226-R2xTS	10226-R2xCs
36			x10236-62y2 PC	x10236-52y2 PC	x10236-52y3 PC	10236-55x3 PC	10236-R2xTS	10236-R2xCs
40	10220-M218 PE 10220-L8A9 PE		x10240-62y2 PC	x10240-52y2 PC	x10240-52y3 PC	10240-55x3 PC	10240-R2xTS	10240-R2xCs
50			x10250-62y2 PC	x10250-52y2 PC	x10250-52y3 PC	10250-55x3 PC	10250-R2xTS	10250-R2xCs
68		10268-5JBE PC	x10268-62y2 PC	x10268-52y2 PC	x10268-52y3 PC	10268-55x3 PC	10268-R2xTS	10268-R2xCs
72	10250-M218 PE 10250-PB17 PE 10250-L219 PE		x102A0-62y2 PC	x102A0-52y2 PC	x102A0-52y3 PC			
80	10268-M218 PE 10268-L219 PE							
100	102A0-M218 PE							
		Solder Tail Length 0.15" (3.9 mm)  PC = Flash Gold over Ni	Solder Tail Length 0.134" (3.4 mm) Standard  PC = Flash Gold over Ni  x: Blank = -20°C to +85°C N = -55°C to +105°C Panel/Board Retention Features y: = 1 = M2.5 panel/ M2.5 screw lock B = M2.5 panel/ground lock G = M2.5 panel with 0.86" ground lock (-52y3) 50-100 postion Panel/Board Retention Features y: = 4 = # 4-40 panel/4-40 scwv lock E = # 4-40 panel/ground lock G = # 4-40 panel with 0.86" ground lock (-52y3)	Solder Tail Length 0.15" (3.9 mm) Standard 14-40 postion  x: Blank = -20°C to +85°C N = -55°C to +105°C Panel/Board Retention Features y: = 1 = M2.5 panel/ M2.5 screw lock B = M2.5 panel/ground lock G = M2.5 panel with 0.86" ground lock (-52y3) 50-100 postion Panel/Board Retention Features y: = 4 = # 4-40 panel/4-40 scwv lock E = # 4-40 panel/ground lock G = # 4-40 panel with 0.86" ground lock (-52y3)	Solder Tail Length 0.11" (2.8 mm) Special Order  x: Blank = -20°C to +85°C N = -55°C to +105°C Panel/Board Retention Features y: = 1 = M2.5 panel/ M2.5 screw lock B = M2.5 panel/ground lock G = M2.5 panel with 0.86" ground lock (-52y3) 50-100 postion Panel/Board Retention Features y: = 4 = # 4-40 panel/4-40 scwv lock E = # 4-40 panel/ground lock G = # 4-40 panel with 0.86" ground lock (-52y3)	Solder Tail Length 0.11" (2.8 mm) Standard 14-40 postion, Panelmount thread size: x = G M2.5  20, 36, 50, 68 pos, Panelmount thread size: x = H # 4-40  PC = Flash Gold over Ni	PCB Press-Fit Hole T = Solder plated  Lockstand thread: x = 0 M2.6 (Special) x = 1 M2.5 (Standard) x = H # 4-40 Assembly Tooling 10991 Stopper Block 10992 Press Block	PCB Press-Fit Hole C = Cu/pre flux
Plating Wiping Area	20µ" (0.50 µm) Gold	30µ" (0.76 µm) Gold	30µ" (0.76 µm) Gold	30µ" (0.76 µm) Gold	30µ" (0.76 µm) Gold	30µ" (0.76 µm) Gold	30µ" (0.76 µm) Gold	30µ" (0.76 µm) Gold
UL File	E68080	E68080	E68080	E68080	E68080	E68080	E68080	E68080
UL Flammability	UL 94V-0	UL 94V-0	UL 94V-0	UL 94V-0	UL 94V-0	UL 94V-0	UL 94V-0	UL 94V-0
Temp. Range	-20°C to +85°C	-55°C to +85°C	See option x: above	See option x: above	See option x: above	-55°C to +105°C	-20°C to +85°C	-20°C to +85°C
Tech Sheet No.	TS-0671	TS-2216	TS-0427	TS-0531	TS-0531	TS-0621	TS-0961	TS-0961

# 3M™ SMT Receptacle Connectors



Receptacle, Shielded, SMT, Straight	Die-Cast Receptacle, Shielded, SMT, Right Angle	Receptacle, Shielded, SMT, Right Angle	Receptacle, Shielded SMT, Straight
	10214-1S10-PX	10214-1210 PE	
10220-22x0 PE	10220-1S10-PX	10220-1210 PE	
10226-22x0 PE	10226-1S10-PX	10226-1210 PE	10226-1A10 PE
10236-22x0 PE			
	10240-1S10-PX	10240-1210 PE	
	10250-1S10-PX	10250-1210 PE	
Panel/Board Retention for high data rate  X = 1 M2.5 (Standard) X = 0 M2.6 (Special)	Rugged die-cast body resists tipping during automated soldering operations  Ultra low signal skew for high data rate transmissin	Ultra low signal skew for high data rate transmissin	Ultra low signal skew for high data rate transmissin  Horizontally balanced to resist tipping during wave soldering
20μ" (0.76 μm) Gold	L = 8 μ" Gold with Lubricant Treatment, E = 20 μ" Gold, C = 30 μ" Gold	20μ" (0.76 μm) Gold	20μ" (0.76 μm) Gold
E68080	E68080	E68080	E68080
UL 94V-0	UL 94V-0	UL 94V-0	UL 94V-0
-55°C to +85°C	-55°C to +85°C	-55°C to +85°C	-55°C to +85°C
Yes	Yes	Yes	Yes
TS-0638	TS-2242	TS-0755	TS-0874

# 3M™ Connectors and Cable Mating guide

Connector				Mating Cable			
Connector Pitch	Pug series	Socket Series	Shell Series	Cable Pitch (if flat)	3M™ Round Conductor Flat Cable	3M™ Jacketed Flat Ribbon Cable	3M™ Twisted Pair Round Jacketed Cable
1.27mm x 1.27mm (0.050" x 0.050")	3M™ Mini Delta Ribbon (MDR) Connector, 101, Series	3M™ Mini Delta Ribbon (MDR) Connector, 102 Series	3M™ Mini Delta Ribbon (MDR) Connector, 103 Series	0.025"	3754, 3447, 3756, 3749, 3609, 3604	90111, 90101, 90202, 90201, 90211, 93101	3600B, 3644, 3647B, 3750 HF644

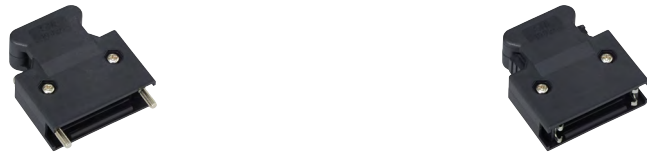
Choose junction shells with exits for straight round or straight flat cables. Features include metal strain relief clamps and quick-release latching mechanism. Junction shells are available as kits for shielded applications.

## 3M™ Shielded Cable Junction Shell



Dedicated Connector	Plastic (Round Cable)			Metal (Round Cable)		Metal (Flat Cable)
10114-6000XX	10314-3210-000			10314-C200-00	10314-C500-00	
10120-6000XX	10320-3210-000			10320-C200-00		10320-1230-00
10126-6000XX	10326-3210-000			10326-C200-00	10326-C500-00	10326-1230-00
10136-6000XX	10336-3210-000		10326-32J0-00x	10336-C200-00	10336-C500-00	10336-1230-00
10140-6000XX	10340-3210-000			10340-C200-00	10340-C500-00	10340-1230-00
10150-6000XX	10350-3210-000	10350-3280-000-x	10350-32J0-00x	10350-C200-00	10350-C500-00	10350-1230-00
10168-6000XX	10368-3210-000	10368-3280-000-x	10368-32J0-00x	10368-C200-00	10368-C500-00	10368-12R1-00
10180-6000XX		10380-3280-000-x			10380-C500-00	10380-12R1-00
101A0-6000XX				103A0-C200-00		103A0-12R1-00
Comments	Shell Color X: 0 = Beige (Standard) 3 = Medium Gray 6 = Black	Cable Exit Inside Diameter of Bushing x: 0 = 10.0mm 1 = 11.0mm	Shell Color X: 0 = Beige (Standard) 3 = Medium Gray 6 = Black			
UL Rating	UL 94V-0	UL 94V-0	UL 94V-0	UL 94V-0	UL 94V-0	UL 94V-0
Dedicated Cables for Series (101xx-60x0 EC)	3600, 3647	3600, 3648	3600, 3649	3600, 3650	3600, 3651	3749, 90102, 90201, 90111, 90211
Tech Sheet No.	TS-0571	TS-0534	TS-0535	TS-0341-C	TS-0394-C	TS-0655 (-1230-00) TS-0396 (-1230-00) TS-0666 (-12R1-00)

## 3M™ Unshielded Round Cable Junction Shell



Dedicated Connector	Plastic (Round Cable)	
10114-3000XX	10314-52A0-008	10314-52F0-008
10120-3000XX	10320-52A0-008	10320-52F0-008
10126-3000XX	10326-52A0-008	10326-52F0-008
10136-3000XX	10336-52A0-008	10336-52F0-008
10140-3000XX		
10150-3000XX	10350-52A0-008	10350-52F0-008
Comments	Plastic shell, unshielded groundplate attached M2.6 jack screw	Plastic shell, unshielded groundplate attached latch
UL Rating	UL 94V-0	UL 94V-0
Dedicated Cables for Series 101xx-3000 (101xx-60x0 EC)	Solderable discrete wire round cable	
Tech Sheet No.	Contact your local 3M sales office	TS-0670

# 3M Wire Accommodations and Accessories for MDR

## 3M MDR Screws

For Boardlock and Panel Mounting  
TS-0142

## 3M MDR Jack Sockets

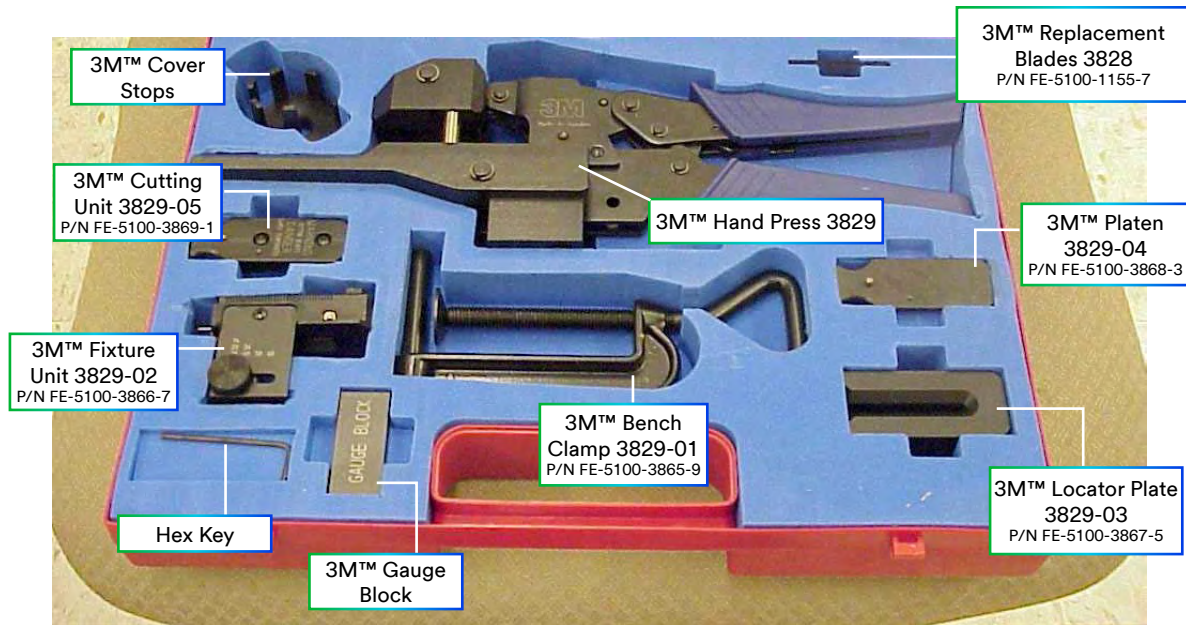
For I/O Panel Mounting  
TS-0142

## 3M MDR Dust Cover

3412-102XX  
TS-0399

## 3M™ MDR Hand Tool Kit, 3829

For the assembly of 3M™ MDR Wiremount Plug 101xx-60x0 (14-68 pos) Series onto 3M™ Round Jacketed Discrete Wire Cables (e.g. Series 3600, 3647, KU-C-).



# 3M SDR Connectors

## 3M™ Shrunk Delta Ribbon (SDR) Cable Assemblies

The 3M Mini Delta Ribbon (SDR) cable assembly is a high-density .80 mm contact pitch interconnect system that allows for similar high speed/density input/output transmission performance of a standard MDR connector, but at a smaller size. Features include:

- 14 and 26 pin configurations
- EMI shielded overmolded backshell
- Pre-loaded ribbon contacts for proven reliable connections
- IDC U-shaped contacts allowing for mass termination
- Supports Mini Camera Link and Camera Link architectures



## The SDR connector system includes:

- 11 shielded, twisted twinax pairs with four drain wires
- Jack socket hardware
- Optional R/A overmolded backshells to eliminate bend radius
- Right-angle version provides additional space savings



# 3M™ Shrunk Delta Ribbon Connectors

## SMT Receptacle Connectors

## Through-Hole Connectors



Pincount	Receptacle, Shielded, Through-Hole, Right Angle	Receptacle, Shielded, SMT, Right Angle	Receptacle, Shielded, Through-Hole, Straight
14	12214-51×0-00 FR	12214-82×0-00 FR	12214-11×0-00 FR
20			
26	12226-51×0-00 FR PE	12226-82×0-00 FR	12226-11×0-00 FR
36			
40			
50	12250-51X0-00 FR		
	X = 0 without Jack Socket X = 5 with Jack Socket  I/O Mounting Hardware Jack Sockets 12600-S-08 12600-S-10 12600-S-12  TS-2123	X = 0 without Jack Socket X = 5 with Jack Socket  I/O Mounting Hardware Jack Sockets 12600-S-08 12600-S-10 12600-S-12  TS-2123	X = 0 without Jack Socket X = 5 with Jack Socket  I/O Mounting Hardware Jack Sockets 12600-S-08 12600-S-10 12600-S-12  TS-2123
Plating Wiping Area	30μ" (0.76 μm) Gold	30μ" (0.76 μm) Gold	30μ" (0.76 μm) Gold
UL-File	E68080	E68080	E68080
UL Flammability	UL 94V-0	UL 94V-0	UL 94V-0
Temp. Range	-40°C to +70°C	-40°C to +70°C	-40°C to +70°C
Tech Sheet No.	TS-2124	TS-2125	TS-2126

# Applications

3M helps maximize system design flexibility with high speed MDR/SDR cable assemblies for machine vision and motion control applications.

[View Camera Link Brochure](#)

## Machine Vision

### 3M™ MDR High Speed Cable Assemblies for Camera Link® Standard Machine Vision Applications

- 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 in EMI shielded junction shell in either plastic or overmolded construction
- RoHS\* compliant



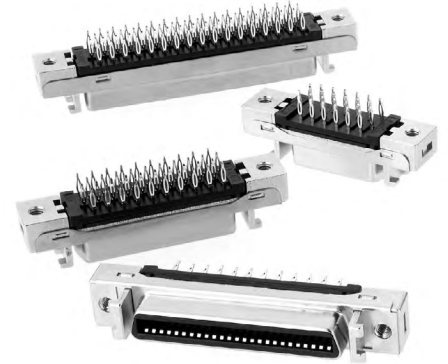
### 3M™ Shrunken Delta Ribbon (SDR) High Speed Cable Assemblies for Mini Camera Link® Standard Machine Vision Applications

- Supports AIA Industrial Mini Camera Link standard for new 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
- Available in configurations to mate between Mini Camera Link and Camera Link products

## Motion Control

### 3M™ MDR Boardmount Connectors for Motion Control

- Pin counts from 14 to 100
- Multiple connector orientations for flexible I/O interface design
- Through-hole, surface mount and press fit mounting styles
- Fine pitch ribbon style contact allows for reliable electrical connection
- Most feature 360° shielding around entire interface, helping improve EMI and RFI protection
- Metal shells are designed to ensure proper grounding of the shroud before mating
- Latch stands allow quick-release backshell latching
- Threaded holes enable thumbscrew attachment



### 3M™ MDR Wiremount Connectors



- Available in IDC and solder termination versions
- Versions include unshielded flat ribbon and pleated foil covered cable in 0.050" and .025" pitch
- Round, discrete cable types include shielded twisted pair, unshielded twisted pair and twin-ax
- Quick-release finger latches are ideal for offices, labs, or medical environments
- Thumbscrew backshell configurations are excellent for industrial and transportation equipment applications

**Safety Data Sheet:** Consult Safety Data Sheet before use.

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

**Technical Information:** The technical information, recommendations and other statements contained in this document are based upon tests or experience that 3M believes are reliable, but the accuracy or completeness of such information is not guaranteed.

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80-4000-1965-1 (080810) K/TG