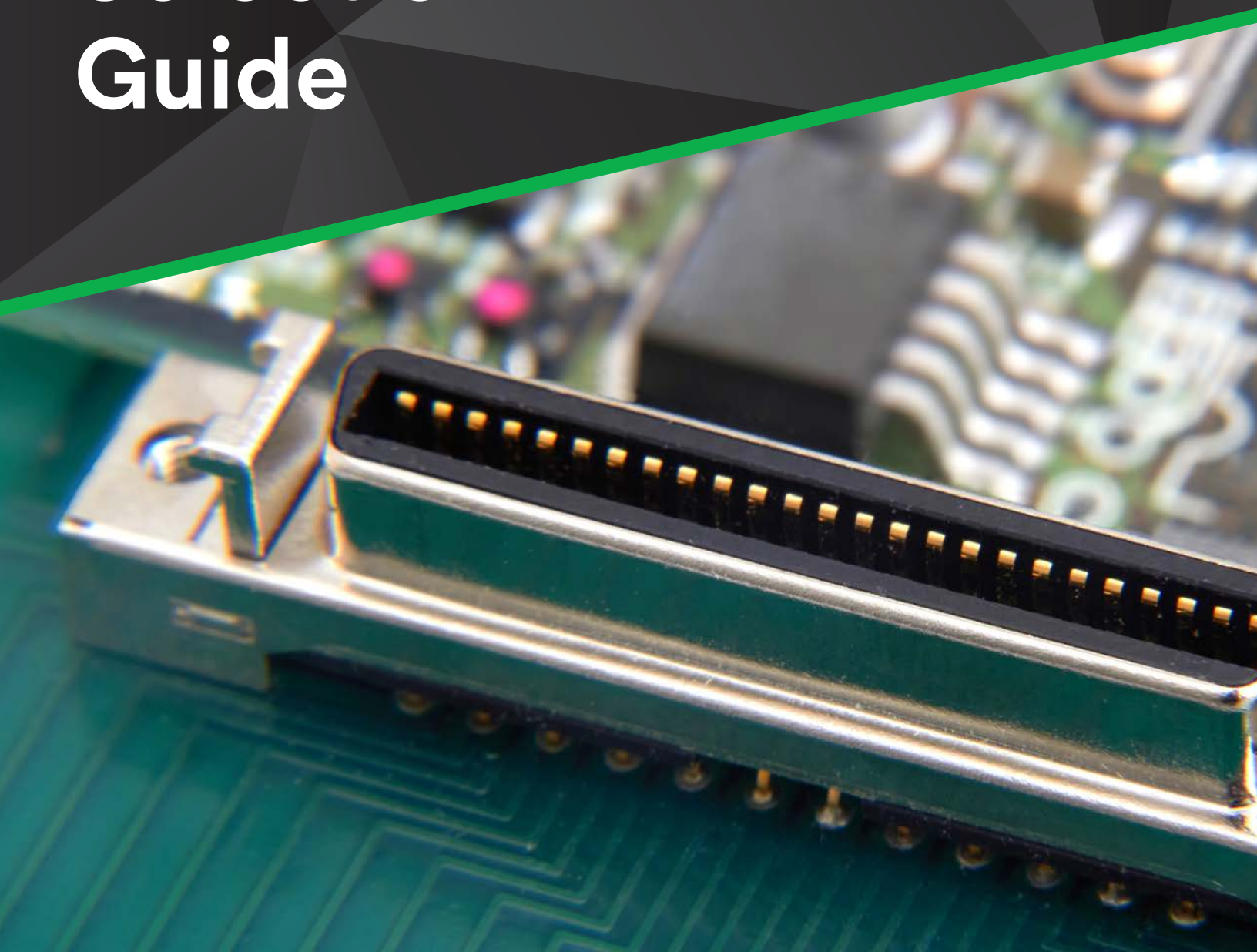
3M Science. Applied to Life.™

3M MDR/SDR/ IEEE1394/SCR Connector Selection Guide



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”

	Wiremount Connectors				Boardmount Plug Connectors	
						
Pincount	**IDC Wiremount Plug, Shielded**	**Solder Plug, Shielded**	**Non-Shielded IDC Plug**	**IDC Wiremount Receptacle**	**Straddlemount Plug**	**Through-Hole Plug, Right Angle, Shielded**
14	10114-6000 EX	10114-3000 PX				
20	10120-6000 EX	10120-3000 PX		10220-0210 EX		10120-X2y2 PX
26	10126-6000 EX	10126-3000 PX		10226-0210 EX	10126-900x PX (PC)	10126-X2y2 PX
36	10136-6000 EX	10136-3000 PX		10236-0210 EX		10136-X2y2 PX
40	10140-6000 EX	10140-3000 PX		10240-0210 EX		
50	10150-6000 EX	10150-3000 PX	10150-8×00 EE	10250-0210 EX	10150-900× PX (PC)	10150-X2y2 PX
68	10168-60×0 EX		10168-8×00 EE	10268-0210 EX	10168-900x PX (PC)	
80	10180-6000 EX					
100	101A0-6000 EX				101A0-900x PX (PC)	
	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 10960J Handtool 3829		x = 0 with Strain Relief (Standard) X = 1 without Strain Relief (Special Order)		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= 8µ” (0.20um)Gold EG = 8µ” (0.20um)Gold (Ni Plating on IDC contact)	PC = 30µ” (0.76 µm) Gold PE = 20µ” (0.50 µm) Gold FD = 8µ” (0.20um)Gold (Tn Plating on solder cup)	20µ”(0.5um)Gold	EC=30µ”(0.76um)Gold EL=8µ”(0.20um)Gold	PC=30µ”(0.76um)Gold PL=8µ”(0.20um)Gold	PC=30µ”(0.76um)Gold PL=8µ”(0.20um)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
Temp. Range	-55° to +85°C	-55°C to +105°C	-55°C to +85°C	-55°C to +85°C	-55°C to +85°C	-55°C to +85°C
Tech Sheet No.	TS-0423	TS-0669	TS-0514	TS-0425	TS-0698	TS-0620

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

Specialties | **Through-Hole Receptacle Connectors**







Pincount	Right Angle Condo Receptacle	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 PX	x10214-52y2 PX	x10214-52y3 PX	10214-55×3 PX	10214-R2xTS	10214-R2xCS
20	10220-M218 PE 10220-L8A9 PE	x10220-62y2 PX	x10220-52y2 PX	x10220-52y3 PX	10220-55×3 PX		10220-R2xCS
26		x10226-62y2 PX	x10226-52y2 PX	x10226-52y3 PX	10226-55×3 PX	10226-R2xTS	10226-R2xCS
36		x10236-62y2 PX	x10236-52y2 PX	x10236-52y3 PX	10236-55×3 PX	10236-R2xTS	10236-R2xCS
40		x10240-62y2 PX	x10240-52y2 PX	x10240-52y3 PX	10240-55×3 PX	10240-R2xTS	10240-R2xCS
50	10250-M218 PE 10250-PB17 PE 10250-L219 PE	x10250-62y2 PX	x10250-52y2 PX	x10250-52y3 PX	10250-55×3 PX	10250-R2xTS	10250-R2xCS
68	10268-M218 PE 10268-L219 PE	x10268-62y2 PX	x10268-52y2 PX	x10268-52y3 PX	10268-55×3 PX	10268-R2xTS	10268-R2xCS
80		x10280-62y2 PX	x10280-52y2 PX	x10280-52y3 PX			
100	102A0-M218 PE	x102A0-62y2 PX	x102A0-52y2 PX	x102A0-52y3 PX			
		Solder Tail Length 0.134” (3.4 mm) Standard PC = Flash Gold over Ni x: Blank = -55°C to +85°C N = -55°C to +105°C Lockstand thread: y = 0 M2.6 (Special) y = 1 M2.5 (Standard)	Solder Tail Length 0.15” (3.9 mm) Standard 14–40 position	Solder Tail Length 0.11” (2.8 mm) Special Order x: Blank = -55°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 position Panel/Board Retention Features y: = 4 = # 4-40 panel/4-40 screw 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 position, 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	PC=30µ’’(0.76um)Gold PL=8µ’’(0.20um)Gold	PC=30µ’’(0.76um)Gold PL=8µ’’(0.20um)Gold		PC=30µ’’(0.76um)Gold PL=8µ’’(0.20um)Gold	30µ” (0.76 µm) Gold	
UL File	E68080	E68080	E68080		E68080	E68080	
UL Flammability	UL 94V-0	UL 94V-0	UL 94V-0		UL 94V-0	UL 94V-0	
Temp. Range	-55°C to +85°C	See option x: above	See option x: above		-55°C to +105°C	-55°C to +85°C	
Tech Sheet No.	TS-0671	TS-0427	TS-0531		TS-0621	TS-0961	

3M™ SMT Receptacle Connectors






Pincount	Receptacle, Shielded, SMT, Straight	Die-Cast Receptacle, Shielded, SMT, Right Angle	Receptacle, Shielded, SMT, Right Angle	Receptacle, Shielded SMT, Straight
14		10214-1S10-PX	10214-1210 PE	
20	10220-22x0 PE	10220-1S10-PX	10220-1210 PE	
26	10226-22x0 PE	10226-1S10-PX	10226-1210 PE	10226-1A10 PE
36	10236-22x0 PE			
40		10240-1S10-PX	10240-1210 PE	
50		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 transmission	Ultra low signal skew for high data rate transmission	Ultra low signal skew for high data rate transmission Horizontally balanced to resist tipping during wave soldering
Plating Wiping Area	20µ" (0.76 µm) Gold	PL = 8 µ" Gold with Lubricant Treatment, E = 20 µ" Gold, PC = 30 µ" Gold	20µ" (0.76 µm) Gold	20µ" (0.76 µm) Gold
UL File	E68080	E68080	E68080	E68080
UL Flammability	UL 94V-0	UL 94V-0	UL 94V-0	UL 94V-0
Temp Range	-55°C to +85°C	-55°C to +85°C	-55°C to +85°C	-55°C to +85°C
Tech Sheet #	TS-0638	TS-2242	TS-0755	TS-0874

3M™ Connectors and Cable Mating guide

Connector					Mating Cable			
Connector Pitch	Plug 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™ MDR Junction Shell - IDC Plug








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-6000 EX	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™ MDR Junction Shell - Solder/IDC Plug






Dedicated Connector	Plastic (Round Cable)		Metal (Round Cable)	
10114-3000XX/6000EX	10314-52A0-008	10314-52F0-008	10314-C2A0-00	10314-C2F0-00
10120-3000XX/6000EX	10320-52A0-008	10320-52F0-008	10320-C2A0-00	10320-C2F0-00
10126-3000XX/6000EX	10326-52A0-008	10326-52F0-008	10326-C2A0-00	10326-C2F0-00
10136-3000XX/6000EX	10336-52A0-008	10336-52F0-008	10336-C2A0-00	10336-C2F0-00
10140-3000XX/6000EX				
10150-3000XX/6000EX	10350-52A0-008	10350-52F0-008	10350-C2A0-00	10350-C2F0-00
Comments	Plastic shell, unshielded groundplate attached M2.6 jack screw	Plastic shell, unshielded groundplate attached latch	Metal Shell, M2.6 jack screw Keying available for 20 & 50pos Short screw available for panel mount	Metal Shell, latch lock Keying available for 20 & 50pos
UL Rating	UL 94V-0	UL 94V-0		
Tech Sheet No.	TS-2825	TS-2825	TS-2852	TS-2852

3M Wire Accommodations and Accessories for MDR

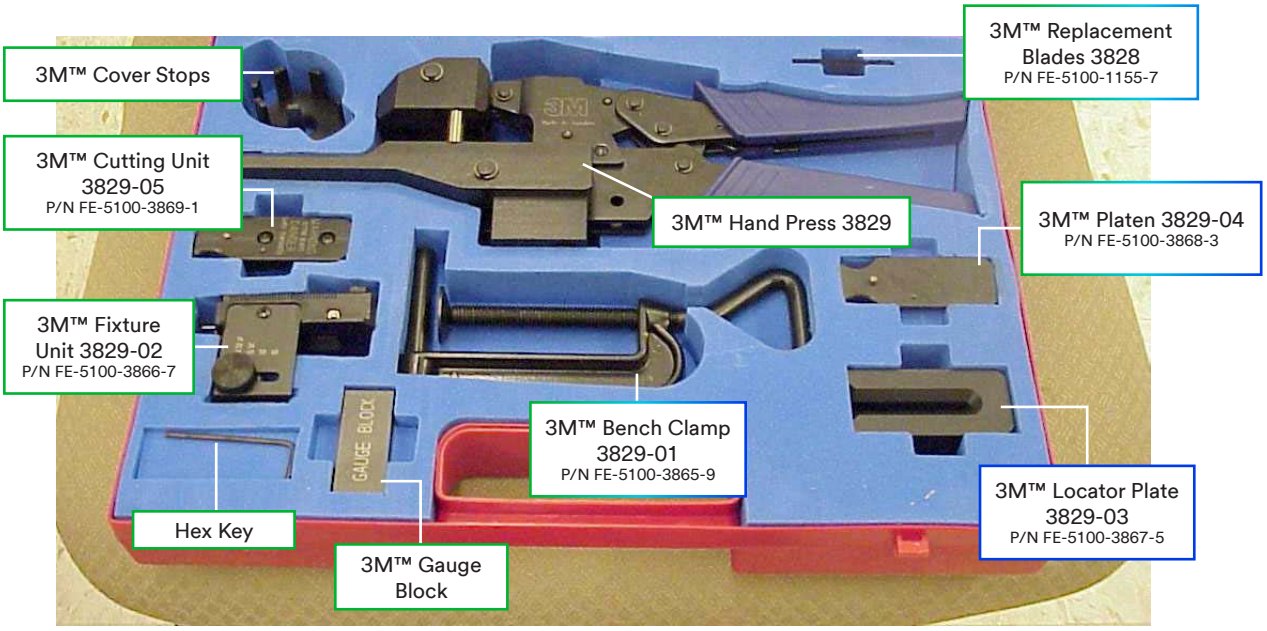
3M MDR Screws
For Boardlock and Panel Mounting
TS-0142

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-60×0 (14-68 pos) Series onto 3M™ Round Jacketed Discrete Wire Cables (e.g. Series 3600, 3647, KU-C-).



3M™ Tool Kit Hand Press, 10960J



For the assembly of the 3M™ MDR Wiremount Plug 101XX-60×0 (14-100 pos.) Series onto 3M™ Round Jacketed Discrete Wire Cables (e.g. Series 3600, 3647, KU-C-).

Product #	Item
10960J	Hand Press
10961J	Cutting Unit; includes 2 spare blades (10970-9)
10962J	Fixture Unit; includes 14, 20, 26, 36, 40, 50, 68, 80 and 100 position connector stops
10964-1J	Cable Clamp; Black,14–50 position
10964-2J	Cable Clamp; Silver, 68–100 position

3M™ I/O Interconnect System 2.0mm for IEEE1394
3M™ Shielded Compact Ribbon (SCR) Connectors

3M™ I/O Interconnect System 2.0mm for IEEE1394





	Boardmount Plug Upright Type 3E106-22xA SP	Boardmount Plug Right Angle Flat 3E106-022A SP	Boardmount Plug Straight 3E106-1230 KV
Pincount	6	6	6
Comments	x = ground lock options 2: straight body tabs 3: kinked body tabs		
Plating Wiping Area	Gold	Gold	Gold
UL Flammability	UL 94V-0	UL 94V-0	UL 94V-0
Temp. Range	-55°C to +85°C	-55°C to +85°C	-55°C to +85°C
Tech Sheet No.	TS2809	TS2810	TS2397




Wire Mount Receptacle Connector 3E206-0100 KV	
Pincount	6
Plating Wiping Area	Gold
UL Flammability	UL 94V-0
Temp. Range	-55°C to +85°C
Tech Sheet No.	TS2296

Wire Mount Receptacle Connector Shell 3E306-3200-00x	
Pincount	6
Comments	Shell Color x: 3: Gray 8: Black
UL Flammability	UL 94V-0
Temp. Range	-55°C to +85°C
Tech Sheet No.	TS2297

3M™ Shielded Compact Ribbon (SCR) Connectors






	Boardmount Plug Upright Type 36110-222A RP	Boardmount Plug Straight SMT 36110-1110 PL
Pincount	10	10
Plating Wiping Area	Gold	Gold
UL Flammability	UL 94V-0	UL 94V-0
Temp. Range	-55°C to +85°C	-55°C to +85°C
Tech Sheet No.	TS2808	TS2224

	Wire Mount Receptacle Connector 36210-0100 PL	Wire Mount Receptacle Shell Kit 36310-3200-008
Pos	10	10
Plating Wiping Area	Gold	Gold
UL Flammability	UL 94V-0	UL 94V-0
Temp. Range	-55°C to +85°C	-55°C to +85°C
Tech Sheet No.	TS2227	TS2228

3M™ Shrunk Delta Ribbon (SDR) Connectors



The 3M Shrunk Delta Ribbon (SDR) Connectors are 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:

- Space saving low profile connector with 0.8mm pitch
- 14, 26, and 50 positions
- EMI shielded overmolded backshell
- Pre-loaded ribbon contacts for proven reliable connections
- Supports Mini Camera Link and Camera Link architectures



The SDR connector system includes:

Wiremount plugs available with shell kits for both screw lock and latch options

- Boardmount receptacle available in through-hole and surface mount styles
- Jack socket hardware

3M™ Shrunk Delta Ribbon Connectors

	Through-Hole Connectors		SMT Receptacle
			

Pincount	Receptacle, Shielded, Through-Hole, Right Angle	Receptacle, Shielded, Through-Hole, Straight	Receptacle, Shielded, SMT, Right Angle
14	12214-51×0-00 XX	12214-11×0-00 XX	12214-82×0-00 XX
26	12226-51×0-00 XX	12226-11×0-00 XX	12226-82×0-00 XX
50	12250-51×0-00 XX		
	X = 0 without Jack Socket X = 5 with Jack Socket I/0 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/0 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/0 Mounting Hardware Jack Sockets 12600-S-08 12600-S-10 12600-S-12 TS-2123
Plating Wiping Area	FR=30µ"(0.76um) Gold PL=8µ"(0.20um) Gold	FR=30µ"(0.76um) Gold PL=8µ"(0.20um) Gold	FR=30µ"(0.76um) Gold PL=8µ"(0.20um) 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-2126	TS-2125

	Wiremount Connectors	Wiremount Connector Shells	
			

Pincount	Plug Connectors	Plug Connector Shells (Screw Lock)	Plug Connector Shells (Latch Lock)
14	12114-5000 FR	12314-3220-00	
26	12126-5000 FR	12326-3220-00	12326-3160-00
50	12150-5000 FR	12350-3270-00	
Plating Wiping area	30u"(0.76um)gold		
UL-File	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-2826	TS-2827	TS-2827

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



3M™ Shrunk 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