

Electronic Solutions Division



# Cables and Accessories Selection Guide

**3M**

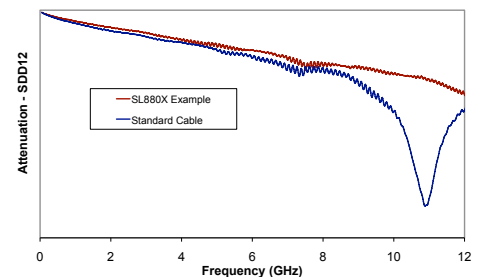
# 3M™ Twin Axial Cable

## SL8800 Series

Your system should be built around performance, not around your cables. The 3M Internal Twin Axial Ribbon Cable SL8800 Series is a new ultra low-profile, high-speed, high signal density cable. The products in the SL8800 Series are only the first of a new family of high-performance cables from 3M.

Currently available in four-channel 100 ohm 30 AWG versions, the SL8800 Series Cable is the optimum solution for space-constrained systems. This cable is unjacketed, extremely thin, very flexible and can even be folded with minimal loss or performance impact. Some high density offerings sacrifice performance to achieve density. For example, flex circuits are often used for tight packaging requirements, but flex circuitry can be cost prohibitive and can have limited bandwidth.

In 2011, 3M Twin Axial Ribbon Cable, SL8800 Series was announced as a recipient of *R&D Magazine's* 49th Annual R&D 100 Awards. The award recognizes 100 of the most technologically significant products and has long been a benchmark of excellence in a variety of industries – from academia to government to medical to manufacturing.



3M™ Twin Axial Cable SL8800 Series exhibits low loss and no “suckout.”

# 3M™ Halogen-Free Cable

In response to market concerns about halogens such as brominated flame retardants and chlorine in electronic products, 3M launched the HF line of Low Smoke Zero Halogen, or “Halogen Free” cables. In addition to containing no halogens, 3M’s HF cables also have the benefits of greater flexibility, higher durability and broader temperature range than comparable PVC insulated cables. Low Smoke Zero Halogen cables are ideal for electronics uses in confined environments, such as transportation or military applications. 3M’s HF cables meet established industry criteria for low smoke (IEC 61034-2:2005), low toxicity of combustion gasses (NF X 70-100-2:2006) and enable customers to make their products halogen-free in advance of proposed government regulations and customer policies requiring elimination of halogen and other brominated flame retardants.



3M now offers our most popular styles of cable in the HF format and will continue to expand this range with additional cables in the future.. Look to 3M for all your halogen-free cable needs!

# 3M™ Cable Solutions

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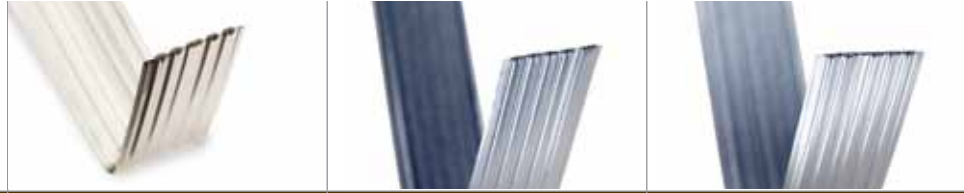
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# 3M™ Twin Axial Cable



Cable Type/Description	Twin Axial Cable	Twin Axial Cable	Twin Axial Cable
<b>Profile</b>			
<b>3M Cable Series</b>	<b>8801</b>	<b>8801</b>	<b>8801</b>
<b>Features</b>	<ul style="list-style-type: none"> <li>– Flat, foldable</li> <li>– High bandwidth</li> <li>– Mass processing and termination</li> </ul>	<ul style="list-style-type: none"> <li>– Flat, foldable</li> <li>– High bandwidth</li> <li>– Mass processing and termination</li> </ul>	<ul style="list-style-type: none"> <li>– Flat, foldable</li> <li>– High bandwidth</li> <li>– Mass processing and termination</li> </ul>
<b>Conductor Size</b>	30 AWG	30 AWG	30 AWG
<b>Conductor Material</b>	Cu	Cu	Cu
<b>Conductor Plating</b>	Silver or Tin	Silver or Tin	Silver or Tin
<b>Signal Conductor Quantity</b>	12	12	11
<b>Primary Insulation</b>	Polyolefin	Polyolefin	Polyolefin
<b>Primary Color</b>	Natural	Natural	Natural
<b>Shield</b>	Internal: Al	Internal: Al	Internal: Al
<b>Differential Impedance</b>	100 ohm	100 ohm	100 ohm
<b>Voltage Rating USA</b>	150 V	150 V	150 V
<b>Temperature Min. [°C]</b>	-20	-20	-20
<b>Temperature Max. [°C]</b>	80	80	80
<b>UL Style Number/File Number</b>	AWM21008 E42789	AWM21008 E42789	AWM21008 E42789
<b>Flammability UL/CUL (Optional)</b>	Horizontal	Horizontal	Horizontal
<b>RoHS Compliant</b>	✓	✓	✓
<b>Halogen-Free</b>	✓	✓	✓
<b>Drawing Number</b>	78-5100-2412-4	78-5100-2463-7	78-5100-2462 -9
<b>Application Examples (cable is not limited to these)</b>	SAS/SATA internal, other 4-pair/8-pair applications requiring sidebands	SAS implemented on 68-position internal assemblies. Can be doubled up or matched with other configurations	PCIe implemented on 36-position assemblies

# 3M™ Twin Axial Cable (cont.)

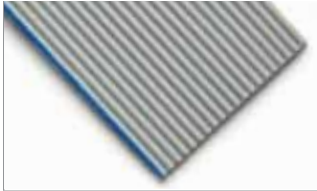
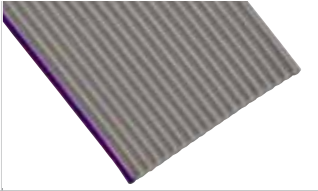
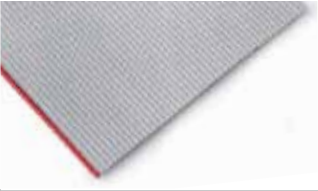
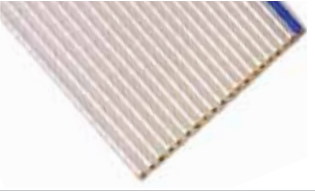
			
Twin Axial Cable	Twin Axial Cable	Twin Axial Cable	Twin Axial Cable
			
8802	8802	8802	8803
<ul style="list-style-type: none"> <li>– Flat, foldable</li> <li>– High bandwidth</li> <li>– Mass processing and termination</li> </ul>	<ul style="list-style-type: none"> <li>– Flat, foldable</li> <li>– High bandwidth</li> <li>– Mass processing and termination</li> </ul>	<ul style="list-style-type: none"> <li>– Flat, foldable</li> <li>– High bandwidth</li> <li>– Mass processing and termination</li> </ul>	<ul style="list-style-type: none"> <li>– Flat, foldable</li> <li>– High bandwidth</li> <li>– Mass processing and termination</li> <li>– Cable can be split into individual pairs</li> </ul>
30 AWG	30 AWG	30 AWG	30 AWG
Cu	Cu	Cu	Cu
Silver or Tin	Silver or Tin	Silver or Tin	Silver or Tin
8	4	11	8
Polyolefin	Polyolefin	Polyolefin	Polyolefin
Natural	Natural	Natural	Natural
Internal: Al	Internal: Al	Internal: Al	Internal: Al
100 ohm	100 ohm	100 ohm	100 ohm
150 V	150 V	150 V	150 V
-20	-20	-20	-20
80	80	80	80
AWM21008 E42789	AWM21008 E42789	AWM21008 E42789	AWM21008 E42789
Horizontal	Horizontal	Horizontal	Horizontal
✓	✓	✓	✓
✓	✓	✓	✓
78-5100-2413-2	78-5100-2401-7	78-5100-2400-9	78-5100-2414-0
SAS/SATA internal assemblies not requiring sidebands. Other 4/8-pair internal assemblies	HD SAS internal or other 2-pair configurations	HD SAS SFF 8643	SAS and/or SATA fanout assemblies. Cable can be split into individual pairs

## 3M™ Flat Ribbon Cable .025" - .033"



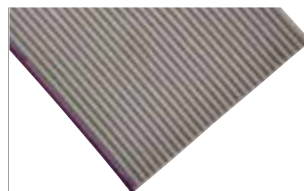
Cable Type/Description	Round Conductor Flat Cable	Round Conductor Flat Cable	Round Conductor Flat Cable
<b>Pitch / Centerline in. (mm)</b>	<b>.025 (0.635)</b>	<b>.025 (0.635)</b>	<b>.025 (0.635)</b>
<b>3M Cable Series</b>	<b>3754</b>	<b>3447</b>	<b>3756</b>
<b>Features</b>	<ul style="list-style-type: none"> <li>– The “basic stranded cable” for 0.050” [1.27 mm] IDC connectors</li> </ul>	<ul style="list-style-type: none"> <li>– 0.025” [6.35 mm] wire spacing designed for mass termination</li> <li>– Zippable</li> </ul>	<ul style="list-style-type: none"> <li>– Meets SCSI-3 impedance requirements</li> </ul>
<b>Conductor Size</b>	30 AWG	30 AWG	30 AWG
<b>Conductor Material</b>	Tinned Copper	Tinned Copper	Tinned Copper
<b>Conductor Stranding</b>	7 x 0.102 (7x38)	Solid	7 x 0.102 (7x38)
<b>Conductor Quantity</b>	20 to 100	20 to 100	20 to 100
<b>Primary Insulation</b>	PVC	PVC	TPE
<b>Primary Color</b>	Gray	Gray	Gray
<b>Jacket Insulation</b>	Not Applicable	Not Applicable	Not Applicable
<b>Jacket Color</b>	Not Applicable	Not Applicable	Not Applicable
<b>Shield</b>	Not Applicable	Not Applicable	Not Applicable
<b>Voltage Rating USA / EU [V]</b>	30 / <50	30 / <50	150 / <50
<b>Temperature Min. [°C]</b>	-20	-20	-40
<b>Temperature Max. [°C]</b>	+105	+105	+105
<b>UL Style Number/File Number</b>	20596/E42769	20596/E42769	20297/E42769
<b>UL Recognition / Listing</b>	✓ / -	✓ / -	✓ / -
<b>Flammability UL/CUL (Optional)</b>	VW-1 / FT1	VW-1	Horizontal / FT2 (Yes)
<b>RoHS Compliant</b>	✓	✓	✓
<b>Drawing Number</b>	TS-0875	TS-0830	TS-0508

## 3M™ Flat Ribbon Cable .025" - .033" Pitch (cont.)

			
Round Conductor Flat Cable	Round Conductor Flat Cable	Round Conductor Flat Cable	Round Conductor Flat Cable
<b>.025 (0.635)</b>	<b>.025 (0.635)</b>	<b>.033 (0.838)</b>	<b>.025 (0.635)</b>
<b>3749</b>	<b>HF447</b>	<b>3849</b>	<b>3609</b>
<ul style="list-style-type: none"> <li>– The “basic solid cable” for 0.050” [1.27 mm] IDC connectors</li> <li>– Meets SCSI-3 Fast-20 impedance requirements</li> <li>– Zippable</li> </ul>	<ul style="list-style-type: none"> <li>– Low Smoke Zero Halogen (LSZH) Insulation*</li> <li>– Broad operating temperature range from -40°C to 105°C</li> <li>– 30 AWG wire on .025 inch centers permits mass termination to broad line of IDC connectors</li> <li>– Zippable</li> </ul>	<ul style="list-style-type: none"> <li>– 3 row DIN connector compatible</li> <li>– Zippable</li> </ul>	<ul style="list-style-type: none"> <li>– Excellent abrasion and chemical resistance</li> <li>– Excellent mechanical durability</li> <li>– For extreme temperature req.</li> </ul>
30 AWG	30 AWG	30 AWG	30 AWG
Tinned Copper	Tinned Copper	Tinned Copper	Silver Plated Copper
Solid	Solid	7 x 0.102 (7 x 38)	7 x 0.102 (7 x 38)
20 to 100	20 to 100	96	20 to 100
TPE	PO	PVC	FEP
Gray	Dark Gray	Gray	Opaque White
Not Applicable	Not Applicable	Not Applicable	Not Applicable
Not Applicable	Not Applicable	Not Applicable	Not Applicable
150 / <50	Not Applicable	Not Applicable	Not Applicable
30 / <50	30 / <50	300 / <50	150 / <50
-40	-40	-20	-55
+105	+105	+105	+150
20297/E42769		2651/E42769	20726/E42769
✓ / -		✓ / -	✓ / -
Horizontal / FT2 (Yes)		VW-1 / FT1 (Yes)	VW-1 / (No)
✓	✓	✓	✓
TS-0068	TS-2343	TS-0573	TS-0654

## 3M™ Flat Ribbon Cable .025" - .033" Pitch (cont.)

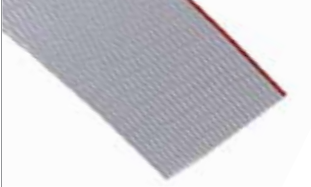
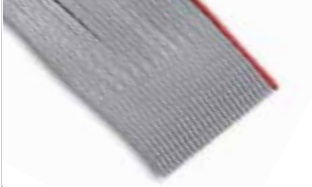
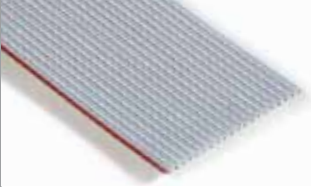

## 3M™ Flat Ribbon Cable 1 mm Pitch



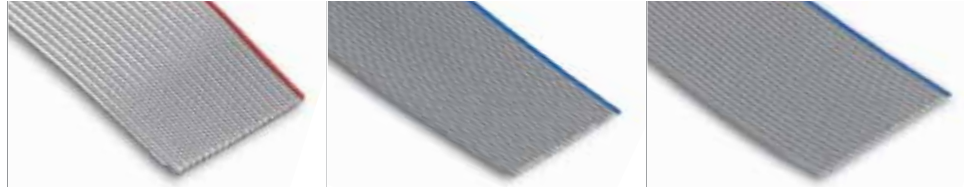
Cable Type/Description	Round Conductor Flat Cable	Round Conductor Flat Cable	Round Conductor Flat Cable
<b>Pitch / Centerline in. (mm)</b>	<b>.025 (0.635)</b>	<b>.039 (1.0)</b>	<b>.039 (1.0)</b>
<b>3M Cable Series</b>	<b>3604</b>	<b>3625</b>	<b>HF625</b>
<b>Features</b>	<ul style="list-style-type: none"> <li>– Excellent abrasion and chemical resistance</li> <li>– Excellent mechanical durability</li> <li>– For extreme temperature req.</li> </ul>	<ul style="list-style-type: none"> <li>– Suitable for .079" [2 mm] IDC Connectors</li> <li>– Zippable</li> </ul>	<ul style="list-style-type: none"> <li>– Low Smoke Zero Halogen (LSZH) Insulation*</li> <li>– Broad operating temperature range from -40°C to 105°C</li> <li>– 28 AWG stranded conductors on 1 mm pitch permits mass terminations to a broad line of metric IDC connectors</li> <li>– Zippable</li> </ul>
<b>Conductor Size</b>	30 AWG	28 AWG	28 AWG
<b>Conductor Material</b>	Silver Plated Copper	Tinned Copper	Tinned Copper
<b>Conductor Stranding</b>	Solid	7 x 0.127 (7 x 36)	7 x 0.127 (7 x 36)
<b>Conductor Quantity</b>	20 to 100	6 to 50	6 to 50
<b>Primary Insulation</b>	FEP	PVC	PO
<b>Primary Color</b>	Opaque White	Gray	Dark Gray
<b>Jacket Insulation</b>	Not Applicable	Not Applicable	Not Applicable
<b>Jacket Color</b>	Not Applicable	Not Applicable	Not Applicable
<b>Shield</b>	Not Applicable	Not Applicable	Not Applicable
<b>Voltage Rating USA / EU [V]</b>	150 / <50	300 / <50	300 / 150
<b>Temperature Min. [°C]</b>	-55	-20	-40
<b>Temperature Max. [°C]</b>	+150	+105	+105
<b>UL Style Number/File Number</b>	20726/E42769	2651/E42769	
<b>UL Recognition / Listing</b>	✓ / -	✓ / -	
<b>Flammability UL/CUL (Optional)</b>	VW-1 / (No)	VW-1 / FT1 (Yes)	Horizontal
<b>RoHS Compliant</b>	✓	✓	✓
<b>Drawing Number</b>	TS-0654	TS-0452	TS-2338



# 3M™ Flat Ribbon Cable .050" Pitch

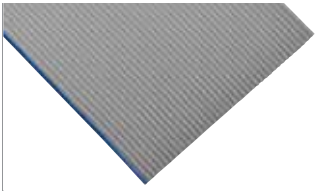
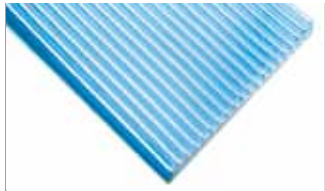
			
Round Conductor Flat Cable	Round Conductor Flat Cable	Round Conductor Flat Cable, Medium Flex Life	Round Conductor Flat Cable, High Flex Life
.050 (1.27)	.050 (1.27)	.050 (1.27)	.050 (1.27)
3365	3667	3539	3319
<ul style="list-style-type: none"> <li>– The “basic stranded cable” for .100” [2.54 mm] IDC connectors</li> <li>– Zippable</li> </ul>	<ul style="list-style-type: none"> <li>– Split conductor sections allow for easier routing</li> <li>– Split/bond repeat of 2.4” [61 cm]</li> <li>– Custom constructions available</li> <li>– Zippable</li> </ul>	<ul style="list-style-type: none"> <li>– 10 million flex cycles at 0.87” [22 mm] bended radius</li> <li>– Zippable</li> </ul>	<ul style="list-style-type: none"> <li>– 100 million flex cycles at 0.87” [22 mm] bended radius</li> <li>– Zippable</li> </ul>
28 AWG	28 AWG	28 AWG	28 AWG
Tinned Copper	Tinned Copper	Tinned Copper	Silver Plated Copper Alloy
7 x 0.127 (7 x 36)	7 x 0.127 (7 x 36)	19 x 0.079 (19 x 40)	19 x 0.079 (19 x 40)
6 to 64	10 to 64	9 to 64	6 to 64
PVC	PVC	PVC	PVC
Gray (Optional Black)	Gray	Gray (Optional Black)	Black
Not Applicable	Not Applicable	Not Applicable	Not Applicable
Not Applicable	Not Applicable	Not Applicable	Not Applicable
Not Applicable	Not Applicable	Not Applicable	Not Applicable
300 / <50	300 / <50	300 / <50	300 / <50
-20	-20	-20	-20
+105	+105	+105	+105
2651/E42769	2651/E42769	2651/E42769	2651/E42769
✓ / -	✓ / -	✓ / -	✓ / -
VW-1 / FT1 (Yes)	VW-1 / FT1 (Yes)	VW-1 / FT1 (Yes)	VW-1 / FT1 (Yes)
✓	✓	✓	✓
TS-1163	TS-0247	TS-0058	TS-0059

## 3M™ Flat Ribbon Cable .050" Pitch (cont.)

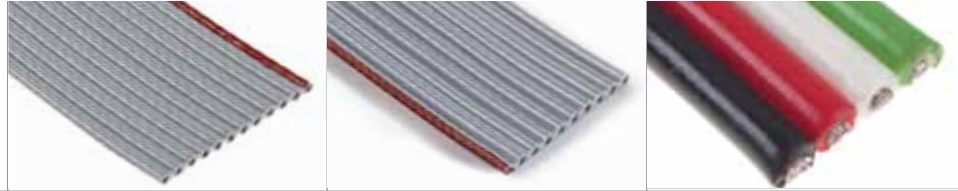


Cable Type/Description	Round Conductor Flat Cable	Round Conductor Flat Cable	Round Conductor Flat Cable
Pitch / Centerline in. (mm)	.050 (1.27)	.050 (1.27)	.050 (1.27)
3M Cable Series	3801	3355	3770
Features	<ul style="list-style-type: none"> <li>– For higher current applications</li> <li>– Zippable</li> </ul>	<ul style="list-style-type: none"> <li>– Extended temperature range</li> <li>– Zippable</li> </ul>	<ul style="list-style-type: none"> <li>– For higher current applications</li> <li>– Extended temperature range</li> <li>– Zippable</li> </ul>
Conductor Size	26 AWG	28 AWG	26 AWG
Conductor Material	Tinned Copper	Tinned Copper	Tinned Copper
Conductor Stranding	7 x 0.160 (7 x 34)	7 x 0.127 (7 x 36)	7 x 0.160 (7 x 34)
Conductor Quantity	9 to 64	9 to 64	9 to 64
Primary Insulation	PVC	TPE	TPE
Primary Color	Gray (Optional Black)	Gray	Gray
Jacket Insulation	Not Applicable	Not Applicable	Not Applicable
Jacket Color	Not Applicable	Not Applicable	Not Applicable
Shield	Not Applicable	Not Applicable	Not Applicable
Voltage Rating USA / EU [V]	300 / <50	300 / <50	300 / <50
Temperature Min. [°C]	-20	-40	-40
Temperature Max. [°C]	+105	+105	+105
UL Style Number/File Number	2651/E42769	20297/E42769	20297/E42769
UL Recognition / Listing	✓ / -	✓ / -	✓ / -
Flammability UL/CUL (Optional)	VW-1 / FT1 (Yes)	Horizontal / (No)	Horizontal / (No)
RoHS Compliant	✓	✓	✓
Drawing Number	TS-0063	TS-0317	TS-0342

# 3M™ Flat Ribbon Cable .050" Pitch (cont.)


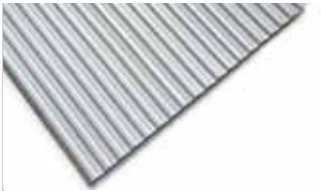
	<b>COMING SOON!</b> Contact 3M	
<b>Round Conductor Flat Cable</b>	<b>Round Conductor Flat Cable</b>	<b>Round Conductor Flat Cable</b>
<b>.050 (1.27)</b>	<b>.050 (1.27)</b>	<b>.050 (1.27)</b>
<b>HF365</b>	<b>HF801</b>	<b>3601</b>
<ul style="list-style-type: none"> <li>- Low Smoke Zero Halogen (LSZH) Insulation*</li> <li>- Broad operating temperature range from -40°C to 105°C</li> <li>- 28 AWG wire on .050 inch wire spacing permits mass termination to a broad line of IDC connectors</li> <li>- Zippable</li> </ul>	<ul style="list-style-type: none"> <li>- Low Smoke Zero Halogen (LSZH) Insulation*</li> <li>- Broad operating temperature range from -40°C to 105°C</li> <li>- 26 AWG wire allows for higher power levels</li> <li>- Stranded wire provides flexibility and extended product life</li> <li>- .050 inch centers permit mass termination to a broad line of IDC connectors</li> <li>- Zippable</li> </ul>	<ul style="list-style-type: none"> <li>- Excellent abrasion and chemical resistance</li> <li>- Excellent mechanical durability</li> <li>- For extreme temperature required</li> </ul>
28 AWG	26 AWG	28 AWG
Tinned Copper	Tinned Copper	Silver Plated Copper
7 x 0.127 (7 x 36)	7 x 0.160 (7 x 34)	7 x 0.127 (7 x 36)
6 to 64	9 to 64	10 to 60
P0	P0	FEP
Dark Gray	Dark Gray	Blue
Not Applicable	Not Applicable	Not Applicable
Not Applicable	Not Applicable	Not Applicable
Not Applicable	Not Applicable	Not Applicable
300 / 150	300 / 150	300 / <50
-40	-40	-55
+105	+105	+200
21682/E42769	21682/E42769	20424/E42769
		✓ / -
Horizontal / (No)	Horizontal	VW-1 / (No)
✓	✓	✓
TS-2334	TS-2340	TS-0553

# 3M™ Flat Ribbon Cable .100"-.156" Pitch



Cable Type/Description	Round Conductor Flat Cable	Round Conductor Flat Cable	Round Conductor Flat Cable for Link Connectors
<b>Pitch / Centerline in. (mm)</b>	<b>.100 (2.54)</b>	<b>.100 (2.54)</b>	<b>.039 (1.0)</b>
<b>3M Cable Series</b>	<b>8125</b>	<b>8124</b>	<b>79100-075-4F1</b>
<b>Features</b>	<ul style="list-style-type: none"> <li>– For higher current applications</li> <li>– Compatible with CHG .100" [2.54 mm] IDC sockets</li> <li>– Zippable</li> </ul>	<ul style="list-style-type: none"> <li>– For higher current applications</li> <li>– Compatible with CHG .100" [2.54 mm] IDC sockets</li> <li>– Zippable</li> </ul>	<ul style="list-style-type: none"> <li>– Designed for factory automation applications</li> <li>– Recommended for use with 3M™ Link Connectors</li> <li>– 19 AWG [0.75 mm<sup>2</sup>] on 0.100" [2.54 mm] centers permits IDC termination</li> </ul>
<b>Conductor Size</b>	24 AWG	22 AWG	19 AWG
<b>Conductor Material</b>	Tinned Copper	Tinned Copper	Tinned Stranded Copper
<b>Conductor Stranding</b>	7 x 0.203 (7 x 32)	7 x 0.254 (7 x 30)	0.75 mm <sup>2</sup> (19 AWG), 30 strands x 0.18 mm (33 AWG)
<b>Conductor Quantity</b>	6 to 30	5 to 40	4
<b>Primary Insulation</b>	PVC	PVC	PVC
<b>Primary Color</b>	Dark Gray	Dark Gray	Black, Red, White, Green
<b>Jacket Insulation</b>	Not Applicable	Not Applicable	Not Applicable
<b>Jacket Color</b>	Not Applicable	Not Applicable	Not Applicable
<b>Shield</b>	Not Applicable	Not Applicable	Not Applicable
<b>Voltage Rating USA / EU [V]</b>	300 / <50	300 / <50	CL2 (UL 13)
<b>Temperature Min. [°C]</b>	-20	-20	–
<b>Temperature Max. [°C]</b>	+105	+105	+90
<b>UL Style Number/File Number</b>	20462/E42769	20462/E42769	/E118773
<b>UL Recognition / Listing</b>	✓ / -	✓ / -	
<b>Flammability UL/CUL (Optional)</b>	VW-1 / FT1 (Yes)	VW-1 / FT1 (Yes)	CL2 (UL 13) / (No)
<b>RoHS Compliant</b>	✓	✓	✓
<b>Drawing Number</b>	TS-0259	TS-0084	TS-2323

# 3M™ Flat Ribbon Cable .100" - .156" Pitch (cont.)



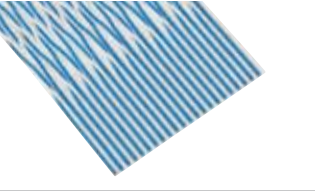
	
Round Conductor Flat Cable for CC-Link/LT	Round Conductor Flat Cable
<b>0.1 (2.54)</b>	<b>.156 (3.96)</b>
<b>79100-075-4FLT</b>	<b>8132</b>
<ul style="list-style-type: none"> <li>- Designed for CC-Link/LT industrial automation field networks</li> <li>- Conforms to CC-Link/LT</li> <li>- 18 AWG [0.75 mm<sup>2</sup>] on 0.100" [2.54 mm] centers permits IDC termination</li> <li>- Recommended for use with 3M™ Link Connectors</li> </ul>	<ul style="list-style-type: none"> <li>- For higher current applications</li> <li>- Zippable</li> </ul>
18 AWG	18 AWG
Tinned Stranded Copper	Tinned Copper
0.75 mm <sup>2</sup> (18 AWG), 35 strands x 0.18 mm (33 AWG)	19 x 30 (19 x 0.254)
4	4 to 24
PVC	PVC
Light Blue with Orange stripe	Dark Gray Wires
Not Applicable	Not Applicable
Not Applicable	Not Applicable
Not Applicable	Not Applicable
CL2 (UL 13)	300 / <50
-	-20
+90	+105
/E118773	20462/E42769
	✓ / -
CL2 (UL 13) / (No)	VW-1 /FT1 (Yes)
✓	✓
TS-2322	TS-0057

# 3M™ Color Coded Flat Cable



Cable Type/Description	Color Coded Flat Cable	Color Coded Flat Cable	Color Coded Flat Cable
<b>Pitch / Centerline in. (mm)</b>	<b>.050 (1.27)</b>	<b>.050 (1.27)</b>	<b>.156 (3.96)</b>
<b>3M Cable Series</b>	<b>3302</b>	<b>3811</b>	<b>3391</b>
<b>Features</b>	<ul style="list-style-type: none"> <li>– Color coded for wire identification</li> <li>– Zippable</li> </ul>	<ul style="list-style-type: none"> <li>– For higher current applications</li> <li>– Color coded for wire identification</li> <li>– Zippable</li> </ul>	<ul style="list-style-type: none"> <li>– For higher current applications</li> <li>– Zippable</li> </ul>
<b>Conductor Size</b>	28 AWG	26 AWG	22 AWG
<b>Conductor Material</b>	Tinned Copper	Tinned Copper	Tinned Copper
<b>Conductor Stranding</b>	7 x 0.127 (7 x 36)	7 x 0.160 (7 x 34)	7 x 0.254 (7 x 30)
<b>Conductor Quantity</b>	9 to 64	9 to 64	4 to 22
<b>Primary Insulation</b>	PVC	PVC	PVC
<b>Primary Color</b>	10 Color Repeat	10 Color Repeat	10 Color Repeat
<b>Jacket Insulation</b>	Not Applicable	Not Applicable	Not Applicable
<b>Jacket Color</b>	Not Applicable	Not Applicable	Not Applicable
<b>Shield</b>	Not Applicable	Not Applicable	Not Applicable
<b>Voltage Rating USA / EU [V]</b>	300 / <50	300 / <50	600 / <50
<b>Temperature Min. [°C]</b>	-20	-20	-20
<b>Temperature Max. [°C]</b>	+105	+105	+80
<b>UL Style Number/File Number</b>	20462/E42769	20462/E42769	20122/E42769
<b>UL Recognition / Listing</b>	✓ / -	✓ / -	✓ / -
<b>Flammability UL/CUL (Optional)</b>	VW-1 / FT1 (Yes)	VW-1 / FT1 (Yes)	VW-1 / FT1 (Yes)
<b>RoHS Compliant</b>	✓	✓	✓
<b>Drawing Number</b>	TS-0123	TS-0122	TS-0079

# 3M™ Twisted Pair Flat Cable

		
Twisted Pair Flat Cable	Twisted Pair Flat Cable	Twisted Pair Flat Cable
<b>.050 (1.27)</b>	<b>.050 (1.27)</b>	<b>.050 (1.27)</b>
<b>1700</b>	<b>3782</b>	<b>HF100</b>
<ul style="list-style-type: none"> <li>– Color-coded for wire identification</li> <li>– Reduced crosstalk</li> <li>– Different lengths of twisted/flat repeat sections available</li> </ul>	<ul style="list-style-type: none"> <li>– Loose twisted pair construction for easier routing</li> <li>– Reduced crosstalk</li> <li>– Bonded flat sections for easy IDC connector termination</li> <li>– Zippable</li> </ul>	<ul style="list-style-type: none"> <li>– Low Smoke Zero Halogen (LSZH) Insulation*</li> <li>– Broad operating temperature range from -40°C to 105°C</li> <li>– 28 AWG stranded wire on .050 inch centers permits mass termination to broad line of IDC connectors</li> </ul>
28 AWG	28 AWG	28 AWG
Tinned Copper	Tinned Copper	Tinned Copper
7 x 0.127 (7 x 36)	7 x 0.127 (7 x 36)	7 x 0.127 (7 x 36)
10 to 64 (5 to 32 Pairs)	10 to 68 (5 to 34 Pairs)	10 to 68 (5 to 32 Pairs)
PVC	PVC	PO
10 Color Repeat	10 Color Repeat + White	Blue/Off-White Pairs
Not Applicable	Not Applicable	Not Applicable
Not Applicable	Not Applicable	Not Applicable
Not Applicable	Not Applicable	Not Applicable
300 / <50	300 / <50	150 / <50
-20	-20	-40
+105	+80	+105
20462/E42769		
✓ / -	- / -	
VW-1 / FT1 (Yes)	VW-1 / (No)	
✓	✓	✓
TS-0115	TS-0999	TS-2344

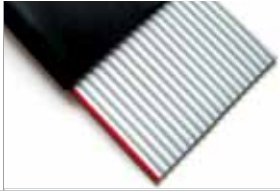

# 3M™ Ground Plane Cable



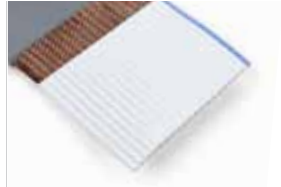
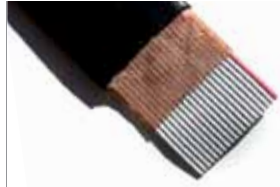
Cable Type/Description	Ground Plane Flat Cable	Ground Plane Flat Cable	Ground Plane Flat Cable
Pitch / Centerline in. (mm)	.050 (1.27)	.050 (1.27)	.050 (1.27)
3M Cable Series	3469	3476	3353
Features	<ul style="list-style-type: none"> <li>– Lower crosstalk than round conductor flat cable</li> <li>– No drain wire</li> </ul>	<ul style="list-style-type: none"> <li>– Lower crosstalk than round conductor flat cable</li> <li>– Conductor No. 1 contacts to the ground plane</li> <li>– One drain wire</li> </ul>	<ul style="list-style-type: none"> <li>– Lower crosstalk than round conductor flat cable</li> <li>– Both edge conductors contact to the ground plane</li> <li>– Two drain wires</li> </ul>
Conductor Size	28 AWG	28 AWG	28 AWG
Conductor Material	Tinned Copper	Tinned Copper	Tinned Copper
Conductor Stranding	7 x 0.127 (7 x 36)	7 x 0.127 (7 x 36)	7 x 0.127 (7 x 36)
Conductor Quantity	10 to 64	10 to 64	26 to 64
Primary Insulation	PVC	PVC	PVC
Primary Color	Gray	Gray	Gray
Jacket Insulation	Not Applicable	Not Applicable	Not Applicable
Jacket Color	Not Applicable	Not Applicable	Not Applicable
Shield	Expanded Copper (one side only)	Expanded Copper (one side only)	Expanded Copper (one side only)
Voltage Rating USA / EU [V]	300 / <50	300 / <50	300 / <50
Temperature Min. [°C]	-20	-20	-20
Temperature Max. [°C]	+105	+105	+105
UL Style Number/File Number	2682/E42769	2682/E42769	2682/E42769
UL Recognition / Listing	✓ / -	✓ / -	✓ / -
Flammability UL/CUL (Optional)	VW-1 / FT1 (Yes)	VW-1 / FT1 (Yes)	VW-1 / FT1 (Yes)
RoHS Compliant	✓	✓	✓
Drawing Number	TS-0077	TS-0071	TS-0078



# 3M™ Jacketed Flat Ribbon Cable

COMING SOON! Contact 3M	COMING SOON! Contact 3M		
Shielded/Jacketed, Flat Cable	Shielded/Jacketed, Flat Cable	Jacketed, Flat Cable	Jacketed, Flat Cable
<b>.039 (1.0)</b>	<b>.039 (1.0)</b>	<b>.050 (1.27)</b>	<b>.050 (1.27)</b>
<b>3855</b>	<b>3844</b>	<b>3603</b>	<b>3602</b>
<ul style="list-style-type: none"> <li>– 28 AWG stranded conductors on 1 mm pitch permits mass terminations to a broad line of metric IDC connectors</li> <li>– 360 degree expanded copper shielding provides 20 db average shielding effectiveness</li> <li>– Primary cable is zippable</li> <li>– UL AWM listed for USA and Canadian markets</li> </ul>	<ul style="list-style-type: none"> <li>– 28 AWG stranded conductors on 1 mm pitch permits mass terminations to a broad line of metric IDC connectors</li> <li>– 360 degree expanded copper shielding provides 20 db average shielding effectiveness</li> <li>– Primary cable is zippable</li> <li>– UL AWM listed for USA and Canadian markets</li> </ul>	<ul style="list-style-type: none"> <li>– CL2 listed for external use</li> <li>– AWM listed for internal use</li> <li>– Primary cable is zippable</li> </ul>	<ul style="list-style-type: none"> <li>– Meets external wiring requirements of National Electrical Code, Article 725 (CL2)</li> <li>– UL listed for US and Canadian markets</li> <li>– 26 AWG stranded wire on .050 inch centers permits mass termination to broad line of IDC connectors</li> <li>– PVC outer jacket prevents damage to cable</li> <li>– Primary cable is zippable</li> </ul>
28 AWG	28 AWG	28 AWG	26 AWG
Tinned Copper	Tinned Copper	Tinned Copper	Tinned Copper
7 x 0.127 (7 x 36)	7 x 0.127 (7 x 36)	7 x 0.127 (7 x 36)	7 x 0.160 (7 x 34)
12 to 50	12 to 50	10 to 64	50
PVC	PVC	PVC	PVC
Gray	Gray	Gray	Gray
PVC	PVC	PVC	PVC
Black	Black	Black	Black
Expanded Copper	Expanded Copper	Not Applicable	Not Applicable
300 / <50	300 / <50	300 / <50	300 / <50
-40	-40	-20	-20
+105	+105	+80 (AVM) 75 (CL2)	+80 (AWM) 75 (CL2)
2651/E42749	2651/E42749	20879/E118773	20879/E118773
		✓ / ✓	
VW-1 / FT1	VW-1 / FT1	N.E.C. 725, CL2/ FT1 (Yes)	N.E.C. 725, CL2/ FT1 (Yes)
✓	✓	✓	✓
TS-2333	TS-2311	TS-0060	TS-1064

## 3M™ Jacketed Flat Ribbon Cable (cont.)


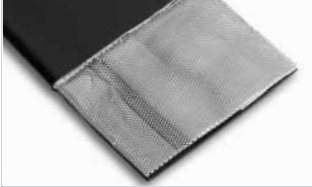




**COMING SOON!**  
Contact 3M

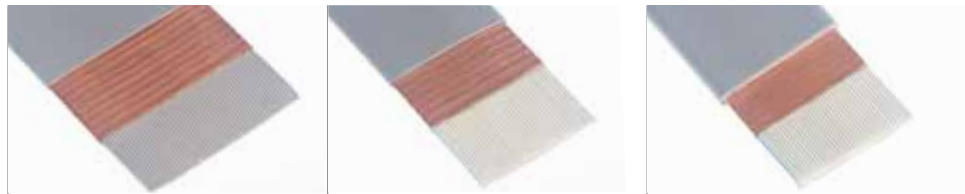
Cable Type/Description	Shielded Jacketed, Flat Cable	Shielded/Jacketed, Flat Cable	Shielded/Jacketed, Flat Cable
Pitch / Centerline in. (mm)	.050 (1.27)	.050 (1.27)	.050 (1.27)
3M Cable Series	3517	HF017	HF517
Features	<ul style="list-style-type: none"> <li>– 20 dB average shielding effectiveness</li> <li>– CL2 listed for external use</li> <li>– AWM listed for internal use</li> <li>– Primary cable is zippable</li> </ul>	<ul style="list-style-type: none"> <li>– Low Smoke Zero Halogen (LSZH) Insulation*</li> <li>– Broad operating temperature range from -40°C to 105°C</li> <li>– 28 AWG stranded wire on .050 inch centers permits mass termination to broad line of IDC connectors</li> <li>– 360 degree expanded copper shielding provides 20 db average shielding effectiveness</li> <li>– Primary cable is zippable</li> </ul>	<ul style="list-style-type: none"> <li>– Low Smoke Zero Halogen (LSZH) Insulation*</li> <li>– 28 AWG stranded wire on .050 inch centers permits mass termination to broad line of IDC connectors</li> <li>– 360 degree expanded copper shielding provides 20 db average shielding effectiveness</li> <li>– Primary cable is zippable</li> </ul>
Conductor Size	28 AWG	28 AWG	28 AWG
Conductor Material	Tinned Copper	Tinned Copper	Tinned Copper
Conductor Stranding	7 x 0.127 (7 x 36)	7 x 0.127 (7 x 36)	7 x 0.127 (7 x 36)
Conductor Quantity	9 to 64	9 to 64	9 to 64
Primary Insulation	PVC	PO	PO
Primary Color	Gray	Dark Gray	Dark Gray
Jacket Insulation	PVC	PO	PO
Jacket Color	Black	Dark Gray	Dark Gray
Shield	Expanded Copper	Expanded Copper	Expanded Copper
Voltage Rating USA / EU [V]	NEC 725, CL2 / <50	300 / <50	300 / 300
Temperature Min. [°C]	-20	-40	-40
Temperature Max. [°C]	+80 (AWM) 75 (CL2)	+105	+105
UL Style Number/File Number	20879/E118773	21683/E42769	21683/E42769
UL Recognition / Listing	✓/✓		
Flammability UL/CUL (Optional)	N.E.C. 725, CL2/ FT1 (Yes)	VW-1/FT1 (Yes)	VW-1
RoHS Compliant	✓	✓	✓
Drawing Number	TS-0069	TS-2345	TS-2354

## 3M™ Jacketed Flat Ribbon Cable (cont.)

## 3M™ Pleated Foil Flat Cable

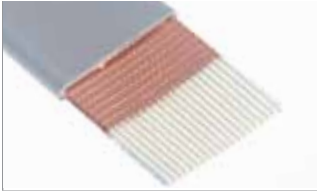
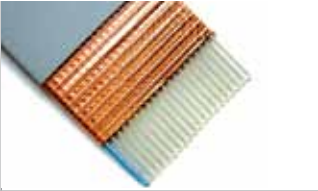
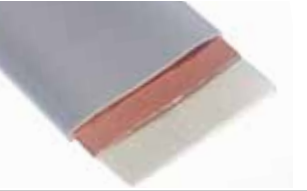
			
Shielded/Jacketed, Twisted Pair Flat Cable	PVC Shielded Jacket	Pleated Foil Shielded Flat Cable	Pleated Foil Shielded Flat Cable
<b>.050 (1.27)</b>	<b>N/A</b>	<b>.25 (0.635)</b>	<b>.25 (0.635)</b>
<b>1785</b>	<b>3617</b>	<b>90111</b>	<b>90101</b>
<ul style="list-style-type: none"> <li>– Reduced crosstalk</li> <li>– Different lengths of split bonded repeat sections available</li> <li>– 20 dB average shielding effectiveness</li> <li>– CL2 listed for external use</li> <li>– AWM listed for internal use</li> </ul>	<ul style="list-style-type: none"> <li>– 3 sizes available</li> <li>– PVC insulation provides excellent protection for external wiring applications</li> <li>– Polyester leader for easy pull-through of cable, expanded copper shield for flexibility and easy termination</li> <li>– 20 dB average shielding effectiveness</li> </ul>	<ul style="list-style-type: none"> <li>– Thick jacket for external applications</li> <li>– Suitable for 75 Ohm unbalanced impedance applications</li> <li>– 35 dB average shielding effectiveness</li> <li>– Very low crosstalk</li> <li>– CL2 listed for external use</li> </ul>	<ul style="list-style-type: none"> <li>– Thick jacket for external applications</li> <li>– Suitable for 50 Ohm unbalanced and 100 Ohm balanced impedance applications</li> <li>– 35 dB average shielding effectiveness</li> <li>– Very low crosstalk</li> <li>– CL2 listed for external use</li> </ul>
28 AWG		30 AWG	30 AWG
Tinned Copper		Tinned Copper	Tinned Copper
7 x 0.127 (7 x 36)		Solid	Solid
20 to 64 (10 to 32 Pairs)		20 to 100	20 to 100
PVC	PVC	TPE	TPE
10 Color Repeat + Tan (ground)	Black	Translucent	Translucent
PVC		PVC	PVC
Black		Gray	Gray
Expanded Copper	Expanded Copper	Pleated Copper Foil	Pleated Copper Foil
150 / <50		N.E.C. 725, CL2 / <50	N.E.C. 725, CL2 / <50
-20	-20		
+80 (AWM) 75 (CL2)	+80	+75	+75
2912/E118773		/E118773	/E118773
✓/✓	N/A	- / ✓	- / ✓
N.E.C. 725, CL2/ FT1 (Yes)	VW-1/FT1	N.E.C. 725, CL2/ FT1 (Yes)	N.E.C. 725, CL2/ FT1 (Yes)
✓	✓	✓	✓
TS-0308	TS-0061	TS-0451	TS-0285

## 3M™ Pleated Foil Flat Cable (cont.)



Cable Type/Description	Pleated Foil Shielded Flat Cable	Pleated Foil Shielded Flat Cable	Pleated Foil Shielded Flat Cable
Pitch / Centerline in. (mm)	.25 (0.635)	.25 (0.635)	.25 (0.635)
3M Cable Series	90202	90201	90211
Features	<ul style="list-style-type: none"> <li>– Thin cover for internal applications</li> <li>– 35 dB average shielding effectiveness</li> <li>– Very low crosstalk</li> <li>– Stranded</li> </ul>	<ul style="list-style-type: none"> <li>– Thin cover for internal applications</li> <li>– Suitable for 50 Ohm unbalanced and 100 Ohm balanced impedance applications</li> <li>– 35 dB average shielding effectiveness</li> <li>– Very low crosstalk</li> </ul>	<ul style="list-style-type: none"> <li>– Thin cover for internal applications</li> <li>– Can be used in applications requiring 75 Ohm unbalanced impedance</li> <li>– 35 dB average shielding effectiveness</li> <li>– Very low crosstalk</li> </ul>
Conductor Size	30 AWG	30 AWG	30 AWG
Conductor Material	Tinned Copper	Tinned Copper	Tinned Copper
Conductor Stranding	7 x 0.102 (7 x 38)	Solid	Solid
Conductor Quantity	20 to 100	20 to 100	20 to 100
Primary Insulation	TPE	TPE	TPE
Primary Color	Gray	Translucent	Translucent
Jacket Insulation	TPE	TPE	TPE
Jacket Color	Gray	Gray	Gray
Shield	Pleated Copper Foil	Pleated Copper Foil	Pleated Copper Foil
Voltage Rating USA / EU [V]	150 / <50	150 / <50	150 / <50
Temperature Min. [°C]	-20	-20	-20
Temperature Max. [°C]	+105	+105	+105
UL Style Number/File Number	20297/E42769	20674/E42769	20674/E42769
UL Recognition / Listing	✓ / -	✓ / -	✓ / -
Flammability UL/CUL (Optional)	N.E.C. 725, VW-1/ FT1 (Yes)	VW-1/FT1 (Yes)	VW-1/FT1 (Yes)
RoHS Compliant	✓	✓	✓
Drawing Number	TS-0730	TS-0402	TS-0598

## 3M™ Pleated Foil Flat Cable (cont.)




		
Pleated Foil Shielded Flat Cable	Pleated Foil Shielded Flat Cable	Pleated Foil Shielded Flat Cable
<b>.050 (1.27)</b>	<b>.050 (1.27)</b>	<b>.25 (0.635)</b>
<b>90104</b>	<b>90204</b>	<b>93101</b>
<ul style="list-style-type: none"> <li>– Thick jacket for external applications</li> <li>– Suitable for 50 Ohm unbalanced and 100 Ohm balanced impedance applications</li> <li>– 35 dB average shielding effectiveness</li> <li>– Very low crosstalk</li> <li>– CL2 listed for external use</li> <li>– Mates with common IDC connectors</li> </ul>	<ul style="list-style-type: none"> <li>– Thin cover for internal applications</li> <li>– Suitable for 50 Ohm unbalanced and 100 Ohm balanced impedance applications</li> <li>– 35 dB average shielding effectiveness</li> <li>– Very low crosstalk</li> <li>– Mates with common IDC connectors</li> </ul>	<ul style="list-style-type: none"> <li>– Thick jacket for external applications</li> <li>– Suitable for 50 Ohm unbalanced and 100 Ohm balanced impedance applications</li> <li>– 35 dB average shielding effectiveness</li> <li>– Very low crosstalk</li> <li>– CL2 listed for external use</li> <li>– Low skew</li> </ul>
28 AWG	28 AWG	30 AWG
Tinned Copper	Tinned Copper	Tinned Copper
7 x 0.127 (7 x 36)	7 x 0.127 (7 x 36)	Solid
15 to 64	15 to 64	50 to 100
TPE	TPE	TPE
Translucent	Translucent	Translucent
PVC	TPE	PVC
Gray	Gray	Gray
Pleated Copper Foil	Pleated Copper Foil	Pleated Copper Foil
Article 725 CL2 / < 50	300 / <50	N.E.C. 725, CL2 / <50
	-20	
+75	+105	+75
/E118773	20674/E42769	
- / ✓	✓ / -	✓ / -
N.E.C. 725, CL2/ FT1 (Yes)	VW-1/FT1 (Yes)	N.E.C. 725, CL2/ FT1 (Yes)
✓	✓	✓
TS-0288	TS-0403	TS-0876

# 3M™ Round Jacketed Flat Cable



Cable Type/Description	Round Jacketed Flat Cable	Round Jacketed Flat Cable	Round Jacketed Flat Cable, High Flex Life
Pitch / Centerline in. (mm)	.25 (0.635)	.050 (1.27)	.050 (1.27)
3M Cable Series	3896	3759	3834
Features	<ul style="list-style-type: none"> <li>– Flat sections permit mass termination on 2.4" [61 mm] centers</li> <li>– Construction allows easy routing</li> <li>– Primary cable is zippable</li> </ul>	<ul style="list-style-type: none"> <li>– Flat sections permit mass termination on 2.4" [61 mm] centers</li> <li>– Construction allows easy routing</li> <li>– CL2 listed for external use</li> <li>– AWM listed for internal use</li> <li>– Primary cable is zippable</li> </ul>	<ul style="list-style-type: none"> <li>– For external applications</li> <li>– Flat sections permit mass termination on 2.4" [61 mm] centers</li> <li>– Construction allows easy routing</li> <li>– CL2 listed for external use</li> <li>– Primary cable is zippable</li> </ul>
Conductor Size	30 AWG	28 AWG	28 AWG
Conductor Material	Tinned Copper	Tinned Copper	Silver Plated Stranded Copper
Conductor Stranding	7 x 0.102 (7 x 38)	7 x 0.127 (7 x 36)	19 x 0.079 (19 x 40)
Conductor Quantity	20 to 100	9 to 64	10 to 64
Primary Insulation	PVC	PVC	PVC
Primary Color	Gray	Gray	Black
Jacket Insulation	PVC	PVC	PVC
Jacket Color	Black	Black	Black
Shield	Not Applicable	Not Applicable	Not Applicable
Voltage Rating USA / EU [V]	30 / <50	300 / <50	N.E.C. 725, CL2 / <50
Temperature Min. [°C]	-20	-20	
Temperature Max. [°C]	+105	+80 (AVM) 75 (CL2)	+75
UL Style Number/File Number	20596/E42769	20267/E118773	/E118773
UL Recognition / Listing	✓ / -	✓ / ✓	- / ✓
Flammability UL/CUL (Optional)	VW-1/FT1 (Yes)	N.E.C. 725, CL2/ FT1 (Yes)	N.E.C. 725, CL2/ FT1 (Yes)
RoHS Compliant	✓	✓	✓
Drawing Number	TS-2173	TS-0070	TS-1006

## 3M™ Round Jacketed Flat Cable (cont.)

		COMING SOON! Contact 3M	
Round Jacketed Flat Cable	Round Jacketed Twisted Pair Flat Cable	Round, Shielded/Jacketed, Flat Cable	Round, Shielded/Jacketed, Flat Cable
<b>.050 (1.27)</b>	<b>.050 (1.27)</b>	<b>.039 (1.0)</b>	<b>.050 (1.27)</b>
<b>3758</b>	<b>3783</b>	<b>HF803</b>	<b>3659</b>
<ul style="list-style-type: none"> <li>– 0.50" [1.27 mm] centers permit mass termination to broad line of IDC connectors</li> <li>– For external applications</li> <li>– Construction allows easy routing</li> <li>– CL2 listed for external use</li> <li>– For higher current applications</li> <li>– Primary cable is zippable</li> </ul>	<ul style="list-style-type: none"> <li>– For external applications</li> <li>– Reduced crosstalk</li> <li>– Flat sections permit mass termination</li> <li>– Loose twisted pair construction for easier routing</li> <li>– Primary cable is zippable</li> </ul>	<ul style="list-style-type: none"> <li>– Low Smoke Zero Halogen (LSZH) Insulation*</li> <li>– Broad operating temperature range from -40°C to 105°C</li> <li>– 28 AWG stranded wire on 1 mm centers permits mass termination to broad line of metric IDC connectors</li> <li>– Round construction permits easier routing</li> <li>– Continuous split/bond repeat allows for mass termination of IDC connectors</li> <li>– Dual shielding provides 35 db average shielding</li> <li>– Primary cable is zippable for branching or discrete terminations</li> </ul>	<ul style="list-style-type: none"> <li>– Flat sections permit mass termination on 2.4" [61 mm] centers</li> <li>– Construction allows easy routing</li> <li>– CL2 listed for external use</li> <li>– AWM listed for internal use</li> <li>– 35 dB average shielding effectiveness</li> <li>– Primary cable is zippable</li> </ul>
26 AWG	28 AWG	28 AWG	28 AWG
Tinned Copper	Tinned Copper	Tinned Copper	Tinned Copper
7 x 0.160 (7 x 34)	7 x 0.127 (7 x 36)	7 x 0.127 (7 x 36)	7 x 0.102 (7 x 36)
9 to 64	10 to 68 (5 to 34 Pairs)	9 to 64	9 to 64
PVC	PVC	PO	PVC
Gray	10 Color Repeat + White	Dark Gray	Gray
PVC	PVC	PO	PVC
Black	Gray	Dark Gray	Black
Not Applicable	Not Applicable	Aluminum Foil + Copper Braid	Aluminum Foil + Copper Braid
300 / <50	300 / <50	150 / 150	300 / <50
-20		-40	-20
+75 (CL2)	+80	+105	+80 (AVM) 75 (CL2)
20267/E118773		21683/E42769	20267/E118773
✓ / ✓	- / -		✓ / ✓
N.E.C. 725, CL2/ FT1 (Yes)	VW-1 (No)	VW-1	N.E.C. 725, CL2/FT1
✓	✓	✓	✓
TS-2200	TS-2249	TS-2349	TS-0083




## 3M™ Round Jacketed Flat Cable (cont.)



Cable Type/Description	Round, Shielded/ Jacketed, Flat Cable	Round, Jacketed, Shielded Twisted Pair Flat Cable	Round, Shielded/ Jacketed, Flat Cable
Pitch / Centerline in. (mm)	.050 (1.27)	.050 (1.27)	.050 (1.27)
3M Cable Series	HF759	3784	HF659
Features	<ul style="list-style-type: none"> <li>– Low Smoke Zero Halogen (LSZH) Insulation*</li> <li>– Broad operating temperature range from -40°C to 105°C</li> <li>– Round construction permits easier routing</li> <li>– 28 AWG wire on .050 inch centers permits mass termination to broad line of IDC connectors</li> <li>– Continuous split/bond repeat allows for mass termination of IDC connectors</li> <li>– Primary cable is zippable for branching or discrete terminations</li> </ul>	<ul style="list-style-type: none"> <li>– For external applications</li> <li>– Reduced crosstalk</li> <li>– Flat sections permit mass termination</li> <li>– Loose twisted pair construction for easier routing</li> <li>– Shielding provides excellent EMI / ESD protection</li> <li>– Primary cable is zippable</li> </ul>	<ul style="list-style-type: none"> <li>– Low Smoke Zero Halogen (LSZH) Insulation*</li> <li>– Broad operating temperature range from -40°C to 105°C</li> <li>– Round construction permits easier routing</li> <li>– 28 AWG wire on .050 inch centers permits mass termination to broad line of IDC connectors</li> <li>– Continuous split/bond repeat allows for mass termination of IDC connectors</li> <li>– Primary cable is zippable</li> </ul>
Conductor Size	28 AWG	28 AWG	28 AWG
Conductor Material		Tinned Copper	Tinned Copper
Conductor Stranding	7 x 0.127 (7 x 36)	7 x 0.127 (7 x 36)	7 x 0.127 (7 x 36)
Conductor Quantity	9 to 64	10 to 68 (5 to 34 Pairs)	9 to 64
Primary Insulation	PO	PVC	PO
Primary Color	Dark Gray	10 color Repeat + White	Dark Gray
Jacket Insulation	PO	PVC	PO
Jacket Color	Dark Gray	Gray	Dark Gray
Shield	Polyester Film	Tinned Copper Braid	Aluminum Foil + Copper Braid
Voltage Rating USA / EU [V]	150 / 150	300 / <50	150 / 150
Temperature Min. [°C]	-40		-40
Temperature Max. [°C]	+105	+80	+105
UL Style Number/File Number	21683/E42769		21683/E42769
UL Recognition / Listing		- / -	
Flammability UL/CUL (Optional)	VW-1 / FT1 (Yes)	VW-1 (No)	VW-1 / FT1 (Yes)
RoHS Compliant	✓	✓	✓
Drawing Number	TS-2336	TS-2250	TS-2335



# 3M™ Round Jacketed Discrete Cable For Factory Automation




		
Round Conductor Round Cable for CC-Link/LT	Round Conductor Round Cable for CC-Link	Round Conductor Round Cable for CC-Link
N/A	N/A	N/A
79100-075-4ZLT	79100-110SBZ-5	79100-110SBH
<ul style="list-style-type: none"> <li>– Designed for factory automation applications</li> <li>– Conforms to CC-Link/LT</li> <li>– Recommended for use with 3M™ Link Connectors</li> <li>– 18 AWG [0.75 mm<sup>2</sup>] conductor wire permits IDC termination</li> </ul>	<ul style="list-style-type: none"> <li>– Designed for factory automation applications</li> <li>– Conforms to CC-Link Ver 1.10</li> <li>– Recommended for use with 3M™ Power Clamp Plug and socket connectors</li> <li>– 0.50 mm<sup>2</sup> [20 AWG] conductor wire permits IDC termination</li> <li>– High flex cable</li> </ul>	<ul style="list-style-type: none"> <li>– Designed for factory automation applications</li> <li>– Conforms to CC-Link Ver. 1.10</li> <li>– Ground/drain wire</li> <li>– Recommended for use with 3M™ Power Clamp Wiremount Sockets 35505-6000-BOM GF and Power Clamp Wiremount Plug, Cable Extension 35805-6000-BOM GF</li> </ul>
18 AWG	20 AWG	20 AWG
Tinned Copper	Stranded Copper	Stranded Copper
0.75 mm <sup>2</sup> (18 AWG), 7 strands x 0.08 mm (22 AWG)	0.50 mm <sup>2</sup> [20 AWG] x 3, 3/33 strands x 0.08 mm	0.50 mm <sup>2</sup> [20 AWG] x 3, 3/33 strands x 0.08 mm
4	3	3
ETFE (Fluorocarbon polymer)	PE (Polyethylene)	PE (Polyethylene)
Black, Red, White, Green	Yellow, White, Blue	Yellow, White, Blue
Oil Resistant Polyvinyl Chloride (PVC)	Oil Resistant Polyvinyl Chloride (PVC)	Oil Resistant Polyvinyl Chloride (PVC)
Black	Dark Brown	Brown
Not Applicable	Not Applicable	Not Applicable
30 V	30 V	30 V
—	—	—
+80	+80	+80
/E42769	/E42769	/E42769
VW-1 /FT1 (Yes)	VW-1 /FT1 (Yes)	VW-1 /FT1 (Yes)
✓	✓	✓
TS-2325	TS-2324	TS-2321

## 3M™ Twisted Pair Round Jacketed Cable



Cable Type/Description	Round, Shielded/Jacketed, Discrete Flat Cable	Round, Shielded, Jacketed, Discrete Wire Cable	Round, Shielded, Jacketed, Discrete Wire Cable
Pitch / Centerline in. (mm)	N/A	N/A	N/A
3M Cable Series	KU-C-KMPVV	3600B	3644X
Features	<ul style="list-style-type: none"> <li>– Twisted pairs</li> <li>– Reduced crosstalk</li> <li>– Very flexible</li> </ul>	<ul style="list-style-type: none"> <li>– Twisted pairs</li> <li>– Dual shielding</li> <li>– 35 dB average shielding effectiveness</li> <li>– Reduced crosstalk</li> <li>– CL2 listed for external use</li> <li>– Wire OD tailored for use with MDR</li> </ul>	<ul style="list-style-type: none"> <li>– Twisted pairs</li> <li>– Dual shielding</li> <li>– 35 dB average shielding effectiveness</li> <li>– Reduced crosstalk</li> <li>– Suitable for 100 Ohm balanced impedance applications</li> <li>– CL2 listed for external use</li> <li>– Wire OD tailored for use with MDR</li> </ul>
Conductor Size	28 AWG	28 AWG	28 AWG
Conductor Material	Tinned Copper	Tinned Copper	Tinned Copper
Conductor Stranding	7 x 0.127 (7 x 36)	7 x 0.127 (7 x 36)	7 x 0.127 (7 x 36)
Conductor Quantity	14 to 100 (7 to 50 Pairs)	14 to 100 (7 to 50 Pairs)	14 to 100 (7 to 50 Pairs)
Primary Insulation	PVC	PVC	PO
Primary Color	Color Coded	Color Coded	Color Coded
Jacket Insulation	PVC	PVC	PVC
Jacket Color	Cream	Beige (Black Optional)	Beige (Black Optional)
Shield	Tinned Copper Braid	Aluminum Foil + Copper Braid	Aluminum Foil + Copper Braid
Voltage Rating USA / EU [V]	30 / <50	N.E.C. 725, CL2/ <50	N.E.C. 725, CL2/ <50
Temperature Min. [°C]	-20		
Temperature Max. [°C]	+60	+75	+75
UL Style Number/File Number		/E118773	/E118773
UL Recognition / Listing	- / -	- / ✓	- / ✓
Flammability UL/CUL (Optional)	VW-1	N.E.C. 725, CL2/ FT1 (Yes)	N.E.C. 725, CL2/ FT1 (Yes)
RoHS Compliant	✓	✓	✓
Drawing Number	TS-2272	TS-0388	TS-0826

## 3M™ Twisted Pair Round Jacketed Cable (cont.)

	<b>COMING SOON! Contact 3M</b>		
Round Shielded Jacketed Discrete Wire Cable	Round Shielded Jacketed Discrete Wire Cable	Round Shielded Jacketed Discrete Wire Cable	Round Shielded Jacketed Discrete Wire Cable
<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>
<b>3647B</b>	<b>HF644</b>	<b>3560</b>	<b>3750</b>
<ul style="list-style-type: none"> <li>– Twisted pairs</li> <li>– Dual shielding</li> <li>– 35 dB average shielding effectiveness</li> <li>– Reduced crosstalk</li> <li>– Suitable for 100 Ohm balanced impedance applications</li> <li>– IEEE 1284 compliant</li> <li>– CL2 listed for external use</li> <li>– Wire OD tailored for use with MDR</li> </ul>	<ul style="list-style-type: none"> <li>– Low Smoke Zero Halogen (LSZH) Insulation*</li> <li>– Stranded wire provides flexible routing</li> <li>– Twisted pair construction reduces crosstalk for balanced drive applications</li> <li>– Dual shielding with aluminum film foil and copper braid provides EMI/ESD protection</li> <li>– Wires are color coded for easy identification</li> </ul>	<ul style="list-style-type: none"> <li>– Twisted pairs</li> <li>– Dual shielding</li> <li>– 35 dB average shielding effectiveness</li> <li>– Reduced crosstalk</li> <li>– For higher current applications</li> <li>– CL2 listed for external use</li> <li>– AWM listed for internal use</li> </ul>	<ul style="list-style-type: none"> <li>– Twisted pairs</li> <li>– Dual shielding</li> <li>– 35 dB average shielding effectiveness</li> <li>– Reduced crosstalk</li> <li>– For higher current applications</li> <li>– Suitable for 50 Ohm unbalanced and 100 Ohm balanced impedance applications</li> <li>– CL2 listed for external use</li> <li>– AWM listed for internal use</li> </ul>
28 AWG	28 AWG	26 AWG	26 AWG
Tinned Copper	Tinned Copper	Tinned Copper	Tinned Copper
7 x 0.127 (7 x 36)	7 x 0.127 (7 x 36)	Solid	7 x 0.160 (7 x 34)
36 (18 Pairs)	14 to 100 (7 to 50 Pairs)	10 to 64 (5 to 32 Pairs)	10 to 64 (5 to 32 Pairs)
PO	PO	PVC	PVC
Color Coded	Dark Gray	Color Coded	Color Coded
PVC	PO	PVC	PVC
Beige	See “Pair Identification” table	Gray	Gray
Aluminum Foil + Copper Braid	Aluminum Foil + Copper Braid	Aluminum Foil + Copper Braid	Aluminum Foil + Copper Braid
N.E.C. 725, CL2 / <50	300 / 150	300 / <50	300 / <50
+75	-40	-20	-20
/E118773	+105	+80 (AWM) 75 (CL2)	+80 (AWM) 75 (CL2)
- / ✓	/E118773	2464/E118773	/E118773
N.E.C. 725, CL2/ FT1 (Yes)	✓ / ✓	✓ / ✓	✓ / ✓
✓	N.E.C. 725, CL2/ FT1 (Yes)	N.E.C. 725, CL2/ FT1 (Yes)	N.E.C. 725, CL2/ FT1 (Yes)
TS-0582	✓	✓	✓
	TS-2355	TS-0672	TS-0072

## Accessories

### 3M™ Flat Ribbon Cable Cutter

The 3M Flat Ribbon Cable Cutter 3382 with toggle lever cuts cables up to 81.5 mm [ 3.2" ] width without conductor deformation. The cutting anvil with wire guide assures a square cut.



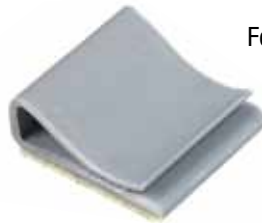
### 3M™ Shielding Tapes

3M offers a variety of different shielding tapes for grounding and shielding. Various copper, aluminum or fabric tapes with conductive adhesives are available.



### 3M™ Cable Clamp

The 3M Cable Clamp 3484 facilitates cable routing by clamping and retaining up to six layers of flat cable. Available with or without adhesive backing.



For more details, download  
tech sheet TS-0260.

### 3M™ High Flex Life Braided Shield

The construction of woven conductors consisting of tinned-copper foil spirally wound over glass fibers allows up to 50 million flex cycles at 3.81 cm [ 1.5" ] radius. Available from 5 mm up to 37 mm [ 0.2" up to 1.5" ].

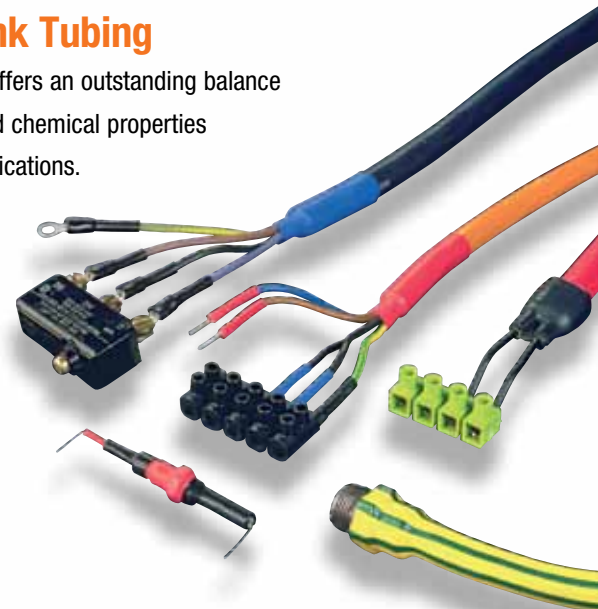


For more details, download tech sheet TS-0713.

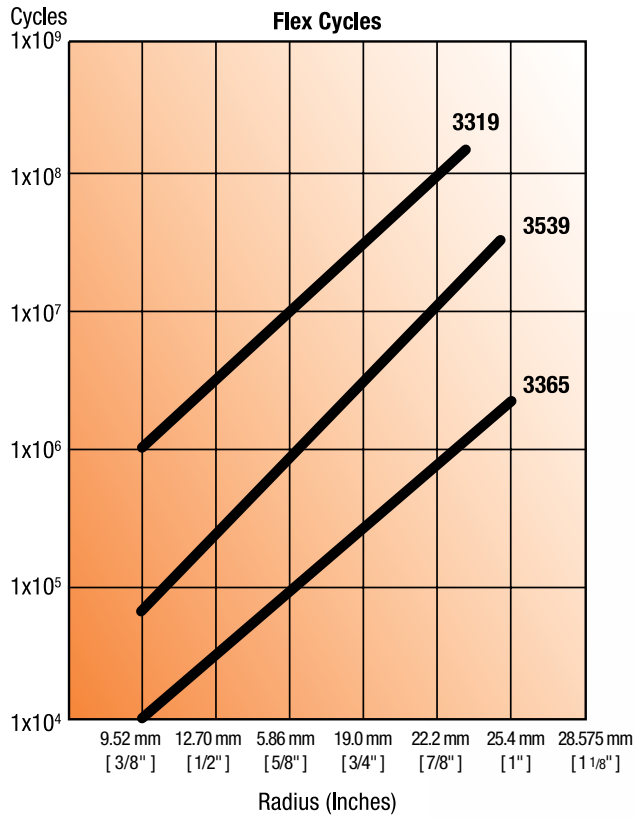
### 3M™ Heat Shrink Tubing

3M Heat Shrink Tubing offers an outstanding balance of electrical, physical and chemical properties for a wide variety of applications.

For more  
details, contact  
your 3M sales  
representative.

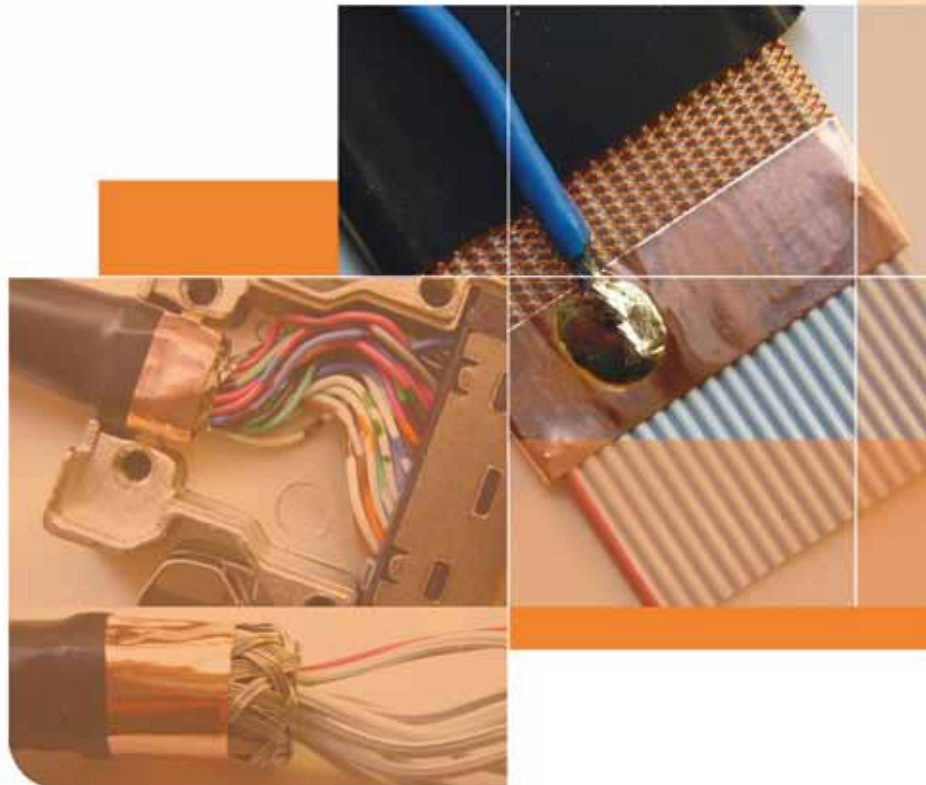
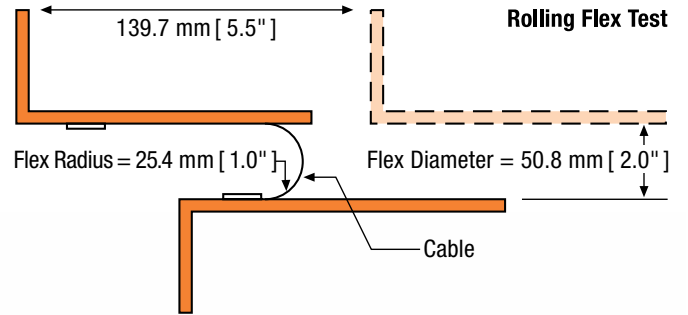


# Cable Flex Cycles

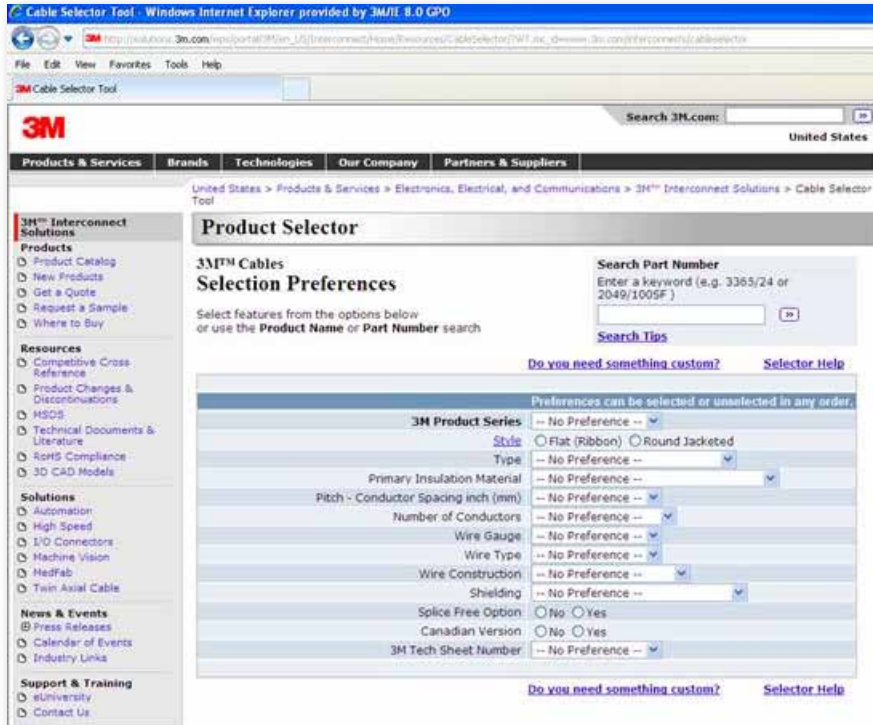


The **"Rolling Flex Test"** flexed the cable 180° around a radius closely resembling typical usage, as represented in the illustration below.

For more details, download tech sheet TS-0732.



# Online Cable Selector Tool



[www.3m.com/interconnects/cableselector](http://www.3m.com/interconnects/cableselector)

Each of the three cables represented in this chart consists of 28 AWG stranded conductors on 1.27 mm [ .050" ] wire spacing.

3M™ Round Conductor Flat Cable 3365 represents conductors that consist of seven strands, in which each of the strands are 36 AWG tinned soft copper.

3M™ Round Conductor Flat Cable, Medium Flex Life 3539 represents conductors that consist of 19 strands, in which each of the strands are 40 AWG tinned soft copper.

3M™ Round Conductor Flat Cable, High Flex Life 3319 represents conductors that consist of 19 strands, in which each of the strands are 40 AWG silver plated high-strength copper alloy.

## AWG Conversion Table

AWG	Individual Strands		Overall Conductor Construction	
	Number	Outside Diameter mm / inch	Outside Diameter mm / inch	Cross Section mm <sup>2</sup> / Circ. Mills
22	1	0.643 / 0.0253	0.64 / 0.0253	0.326 / 640
22	7	0.254 / 0.0100	0.78 / 0.0300	0.355 / 700
22	19	0.160 / 0.0063	0.81 / 0.0320	0.382 / 750
24	1	0.510 / 0.0201	0.51 / 0.0201	0.205 / 404
24	7	0.203 / 0.0080	0.61 / 0.0240	0.227 / 448
24	19	0.127 / 0.0050	0.64 / 0.0250	0.241 / 475
26	1	0.404 / 0.0159	0.40 / 0.0159	0.128 / 253
26	7	0.160 / 0.0063	0.48 / 0.0190	0.141 / 275
26	19	0.102 / 0.0040	0.51 / 0.0200	0.149 / 304
28	1	0.320 / 0.0126	0.32 / 0.0126	0.080 / 124
28	7	0.127 / 0.0050	0.38 / 0.0150	0.089 / 175
28	19	0.080 / 0.0031	0.40 / 0.0160	0.092 / 201
30	1	0.250 / 0.0100	0.25 / 0.0100	0.050 / 100
30	7	0.102 / 0.0040	0.30 / 0.0120	0.057 / 112

## 3M™ Cable Assemblies

Contact your 3M sales representative.



**Notes:**



\*Advantages of LSZH insulation are the low smoke (IEC 61034-2:2005), low toxicity of combustion gases (NF X 70-100-2:2006), reducing the risk to firefighters and reducing the soot and corrosion damage to nearby equipment. "RoHS Compliant 2002/95/EC" means that the product or part ("Product") does not contain any of the substances in excess of the maximum concentration values in EU Directive 2002/95/EC, as amended by Commission Decision 2005/618/EC, unless the substance is in an application that is exempt under EU RoHS. This information represents 3M's knowledge and belief, which may be based in whole or in part on information provided by third party suppliers to 3M. In the event any product is proven not to conform with 3M's Regulatory Information Appendix, then 3M's entire liability and Buyer's exclusive remedy will be in accordance with the Warranty states below.

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