

# 3M™ Mini D Ribbon (MDR) Cable Assembly

.050" High Speed Digital CameraLink™ Cable – Right Angle

14H26-SZ3X-XXX-0LC



- Supports Industrial CameraLink™ standard for camera to frame grabber communications
- Space-saving right angle cable exit
- 11 shielded twin-ax 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 on straight end
- EMI shielded overmolded shell on right-angle end
- See Regulatory Information Appendix (RIA) for chemical compliance information

Date Modified: January 24, 2008

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## Physical

### Connector Contact Plating

Wiping Area: 30 μ" [0.76 μm] Min. Gold (RIA E1 & C1 apply)

### Overmolded Shell:

Color: Black

Material: Polyvinyl Chloride (PVC)

### Shell:

Color: Beige

Material: Polyester Elastomer

### Cable:

Color: Beige

Jacket Material: Polyvinyl Chloride (PVC)

Flammability: AWM VW-1

## Electrical

**Voltage Rating:** 30V

**Current Rating:** 1 A

**Insulation Resistance:**  $> 1 \times 10^8 \Omega$  at 100 V<sub>DC</sub>

**Withstanding Voltage:** 350 V<sub>RMS</sub> for 1 minute

### Individually Shielded Twisted Pairs

**Characteristic Impedance:**  $100 \pm 10 \Omega$

**Conductor Size:** 28 AWG Stranded

**Propagation Velocity:** 1.25 ns/ft [4.1 ns/m]

**Skew (within pair):** 50 ps/meter maximum

**Skew (channel skew per chipset):** 50 ps/meter maximum

## Environmental

**Temperature Rating:** -20 °C to +75 °C

UL File No.: E86982



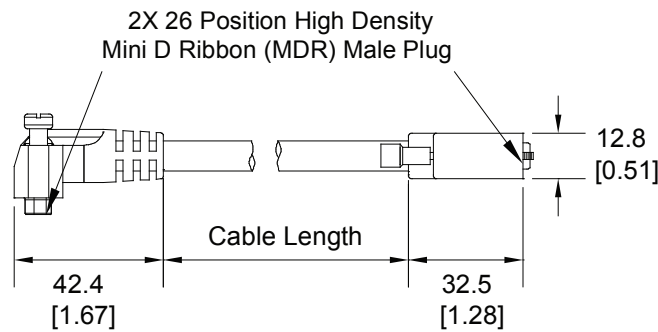
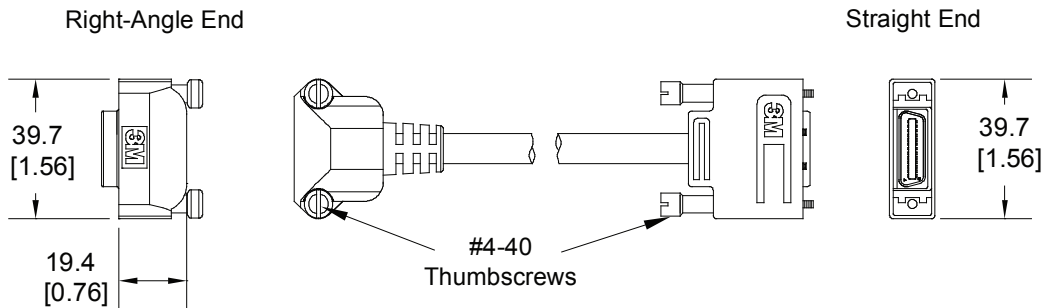
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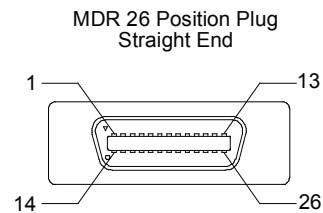
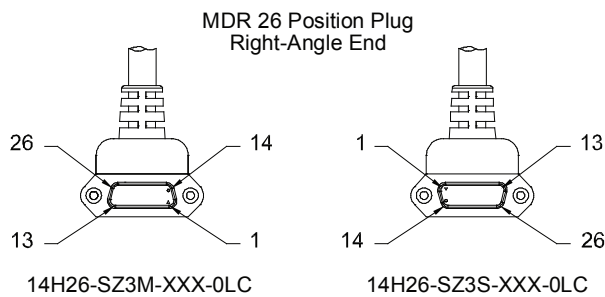
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Cable Length Tolerance is the Larger of +50mm / -0mm or +3% / -0%



mm [inch]		
Tolerance Unless Noted		
	.0	.00
mm	±.1	±.10

[ ] Dimensions for Reference Only

Use 3M™ Jacksocket 3341-31 for mounting receptacle to panel.



## Ordering Information

### 14H26-SZ3X-XXX-0LC

Right Angle Orientation  
 M = Position 1 opposite cable  
 S = Position 1 on cable side

#### Cable Length

050 = 50 cm	300 = 300 cm	600 = 600 cm
100 = 100 cm	350 = 350 cm	700 = 700 cm
150 = 150 cm	400 = 400 cm	800 = 800 cm
200 = 200 cm	450 = 450 cm	900 = 900 cm
250 = 250 cm	500 = 500 cm	A00 = 1000 cm

For lengths greater than 1000 cm refer to Table 2

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# 3M™ Mini D Ribbon (MDR) Cable Assembly

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**Table 1. Cable Assembly and Camera Link Pinouts**

Medium and Full Configurations				Base Configuration		
Two Channel Link Chips				One Channel Link Chip + Camera Control + Serial Communication		
Camera Connector	Right Angle Frame Grabber	Channel Link Signal	Cable Name (Reference only)	Camera Connector	Right Angle Frame Grabber	Channel Link Signal
1	1	inner shield	inner shield	1	1	inner shield
14	14	inner shield	inner shield	14	14	inner shield
2	25	Y0-	Pair 1	2	25	X0-
15	12	Y0+	Pair 1	15	12	X0+
3	24	Y1-	Pair 2-	3	24	X1-
16	11	Y1+	Pair 2+	16	11	X1+
4	23	Y2-	Pair 3-	4	23	X2-
17	10	Y2+	Pair 3+	17	10	X2+
5	22	Yclk-	Pair 4-	5	22	Xclk-
18	9	Yclk+	Pair 4+	18	9	Xclk+
6	21	Y3-	Pair 5-	6	21	X3-
19	8	Y3+	Pair 5+	19	8	X3+
7	20	100 ohm	Pair 6+	7	20	SerTC+
20	7	terminated	Pair 6-	20	7	SerTC-
8	19	Z0-	Pair 7-	8	19	SerTFG-
21	6	Z0+	Pair 7+	21	6	SerTFG+
9	18	Z1-	Pair 8-	9	18	CC1-
22	5	Z1+	Pair 8+	22	5	CC1+
13	17	Z2-	Pair 9-	13	17	CC2+
23	4	Z2+	Pair 9+	23	4	CC2-
11	16	Zclk-	Pair 10-	11	16	CC3-
24	3	Zclk+	Pair 10+	24	3	CC3+
12	15	Z3-	Pair 11-	12	15	CC4+
15	2	Z3+	Pair 11+	15	2	CC4-
13	13	inner shield	inner shield	13	13	inner shield
26	26	inner shield	inner shield	26	26	inner shield

**Notes:**

1. All pairs are individually shielded with aluminum foil.
2. Pair shields are wrapped aluminum out and are in contact with four internal drains (logic ground).
3. Outer braid and foil (chassis ground) are isolated from inner drains (logic ground).
4. Cable assembly compatible with both CameraLink configurations.

**Table 2  
Length Codes**

First 2 Digits	Alpha Code	First 2 Digits	Alpha Code	First 2 Digits	Alpha Code
10	A	17	H	24	R
11	B	18	J	25	S
12	C	19	K	26	T
13	D	20	L	27	V
14	E	21	M	28	W
15	F	22	N	29	Y
16	G	23	P	30	Z

For lengths in excess of 1000 cm substitute the corresponding alpha code for the first 2 digits. Example: the code for 1160 cm is B60.

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# Regulatory Information Appendix

## 3M Electronic Solutions Division/Interconnect

### EUROPE

#### Appendix E1: European Union RoHS

Directive 2002/95/EC, Restriction of the Use of Certain Hazardous Substances in Electrical & Electronic Equipment, as amended by EU Commission Decision 2005/618/EC.

**This product is RoHS Compliant 2005/95/EC.**

“RoHS Compliant 2005/95/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. Unless otherwise stated by 3M in writing, this information represents 3M’s best knowledge and belief based upon 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 stated below.

#### Appendix E2: European Union RoHS

Directive 2002/95/EC, Restriction of the Use of Certain Hazardous Substances in Electrical & Electronic Equipment, as amended by EU Commission Decision 2005/618/EC.

**This product contains lead in the compliant pin area in excess of the maximum concentration value allowed but is compliant by exemption under EU Commission Decision 2005/747/EC.**

“RoHS Compliant 2005/95/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. Unless otherwise stated by 3M in writing, this information represents 3M’s best knowledge and belief based upon 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 stated below.

#### Appendix E3: European Union RoHS

Directive 2002/95/EC, Restriction of the Use of Certain Hazardous Substances in Electrical & Electronic Equipment as amended by Commission Decision 2005/618/EC.

**This product contains lead in the solder tail area in excess of the maximum concentration value allowed.**

Unless otherwise stated by 3M in writing, this information represents 3M’s best knowledge and belief based upon 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 stated below.

#### Appendix E4: European Union RoHS

Directive 2002/95/EC, Restriction of the Use of Certain Hazardous Substances in Electrical & Electronic Equipment, as amended by EU Commission Decision 2005/618/EC.

**This product contains decaBDE in the insulating material in excess of the maximum concentration value allowed but is compliant by exemption under EU Commission Decision 2005/717/EC.**

“RoHS Compliant 2005/95/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. Unless otherwise stated by 3M in writing, this information represents 3M’s best knowledge and belief based upon 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 stated below.

# Appendix E5: European Union RoHS

Directive 2002/95/EC, Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment, as amended by EU Commission Decision 2005/618/EC.

**This product contains lead in excess of the maximum concentration value allowed but is compliant by exemption under Item 6 of the Annex to the Directive.**

“RoHS Compliant 2005/95/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. Unless otherwise stated by 3M in writing, this information represents 3M’s best knowledge and belief based upon 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 stated below.

## CHINA

### Appendix C1: China RoHS



Electronic Industry Standard of the People’s Republic of China, SJ/T11363-2006, Requirements for Concentration Limits for Certain Hazardous Substances in Electronic Information Products.

This symbol, per Marking for the Control of Pollution Caused by Electronic Information Products, SJ/T11364-2006, means that the product or part **does not** contain any of the following substances in excess of the following maximum concentration values in any homogeneous material: (a) 0.1% (by weight) for lead, mercury, hexavalent chromium, polybrominated biphenyls or polybrominated diphenyl ethers; or (b) 0.01% (by weight) for cadmium. Unless otherwise stated by 3M in writing, this information represents 3M’s best knowledge and belief based upon 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 stated below.

### Appendix C2: China RoHS



Electronic Industry Standard of the People’s Republic of China, SJ/T11363-2006, Requirements for Concentration Limits for Certain Hazardous Substances in Electronic Information Products.

This symbol, per Marking for the Control of Pollution Caused by Electronic Information Products, SJ/T11364-2006, means that the product or part **does** contain a substance, as detailed in the chart below, in excess of the following maximum concentration values in any homogeneous material: (a) 0.1% (by weight) for lead, mercury, hexavalent chromium, polybrominated biphenyls or polybrominated diphenyl ethers; or (b) 0.01% (by weight) for cadmium. Unless otherwise stated by 3M in writing, this information represents 3M’s best knowledge and belief based upon information provided by third party suppliers to 3M.

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产品中有毒有害物质或元素的名称及含量 Name and Content of Hazardous Substances or Elements

部件名称 (Part or Component Name)	有毒有害物质或元素 (Hazardous Substances or Elements)					
	铅(Pb)	汞(Hg)	镉(Cd)	六价铬(Cr(VI))	多溴联苯(PBB)	多溴二苯醚(PBDE)
端子镀层(contact plating)	×	○	○	○	○	○
○: 表示该有毒有害物质在该部件所有均质材料中的含量均在SJ/T11363-2006 标准规定的限量要求以下。(Indicates that this hazardous substance contained in all of the homogeneous materials for this part is below the limit requirement in SJ/T11363-2006.) ×: 表示该有毒有害物质至少在该部件的某一均质材料中的含量超出SJ/T11363-2006 标准规定的限量要求。(Indicates that this hazardous substance contained in at least one of the homogeneous materials used for this part is above the limit requirement in SJ/T11363-2006.)						

# Appendix C3: China RoHS

Electronic Industry Standard of the People's Republic of China, SJ/T11363-2006, Requirements for Concentration Limits for Certain Hazardous Substances in Electronic Information Products.

This symbol, per Marking for the Control of Pollution Caused by Electronic Information Products, SJ/T11364-2006, means that the product or part **does** contain a substance, as detailed in the chart below, in excess of the following maximum concentration values in any homogeneous material: (a) 0.1% (by weight) for lead, mercury, hexavalent chromium, polybrominated biphenyls or polybrominated diphenyl ethers; or (b) 0.01% (by weight) for cadmium. Unless otherwise stated by 3M in writing, this information represents 3M's best knowledge and belief based upon information provided by third party suppliers to 3M.

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产品中有毒有害物质或元素的名称及含量 Name and Content of Hazardous Substances or Elements

部件名称 (Part or Component Name)	有毒有害物质或元素 (Hazardous Substances or Elements)					
	铅(Pb)	汞(Hg)	镉(Cd)	六价铬(Cr(VI))	多溴联苯(PBB)	多溴二苯醚(PBDE)
合金(Metal alloy)	×	○	○	○	○	○
<p>○：表示该有毒有害物质在该部件所有均质材料中的含量均在SJ/T11363-2006 标准规定的限量要求以下。(Indicates that this hazardous substance contained in all of the homogeneous materials for this part is below the limit requirement in SJ/T11363-2006.)</p> <p>×：表示该有毒有害物质至少在该部件的某一均质材料中的含量超出SJ/T11363-2006 标准规定的限量要求。(Indicates that this hazardous substance contained in at least one of the homogeneous materials used for this part is above the limit requirement in SJ/T11363-2006.)</p>						

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This product will be free from defects in material and manufacture for a period of one (1) year from the time of purchase. **3M MAKES NO OTHER WARRANTIES INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.** If this product is defective within the warranty period stated above, your exclusive remedy shall be, at 3M's option, to replace or repair the 3M product or refund the purchase price of the 3M product. **Except where prohibited by law, 3M will not be liable for any indirect, special, incidental or consequential loss or damage arising from this 3M product, regardless of the legal theory asserted.**



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