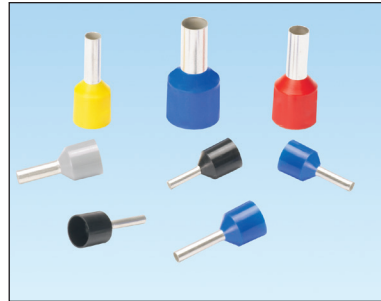


# Ferrules with Sleeves for Short Circuit Protection

## specifications

Ferrules with sleeves for short circuit protection shall be designed with a seamless barrel and with a wider inside diameter sleeve. This wider inside diameter sleeve shall provide a significant air gap between the wire and the outside material to prevent an electrical arc in terminal block and panel building applications. Ferrules with sleeves for short circuit protection shall meet UL 486F, CSA-C22.2 No. 291-14 and DIN 46228 requirements for color and single wire containment. Ferrules with sleeves for short circuit protection shall be available in wire sizes #16 – 6 AWG and be suitable for wires with very thick insulation. Ferrules with sleeves for short circuit protection shall be installed with controlled cycle tools for consistent, reliable, high quality terminations.



## technical information

**Industry standards:** Meets UL 486F, CSA-C22.2 No. 291-14 and DIN 46228 standards\*

**Maximum insulation temperature:** 221°F (105°C)

\* UL 486F for 1/0-20AWG

## key features and benefits

<b>Wider polypropylene sleeve</b>	Delivers a much wider inside diameter to provide a significant air gap between the wire and the outside of the sleeve; to prevent an electrical arc to adjacent material
<b>Flanged wire entry</b>	Polypropylene sleeve forms a guide for easy insertion of wire strands into the crimp barrel to enhance the installation process and improve productivity
<b>Colored sleeves</b>	Allows visual color designation of wire size to aid in identification and quality inspection
<b>Seamless barrel design</b>	A tin-plated copper barrel provides a crimp barrel without any weak points for a consistent and reliable installation
<b>Meets UL 486F, CSA-C22.2 No. 291-14 and DIN 46228 standards*</b>	Ensures ferrules meet dimensional expectations and performance requirements for improved safety and product compatibility

## applications

Ferrules with sleeves for short circuit protection meets UL 486F, CSA -C22.2 No. 291-14 and DIN 46228 standards. Featuring a seamless barrel and a wider inside diameter sleeve, these ferrules ensure superior performance in terminal block and panel building applications requiring the use of wires with very thick insulation.

Ferrules with sleeves for short circuit protection prevent electrical arcs in terminal block and panel building applications, to provide a safe, high quality termination solution that contributes to the overall reliability and productivity of the physical infrastructure.

### Related Products

#### Ferrules with Expanded Sleeves (FSDX)

<b>Sleeve color standard:</b>	DIN
<b>Wire range:</b>	20 – 6 AWG (0.5 – 16.0mm <sup>2</sup> )
<b>Pin length (varies):</b>	0.31" – 0.47" (8.0 – 12.0mm)

#### Ferrules with Sleeves (FSD)

<b>Sleeve color standard:</b>	DIN and French
<b>Wire range:</b>	26 AWG – 300 kcmil (0.14 – 150.0mm <sup>2</sup> )
<b>Pin length (varies):</b>	0.24" – 1.26" (6.0 – 32.0mm)

#### Ferrules with Sleeves for Twin Wires (FTD)

<b>Sleeve color standard:</b>	DIN
<b>Wire range:</b>	22 – 6 AWG (0.5 – 16.0mm <sup>2</sup> )
<b>Pin length (varies):</b>	0.31" – 0.63" (8.0 – 16.0mm)

#### Ferrules without Sleeves (F)

<b>Sleeve color standard:</b>	N/A
<b>Wire range:</b>	22 AWG – 500 kcmil (0.25 – 240.0mm <sup>2</sup> )
<b>Pin length (varies):</b>	0.20" – 1.57" (5.0 – 40.0mm)

#### Ferrules with Sleeves on Strips (FSD)

<b>Sleeve color standard:</b>	DIN
<b>Wire range:</b>	22 – 14 AWG (0.5 – 2.5mm <sup>2</sup> )
<b>Pin length:</b>	0.31" (8.0mm)

#### Ferrules with Sleeves on Reels (FSD)

<b>Sleeve color standard:</b>	DIN
<b>Wire range:</b>	24 – 14 AWG (0.25 – 2.5mm <sup>2</sup> )
<b>Pin length:</b>	0.31" (8.0mm)

# Ferrules with Sleeves for Short Circuit Protection

## ordering information

Part Number	Wire Size		Color Code	Max. Wire Insul. Dia.		Length		Pin Length		Inside Diameter		Wire Strip Length		Tool	Std. Pkg. Qty.
	AWG	mm <sup>2</sup>		In.	mm	In.	mm	In.	mm	In.	mm	In.	mm		
FSDXL78-8-C	16 AWG	1.5	Black	0.27	6.9	0.69	17.5	0.31	8.0	0.07	1.8	15/32	11.9	CT-1002 CT-1123	100
FSDXL78-10-C	16 AWG	1.5	Black	0.27	6.9	0.77	19.5	0.39	10.0	0.07	1.8	17/32	13.5		100
FSDXL80-8-C	14 AWG	2.5	Blue	0.31	7.8	0.69	17.5	0.31	8.0	0.09	2.3	15/32	11.9		100
FSDXL80-12-C	14 AWG	2.5	Blue	0.31	7.8	0.85	21.5	0.47	12.0	0.09	2.3	5/8	15.9		100
FSDXL81-10-C	12 AWG	4.0	Gray	0.31	7.8	0.77	19.5	0.39	10.0	0.11	2.9	17/32	13.5		100
FSDXL82-12-C	10 AWG	6.0	Yellow	0.33	8.3	0.91	23.0	0.47	12.0	0.14	3.6	5/8	15.9		100
FSDXL83-12-C	8 AWG	10.0	Red	0.39	9.8	0.94	24.0	0.47	12.0	0.18	4.6	5/8	15.9	CT-1004 CT-1104 CT-1123	100
FSDXL84-12-C	6 AWG	16.0	Blue	0.47	12.0	1.00	25.5	0.47	12.0	0.24	6.0	5/8	15.9	CT-1004 CT-1104	100

## recommended installation tools



CT-1002



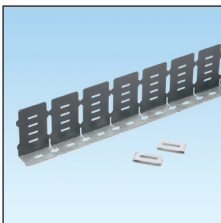
CT-1123

Part Number	Part Description	Std. Pkg. Qty.
-------------	------------------	----------------

### Contour Crimp™ Controlled Cycle Hand Operated Crimping Tool

CT-1002	Controlled cycle crimp tool with trapezoid profile for #26 – 10 AWG (0.14 – 6.0mm <sup>2</sup> ) and #22 – 2 AWG (0.5 – 4.0mm <sup>2</sup> ) insulated twin wire ferrules.	1
CT-1004	Controlled cycle crimp tool with trapezoid profile for #8 – 6 AWG (10.0 – 16.0mm <sup>2</sup> ) and #12 – 10 AWG (4.0 – 6.0mm <sup>2</sup> ) insulated twin wire ferrules.	1
CT-1104	Controlled cycle crimp tool with square profile for #8 – 6 AWG (10.0 – 16.0mm <sup>2</sup> ) insulated and non-insulated ferrules and #12 – 10 AWG (4.0 – 6.0mm <sup>2</sup> ) insulated twin wire ferrules.	1
CT-1123	Controlled cycle crimp tool with square profile for #26 – 8 AWG (0.14 – 10.0mm <sup>2</sup> ) insulated and non-insulated ferrules and #22 – 12 AWG (0.5 – 4.0mm <sup>2</sup> ) insulated twin wire ferrules.	1

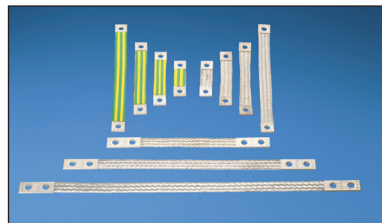
## other control panel products available



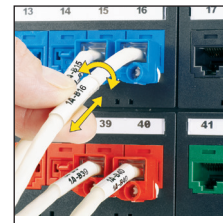
**Panduit® PanelMax™ Noise Shield:**  
Reduces electromagnetic interference (EMI) while saving valuable space.



**Plenum Rated Hook and Loop Cable Ties:**  
Deliver reliability by protecting against over-tensioning high performance cables.



**Braided Bonding Straps:** Reduce the effects of electromagnetic interference (EMI) and promote better electro-mechanical compatibility (EMC).



**Turn-Tell® Labels:** Improve the flexibility of labeling with labels that can be rotated on cable after installation.



**Mini-Com® DIN Rail Mount Adapter:** Provides terminal block housing for all Mini-Com® Modules to allow for superior wire management of network cables in control panels.

### WORLDWIDE SUBSIDIARIES AND SALES OFFICES

PANDUIT CANADA  
Markham, Ontario  
cs-cdn@panduit.com  
Phone: 800.777.3300

PANDUIT EUROPE LTD.  
London, UK  
cs-emea@panduit.com  
Phone: 44.20.8601.7200

PANDUIT SINGAPORE PTE. LTD.  
Republic of Singapore  
cs-ap@panduit.com  
Phone: 65.6305.7575

PANDUIT JAPAN  
Tokyo, Japan  
cs-japan@panduit.com  
Phone: 81.3.6863.6000

PANDUIT LATIN AMERICA  
Guadalajara, Mexico  
cs-la@panduit.com  
Phone: 52.33.3777.6000

PANDUIT AUSTRALIA PTY. LTD.  
Victoria, Australia  
cs-aus@panduit.com  
Phone: 61.3.9794.9020

For a copy of Panduit product warranties, log on to [www.panduit.com/warranty](http://www.panduit.com/warranty)

### For more information

Visit us at [www.panduit.com](http://www.panduit.com)

Contact Customer Service by email: [cs@panduit.com](mailto:cs@panduit.com)  
or by phone: 800.777.3300 and reference TMSPO3

© 2015 Panduit Corp.  
ALL RIGHTS RESERVED.

WW-TMSP03

4/2015