

### **Altech Ferrules**

Since 1984, Altech Corporation has grown to become a leading supplier of automation and industrial control components. Headquartered in Flemington, NJ, Altech has an experienced staff of engineering, manufacturing and sales personnel to provide the highest quality products with superior service. This is the Altech Commitment!

Our well trained technical experts welcome the opportunity to answer your technical questions and provide solutions to your automation and control needs.

Give us a call or visit www.altechcorp.com.



Altech's control components meet diverse national and international standards such as UL, NEC, CSA, IEC, VDE and more. Altech provides superior customer service and delivery through Total Quality Management and Continuous Process Improvement. Altech is ISO 9001 approved. We perform these services with honesty and integrity and are committed to achieve these goals.



## **Introduction & Table of Contents**





### Introduction

UL recognized ferrules are now available for the control circuit of your UL508A panel! A wide variety of single and twin insulated ferrules for all your stranded wire applications. No more loose strands, no more loosening terminations, and no more shorts caused by stray strands. Ferrules are made of tin-plated copper and insulating collar is made of polypropylene plastic.

For over 30 years Altech has been supplying the fullest line of Wire Ferrules available to the industry. This catalog helps to further our service to our customers by providing them an easy way to find the wire ferrule and tool they'll need to do the job.

A complete offering of UL, CSA, CE, DIN Standard and Industry standard Ferrules, listed along with a large variety of UL Recognized hand crimpers and semi-auto crimpers, Altech strives to be our customers strongest supplier.

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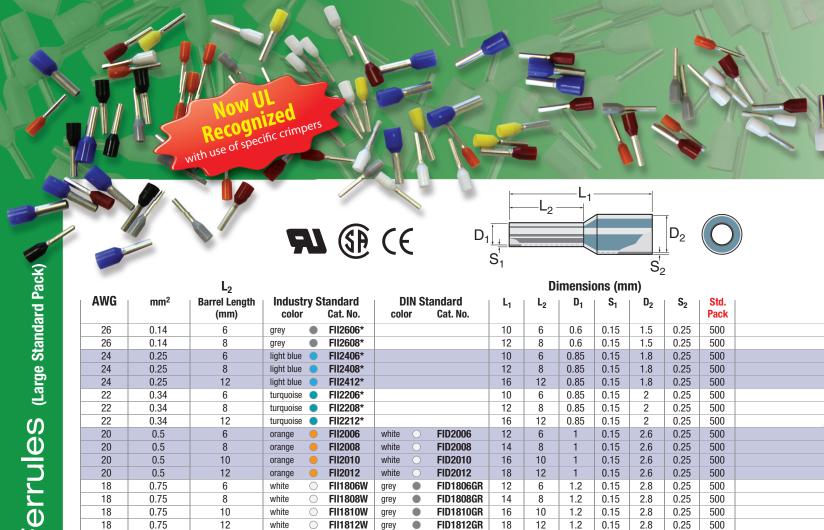
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FII0125 41 25 50 25 FID0125 10.3 0.3 15 0.5 50 30 olive FII0130 blue FID0130 46 30 10.3 0.3 15 0.5 50 \* 26AWG, 24AWG and 22AWG are no longer included in the UL 486F coverage. We hope to include these gauge sizes at a later date. For Smaller Packs see page 6.





Crimpit F 4		Crimpit F 6 gyra	npit Crimpit Crimp gyra F 6 EN F 6 aut		Crimpit F 6 L	Crimpit F 16 / F 16 L	Crimpit F 25 L	Crimpit F 50 L	
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With the use of these crimpers the Ferrules are UL Recognized.





		$L_2$														
AWG	mm <sup>2</sup>	Barrel Length (mm)	Indus cold		Standard Cat. No.	D cold		tandard Cat. No.	L <sub>1</sub>	L <sub>2</sub>	D <sub>1</sub>	S <sub>2</sub>	D <sub>2</sub>	S <sub>2</sub>	Std.* Pack	
26	0.14	6	grey	•	FII2606M*				10	6	0.6	0.15	1.5	0.25	100	
26	0.14	8	grey	•	FII2608M*				12	8	0.6	0.15	1.5	0.25	100	
24	0.25	6	light blue		FII2406M*				10	6	0.85	0.15	1.8	0.25	100	
24	0.25	8	light blue		FII2408M*				12	8	0.85	0.15	1.8	0.25	100	
24	0.25	12	light blue		FII2412M*				16	12	0.85	0.15	1.8	0.25	100	
22	0.34	6	turquoise	•	FII2206M*				10	6	0.85	0.15	2	0.25	100	
22	0.34	8	turquoise	•	FII2208M*				12	8	0.85	0.15	2	0.25	100	
22	0.34	12	turquoise	•	FII2212M*				16	12	0.85	0.15	2	0.25	100	
20	0.5	6	orange	•	FII2006M	white	0	FID2006M	12	6	1	0.15	2.6	0.25	100	
20	0.5	8	orange	•	FII2008M	white	0	FID2008M	14	8	1	0.15	2.6	0.25	100	
20	0.5	10	orange	•	FII2010M	white	0	FID2010M	16	10	1	0.15	2.6	0.25	100	
20	0.5	12	orange	•	FII2012M	white	0	FID2012M	18	12	1	0.15	2.6	0.25	100	
18	0.75	6	white		FII1806WM	grey	•	FID1806GRM	12	6	1.2	0.15	2.8	0.25	100	
18	0.75	8	white		FII1808WM	grey	•	FID1808GRM	14	8	1.2	0.15	2.8	0.25	100	
18	0.75	10	white		FII1810WM	grey	•	FID1810GRM	16	10	1.2	0.15	2.8	0.25	100	
18	0.75	12	white		FII1812WM	grey	•	FID1812GRM	18	12	1.2	0.15	2.8	0.25	100	
18	1	6	yellow	0	FII1806YM	red	•	FID1806RM	12	6	1.4	0.15	3	0.25	100	
18	1	8	yellow	0	FII1808YM	red	•	FID1808RM	14	8	1.4	0.15	3	0.25	100	
18	1	10	yellow	0	FII1810YM	red	•	FID1810RM	16	10	1.4	0.15	3	0.25	100	
18	1	12	yellow	0	FII1812YM	red	•	FID1812RM	18	12	1.4	0.15	3	0.25	100	
16	1.5	6	red	•	FII1606M	black	•	FID1606M	12	6	1.7	0.15	3.5	0.25	100	
16	1.5	8	red	•	FII1608M	black	•	FID1608M	14	8	1.7	0.15	3.5	0.25	100	
16	1.5	10	red	•	FII1610M	black	•	FID1610M	16	10	1.7	0.15	3.5	0.25	100	
16	1.5	12	red	•	FII1612M	black	•	FID1612M	18	12	1.7	0.15	3.5	0.25	100	
14	2.08	8	yellow		FII1408YM				15	8	2.05	0.15	4.2	0.25	100	
14	2.5	6			blue 🌑 👭	D1406M			13	6	2.2	0.15	4.2	0.25	100	
14	2.5	8			blue 🌑 👭	D1408M			15	8	2.2	0.15	4.2	0.25	100	
14	2.5	10			blue 🌑 👭	D1410M			17	10	2.2	0.15	4.2	0.25	100	
14	2.5	12			blue 🔵 FII	D1412M			19	12	2.2	0.15	4.8	0.25	100	
12	4	8			grey 🔵 FII	D1208M			16	8	2.8	0.2	4.8	0.3	50	
12	4	10			grey 🔵 FII	D1210M			18	10	2.8	0.2	4.8	0.3	50	
10	6	12	black	•	FII1012M	yellow	0	FID1012M	20	12	3.5	0.2	6.3	0.3	20	
8	10	12	ivory	0	FII0812M	red	•	FID0812M	22	12	4.5	0.2	7.6	0.4	20	

For Larger Packs see page 4. \* 26AWG, 24AWG and 22AWG are no longer included in the UL 486F coverage. We hope to include these gauge sizes at a later date.





AWG	Crimpit F 4	Crimpit F 6 gyra	Crimpit F 6 EN	Crimpit F 6 auto	Crimpit F 6 L	Crimpit F 16 / F 16 L	Crimpit F 25 L	Crimpit F 50 L
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With the use of these crimpers the Ferrules are UL Recognized.





		L <sub>2</sub>			Dimensions (mm)								
AWG	mm <sup>2</sup>	Barrel Length (mm)	Industry Standard color Cat. No.	DIN Standard color Cat. No.	L <sub>1</sub>	L <sub>2</sub>	D <sub>1</sub>	S <sub>1</sub>	S <sub>2</sub>	A	В	Std. Pack	
2 x 22	2 x 0.34	8	turquoise FTI2208*		15	8	1.2	0.15	0.25	3.5	2	500	
2 x 20	2 x 0.5	8	orange FTI2008	white OFTD2008	14	8	1.4	0.15	0.3	5	3	500	
2 x 20	2 x 0.5	10	orange FTI2010	white OFTD2010	16	10	1.4	0.15	0.3	5	3	500	
2 x 20	2 x 0.5	12	orange FTI2012	white OFTD2012	18	12	1.4	0.15	0.3	5	3	500	
2 x 18	2 x 0.75	8	white FTI1808W	grey FTD1808GR	14	8	1.7	0.15	0.3	5.5	3	500	
2 x 18	2 x 0.75	10	white FTI1810	grey • FTD1810	16	10	1.7	0.15	0.3	5.5	3	500	
2 x 18	2 x 0.75	12	white FTI1812W	grey FTD1812GR	18	12	1.7	0.15	0.3	5.5	3	500	
2 x 18	2 x 0.75	18	white FTI1818W	grey FTD1818GR	24	18	1.7	0.15	0.3	5.5	3	500	
2 x 18	2 x 1	8	yellow FTI1808Y	red FTD1808R	15	8	2	0.15	0.3	5.8	3.2	500	
2 x 18	2 x 1	12	yellow FTI1812Y	red FTD1812R	19	12	2	0.15	0.3	5.8	3.2	500	
2 x 18	2 x 1	14	yellow FTI1814	red • FTD1814	21	14	2	0.15	0.3	5.8	3.2	500	
2 x 18	2 x 1	18	yellow FTI1818Y	red FTD1818R	25	18	2	0.15	0.3	5.8	3.2	500	
2 x 16	2 x 1.5	8	red <b>FTI1608</b>	black • FTD1608	16	8	2.2	0.15	0.3	6.5	3.6	500	
2 x 16	2 x 1.5	12	red <b>FTI1612</b>	black • FTD1612	20	12	2.2	0.15	0.3	6.5	3.6	500	
2 x 16	2 x 1.5	18	red <b>FTI1618</b>	black • FTD1618	26	18	2.2	0.15	0.3	6.6	3.6	100	
2 x 14	2 x 2.5	10	blue • F	TD1410	19	10	2.8	0.15	0.4	8	4.5	500	
2 x 14	2 x 2.5	12	blue • F	TD1412	21	12	2.8	0.15	0.4	8	4.5	100	
2 x 14	2 x 2.5	18	blue • F	TD1418	27	18	2.8	0.15	0.4	8	4.5	100	
2 x 12	2 x 4	12	grey • F	TD1212	22	12	3.5	0.2	0.5	9	5.2	100	
2 x 12	2 x 4	18	grey • F	TD1218	28	18	3.5	0.2	0.5	9	5.2	100	
2 x 10	2 x 6	12	black • FTI1012	yellow FTD1012	23	12	4.5	0.2	0.5	11.4	6.2	100	
2 x 10	2 x 6	18	black • FTI1018	yellow FTD1018	29	18	4.5	0.2	0.5	11.4	6.2	100	
2 x 8	2 x 10	12	ivory FTI0812	red • FTD0812	24	12	5.8	0.2	0.5	13.4	7.6	100	
2 x 8	2 x 10	18	ivory FTI0818	red <b>FTD0818</b>	30	18	5.8	0.2	0.5	13.4	7.6	100	
2 x 6	2 x 16	16	olive FTI0616	blue FTD0616	29	16	8.3	0.3	0.6	17.2	9.5	50	
2 x 6	2 x 16	25	olive FTI0625	blue <b>FTD0625</b>	38	25	8.3	0.3	0.6	17.2	9.5	50	

### Twin Insulated Wire Ferrules (Small Standard Pack)

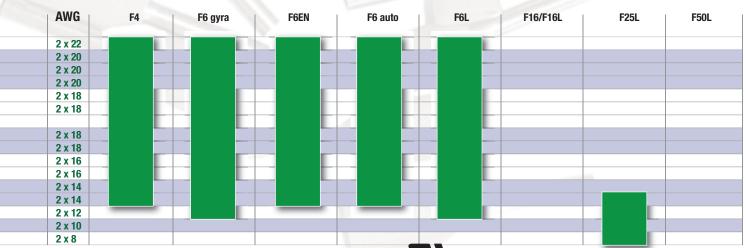
$L_2$							Dimensions (mm)										
AWG	mm <sup>2</sup>	Barrel Length (mm)	Indu colo	stry Standard r Cat. No.	col		Standard Cat. No.	L1	L <sub>2</sub>	D1	S1	S2	A	В	Std. Pack		
2 x 22	2 x 0.34	8	turquois	e <b>FTI2208M</b> *				15	8	1.2	0.15	0.25	3.5	2	100		
2 x 20	2 x 0.5	8	orange	FTI2008M	white	0	FTD2008M	14	8	1.4	0.15	0.3	5	3	100		
2 x 20	2 x 0.5	10	orange	FTI2010M	white	0	FTD2010M	16	10	1.4	0.15	0.3	5	3	100		
2 x 20	2 x 0.5	12	orange	FTI2012M	white	0	FTD2012M	18	12	1.4	0.15	0.3	5	3	100		
2 x 18	2 x 0.75	8	white	○ FTI1808WM	grey		FTD1808GRM	14	8	1.7	0.15	0.3	5.5	3	100		
2 x 18	2 x 0.75	10	white	○ FTI1810M	grey		FTD1810M	16	10	1.7	0.15	0.3	5.5	3	100		
2 x 18	2 x 0.75	12	white	○ FTI1812WM	grey		FTD1812GRM	18	12	1.7	0.15	0.3	5.5	3	100		
2 x 18	2 x 1	8	yellow	<ul><li>FTI1808YM</li></ul>	red	•	FTD1808RM	15	8	2	0.15	0.3	5.8	3.2	100		
2 x 18	2 x 1	12	yellow	<ul><li>FTI1812YM</li></ul>	red	•	FTD1812RM	19	12	2	0.15	0.3	5.8	3.2	100		
2 x 16	2 x 1.5	8	red	FTI1608M	black	•	FTD1608M	16	8	2.2	0.15	0.3	6.5	3.6	100		
2 x 16	2 x 1.5	12	red	FTI1612M	black		FTD1612M	20	12	2.2	0.15	0.3	6.5	3.6	100		
2 x 14	2 x 2.5	10		blue 🌑 FT	D1410N	۷I		19	10	2.8	0.15	0.4	8	4.5	50		
2 x 14	2 x 2.5	12		blue 🌑 FT	D1412N	۷I		21	12	2.8	0.15	0.4	8	4.5	50		
2 x 12	2 x 4	12		grey 🌑 FT	D12121	VI		22	12	3.5	0.2	0.5	9	5.2	20		
2 x 10	2 x 6	12	black	<ul><li>FTI1012M</li></ul>	yellow		FTD1012M	23	12	4.5	0.2	0.5	11.4	6.2	20		
2 x 8	2 x 10	12	ivory	FTI0812M	red	•	FTD0812M	24	12	5.8	0.2	0.5	13.4	7.6	20		

<sup>\* 26</sup>AWG, 24AWG and 22AWG are no longer included in the UL 486F coverage. We hope to include these gauge sizes at a later date.

















### Insulated Wire Ferrules (on reel) for Handtools and Machines

AWG	mm²	Barrel Length (mm)	Indu: color	-	Standard Cat. No.	D colo		Standard Cat. No.	Std. Pack	
22	0.34	8	turquoise		FII2208RE*				5,000	
20	0.5	8	orange	•	FII2008RE	white	0	FID2008RE	5,000	
18	0.75	8	white	$\bigcirc$	FII1808WRE	grey		FID1808GRRE	5,000	
18	1	8	yellow		FII1808YRE	red	•	FID1808RRE	5,000	
16	1.5	8	red	•	FII1608RE	black	•	FID1608RE	5,000	
14	2.5	8			blue • FID1	408RE			3,000	

#### Insulated Wire Ferrules (belt-strips) for handtools and machines

colo	r	Cat. No.	color	Cat. No.	Pack		Crimpit \ F Multi
orange	•	FII2008B	white O	FID2008B	10 x 50		
white	0	FII1808WB	grey 🔵	FID1808GRB	10 x 50		
yellow	0	FII1808YB	red 🔴	FID1808RB	10 x 50		
red	•	FII1608B	black	FID1608B	10 x 50		
		blue  FID	1408B		10 x 50		
	orange white yellow	orange white yellow	orange	orange FII2008B white white FII1808WB grey yellow FII1808YB red	orange         FII2008B         white         FID2008B           white         FII1808WB         grey         FID1808GRB           yellow         FII1808YB         red         FID1808RB           red         FII1608B         black         FID1608B	orange         FII2008B         white         FID2008B         10 x 50           white         FII1808WB         grey         FID1808GRB         10 x 50           yellow         FII1808YB         red         FID1808RB         10 x 50           red         FII1608B         black         FID1608B         10 x 50	orange         FII2008B         white         FID2008B         10 x 50           white         FII1808WB         grey         FID1808GRB         10 x 50           yellow         FII1808YB         red         FID1808RB         10 x 50           red         FII1608B         black         FID1608B         10 x 50

<sup>\* 26</sup>AWG, 24AWG and 22AWG are no longer included in the UL 486F coverage. We hope to include these gauge sizes at a later date.

### **Ferrule Crimping Machines and Multi-function Tool**



For technical and ordering information regarding Ferrule Crimping Machines please contact Altech.





With the use of these crimpers the Ferrules are UL Recognized.









### Crimpit F 4

Crimping tool for ferrules (according to DIN 46228 part 1 and 4) with or without plastic collars. Only one crimping profile for the entire cross-section range.

Ferrules: 0,5 - 4 mm<sup>2</sup> (20 - 12 AWG)

Twin Ferrules: 2 x 0.5 - 2 x 2.5 mm<sup>2</sup> (2 x 20 - 2 x 14 AWG)

Cat. No.: Crimpit F 4

Weight 448 g



### **Crimpit F 6 Auto**

Crimping tool for ferrules (according to DIN 46228 part 1 and 4) with and without plastic collars. Feeding from front.

Ferrules: 0,5 - 6 mm<sup>2</sup> (20 - 10 AWG)

**Twin Ferrules:** 2 x 0.5 – 2 x 2.5 mm<sup>2</sup> (2 x 20 – 2 x 14 AWG)

Cat. No.: Crimpit F 6 Auto

Weight 426 g



### Crimpit F 6 Gyra

Crimping tool for ferrules (according to DIN 46228 part 1 and 4) with and without plastic collars. Rotatable crimp die for feeding from the front or the side

Ferrules: 0,14 - 6 mm<sup>2</sup> (26 - 10 AWG)

Twin Ferrules: 2 x 0.5 – 2 x 4 mm<sup>2</sup> (2 x 20 – 2 x 12 AWG)

Cat. No.: Crimpit F 6 Gyra

Weight 428 g



#### Crimpit F 6 EN

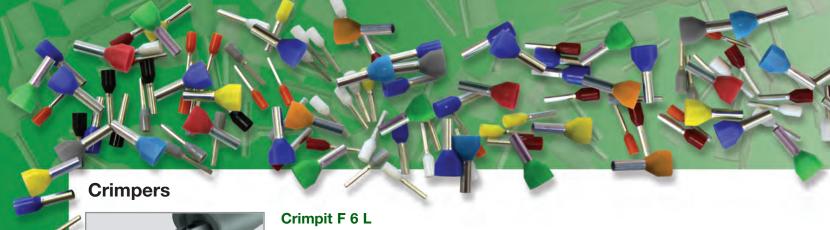
Crimping tool for ferrules (according to DIN 46228 part 1 and 4) with and without plastic collars. Crimp conforms to EN 60947-1. Five crimping profiles for the rated conductor cross-sections. Registration in accordance with VG 95211 (Military designation VG 95236 T 14 A 0001).

Ferrules: 0.25 - 6 mm<sup>2</sup> (24 - 10 AWG)

Twin Ferrules: 2 x 0.75 - 2 x 4 mm<sup>2</sup> (2 x 18 - 2 x 12 AWG)

Cat. No.: Crimpit F 6 EN

Weight 423 g





Crimping tool for ferrules (conforming to DIN 46228 part 1 and 2) with and without insulating collar. Five crimping profiles depending on the wire cross-sections.

Ferrules: 0.5 - 6 mm<sup>2</sup> (20 - 10 AWG)

Twin Ferrules: 2 x 0.75 - 2 x 4 mm<sup>2</sup> (2 x 18 - 2 x 12 AWG)

Cat. No.: Crimpit F 6 L

Weight 335 g



### Crimpit F 16

Crimping tool for ferrules (according to DIN 46228 part 1 and 4) with and without plastic collars. Crimp conforms to EN 60947-1. Three crimping profiles for the rated conductor cross-sections. Registration in accordance with VG 95211 (Military designation VG 95236 T 14 A 0002).

Ferrules: 6 – 16 mm<sup>2</sup> (10 – 6 AWG)

Cat. No.: Crimpit F 16

Weight 418 g



### Crimpit F 16 L

Crimping tool for ferrules (according to DIN 46228 part 1 and 4) with and without plastic collars. Crimp conforms to EN 60947-1. Three crimping profiles for the rated conductor cross-sections.

Ferrules: 6 – 16 mm<sup>2</sup> (10 – 6 AWG)

Cat. No.: Crimpit F 16 L

Weight 380 g



### Crimpit F 25 L

Crimping tool for ferrules (according to DIN 46228 part 1 and 4) as well as for twin ferrules.

Ferrules: 6 - 25 mm<sup>2</sup> (10 - 4 AWG)

**Twin Ferrules:** 2 x 4 – 2 x 10 mm<sup>2</sup> (2 x 12 – 2 x 8 AWG)

Cat. No.: Crimpit F 25 L

Weight 540 g







### Crimpit F 50 L

Crimping tool for ferrules (according to DIN 46228 part 1 and 4) as well as for twin ferrules.

Ferrules: 35 - 50 mm<sup>2</sup> (2 - 1 AWG)

Twin Ferrules: 2 x 16 mm<sup>2</sup> (2 x 6 AWG)

Cat. No.: Crimpit F 50 L

Weight 540 g



### **Crimpit F Multi**

Multi-function tool. Stripping and cutting of wires. Crimping tool for insulated belt-strip ferrules according to DIN 46228.

**Cross-section:** 0.5 – 2,5 mm<sup>2</sup> (20 – 14 AWG)

Ferrules: 0.5 – 2.5 mm<sup>2</sup> (20 – 14 AWG)

Cat. No.: Crimpit F Multi

Weight 260 g



UL Crimper photos are supplied by Zoller & Fröhlich GmbH.

### **Original Industry Standard Ferrules**





Tested According To:

CSA Std C22.2 No. 65-93 CSA Std C22.2 No. 188-M1983 - Splicing Wire and Cable Connectors

ANSI/**UL** Std No. 486A - Wire Connectors and Soldering Lugs for Use with Copper Conductors ANSI/UL Std No. 486C

- Wire Connectors

Cat.

S<sub>1</sub>

**Ferrule Dimensions mm** 

D1

Std.

- Splicing Wire Connectors

Ferrules insure reliable electrical connections when terminating stranded flexible wire in terminal blocks, circuit breakers or other control devices. Insulated ferrules prevent conductor breakage due to bending, wire stress or vibration while facilitating wire insertion into the terminal clamp.

Altech's standard insulated ferrules are color coded by conductor size for convenient identification.

To ensure efficient ferrule crimping, always select the smallest ferrule diameter that fits the wire and use only professional crimping tools.

• Sleeve: polypropylene

• Tube: tin-plated copper

**CRIMPER SELECTOR GUIDE** page 18

AWG	mm <sup>2</sup>	Color	No.	L1	L2	D1	S1	D2	S2	Pack*
24	0.25	Lt. Blue	2620.0	10	6	0.85	0.15	1.8	0.25	500/100
24	0.25	Lt. Blue	2621.0	12	8	0.85	0.15	1.8	0.25	500/100
22	0.34	Turquoise	2622.0	10	6	0.85	0.15	2	0.25	500/100
22	0.34	Turquoise	2623.0	12	8	0.85	0.15	2	0.25	500/100
20	0.5	Orange	2397.0	12	6	1	0.15	2.6	0.25	500/100
20	0.5	Orange	2201.0	14	8	1	0.15	2.6	0.25	500/100
18	0.75	White	2398.0	12	6	1.2	0.15	2.8	0.25	500/100
18	0.75	White	2202.0	14	8	1.2	0.15	2.8	0.25	500/100
18	1	Yellow	2399.0	12	6	1.4	0.15	3	0.25	500/100
18	1	Yellow	2203.0	14	8	1.4	0.15	3	0.25	500/100
16	1.5	Red	2204.0	14	8	1.7	0.15	3.5	0.25	500/100
16	1.5	Red	2400.0	16	10	1.7	0.15	3.5	0.25	500/100
16	1.5	Red	2205.0	24	18	1.7	0.15	3.5	0.25	500/100
14	2.5	Blue	2206.0	14	8	2.2	0.15	4.2	0.25	500/100
14	2.5	Blue	2401.0	18	12	2.2	0.15	4.2	0.25	500/100
14	2.5	Blue	2207.0	24	18	2.2	0.15	4.2	0.25	500/100
12	4	Gray	2208.0	17	10	2.8	0.2	4.8	0.3	500/100
12	4	Gray	2402.0	20	12	2.8	0.2	4.8	0.3	500/100
12	4	Gray	2209.0	26	18	2.8	0.2	4.8	0.3	100
10	6	Black	2210.0	20	12	3.5	0.2	6.3	0.3	100
10	6	Black	2211.0	26	18	3.5	0.2	6.3	0.3	100
8	10	lvory	2212.0	22	12	4.5	0.2	7.6	0.4	100
8	10	Ivory	2213.0	28	18	4.5	0.2	7.6	0.4	100
6	16	Green	2214.0	24	12	5.8	0.2	8.8	0.4	100
6	16	Green	2215.0	28	18	5.8	0.2	8.8	0.4	100
4	25	Brown	2267.0	30	18	7.3	0.2	11.2	0.4	50
4	25	Brown	2272.0	36	22	7.3	0.2	11.2	0.4	50
2	35	Beige	2276.0	30	18	8.3	0.2	12.7	0.4	50
2	35	Beige	2390.0	39	25	8.3	0.2	12.7	0.4	50
1	50	Olive	2500.0	36	20	10.3	0.3	15	0.5	50
2/0	70	Yellow	2786.0	37	20	12.7	0.35	16	0.6	25
3/0	95	Red	2787.0	44	25	14.7	0.35	16	0.6	5
4/0	120	Blue	2788.0	48	27	16.5	0.5	21	0.7	25
250MCM	150	Yellow	2789.0	58	32	18.5	0.5	23.5	0.75	25

<sup>\*</sup> Different standard packs are available as shown. To order the desired standard pack, please use the quantity required as a suffix to the cat. no. Example for 100 standard pack: Cat. No. 2620.0/100





Std.

Pack\*

500/100

500/100

500/100

500/100

500/100

500/100

500/100

500/100

500/100

500/100

500/100

### **Original DIN Standard Ferrules**





**Tested According To:** 

CSA Std C22.2 No. 65-93 CSA Std C22.2 No. 188-M1983 - Splicing Wire and Cable Connectors

ANSI/UL Std No. 486A td No.

- Wire Connectors

mm<sup>2</sup>

0.5

0.5

0.5

0.75

0.75

0.75

0.75

AWG

20

20

20

18

18

18

18

18

18

Cat.

Color

White

White

White

Gray

Gray

Gray

Gray

Red

Red

Red

- Wire Connectors and Soldering Lugs for Use with Copper Conductors

No.

2863.0

2864.0

2865.0

2866.0

2867.0

2868.0

2869.0

2870.0

2871.0

2872.0

2840.0

L1

12

14

16

12

14

16

18

12

14

16

L2

6

10

6

10

12

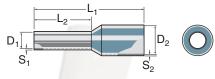
6

8

10

12

- Splicing Wire Connectors



D2

2.6

2.6

2.6

2.8

2.8

2.8

2.8

3

3

**S2** 

0.25

0.25

0.25

0.25

0.25

0.25

0.25

0.25

0.25

0.25

0.25

**Ferrule Dimensions mm** 

S1

0.15

0.15

0.15

0.15

0.15

0.15

0.15

0.15

0.15

0.15

0.15

D1

1

1

1.2

1.2

1.2

1.2

1.4

1.4

1.4

1.4

220072	ANSI/ <b>UL</b> St
electrical co terminating wire in terr	sure reliable connections when g stranded flexible ninal blocks, kers or other rices.
conductor bending, w	
	N standard ferrule pliance with DIN

requirements, making them ideal for export applications. They also have a specified color code convention that differs from the color code used for Altech's industry standard ferrules.

To ensure efficient ferrule crimping, always select the smallest ferrule diameter that fits the wire and use only professional crimping tools.

• Sleeve: polypropylene • Tube: tin plated copper

16	1.5	Black	2841.0	14	8	1.7	0.15	3.5	0.25	500/100
16	1.5	Black	2842.0	16	10	1.7	0.15	3.5	0.25	500/100
16	1.5	Black	2843.0	18	12	1.7	0.15	3.5	0.25	500/100
16	1.5	Black	2844.0	24	18	1.7	0.15	3.5	0.25	500/100
14	2.5	Blue	2845.0	14	8	2.2	0.15	4.2	0.25	500/100
14	2.5	Blue	2846.0	18	12	2.2	0.15	4.2	0.25	500/100
14	2.5	Blue	2847.0	24	8	2.2	0.15	4.2	0.25	500/100
12	4	Gray	2848.0	17	10	2.8	0.2	4.8	0.3	500/100
12	4	Gray	2849.0	20	12	2.8	0.2	4.8	0.3	500/100
12	4	Gray	2850.0	26	18	2.8	0.2	4.8	0.3	100
10	6	Yellow	2851.0	20	12	3.5	0.2	6.3	0.3	100
10	6	Yellow	2852.0	26	18	3.5	0.2	6.3	0.3	100
8	10	Red	2853.0	22	12	4.5	0.2	7.6	0.4	100
8	10	Red	2854.0	28	18	4.5	0.2	7.6	0.4	100
6	16	Blue	2855.0	24	12	5.8	0.2	8.8	0.4	100
6	16	Blue	2856.0	28	18	5.8	0.2	8.8	0.4	100
4	25	Yellow	2857.0	30	18	7.3	0.2	11.2	0.4	50
4	25	Yellow	2858.0	36	22	7.3	0.2	11.2	0.4	50
2	35	Red	2859.0	30	18	8.3	0.2	12.7	0.4	50
2	35	Red	2860.0	39	25	8.3	0.2	12.7	0.4	50
1	50	Blue	2861.0	36	20	10.3	0.3	15	0.5	50

### **CRIMPER SELECTOR GUIDE** page 18



<sup>\*</sup> Different standard packs are available as shown. To order the desired standard pack, please use the quantity required as a suffix to the cat. no. Example for 100 standard pack: Cat. No. 2863.0/100

### **Original Uninsulated Ferrules**







### Tested According To:

ANSI/UL Std No.

CSA Std C22.2 No. 65-93 CSA Std C22.2 No. 188-M1983 ANSI/UL Std No. 486A

- Splicing Wire and Cable Connectors

- Wire Connectors and Soldering Lugs for Use with Copper Conductors

S<sub>1</sub>

- Splicing Wire Connectors

- Wire Connectors



Ferrules insure reliable electrical connections when terminating stranded flexible wire in terminal blocks, circuit breakers or other control devices.

Uninsulated ferrules prevent wire strands from fraying and breaking and are extremely cost effective. Their shorter lengths and uninsulated bodies offer advantages when making terminations in printed circuit board terminal blocks and in other terminal blocks with smaller clamps or narrow widths.

To ensure efficient ferrule crimping, always select the smallest ferrule diameter that fits the wire and use only professional crimping tools. (Please refer to the ordering pages and the Crimper Selector Guide on page 18.)

• Tube: tin plated copper

	AWG	mm <sup>2</sup>	Cat. No.	Barrel Length (A)	Α	Ferrule Dimer	nsions mn S <sub>1</sub>	n C	Std. Pack*
	20	0.5	2216.0	6	6	1	0.15	2.1	1000/100
$\Box$	18	0.75	2217.0	6	6	1.2	0.15	2.3	1000/100
	18	0.75	2218.0	10	10	1.2	0.15	2.3	1000/100
	18	1	2219.0	6	6	1.4	0.15	2.5	1000/100
	18	1	2220.0	10	10	1.4	0.15	2.5	1000/100
	16	1.5	2221.0	7	7	1.7	0.15	2.8	1000/100
	16	1.5	2222.0	10	10	1.7	0.15	2.8	1000/100
	14	2.5	2223.0	7	7	2.2	0.15	3.4	1000/100
	14	2.5	2224.0	12	12	2.2	0.15	3.4	1000/100
	12	4	2225.0	9	9	2.8	0.2	4.0	1000/100
	12	4	2226.0	12	12	2.8	0.2	4.0	1000/100
	10	6	2227.0	12.	12	3.5	0.2	4.7	500/100
	10	6	2388.0	15	15	3.5	0.2	4.7	500/100
	8	10	2228.0	12	12	4.5	0.2	5.8	500/100
	8	10	2389.0	15	15	4.5	0.2	5.8	500/100
	8	10	2229.0	18	18	4.5	0.2	5.8	500/100
	6	16	2391.0	12	12	5.8	0.2	7.5	500/100
	6	16	2392.0	15	15	5.8	0.2	7.5	500/100
	6	16	2393.0	18	18	5.8	0.2	7.5	100
	4	25	2394.0	15	15	7.3	0.2	9.5	500/100
	4	25	2395.0	18	18	7.3	0.2	9.5	100
	2	35	2396.0	18	18	8.3	0.2	11	100
	1	50	2816.0	32	32	10.3	0.3	13	100
	2/0	70	2790.0†	25	25	12.5	0.3	15	100
	3/0	95	2791.0†	32	32	14.5	0.3	17	50
	4/0	120	2792.0†	32	32	17.2	0.5	19	25
	250MCM	150	2793.0†	32	32	19.5	0.5	21	25
	350MCM	185	2815.0†	32	32	21.2	0.5	23.5	25
	500MCM	240	2815.5†	40	40	23.0	0.6	25	25

### **CRIMPER SELECTOR GUIDE** page 18

<sup>\*</sup> Different standard packs are available as shown. To order the desired standard pack, please use the quantity required as a suffix to the cat. no. Example for 100 standard pack: Cat. No. 2216.0/100

<sup>† 2/0, 3/0, 4/0, 250</sup>MCM, 350MCM and 500MCM are not included in the UL 486F coverage. We hope to include these gauge sizes at a later date.





### **Original Dual Wire Ferrules**

#### **Dual Wire Insulated**

Dual Wire Ferrules have larger diameters and special shaped sleeves that accept two conductors of the same or different size. They provide an efficient connection of multiple wires in the same terminal clamp or simplify wire jumpering between terminal clamps. They are color coded with the same convention as the insulated DIN standard ferrules.

To ensure efficient ferrule crimping always select the smallest ferrule diameter that fits the wire and use only professional crimping tools.

- Sleeve: polypropylene
- •Tube: tin plated copper





#### **Tested According To:**

CSA Std C22.2 No. 65-93 CSA Std C22.2 No. 188-M1983 ANSI/UL Std No. 486A ANSI/UL Std No. 486C

- Wire Connectors
- Splicing Wire and Cable Connectors - Wire Connectors and Soldering Lugs for Use with Copper Conductors
- Splicing Wire Connectors

Wires			Cat.			Ferrule D	imensio	ıs mm			Std.
x AWG	mm <sup>2</sup>	Color	No.	L1	L2	D1	S1	Α	В	S2	Pack*
2x20	2x0.50	White	2794.0	14.6	8.2	1.4	0.15	5	3	0.3	500/100
2x18	2x0.75	Gray	2775.0	14.6	8.2	1.7	0.15	5.5	3	0.3	500/100
2x18	2x0.75	Gray	2795.0	16.4	10	1.7	0.15	5.5	3	0.3	500/100
2x18	2x1	Red	2776.0	15.4	8.2	2	0.15	5.8	3.2	0.3	500/100
2x18	2x1	Red	2796.0	25.2	18	2	0.15	5.8	3.2	0.3	500/100
2x16	2x1.5	Black	2777.0	15.8	8.2	2.2	0.15	6.5	3.6	0.3	500/100
2x16	2x1.5	Black	2797.0	19.6	12	2.2	0.15	6.5	3.6	0.3	500/100
2x14	2x2.5	Blue	2778.0	18.5	10	2.8	0.15	8	4.5	0.4	500/100
2x14	2x2.5	Blue	2798.0	20.5	12	2.8	0.15	8	4.5	0.4	500/100
2x12	2x4	Gray	2799.0	22	12	3.5	0.2	9	5.2	0.5	100
2x10	2x6	Yellow	2800.0	23	12	4.5	0.2	11.4	6.2	0.5	100
2x8	2x10	Red	2801.0	24	12	5.8	0.2	13.4	7.6	0.5	100
2X6	2x16	Blue	2802.0	29	16	8.3	0.3	17.2	9.5	0.6	50

### **INSULATED FERRULES Assortment Box**

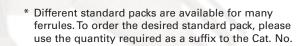
Handy Assortment Boxes for convenient dispensing and storage of Industry and DIN Standard Insulated Ferrules. Types AB1-S and AB1-D are equipped with five different ferrule sizes. Types AB2-S and AB2-D are equipped with four different ferrule sizes. Contents of each box is listed.



**CRIMPER SELECTOR GUIDE** page 18



AB2-S



Example: Cat. No. 2794.0/100 for a standard pack of 100

Ferrule Oty.	AWG	mm <sup>2</sup>	Ferrule Cat. No.	Ferrule Color	Туре	Cat. No.	Std. Pack
AB1-S Ind	lustry Standa	ırd			AB1-S	2884.9	1
50	20	0.5	2201.0	Orange			
100	20	0.75	2202.0	White			
100	18	1	2399.0	Yellow			
100	16	1.5	2204.0	Red			
50	14	2.5	2206.0	Blue			
AB2-S Ind	lustry Standa	ırd			AB2-S	2885.9	1
50	12	4	2208.0	Gray			
20	10	6	2210.0	Black			
20	8	10	2212.0	Ivory			
10	6	16	2214.0	Green			
AB1-D DII	N Standard				AB1-D	2884.0	1
50	20	0.5	2864.0	White			
100	20	0.75	2867.0	Gray			
100	18	1	2871.0	Red			
100	16	1.5	2841.0	Black			
50	14	2.5	2845.0	Blue			
AB2-D DII	N Standard				AB2-D	2885.0	1
50	12	4	2848.0	Gray			
20	10	6	2851.0	Yellow			
20	8	10	2853.0	Red			
10	6	16	2855.0	Blue			



### **Original Ferrule and Wire Size by Crimper Type**

Use this Selector Guide to determine ferrule and wire sizes which can be crimped. Refer to following pages for selection and ordering information of crimpers.

- 1. Determine the wire size(s) to be used.
- 2. To insure efficient ferrule crimping, always select the smallest ferrule diameter that fits the wire.
- 3. Based on the ferrule size, choose the crimper type appropriate for use.
- 4. Select the crimper style best suited for your application.

### **CRIMPER STYLES**

			UNIVERSAL FERRULE CRIMPER			PNEUMATI CRIN		VISE MOUNT FERRULE CRIMPER
Wire Size AWG	Ferrule Size mm <sup>2</sup>	Crimpe tipe	0.06 170.00	0.01/5 10.020 0.01	* 22.0	15 22 16* 22.	22.030	
26	0.14						ĺ	,
24	0.25							
22	0.34							
20	0.50							
20	0.75							
18	1							
16	1							
14	2.5							
12	4							
10	6							
8	10							
6	16							
4	25							
2	35							
1	50							
2/0	70							
3/0	95							
4/0	120							
250MCM	150							

### **Dual Wire Ferrules**

E110.000 crimper covers 2x20 to 2x12 AWG dual wire ferrules E110.010 crimper covers 2x10 to 2x8 AWG dual wire ferrules E110.015 crimper covers 2x6 AWG dual wire ferrules

#### Key:

= Cavity Range

<sup>\*</sup> Insulated ferrule/wire size range is shown, uninsulated ferrule range is 16-14 AWG (1.5 - 2.5mm²).





### **Universal Ferrule Crimpers for Original Ferrules**

#### **Front Conductor Entry**

One die crimps a wide range of insulated and uninsulated ferrule sizes. Three Universal Ferrule Crimpers are offered to crimp different ferrule and wire size ranges up to 16mm² (6 AWG).

- · Positive ratcheting with spring return
- Trapezoidal crimp geometry
- Comfort grip plastic handle
- Hardened steel frame, matte black

#### **Universal Ferrule Crimper Universal Ferrule Crimper Universal Ferrule Crimper** Part No. **Ferrule Ferrule Ferrule** Wire/ Std. Part No. Wire/ Std. Part No. Wire/ Std. $\,\mathrm{mm^2}$ **AWG AWG AWG** $\,\mathrm{mm^2}$ **Pack** mm<sup>2</sup> **Pack Pack** E110.000 26 - 10 E110.005 20 - 8 0.5 - 10E110.010 0.14 - 68 - 6 10 - 16 Replacement Spring Set: Replacement Spring Set: Replacement Spring Set: 185140008 185140008 185140008 Handle Spring Set Handle Spring Set Handle Spring Set 318001002 318001002 318001002 **Rachet Spring** Rachet Spring Rachet Spring

### **Ferrule Crimper**

### **Side Conductor Entry**

Individual crimp cavities conform to industry standard insulated and uninsulated ferrules from 25-50mm² (4-1 AWG).

- Positive ratcheting with spring return
- Emergency release
- •Trapezoidal crimp geometry
- Comfort grip plastic handle
- Hardened steel frame, matte black





# Pneumatic Crimping Tool for Original Ferrules

Altech's pneumatic crimping tools speed the crimping process of insulated or uninsulated ferrules for a wide range of wire sizes up to 8 AWG.

Altech pneumatic crimpers are simple and easy to use. Just install the ferrule over the end of the stripped wire and insert it into either the front or side tool opening. Then touch the actuating lever or push the foot switch pedal to initiate the crimp cycle. Once the head closes it will automatically reopen after crimping. The resulting crimp features a compact trapezoidal cross section which is mechanically very strong and provides a large surface to insure a highly efficient electrical contact.

Crimp ferrules efficiently and economically. A unique dual crimping head provides convenient front or side wire entry, allowing crimping from multiple positions. This features makes crimping in tight places simple.

Choose either lever actuated, hand held units or hands-free foot switch operated table top models, in two basic tool sizes. Hand held models feature a flexible coil air-hose with 1/4" NPT interchange connector for quick hook-up with a standard push-to-connect coupler.

The table top units also include a flexible coil air hose to the foot switch and a 1/4" NPT interchange located on the foot switch for one hand push-to-connect supply hook-up. They feature a sturdy metal base with integral table clamp and dual storage trays for quick access to the ferrule supply. The air release port on the foot switch has been quieted with a sintered bronze air silencer. The foot switch has a metal frame and a tough fiberglass shroud. Its spring return pedal provides for short actuating cycles.

Optional items for the hand held crimper include a counterbalance for maximum control and a magnetic holder for storage.



- Operates on 60 90 psi air supply
- Crimp insulated and uninsulated ferrules
- Trapezoidal crimp geometry
- Flexible coil air hose with 1/4" NPT interchange
- Metal tool body and base
- Hardened steel crimp head

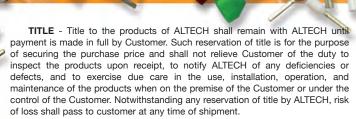
Tool	Wire/ Fe	errule Size mm <sup>2</sup>	Cat. No.	Tool Wt. g (lbs.)	Std. Pack
Hand Held Crimper with Actuating Lever Crimp Insulated Ferrules and Uninsulated Ferrules	24-14	0.25-2.5	22.014	430 (.95)	1
Hand Held Crimper with Actuating Lever Crimp Insulated Ferrules and Uninsulated Ferrules	12-8	4-10	22.015	430 (.95)	1
Table Top Crimper with Foot Switch and Storage Trays Crimp Insulated Ferrules and Uninsulated Ferrules	24-14	0.25-2.5	22.016	1000 (2.20)	1
Table Top Crimper with Foot Switch and Storage Trays Crimp Insulated Ferrules and Uninsulated Ferrules	12-8	4-10	22.017	1000 (2.20)	1
Magnetic Mounting Holder for hand held pneumatic crimpers			22.018		1
Counterbalance for hand held pneumatic crimpers			22.019		1



Altech®



Part No.	Pg.	Part No.	Pg.	Part No.	Pg.	Part No.	Pg.	Part No.	Pg.
185140008	19	2798.0	17	FID0812M	6	FII1608	4	FTD1608M	8
2201.0	14	2799.0	17	FID0818	4	FII1608B	10	FTD1808GRM	8
2202.0	14	2800.0 2801.0	17	FID1012 FID1012M	4 6	FII1608M FII1608RE	6 10	FTD1808R FTD1808RM	8 8
2203.0 2204.0	14 14	2802.0	17 17	FID1012M FID1018	4	FII1610	4	FTD1810	8
2205.0	14	2815.0	16	FID1408B	10	FII1610M	6	FTD1810M	8
2206.0	14	2815.5	16	FID1408RE	10	FII1612	4	FTD1812R	8
2207.0	14	2816.0	16	FID1606	4	FII1612M	6	FTD1812RM	8
2208.0	14	2840.0	15	FID1606M	6	FII1618	4	FTD1814	8
2209.0	14	2841.0	15 15	FID1608 FID1608B	4 10	FII1806W FII1806WM	4 6	FTD1812GR FTD1812GRM	8 8
2210.0 2211.0	14 14	2842.0 2843.0	15	FID1608B FID1608M	6	FII1806Y	4	FTD1818GR	8
2212.0	14	2844.0	15	FID1608RE	10	FII1806YM	6	FTD1818R	8
2213.0	14	2845.0	15	FID1610	4	FII1808W	4	FTD2008	8
2214.0	14	2846.0	15	FID1610M	6	FII1808WB	10	FTD2008M	8
2215.0	14	2847.0	15	FID1612	4	FII1808WM	6	FTD2010	8
2216.0	16	2848.0 2849.0	15 15	FID1612M FID1618	6 4	FII1808WRE FII1808Y	10 4	FTD2010M FTD2012	8 8
2217.0 2218.0	16 16	2850.0	15	FID1806GR	4	FII1808YB	10	FTD2012M	8
2219.0	16	2851.0	15	FID1806GRM	6	FII1808YM	6	FTI0616	8
2220.0	16	2852.0	15	FID1806R	4	FII1808YRE	10	FTI0625	8
2221.0	16	2853.0	15	FID1806RM	6	FII1810W	4	FTI0812	8
2222.0	16	2854.0	15	FID1808GR	4	FII1810WM	6	FTI0812M	8
2223.0	16	2855.0 2856.0	15	FID1808GRB FID1808GRM	10 6	FII1810Y FII1810YM	4 6	FTI0818 FTI1012	8 8
2224.0 2225.0	16 16	2857.0	15 15	FID1808GRIVI	10	FII1812W	4	FTI1012M	8
2226.0	16	2858.0	15	FID1808R	4	FII1812WM	6	FTI1018	8
2227.0	16	2859.0	15	FID1808RB	10	FII1812Y	4	FTI1608	8
2228.0	16	2860.0	15	FID1808RM	6	FII1812YM	6	FTI1608M	8
2229.0	16	2861.0	15	FID1808RRE	10	FII2006	4	FTI1612	8
2267.0	14	2863.0	15 15	FID1810GR FID1810GRM	4 6	FII2006M FII2008	6 4	FTI1612M FTI1618	8 8
2272.0 2276.0	14 14	2864.0 2865.0	15	FID1810R	4	FII2008	10	FTI1808W	8
2388.0	16	2866.0	15	FID1810RM	6	FII2008M	6	FTI1808WM	8
2389.0	16	2867.0	15	FID1812GR	4	FII2008RE	10	FTI1808Y	8
2390.0	14	2868.0	15	FID1812GRM	6	FII2010	4	FTI1808YM	8
2391.0	16	2869.0	15	FID1812R	4	FII2010M	6	FTI1810	8
2392.0 2393.0	16	2870.0 2871.0	15 15	FID1812RM FID2006	6 4	FII2012 FII2012M	4 6	FTI1810M FTI1812W	8
2394.0	16 16	2872.0	15	FID2006 FID2006M	6	FII2206	4	FTI1812WM	8
2395.0	16	22.014	20	FID2008	4	FII2206M	6	FTI1812Y	8
2396.0	16	22.015	20	FID2008B	10	FII2208	4	FTI1812YM	8
2397.0	14	22.016	20	FID2008M	6	FII2208M	6	FTI1814	8
2398.0	14	22.017	20	FID2008RE	10	FII2208RE	10	FTI1818W	8
2399.0 2400.0	14	22.018 22.019	20 20	FID2010 FID2010M	4 6	FII2212 FII2212M	4 6	FTI1818Y FTI2008	8 8
2400.0	14 14	22.030	19	FID2010W	4	FII2406	4	FTI2008M	8
2402.0	14	2884.0	17	FID2012M	6	FII2406M	6	FTI2010	8
2500.0	14	2884.9	17	FII0120	4	FII2408	4	FTI2010M	8
2620.0	14	2885.0	17	FII0125	4	FII2408M	6	FTI2012	8
2621.0	14	2885.9	17	FII0130	4	FII2412	4	FTI2012M	8
2622.0 2623.0	14 14	318001002 E110.000	19 19	FII0216 FII0218	4	FII2412M FII2606	6 4	FTI2208 FTI2208M	8 8
2775.0	17	E110.000 E110.005	19	FII0216	4	FII2606M	6	K70ZA000109	11
2776.0	17	E110.010	19	FII0416	4	FII2608	4	K70ZA000110	11
2777.0	17	E110.015	19	FII0418	4	FII2608M	6	K70ZA000111	11
2778.0	17	E110.020	19	FII0422	4	FTD0616	8	K70ZA000112	12
2786.0	14	FID0120	4	FII0612	4	FTD0625	8 8	K70ZA000113 K70ZA000114	12 12
2787.0 2788.0	14 14	FID0125 FID0130	4	FII0618 FII0812	4	FTD0812 FTD0812M	8	K70ZA000114 K70ZA000115	12
2789.0	14	FID0100	4	FII0812M	6	FTD0818	8	K70ZA000117	13
2790.0	16	FID0218	4	FII0818	4	FTD1012	8	K70ZA000118	13
2791.0	16	FID0225	4	FII1012	4	FTD1012M	8	K70ZA000125	13
2792.0	16	FID0416	4	FII1012M	6	FTD1018	8	V70ZA000001	11
2793.0	16	FID0418	4 4	FII1018 FII1408Y	4	FTD1608 FTD1612	8 8	V70ZA000016	11
2794.0 2795.0	17 17	FID0422 FID0612	4	FII1408YM	6	FTD1612 FTD1612M	8		
2796.0	17	FID0618	4	FII1606	4	FTD1618	8		
2797.0	17	FID0812	4	FII1606M	6	FTD1808GR	8		



SHIPMENT AND DELIVERY - All orders for destination in the mainland United States (less Hawaii, Alaska and non-continental United States possessions) will be shipped F.O.B. Flemington, N.J. All destination, shipping and other charges shall be paid by the Customer in accordance with ALTECH's then current shipping and billing practices.

Delivery dates given in the acceptance of any order are approximate. ALTECH shall not be liable for delays in delivery or in performance due to causes beyond its reasonable control including acts of God, acts of Customer, acts of civil or military authority, fires, strikes or other labor disturbances, war, riot or delays in transportation. In the event of such delay, the date of delivery or performance shall be extended for a period equal to the time lost by reason of the delay.

**PRICE** - PRICES in any ALTECH publication are subject to change without prior notification. Catalog prices are based on prices published in the current price list. All written quotations are valid for thirty (30) days from the date of quotation. Customer shall pay all sales, use, excise or similar taxes whenever ALTECH must itself pay and/or collect such tax from Customer arising out of the sale.

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**LIMITED WARRANTY** - ALTECH warrants to Customer that the equipment purchases shall be free from defects in material and workmanship under normal use and service for a period of one year from shipment.

Written notice as an explanation of the circumstances of any claim that the equipment has proved defective in material or workmanship shall be given promptly by the Customer to ALTECH.

ALTECH will not be liable for any misuse, improper operations, improper installation, improper maintenance, alteration, modification, accident or unusual degradation of the equipment or parts due to an unsuitable installation environment.

No representation of other affirmation of facts, including but not limited to statements regarding capacity, suitability for use or performance of the equipment, shall be or be deemed to be a warranty or representation by ALTECH for any purpose, nor give rise to any liability or obligation of ALTECH whatsoever.

Customer's sole and exclusive remedy in the event of breach of warranty, as set forth herein, is expressly limited to (1) the correction of the defect by adjustment, repair, modification, or replacement, or (2) issuance of a credit or refund of the purchase price for the defective equipment at ALTECH's election and sole expense.

EXCEPT AS SPECIFICALLY PROVIDED IN THIS AGREEMENT, THERE ARE NO OTHER WARRANTIES EXPRESSED OR IMPLIED INCLUDING BUT NOT LIMITED TO ANY IMPLIED WARRANTIES OR MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

THIS WARRANTY EXTENDS ONLY TO THE CUSTOMER FROM ALTECH OR ITS AUTHORIZED DISTRIBUTOR.

**LIMITATION OF LIABILITY** - IN NO EVENT, SHALL ALTECH BE LIABLE FOR LOSS OF PROFITS, INDIRECT, SPECIAL, CONSEQUENTIAL OR OTHER SIMILAR DAMAGES ARISING OUT OF ANY BREACH OF THIS AGREEMENT OR OBLIGATIONS UNDER THE AGREEMENT.

ALTECH SHALL NOT BE LIABLE FOR ANY DAMAGES CAUSED BY DELAY IN SHIPMENT, INSTALLATION OR FURNISHING OF EQUIPMENT OR SERVICES UNDER THIS AGREEMENT.

No action arising out of any claimed breach of this Agreement may be brought by either party more than two (2) years after the cause of action has accrued.

PATENT INDEMNITY - ALTECH shall defend or settle any suit or proceeding brought against Customer based on a claim that any equipment made to ALTECH design and furnished hereunder constitutes an infringement of any existing United States patent, provided (ALTECH) is notified promptly in writing and is given complete authorization and information required for the defense, and ALTECH shall pay all damages and costs awarded against Customer, but shall not be responsible for any costs, expense or compromise incurred or made by Customer without ALTECH's prior written consent. If any equipment is in ALTECH's opinion likely to or does become the subject of a claim for patent infringement, ALTECH may at its option and expense procure for Customer the right to continue using the device, modify it to become non-infringing, but in the event ALTECH is not reasonably able to modify, substitute, or otherwise procure for Customer the right to continue using it, ALTECH will remove such equipment and refund to Customer the amount paid in excess of a reasonable rental for past use.

ALTECH shall not be liable for any infringement or claim based upon use of the equipment in combination with other equipment not supplied by ALTECH or with modifications made by Customer.

The foregoing states the entire liability of ALTECH to Customer arising from patent infringement.

SELLER'S REMEDIES - Should Customer fail to make any payment within ten (10) days of its due date, or fail to perform any other of the Customer's obligation hereunder upon thirty (30) days written notice, or should Customer be or become insolvent or be a party to any bankruptcy receivership proceeding prior to full payment of all amounts payable hereunder, ALTECH may: (a) with or without demand or notice to customer declare the entire amount unpaid immediately due and payable; (b) enter upon the premises where the equipment may be found and remove it (Customer shall assemble the equipment and make it available to ALTECH at a place reasonably convenient to both parties and shall permit and assist ALTECH in effecting the retaking and removal of the equipment); and (c) sell any or all the equipment as permitted under applicable law, applying the proceeds of the sale to payment of the expenses of retaking, repairing and selling the equipment, reasonable attorney fees and to the satisfaction of all indebtedness then due and unpaid under this Agreement. Any surplus shall be paid to Customer and any deficiency shall be paid to ALTECH by Customer.

The remedies provided herein shall be cumulative and in addition to all other remedies provided by law or equity or under the Uniform Commercial Code.

 $\mbox{\bf GOVERNING LAW}$  - This agreement will be governed by the Laws of the State of New Jersey.

**GENERAL** - This Agreement shall only become effective and binding when either (a) it has been accepted and executed by an authorized representative of ALTECH, or (b) the equipment has been shipped to Customer, with or without acceptance in writing hereon. Notice of acceptance is hereby waived by Customer. Customer hereby acknowledges receipt of a true and complete copy

No addition to or modification of any of the Terms and Conditions of Sale as they appear herein shall be binding upon ALTECH unless signed in writing by duly authorized representative of ALTECH in Flemington, N.J.

Typographical and clerical errors in quotations, orders and acknowledgments are subject to correction.

This Agreement is not assignable without the prior written consent of ALTECH. Any attempt to assign any of the rights, duties or obligations of this Agreement without such consent is void.

If any provision or provisions of this Agreement shall be held to be invalid, illegal or unenforceable, the validity, legality and enforceability, of the remaining provisions shall not in any way be affected or impaired thereby.

ALTECH is not responsible for failure to fulfill its obligation under this Agreement due to causes beyond its control, or except as agreed herein.

THE CUSTOMER ACKNOWLEDGES THAT HE HAS READ THE AGREEMENT, UNDERSTANDS IT, AND AGREES TO BE BOUND BY ITS TERMS AND CONDITIONS. FURTHERMORE, THE CUSTOMER AGREES THAT IT IS THE COMPLETE AND EXCLUSIVE STATEMENT OF THE AGREEMENT BETWEEN THE PARTIES, WHICH SUPERSEDES ALL PROPOSALS OR PRIOR AGREEMENTS, ORAL OR WRITTEN, EXPRESSED OR IMPLIED, AND ALL OTHER COMMUNICATIONS BETWEEN THE PARTIES RELATING TO THE SUBJECT MATTER OF THIS AGREEMENT.





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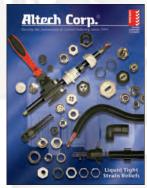
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Altech offers a wide range of DIN Rail or panel mount cable interface modules, relay interface modules, power supplies, carrier modules, and custom designed modules. Cable to connector models include: D-Sub connectors, ribbon cable connectors, and Dip socket connectors to terminals. Standard relay modules from 1 to 16 channels, and safety relay modules from 1 to 16 channels and up to 10 poles are included. The catalog also contains switching power supplies, linear power supplies, and custom designed interface modules.

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#### Liquid Tight Strain Reliefs



This 64-page catalog introduces Altech's full line Liquid Tight Strain Reliefs (Cord Grips) which are used to seal cable entries, keep contaminant's from entering enclosures, provide strain relief and thus reduce stress on components and termination points inside enclosures. Available standard, high-performance, Available in economy versions, functions include Straight-Through, Increased Strain Relief, Bend Protection, Pull/Bend Protection, Multi-conductor, Flat Cable and EMI/RFI. They can be used with almost any type of cable, cord or conductor - solid, stranded,

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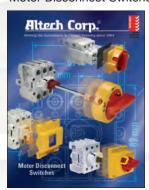
### Industrial Enclosures



Altech's expanded line of TK Industrial Enclosures, with metric knockouts, is here. Now our entire line of industrial enclosures is in metric. Metric knockouts align with international standards making selection easier and more universal. Plus the PG standard is still available. All of Altech's enclosures are internationally accepted and stand up to the harshest environments. They protect against dust, water and corrosion while enhancing the value of your product. Rated up to IP66 (NEMA type 4x), Altech enclosures are available in a wide range of sizes.

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### Motor Disconnect Switches



Altech's line of Motor Disconnect Switches are UL 508 listed as Manual Motor Controllers for AC Motor Starting Across-the-line and AC General use. This new 16 page catalog includes the 3 different handle designs, which are all available in gray/black or yellow/red housings. Electrical ratings are 25-150A / 600V. The switches are non-fused DIN Rail mountable. Neat features include: snap-on auxiliary switches, door mounting kit and a retrofit 30A fuse holder. Also featured are Enclosed Motor Disconnect Switches & Fused Enclosed Motor Disconnect Switch (30A) in plastic or stainless housings.

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