

Table of Contents

AMP Power Series Connectors	
Selection Guide and Overview	3,4
Series 15/30/45 (Single-Pole)	5
Series 50 (2-Pole Battery)	6
Series 50 Finger Probe Resistant (FPR)	7
Series 75 (Single-Pole)	8
Series 120 (Single-Pole)	9
Series 120 (2-Pole Battery)	10
Series 175 (2-Pole Battery)	11
Series 180 (Single-Pole)	12
Series 350 (2-Pole Battery)	13
Accessories	14,15
Application Tooling	16,17
AMPINNERGY Connectors	
Wire-To-Wire	
Introduction and Technical Documents	18
1-Pole Housing and Accessories	19
Contacts and Application Tooling	20
Wire-To-Board	
Introduction and Technical Documents	21
PC Board Receptacles	22,23
Plug Housings (2- to 8-Position)	24
Contacts and Application Tooling	25
Technical Documents	26
Part Number Index	27
Related Product Catalogs	28,29
Engineering Notes	30
Global Contacts	31

AMP, AMPINNERGY, AMPOWER, AMP-O-ELECTRIC, AMP-TAPETRONIC, DIAMOND GRIP, ELCON, RAYCHEM, SOLISTRAND, and TYCO are trademarks.

PICO is a trademark of Pacific Industrial Components Corporation.

Other products, logos, and company names mentioned herein may be trademarks of their respective owners.

© 2005 by Tyco Electronics Corporation. All Rights Reserved.

While Tyco Electronics has made every reasonable effort to ensure the accuracy of the information in this catalog, Tyco Electronics does not guarantee that it is error-free, nor does Tyco Electronics make any other representation, warranty or guarantee that the information is accurate, correct, reliable or current.

Tyco Electronics reserves the right to make any adjustments to the information contained herein at any time without notice. Tyco Electronics expressly disclaims all implied warranties regarding the information contained herein, including, but not limited to, any implied warranties of merchantability or fitness for a particular purpose.

The dimensions in this catalog are for reference purposes only and are subject to change without notice. Specifications are subject to change without notice. Consult Tyco Electronics for the latest dimensions and design specifications.

AMP Power Series Connectors

Product Facts

- Single-pole and 2-pole (battery) quick connect/disconnect connectors
- Eight Series, based on approximate current-carrying capability:
 - Series 15/30/45 (Single-Pole)
 - Series 50 (2-Pole Battery)
 - Series 50 Finger Probe Resistant (FPR)
 - Series 75 (Single-Pole)
 - Series 120 (Single- and 2-Pole)
 - Series 175 (2-Pole Battery)
 - Series 180 (Single-Pole)
 - Series 350 (2-Pole Battery)
- Voltage rating: 600 V AC/DC
- Color-coded housings, UL 94V-0
- Hermaphroditic (genderless) housings reduce inventory
- Modular, single-pole housings are stackable in four directions
- Polarity (+ and -) molded into 2-pole housings promotes proper wiring
- Mechanical keys help prevent two different color-coded housings from mating
- Stainless steel retaining springs secure contacts in housings
- Stamped and formed, open barrel contacts (6-20 AWG) on reels for automatic and semiautomatic machine termination
- Loose piece, cold-headed contacts (6 AWG – 300 MCM) for manual and hydraulic hand tools; reducing bushings accommodate smaller wire sizes
- Compatible with industry standard crimp tooling from PICO Corporation (<http://www.picotools.com>)
- Connectors intermateable with similar connectors from other manufacturers



- Series 15/30/45, single-pole connectors designed to meet Amateur Radio Emergency Service (ARES)/Radio Amateur Civil Emergency Service (RACES) Standard Power Connector requirements
- Accessories available for mounting, vibration protection, and strain relief
- Component Recognized by Underwriters Laboratories Inc. to US and Canadian Standards, File No. E28476



AMP Power Series Connectors provide a durable, quick connect/disconnect means to transmit "power" levels of current and voltage (15-275 A, 600 V AC/DC).

This product family is primarily comprised of single-pole and 2-pole (battery) connector housings, crimp snap-in contacts, and accessories. Housings are offered in various colors. Two-pole housings have different polarization configurations; with the exception of black housings, each color identifies a different keying configuration. In general, only like color housings will mate. Contacts are either cold-headed or stamped and formed, depending upon the connector Series.

AMP Power Series Connectors are divided into eight Series, based on approximate current-carrying capability.

Applications

AC/DC Power Supplies and Charging Systems, Rechargeable Batteries, Material Handling Equipment (e.g. forklift trucks), Electric Vehicles (e.g., golf carts, sweepers, wheelchairs), Office Furniture/Panels, Amateur Emergency Radios, and Industrial Equipment

Technical Documents

See page 26

AMP Power Series Connectors (Continued)



AMP Power Series 15/30/45
Single-pole connector housings are stackable side-to-side and top-to-bottom. For example, Series 30 red and black housings joined side-to-side, are commonly used as standard power connectors for handheld, mobile, or base amateur radio equipment.

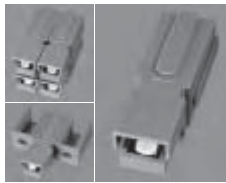
Modular housings can also be grouped into plug frames with or without latches, which mate with receptacle housings. Typically, these are used as quick disconnects for electrical power distribution in office furniture and panels.



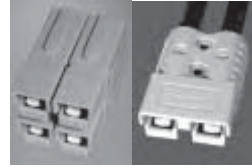
AMP Power Series 50
Two-pole (battery) housings are available in bulk quantities or in kit form (i.e., 1 housing and 2 contacts). These high durability connectors are designed for repeated mating and unmating.



AMP Power Series 50 Finger Probe Resistant (FPR)
This new, 2-pole, FPR version helps prevent finger access, which allows it to be more safely used at elevated voltages and in user access areas.



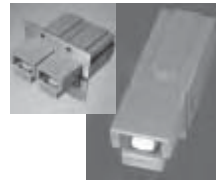
AMP Power Series 75
Single-pole, stackable housings, in locking and non-locking versions, are available in a variety of colors. Housings accept stamped and formed or cold-headed contacts. Bulk quantities and connector kits (1 housing and 1 contact) can be ordered. Accessories include: mounting wings for through-panel or surface mounting and mounting clamp sets for ganging housings.



AMP Power Series 120
This Series includes both single- and 2-pole (battery) versions. Single-pole housings with molded-in dovetails allow stacking. Housing retaining pins provide more vibration protection. Two-pole housing have slots designed to accept mounting clamp sets for easier panel mounting.



AMP Power Series 175
Two-pole (battery) housings accept cold-headed contacts (4-1/0 AWG). Basically, these connectors offer the same features as the two-pole Series 50 connectors.



AMP Power Series 180
These stackable, single-pole connectors accept cold-headed contacts (4-1/0 AWG). Most features are similar to the smaller, single-pole, Series 120 connectors.



AMP Power Series 350
Rugged, 2-pole housings accept only loose piece, cold-headed contacts (1/0-300 MCM). Rated at 275 A, these connectors have been tested up to 275 A, with 4/0 AWG wire.

Selection Guide


Series	Housing Type	Stackable Housing	Current Max. (A)	Voltage, Max. (V, AC or DC)	Cold-headed Contact (AWG)	Stamped & Formed Contact (AWG)	Housing Colors	Approvals
15	Single-Pole	Yes	15	600	—	16-20	Blue, Black, White, Red Green, Yellow, Orange, Gray	UL File No. E28476
30	Single-Pole	Yes	30	600	—	12-16	Blue, Black, White, Red Green, Yellow, Orange, Gray	UL File No. E28476
45	Single-Pole	Yes	40*	600	—	10-14	Blue, Black, White, Red Green, Yellow, Orange, Gray	UL File No. E28476
50	2-Pole	No	50	600	6, 8, 10-12	6-10,10-12	Red, Gray, Blue, Black, Yellow	UL File No. E28476
75	Single-Pole	Yes	75	600	6, 8,10-12	6-10,10-12	Blue, Black, White, Green, Red (Single-Pole)	UL File No. E28476
120	Single-Pole	Yes	120	600	2, 4, 6	—	Blue, Black, White, Green, Red (Single-Pole)	UL File No. E28476
120	2-Pole	No	120	600	2, 4, 6	—	Blue, Gray (2-Pole)	UL File No. E28476
175	2-Pole	No	175	600	1/0, 1, 2, 4	—	Blue, Gray, Orange, Yellow, Red	UL File No. E28476
180	Single-Pole	Yes	180	600	1/0, 1, 2, 4	—	Blue, Black, White, Green, Red	UL File No. E28476
350	2-Pole	No	275**	600	1/0, 2/0, 3/0, 4/0, 300 MCM	—	Blue, Green, Red, Yellow, Orange, Gray	UL File No. E28476

*Performance equivalent to competition **Tested to 275 amps with 4/0 AWG wire

Electronics

AMP Power Series 15/30/45 Connectors (Single-Pole)

Product Facts

- Color-coded UL 94V-0 housings: blue, black, white, green, red, yellow, orange and gray
- Genderless housings reduce inventory
- 3 contact offerings available: Series 15, 30 and 45
- Built-in interlocking features (dovetails) allow stacking
- Series 15/30/45, single-pole connectors designed to meet Amateur Radio Emergency Service (ARES)/Radio Amateur Civil Emergency Service (RACES) Standard Power Connector requirements
- Plug frames (with or without latches) and receptacle housings accept stacked single-pole housings (2 to 8 poles)
- File No. E28476 c  us

Material and Finish

- Housing**—Polycarbonate, UL 94V-0
- Retaining Spring**—Stainless Steel
- Contacts**—Copper with silver or tin plating
- Mounting Wings & Spacers**—Polycarbonate, UL 94V-0
- Retaining Pins**—Stainless steel

Electrical Characteristics

- Current Carrying Capability**—40 A w/10 AWG wire (Series 45)
30 A w/12 AWG wire (Series 30)
20 A w/16 AWG wire (Series 15)
- Operating Voltage**—600 V, AC or DC
- Dielectric Withstanding Voltage**—2200 VDC
- Average Initial Contact Resistance**—525 micro-ohms

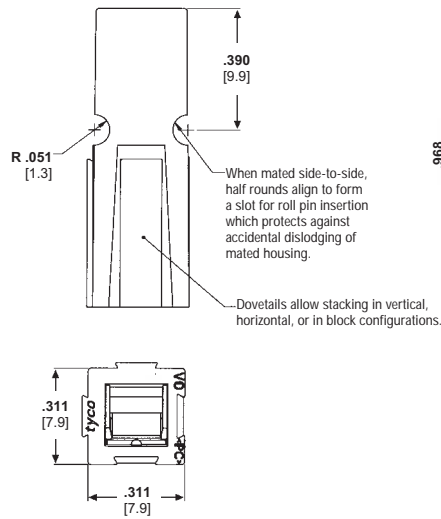
Mechanical Characteristics

- Contact Retention**—25 lbs. [111.2 N]
- Average Mating/Unmating Force**—4.7 [20.9 N]
- Max. Wire Insulation Diameter**—175 [18.16]
- Wire Size Range**—10-20 AWG [5-0.5 mm²]

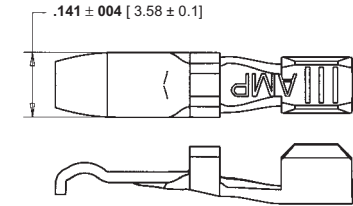
Related Product Data

Accessories—page 14

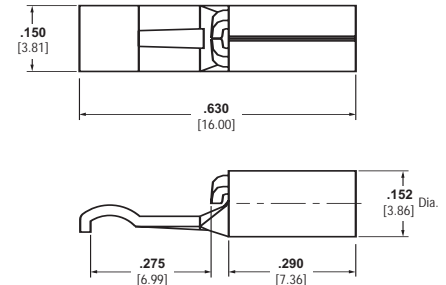
Single-Pole Housing



Stamped and Formed Contact (Strip)



Closed Barrel Contact (Loose Piece)



AMP Power Series 15

Housing ¹		Contact Part Number	
Color	Part Number	Strip Form (16, 18, 20 AWG)	Loose Piece (16-20 AWG)
Blue	1445957-1		
Black	1445957-2		
White	1445957-3		
Green	1445957-4	1604113-1 (silver) ²	1744042-1
Red	1445957-5	1604113-2 (tin) ²	
Yellow	1445957-6		
Orange	1445957-7		
Gray	1445957-8		

AMP Power Series 30

Housing ¹		Contact Part Number	
Color	Part Number	Strip Form (12, 14, 16 AWG)	Loose Piece (12-16 AWG)
Blue	1445957-1		
Black	1445957-2		
White	1445957-3		
Green	1445957-4	1604112-1 (silver) ³	1744041-1 Dimensions shown above.
Red	1445957-5	1604112-2 (tin) ³	
Yellow	1445957-6		
Orange	1445957-7		
Gray	1445957-8		

AMP Power Series 45

Housing ¹		Contact Part Number	
Color	Part Number	Strip Form (10, 12, 14 AWG)	
Blue	1445957-1		
Black	1445957-2		
White	1445957-3		
Green	1445957-4	1445962-1 (silver) ⁴	
Red	1445957-5	1445962-2 (tin) ⁴	
Yellow	1445957-6		
Orange	1445957-7		
Gray	1445957-8		

¹ Housings are bulk packaged.

² Use Applicator Part No. 1385450-3


³ Use Applicator Part No. 1385468-3

⁴ Use Applicator Part No. 1385469-3

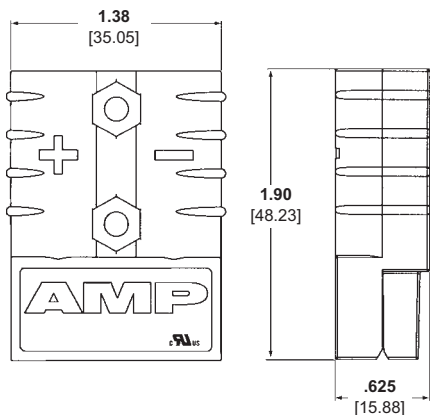
Note: Tyco Electronics does NOT recommend intermating connectors with different contact platings.

AMP Power Series 50 Connectors (2-Pole Battery)

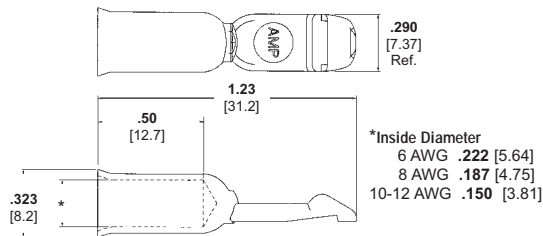
Product Facts

- Color-coded UL 94V-0 housings: gray, red, blue, yellow and black; other colors available upon request
Note: Black color housing has the same mechanical key as the gray housing
- Mechanical keys help prevent two different voltage color-coded housings from mating
- Polarity (+ and -) molded into housings
- Genderless housings reduce inventory
- Cold-headed contact wire range: 6, 8, 10-12 AWG (Taped version of the cold-headed contacts available.)
- File No. E28476 c 

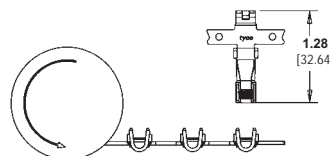
2-Pole Housing



Cold-headed Contact



Stamped and Formed Contact (on Reel)



Series 50 (2-Pole)

Housing ^{2,3}		Contact ²		Connector Kit Part Number ¹
Color	Part Number	Wire Size	Part Number	
Red	647845-3	6 AWG	647877-1	647892-3
		10-12 AWG	647879-1	647893-3
Gray	647845-4	6 AWG	647877-1	647892-4
		10-12 AWG	647879-1	647893-4
Blue	647845-5	6 AWG	647877-1	647892-5
		10-12 AWG	647879-1	647893-5
Black ⁴	647845-7	6 AWG	647877-1	647892-7
		10-12 AWG	647879-1	647893-7
Yellow	647845-8	6 AWG	647877-1	647892-8
		10-12 AWG	647879-1	647893-8
Cold-headed Contact		8 AWG	647878-1	—
⁵ Stamped and Formed contacts, on Reel		6-8 AWG	1604433-1 strip (tin) ⁶	
⁶ Stamped and Formed contacts, on Reel		10-12 AWG	1604433-2 (strip) ⁸	
⁷ Taped version of Cold-headed contacts		6 AWG	647754-1	
		8 AWG	647755-1	
		10-12 AWG	647756-1	

Material and Finish

Housing—Polycarbonate, UL 94V-0
Retaining Spring—Stainless Steel
Contacts—Copper with silver plating
Reducing Bushings—Copper with silver plating

Electrical Characteristics

Current Carrying Capability—50 amp per circuit w/6 AWG wire
Max. Operating Voltage—600 V, AC or DC

Dielectric Withstanding Voltage—2200 VDC

Average Initial Contact Resistance—200 micro-ohms

Mechanical Characteristics

Contact Retention—50 lbs. [222.4 N]
Average Mating/Unmating Force—15 lbs. [66.7 N]
Max. Wire Insulation Diameter—.44 [11.18]
Wire Size Range—6-12 AWG (also 6-16 AWG w/Reducing Bushings)

Related Product Data

Accessories—page 14

¹ 1 Housing and 2 contacts.
² Housings and contacts are bulk packaged.
³ Mechanical keys molded in housings will engage only with housings of same color.
⁴ Black color housing has the same mechanical key as the gray housing.
⁵ Use Heavy Duty Mini-Applicator (HDM) for 6 to 8 AWG - Part Number 1385663-2 (Use with AMP-O-LECTRIC Model K Terminator)
⁶ Use Heavy Duty Mini-Applicator (HDM) for 10 to 12 AWG - Part Number 1385664-2 (Use with AMP-O-LECTRIC Model K Terminator)
⁷ Hand Tool for Cold-headed Contact - Part Number 1526955-1 Taped version can be terminated using the AMP-TAPETRONIC Machine
⁸ Use Power Lock Machine Part Number 68296-1


Voltage Key Color Chart

Housing Color	Voltage
Yellow	12V
Red	24V
Gray	36V
Blue	48V
Black	80V

Color code given for various voltages is only a suggestion, other codes and keys available upon request.

AMP Power Series 50 FPR (Finger Probe Resistant) Connectors

Product Facts

- Complies with UL 60950 finger probe requirements
- Utilizes AMP Power Series 50 contacts
- Brown and white housing colors available (other colors possible)
- Two keying configurations available (up to 6 keying configurations possible)
- File No. E28476 c 

Material and Finish

Housing—Polycarbonate, UL 94V-0
Retaining Spring—Stainless Steel
Contacts—Copper
Reducing Bushings—Copper with silver plating

Electrical Characteristics

Current Capability—50 A max.
Voltage Rating—600 V, AC or DC
Dielectric Withstanding Voltage—2200 VDC

Mechanical Characteristics

Designed to defeat UL finger probe as outlined in UL 60950
Contact Retention—50 lbs. [222.4 N]
Wire Size—6-12 AWG [15-3 mm²]
Max. Wire Insulation Diameter—.44 [11.18]

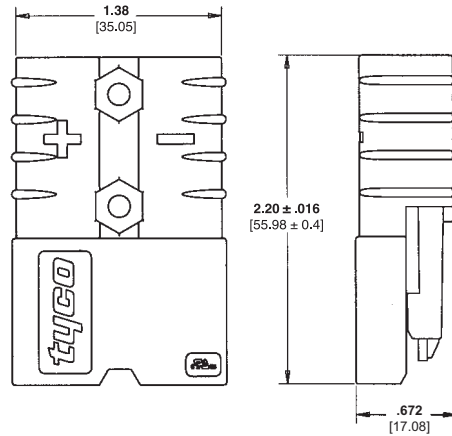
Related Product Data

Accessories—page 14

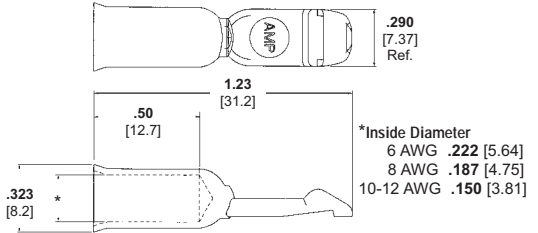
Applications

- Uninterruptible Power Supplies
- Power Supplies
- Battery Banks

2-Pole Housing

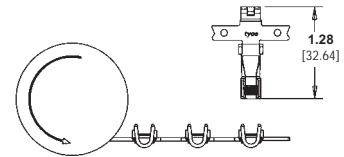


Cold-headed Contact



*Inside Diameter
 6 AWG .222 [5.64]
 8 AWG .187 [4.75]
 10-12 AWG .150 [3.81]

Stamped and Formed Contact (on Reel)



Series 50 FPR (2-Pole)

Housing ^{1,2}		Wire Size	Contact Part Number ¹			
Color	Part Number		Cold-headed ⁵		Stamped and Formed/Strip ^{3,4,6}	
			Loose Piece	On Tape	On Reel	
Brown	1604342-1	6 AWG	647877-1	647754-1	6-8 AWG	1604433-1 ⁶ (tin)
		8 AWG	647878-1	647755-1		
White	1604342-2	10-12 AWG	647879-1	647756-1	10-12 AWG	1604433-2 ⁶

¹ Housings and contacts are bulk packaged.
² Mechanical keys molded in housings will engage only with housings of same color.
³ Use Heavy Duty Mini-Applicator (HDM) for 6 to 8 AWG - Part Number 1385663-2 (Use with AMP-O-LECTRIC Model K Terminator)
⁴ Use Heavy Duty Mini-Applicator (HDM) for 10 to 12 AWG - Part Number 1385664-2 (Use with AMP-O-LECTRIC Model K Terminator)
⁵ Hand Tool for Cold-headed Contact - Part Number 1526955-1
 Taped version can be terminated using the AMP-TAPETRONIC Machine
⁶ Use Power Lock Machine Part Number 68296-1

AMP Power Series 75 Connectors (Single-Pole)

Product Facts

- Color-coded UL 94V-0 housings: blue, black, white, green and red
- Genderless housings reduce inventory
- Cold-headed contact wire range: 6, 8, 10-12 AWG
- Stamped and formed contacts available:
6-8 AWG Part Number 1604433-1 (strip);
10-12 AWG Part Number 1604433-2 (strip)
- File No. E28476 c us

Material and Finish

Housing—Polycarbonate, UL 94V-0
Retaining Spring—Stainless Steel
Contacts—Copper with silver plating
Reducing Bushings—Copper with silver plating
Mounting Wings—Polycarbonate, UL 94V-0
Retaining Pins—Stainless steel

Electrical Characteristics

Current Carrying Capability (with 6 AWG)—Configuration:
 Single-Pole 75 A
 1x2 Stacked 62 A
 2x2 Stacked 60 A
 1x3 Stacked 58 A
 2x3 Stacked 52 A
Operating Voltage—600 V, AC or DC

Dielectric Withstanding Voltage—2200 VDC

Average Initial Contact Resistance—200 micro-ohms

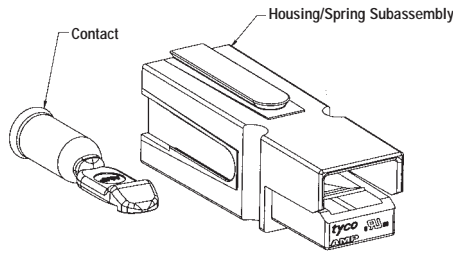
Mechanical Characteristics

Contact Retention—50 lbs. [222.4 N]
Average Mating/Unmating Force—15 lbs. [66.7 N]
Max. Wire Insulation Diameter—
.44 [11.18]
Wire Size Range—6-12 AWG [15-3 mm²]

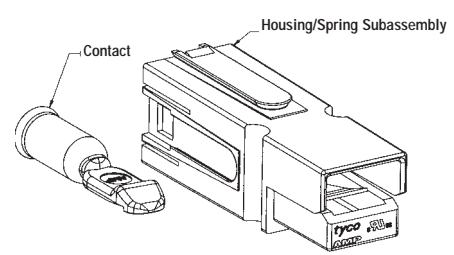
Related Product Data

Accessories—page 14
Application Tooling—page 16

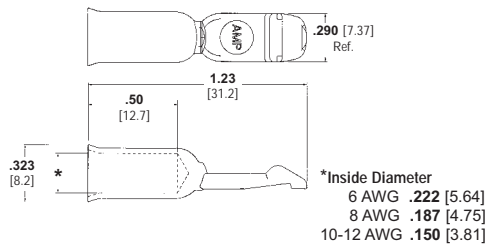
Housing without Locking Feature



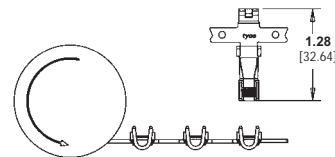
Housing with Locking Feature



Cold-headed Contact



Stamped and Formed Contact (on Reel)



Series 75 (Single-Pole)

Color	Housing ²		Cold-headed Contact ²		Connector Kit Part Number ¹
	Part Number	Wire Size	Part Number	Wire Size	
Non-Locking Version					
Blue	1445715-1	6 AWG	647877-1	6 AWG	1445716-1
Black	1445715-2	6 AWG	647877-1	6 AWG	1445716-2
White	1445715-3	6 AWG	647877-1	6 AWG	1445716-3
Green	1445715-4	6 AWG	647877-1	6 AWG	1445716-4
Red	1445715-5	6 AWG	647877-1	6 AWG	1445716-5
Locking Version					
Blue	1445715-6	6 AWG	647877-1	6 AWG	1445716-6
Black	1445715-7	6 AWG	647877-1	6 AWG	1445716-7
White	1445715-8	6 AWG	647877-1	6 AWG	1445716-8
Green	1445715-9	6 AWG	647877-1	6 AWG	1445716-9
Red	1-1445715-0	6 AWG	647877-1	6 AWG	1-1445716-0

*Samples available on loose housing and contacts only.

Contacts

Description	Wire Size	Part Number	Die Set Part Number ³	Applicator Part No. for AMP-O-LETRIC Model K Terminator
Cold-headed (Loose Piece) ⁴	6 AWG	647877-1	—	—
	8 AWG	647878-1	—	—
	10-12 AWG	647879-1	—	—
Cold-headed (Tape) ^{3, 4}	6 AWG	647754-1	68344-1	—
	8 AWG	647755-1	68344-1	—
	10-12 AWG	647756-1	68313-1	—
Stamped and Formed (Strip)	6-8 AWG	1604433-1	—	1385663-2
	10-12 AWG	1604433-2	—	1385664-2

¹ 1 housing and 1 contact

² Housings and contacts are bulk packaged.

³ Taped version can be terminated using the AMP-TAPETRONIC machine Part Number 68250-1.

⁴ Use hand tool Part Number 1526955-1 for Cold-headed contacts

AMP Power Series 120 Connectors (Single-Pole)



Product Facts

- Color-coded modular housings: blue, black, white, green and red
- Genderless housings reduce inventory
- Cold-headed contact wire range: 2, 4, and 6 AWG
- Built-in interlocking features (dovetails) allow stacking and wire routing
- Self-wiping contacts increase product life and improve conductivity
- Integral stainless steel locking spring in housing for contact retention
- Rugged design
- File No. E28476 c ^{us}

Material and Finish

Housing—Polycarbonate, UL 94V-0
Retaining Spring—Stainless Steel
Contacts—Copper with silver plating
Reducing Bushings—Copper with silver plating
Mounting Clamp Sets—Aluminum

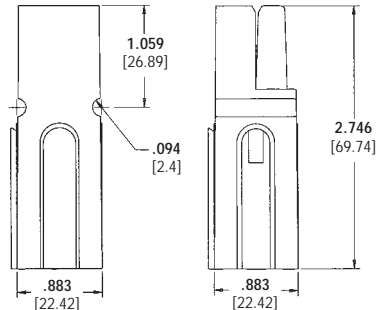
Electrical Characteristics

Current Carrying Capability—
 Single-Pole—120 A
 2x1 Stacked Array—115 A
 2x2 Stacked Array—115 A
Voltage Rating—600 V (both AC and DC)
Dielectric Withstanding Voltage—2200 VDC
Average Initial Contact Resistance—136 micro-ohms

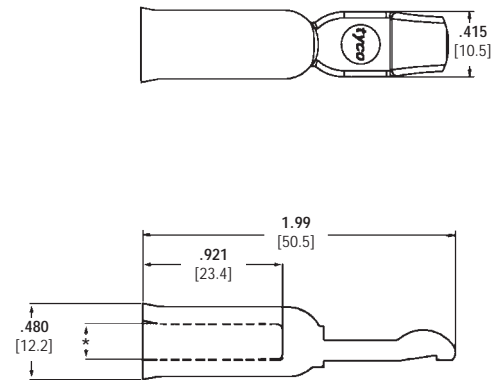
Mechanical Characteristics

Contact Retention—100 lbs. [444.8 N]
Average Mating/Unmating Force—8 lbs. [35.6 N]
Temperature Rating—-4°F to 221°F [-20°C to 105°C]
Max. Wire Insulation Diameter—.6 [15.24]
Wire Size Range—2-6 AWG

Single-Pole Housing



Cold-headed Contact



*Inside Diameter 6 AWG .222 [5.64];
 4 AWG .295 [7.5];
 2 AWG .344 [8.74]

Series 120 (Single-Pole)

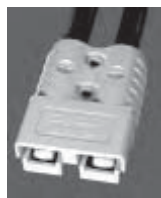
Housing		Contact		Connector Kit Part Number ¹
Color	Part Number	Wire Size	Part Number	
Blue	1604001-1	2 AWG	1445995-1	1604002-1
Black	1604001-2	2 AWG	1445995-1	1604002-2
White	1604001-3	2 AWG	1445995-1	1604002-3
Green	1604001-4	2 AWG	1445995-1	1604002-4
Red	1604001-5	2 AWG	1445995-1	1604002-5
—	—	4 AWG	1445996-1	—
—	—	6 AWG	1445997-1	—

¹ 1 Housing and 1 contact.

Related Product Data

Accessories—page 15
Application Tooling—page 16
Technical Documents—page 26

AMP Power Series 120 Connectors (2-Pole Battery)



Product Facts

- Color-coded UL 94V-0 housings: gray and blue
- Keying feature helps prevent two different voltage color-coded housings from mating
- Genderless housings reduce inventory
- Contact wire range: 2, 4, 6 and 8 AWG
- Molded-in panel mount grooves
- Integral stainless steel locking spring in housing for contact retention
- Rugged design
- File No. E28476 c ^{us}

Material and Finish

Housing—Polycarbonate, UL 94V-0
Retaining Spring—Stainless Steel
Contacts—Copper with silver plating
Reducing Bushings—Copper with silver plating

Electrical Characteristics

Current Carrying Capability—115 A with 2 AWG
Voltage Rating—600 V (both AC and DC)
Dielectric Withstanding Voltage—2200 VDC
Avg. Initial Contact Resistance—136 micro-ohms

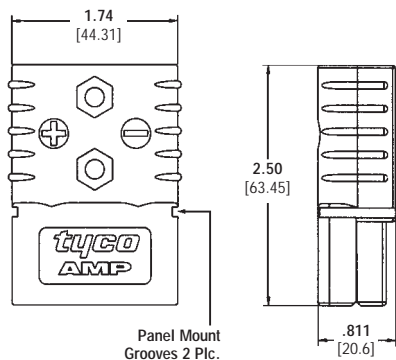
Mechanical Characteristics

Contact Retention—100 lbs. [444.8 N]
Average Mating/Unmating Force—18 lbs. [80.1 N]
Temperature Rating—-4°F to 221°F [-20°C to 105°C]
Max. Wire Insulation Diameter—.6 [15.24]
Wire Size Range—2-8 AWG

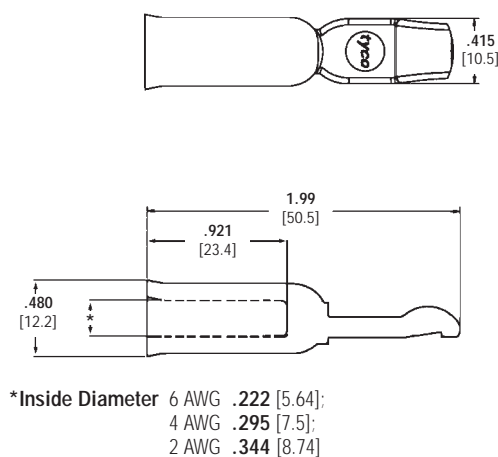
Related Product Data

Accessories—page 15
Application Tooling—page 16
Technical Documents—page 26

2-Pole Housing



Cold-headed Contact



Series 120 (2-Pole)

Housing ^{2,3}		Contact ²		Connector Kit
Color	Part Number	Wire Size	Part Number	Part Number ¹
Gray	1445994-1	2 AWG	1445995-1	1445998-1
Blue	1445994-2	2 AWG	1445995-1	1445998-2
Gray	1445994-1	4 AWG	1445996-1	1445999-1
Blue	1445994-2	4 AWG	1445996-1	1445999-2
Gray	1445994-1	6 AWG	1445997-1	1446000-1
Blue	1445994-2	6 AWG	1445997-1	1446000-2

¹ 1 Housing and 2 contacts.
² Housings and contacts are bulk packaged.
³ Mechanical keys molded in connectors will engage only with connectors of same color.


Voltage Key Color Chart

Housing ^{2,3} Color	Voltage
Gray	36 V
Blue	48 V

Color code given for various voltages is only a suggestion, other codes and keys available upon request.

AMP Power Series 175 Connectors (2-Pole Battery)

Product Facts

- Color-coded UL 94V-0 housings: yellow, orange, red, gray, blue, and black
- Keying feature helps prevent two different voltage color-coded housings from mating
- Genderless housings reduce inventory
- Contact wire range: 1/0, 1, 2, 4 AWG
- Integral stainless steel locking spring in housing for contact retention
- Reducing bushings down to 10 gauge
- File No. E28476 c 

Material and Finish

Housing—Polycarbonate, UL 94V-0
Retaining Spring—Stainless Steel
Contacts—Copper with silver plating
Reducing Bushings—Copper with silver plating

Electrical Characteristics

Current Carrying Capability—175 amp @ 80.42°F [26.9°C] T-Rise with 1/0 AWG wire
Voltage Rating—600 V (both AC and DC)
Dielectric Withstanding Voltage—2200 VDC
Avg. Initial Contact Resistance—100 micro-ohms

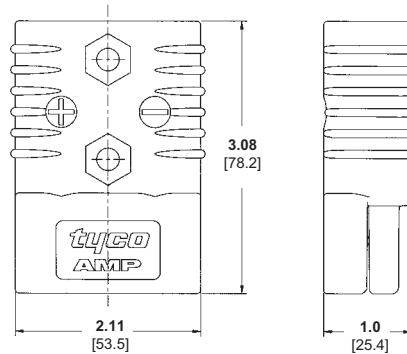
Mechanical Characteristics

Average Mating/Unmating Force—25 lbs. [111.21 N]
Max. Wire Insulation Diameter—.750 [19.05]
Wire Size Range—1/0, 1, 2, 4 AWG [53, 40, 35, 21 mm²]
Contact Retention—300 lbs. [1,334.47 N]
Temperature Rating—-4°F to 221°F [-20°C to 105°C]

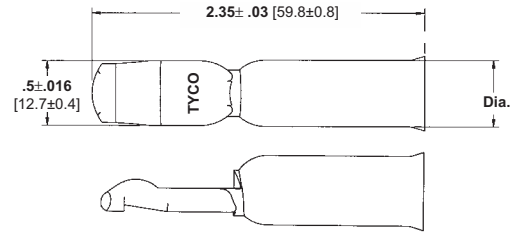
Related Product Data

Accessories—page 15
Application Tooling—page 16
Technical Documents—page 26

2-Pole Housing



Cold-headed Contact



Inside Diameter .516 ± .005 [13.1 ± 0.13] for 1/0 AWG
 .512 ± .005 [13.0 ± 0.13] for 1 AWG, 2 AWG, and 4 AWG

Series 175 (2-Pole)

Housing		Connector Kit Part Numbers ^{1, 2}			
Color	Part Number	4 AWG	2 AWG	1 AWG	1/0 AWG
Yellow	1604037-1	1604044-1	1604043-1	1604045-1	1604042-1
Orange	1604037-2	1604044-2	1604043-2	1604045-2	1604042-2
Red	1604037-3	1604044-3	1604043-3	1604045-3	1604042-3
Gray	1604037-4	1604044-4	1604043-4	1604045-4	1604042-4
Blue	1604037-5	1604044-5	1604043-5	1604045-5	1604042-5
Black ³	1604037-6	1604044-6	1604043-6	1604045-6	1604042-6

¹ 1 Housing and 2 contacts.
² Housings and contacts are bulk packaged.
³ Black housing mates with any other housing.

Contacts (Cold-headed)

Wire Size	Part Number
4 AWG	1604040-1
2 AWG	1604039-1
1 AWG	1604041-1
1/0 AWG	1604038-1

Voltage Key Color Chart


Housing Color	Voltage
Yellow	12 V
Orange	18 V
Red	24 V
Gray	36 V
Blue	48 V
Black	80 V

Color code given for various voltages is only a suggestion, other codes and keys available upon request.

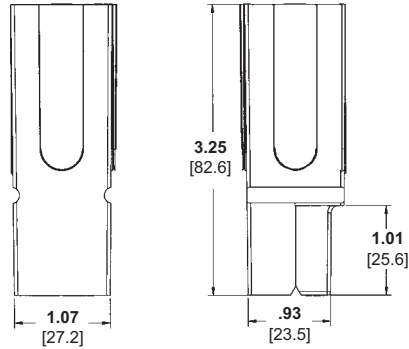
Electronics

AMP Power Series 180 Connectors (Single-Pole)

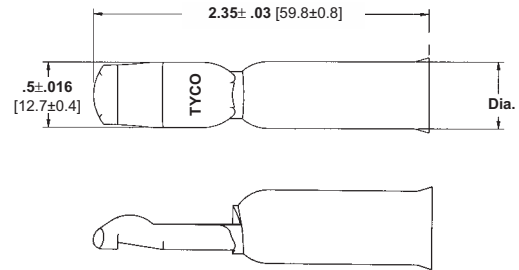
Product Facts

- Color-coded modular housings: blue, black, white, red and green
- Genderless housings reduce inventory
- Contact wire range: 1/0, 1, 2, 4 AWG
- Integral stainless steel locking spring in housing for contact retention
- Built-in interlocking features (dovetails) allow stacking and wire routing
- Reducing bushings down to 10 gauge
- File No. E28476 c  us

Single-Pole Housing



Cold-headed Contact



Inside Diameter .516±.005 [13.1±0.13] for 1/0 AWG
 .512±.005 [13.0±0.13] for 1 AWG, 2 AWG, and 4 AWG

Material and Finish

Housing—Polycarbonate, UL 94V-0
Retaining Spring—Stainless Steel
Contacts—Copper with silver plating
Mounting Clamp Sets—Aluminum
Reducing Bushings—Copper with silver plating

Electrical Characteristics

Current Carrying Capability—
 (1/0 AWG Wire)
 1 x 1 — 180 A, 84.9°F [29.4°C] T-Rise
 2 x 1 — 165 A, 78.3°F [25.7°C] T-Rise
 2 x 2 — 150 A, 76.6°F [24.8°C] T-Rise
Voltage Rating—600 V (both AC and DC)
Dielectric Withstanding Voltage—
 2200 VDC
Avg. Initial Contact Resistance—
 100 micro-ohms

Mechanical Characteristics

Average Mating/Unmating Force—20 lb. [89 N]
Max. Wire Insulation Diameter—
 .900 [22.86]
Wire Size Range—1/0, 1, 2, 4 AWG
 [53, 40, 35, 21 mm²]
Contact Retention—170 lb. [756 N]
Temperature Rating—-4°F to
 221°F [-20°C to 105°C]

Related Product Data

Accessories—page 15
Application Tooling—page 16
Technical Documents—page 26

Series 180 (Single-Pole)

Housing		Connector Kit Part Numbers ^{1,2}			
Color	Part Number	4 AWG	2 AWG	1 AWG	1/0 AWG
Blue	1604062-1	1604395-1	1604396-1	1604397-1	1604398-1
Black	1604062-2	1604395-2	1604396-2	1604397-2	1604398-2
White	1604062-3	1604395-3	1604396-3	1604397-3	1604398-3
Red	1604062-4	1604395-4	1604396-4	1604397-4	1604398-4
Green	1604062-5	1604395-5	1604396-5	1604397-5	1604398-5


¹ 1 Housing and 1 contact.
² Housings and contacts are bulk packaged.

Contacts (Cold-headed)

Wire Size	Part Number
4 AWG	1604040-1
2 AWG	1604039-1
1 AWG	1604041-1
1/0 AWG	1604038-1

AMP Power Series 350 Connectors (2-Pole Battery)

Product Facts

- Color-coded UL 94V-0 housings: yellow, orange, red, gray, blue, and green
- Keying feature helps prevent two different voltage color-coded housings from mating
- Genderless housings reduce inventory
- Contact wire range: 1/0, 2/0, 3/0, 4/0, 300 MCM
- Replaceable contacts
- Integral stainless steel locking spring in housing for contact retention
- File No. E28476 c 

Material and Finish

Housing—Polycarbonate, UL 94V-0
Retaining Spring—Stainless Steel
Contacts—Copper with silver plating
Reducing Bushings—Copper with silver plating

Electrical Characteristics

Current Carrying Capability—275 amp @ 83.3°F [28.5°C] T-Rise with 4/0 AWG wire
Voltage Rating—600 V, AC or DC
Dielectric Withstanding Voltage—2200 VDC
Average Initial Contact Resistance—50 micro-ohms

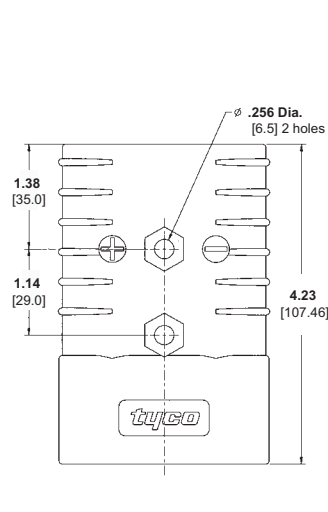
Mechanical Characteristics

Contact Retention—500 lbs. [2224.1 N]
Average Mating/Unmating Force—30 lbs. [133.5 N]
Max. Wire Insulation Diameter—1.10 [27.94]
Temperature Rating—-4°F to 221°F [-20°C to 105°C]
Wire Size Range—1/0, 2/0, 3/0, 4/0, 300 MCM [53, 67, 85, 107, 152 mm²]

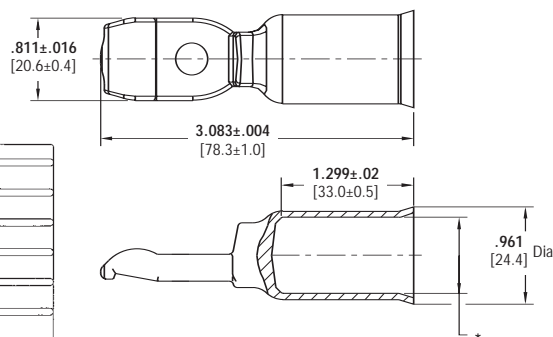
Related Product Data

Accessories—page 15
Application Tooling—page 16
Technical Documents—page 26
Reducing Bushing—(1/0 to 2/0 AWG) Part No. 1604121-6
Cable Clamp—Part No. 647688-1

2-Pole Housing



Cold-headed Contact



*Inside Diameter .437±0.004 [11.10 +/- 0.10] for 1/0 AWG
 .488±0.004 [12.40 +/- 0.10] for 2/0 AWG
 .579±0.004 [14.70 +/- 0.10] for 3/0 AWG
 .642±0.004 [16.30 +/- 0.10] for 4/0 AWG
 .752±0.004 [19.10 +/- 0.10] for 300 MCM

Note: 300 MCM contact dimensions shown, unless otherwise noted.

Series 350 (2-Pole)

Housing		Connector Kit Part Numbers ^{1,2}				
Color	Part Number	1/0 AWG	2/0 AWG	3/0 AWG	4/0 AWG	300 MCM
Yellow	1604050-1	1604060-1	1604059-1	1604058-1	1604057-1	1604056-1
Orange	1604050-2	1604060-2	1604059-2	1604058-2	1604057-2	1604056-2
Red	1604050-3	1604060-3	1604059-3	1604058-3	1604057-3	1604056-3
Gray	1604050-4	1604060-4	1604059-4	1604058-4	1604057-4	1604056-4
Blue	1604050-5	1604060-5	1604059-5	1604058-5	1604057-5	1604056-5
Green	1604050-6	1604060-6	1604059-6	1604058-6	1604057-6	1604056-6

¹ 1 Housing and 2 contacts.
² Housings and contacts are bulk packaged.

Contacts (Cold-headed)

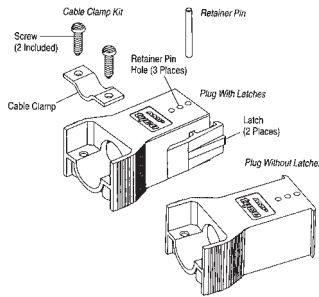
Wire Size	Part Number
1/0 AWG	1604055-1
2/0 AWG	1604054-1
3/0 AWG	1604053-1
4/0 AWG	1604052-1
300 MCM	1604051-1

Voltage Key Color Chart

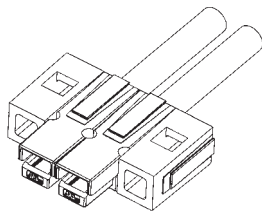
Housing Color	Voltage
Yellow	12V
Orange	18V
Red	24V
Gray	36V
Blue	48V
Green	72V

Color code given for various voltages is only a suggestion, other codes and keys available upon request.

Series 15/30/45 Hardware Kits



Series 15/30/45 Mounting Wings



AMP Power Series Accessories

Series 15/30/45 Accessories

Part Number	Description
Mounting Wings	
1445960-1	Red, UL 94V-0
Spacers	
1445959-1	Red, UL 94V-0, Short
1445959-2	Red, UL 94V-0, Long
Retaining Pins for use with 15 A/30 A/45 A	
1445886-4	.25 [6.35] length
1445886-5	.44 [11.18] length
1445886-6	.85 [21.6] length

Part Number	Description
Plug and Receptacle Housings	
1604077-1	Receptacle, 2, 3, 4 pole
1604078-1	Receptacle, 5, 6 pole
1604079-1	Receptacle, 7, 8 pole
1604080-1	Plug Frame without Latch, 2, 3, 4 pole
1604081-1	Plug Frame without Latch, 5, 6 pole
1604082-1	Plug Frame without Latch, 7, 8 pole
1604083-1	Plug Frame with Latch, 2, 3, 4 pole
1604084-1	Plug Frame with Latch, 5, 6 pole
1604085-1	Plug Frame with Latch, 7, 8 pole

Part Number	Description
Hardware Kits (Cable clamp, screws & retaining pins)	
647747-3	4 pole
647747-2	6 pole
647747-1	8 pole

Series 50 Accessories

Part Number	Description
647746-1	Plastic Handle & Screw Kit, Red
1744077-1	Dust Cover, Black
647745-1	Strain Relief Cable Clamp Kit, #6 & #8 AWG
647743-1	Strain Relief Cable Clamp Kit, #10 & #12 AWG
647765-1	Strain Relief Cable Clamp Kit, Single Conductor #6

Please contact Product Engineering or Product Management for availability.

Reducing Bushings	
Wire Size (AWG)	Part Number
6 to 8	1445762-1
6 to 10-12	647840-1
6 to 14-16	1445763-1

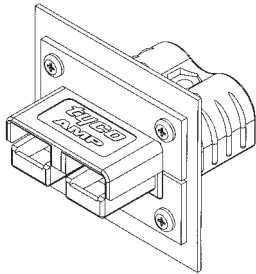
(permits use of smaller wires with 6 AWG contact Part Number 647877-1)

Series 75 Accessories

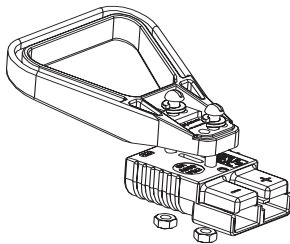
Part Number	Description
Mounting Wings	
1445729-1	Blue, oval mounting hole
1445729-2	Blue, round mounting hole
Retaining Pins for use with 75 A/120 A/180 A	
1445886-1	75 A/120 A/180 A hsgs, 1 high block
1445886-2	75 A/120 A/180 A hsgs, 2 high block
1445886-3	75 A/120 A/180 A hsgs, 3 high block
Reducing Bushings for Series 50 A and 75 A	
1445762-1	6 to 8 AWG
647840-1	6 to 10-12 AWG
1445763-1	6 to 14-16 AWG

Mounting clamp set part numbers available.

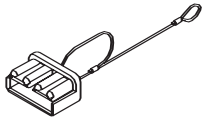
Series 120
Panel Mounting Clamp



Series 175 & 350
Handle Kit



Series 175
Dust Cover Assembly



AMP Power Series Accessories (Continued)

Series 120 Accessories

Part Number	Type	Description
Retaining Pins for use with 75A/120A/180A		
1445886-1	Single-Pole	1 high block
1445886-2	Single-Pole	2 high block
Reducing Bushings		
1604072-3	Single/2-Pole	2 to 4 AWG
1604072-2	Single/2-Pole	2 to 6 AWG
1604072-1	Single/2-Pole	2 to 8 AWG
Mounting Clamp Sets		
647721-1	Single-Pole	2- & 4- pole configuration
647722-1	Single-Pole	3-pole configuration
Panel Mounting Clamp		
1744090-1	2-Pole	—

Series 175, 180 & 350 Accessories

Part Number	Type	Description
Reducing Bushings		
1604121-1	175/180	10 to 1/0 AWG
1604121-2	175/180	6 to 1/0 AWG
1604121-5	175/180	4 to 1/0 AWG
1604121-4	175/180	2 to 1/0 AWG
1604121-3	175/180	1 to 1/0 AWG
1604121-6	350	1/0 to 2/0 AWG
Handle Kit		
647737-1	175 2-Pole	Red
647737-2	175 2-Pole	Gray
1-647737-1	350 2-Pole	Red
1-647737-2	350 2-Pole	Gray

Series 175 & 180 Accessories

Part Number	Type	Description
Cable Clamps		
647700-1	Clamp	Single Conductor
647703-1	Clamp	2 Single Conductors
647697-1	Clamp	Twin Conductor Cable
647688-1	350	Cable Clamp
647695-1	180	Single pole version
647720-1	180	2 pole version
647719-1	180	3 pole version
Dust Cover		
647691-1	175	Dust Cover Assembly (Shown)
647692-1	175	Dust Cover Housing

AMP Power Series Tooling

AMP-O-LECTRIC Model "G" Terminating Machines, Part Nos. 354500-1, -9, -11 (409-5842)



Semiautomatic bench machines for crimping reeled terminals and contacts, featuring a quiet and reliable direct motor drive, microprocessor controls for ease of setup and operation, and guarding and lighting designed for operator convenience and safety. All models are equipped with either manual or automatic precision adjustment of crimp height. Machine-mounted sensors are available for crimp quality monitoring using conventional miniature-style applicators.

For more information, request Catalog 65828, Video 198116, Catalog 82275 [Crimp Quality Monitor (CQM)], Video 198094.

AMP 3K/40 and AMP 5K/40 Terminating Machines (409-10047)

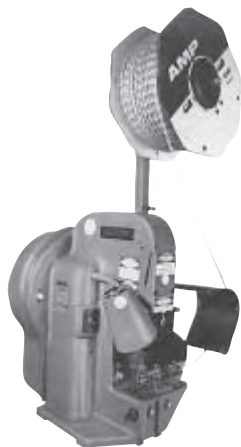


The AMP 3K/40 and AMP 5K/40 Terminators are designed for customers that require the increased output and quality of a semiautomatic machine at a competitive price. By incorporating the most commonly requested features as standard and offering a long list of optional equipment, these terminators offer flexibility to meet the specific needs of various applications at the lowest possible cost.

- 3,000 lb [1361 kg] max. crimp force (AMP 3K/40); 5,000 lb [2268 kg] max. crimp force (AMP 5K/40)
- Toolless removal of applicators and guards
- Jog capability
- Quiet, fast operation — 80/76 dBA and cycle time less than 0.400 seconds
- Accepts Heavy Duty Mini style applicators
- Wide range of optional equipment such as toolless precision crimp height adjust, batch counter, CQM capability and work light

For more information, request Catalog 1654856.

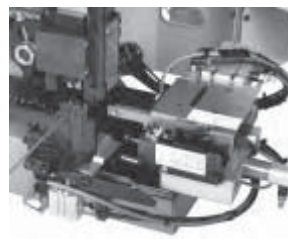
AMP-O-LECTRIC Model "K" Terminating Machine Part No. 1-471273-3 (409-5128)



AMP-O-LECTRIC Model "K" Terminating Machine with a permanently-mounted applicator that accepts interchangeable die sets to apply a variety of tape-mounted terminals and splices. Many of the die sets can also be used in AMP-O-LECTRIC Terminating Machines with a tape applicator.

For more information, contact Tyco Electronics.

Stripping Module (for the AMP 3K/40 and AMP 5K/40 Terminating Machines and AMP-O-LECTRIC Model "G" Terminator)



The combination of the Stripping Module with the AMP 3K/40 and AMP 5K/40 Terminating Machines or the AMP-O-LECTRIC Model "G" Terminator provides an economic and proficient method of stripping the wire and crimping terminals on the same machine. The module accepts End- and Side-Feed HDM Applicators (32-14 AWG) and operates in three modes: crimp only, strip only, or strip and crimp. It can be installed on existing machines in the field or purchased as one unit from the factory.

For more information, request Catalog 1309085.

Electronics

AMP Power Series Tooling (Continued)

Power Applicator
Part Number 68296-1
(Customer Manual 409-2661)



The Semiautomatic Power Applicator is designed to produce a carefully controlled uniform pressure crimp while providing a high rate of production. The applicator features matching dies that fully bottom at the completion of the crimp to provide proper crimp height. The one die set is fully adjustable to provide the full range of crimp heights for all wire sizes.

500 MCM Heavy Duty Cable Cutter

Part No. 605742-1
(408-4557)



- Designed to cut aluminum or copper cable up to 500 MCM.
- Light weight tubular steel handles with hand grips
- 21" overall length

Cable Insulation Stripper/Slitter

Part No. 606700-1
(408-9688)



- Used on single or multiple conductor cable up to 1.75" in diameter

Contact Extraction Tool

Part No. 68265-1 or standard insulated screwdriver



Hand Tools for Cold-headed Contacts and Heavy-Duty Lug Terminals (Single-Indent Crimp)



For AMP Power Series 50 and 75 Contacts			Tyco Electronics Crimp Tool Part No. 1526955-1 Includes Adapter		OR American Electrical Terminal (AET) Crimp Tool Part No. T-406 Includes Adapter		Also For Heavy-Duty Lug Terminals (See pages 28, 29)	
Wire Size (AWG)	Strip Length	Part No.	Part Number	Marking	Part Number	Marking	Wire Size (AWG)	Strip Length
6	.475-.525	647877-1	1527508-1	A	5992	A	6	7/16 [11.11]
8	[12.06-13.33]	647878-1					4	1/2 [12.70]
10-12		647879-1					1/0	11/16 [17.46]
—	—	—	1527507-1	B	5991	B	2/0	11/16 [17.46]
—	—	—	1527505-1	C	5989	C	2	9/16 [14.29]
—	—	—	No Adapter	—	No Adapter	—	1	5/8 [15.87]
—	—	—	—	—	—	—	3/0	3/4 [19.05]
—	—	—	—	—	—	—	4/0	13/16 [20.64]

Pneumatic Tools for Cold-headed Contacts (Dual-Indent Crimp) and Heavy-Duty Lug Terminals (See pages 28, 29)





AMP Power Series Contacts			PICO* Pneumatic Tools**						
Series	Wire Size (AWG)	Part No.	400 Series Power Unit		Locator			Closure Dim.	
			Preferred	Alternate	Die	Preferred	Alternate		
50/50 FPR/75	6	647877-1	400-BEC	400-BHD	414DA-4583	4582-1	9616-1	.152 [3.86]	
	8	647878-1			414DA-4583			.152 [3.86]	
	10-12	647879-1			414DA-4582			.134 [3.40]	
120	2	1445995-1	400-BEC	400-BHD	414DA-4580	4580-1	None	.200 [5.08]	
	4	1445996-1							
	6	1445997-1							
50/50 FPR/75	6	647877-1	500-DEC	500-D	514DA-7033	7033-1	7034-1	.152 [3.86]	
	8	647878-1			514DA-7033			.152 [3.86]	
	10-12	647879-1			514DA-7034			.134 [3.40]	
120	2	1445995-1	500-DEC	500-D	514DA-7035	7035-1	None	.200 [5.08]	
	4	1445996-1							
	6	1445997-1							
175/180	1/0	1604038-1	500-DEC	500-D	514DA-10023	10034-1	None	.250 [6.35]	
	2	1604039-1			514DA-10024				
	4	1604040-1			514DA-10025				
350	1	1604041-1	500-DEC	500-D	514DA-10026	None	None	.525 [13.34]	
	300 MCM	1604051-1			514DA-10027			10023-2	.400 [10.16]
	4/0	1604052-1			514DA-10026			10023-2	
	3/0	1604053-1			514DA-10025			10023-2	.360 [9.14]
	2/0	1604054-1			514DA-10024			10023-1	.325 [8.26]
	1/0	1604055-1			514DA-10023			10023-1	.250 [6.35]

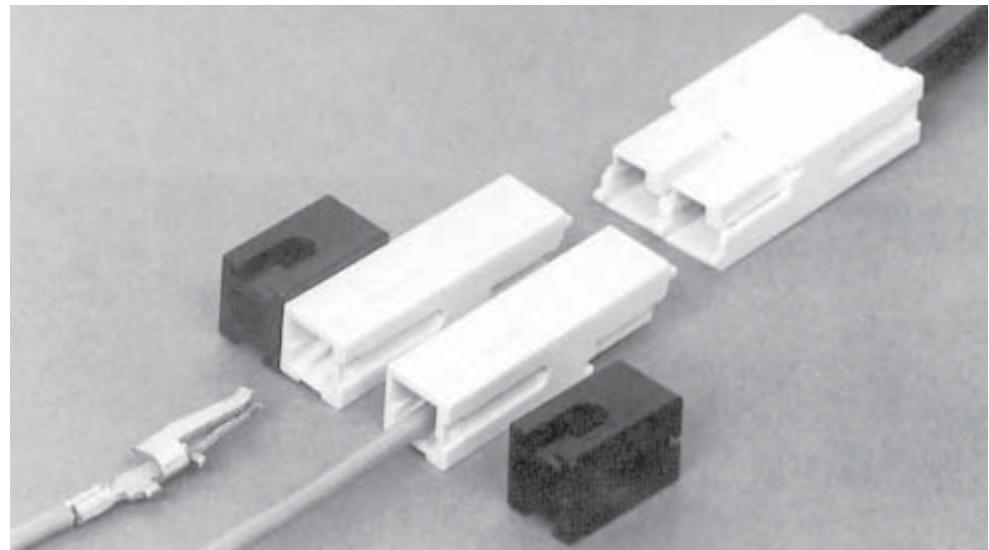
* Pacific Industrial Components (PICO) Corporation, 444 Constitution Ave., Camarillo, CA 93012-8505; Tel: (805) 388-5510

** Pneumatic Tool consists of a power unit, die, and locator; it can be used as a portable hand tool, bench-mounted hand tool, or foot-controlled unit.

AMPINNERGY Wire-To-Wire Connectors

Product Facts

- Rated to 600 VAC (RMS)
- Flame retardant housings 94V-0
- Housings, adapters, and power terminals keyed for proper assembly
- Stackable housings provide easy wire routing and neat wire dressing
- Built-in interlocking features better resist shock and vibration
- Usable as in-line connector, or as panel and surface mount connector
- Available in six different colors for circuit coding and identification
- Choice of two power terminals accommodates 10-12 AWG and 14-16-18 AWG conductors
- Recognized under the  Component Program of Underwriters Laboratories Inc., File No. E28476
- CSA Certified, File No. LR7189 
- VDE Registered #5133



AMPINNERGY Wire-To-Wire (WTW) Connectors provide a reliable and efficient means of interconnecting conductors employed to carry up to 600 VAC in power circuits or networks.

The WTW Connectors consist of mating hermaphroditic, flame retardant polycarbonate housings into which customer terminated power contacts are inserted. Stackable in four directions through the use of molded interlocking keyways, the connectors make wire routing and dressing orderly and easy to accomplish. More importantly, the built-in interlocking features on the connectors and the accessory mounting adapters provide better resistance to the effects of shock and vibration, keeping the interconnect more stable and secure.

The design features of the WTW Connector make it easily applicable to free hanging, surface mounted or panel mounted applications. By simply sliding the accessory mounting adapters into the molded keyways of the connector housing, a free hanging

connector can be transformed into a surface mount connector or a panel mount connector. Customer supplied 8-32 screws and nuts may be used to secure the connectors configured with the mounting adapters to printed circuit boards or distribution panels. The same hardware may be used to secure the connectors to pre-cut openings in the panels.

Furthermore, WTW Connector housings, mounting adapters and power terminals are all provided with alignment or keying features that make it difficult to improperly assemble and apply the connector. Alignment slots and tabs on the plastic connector housings provide for easy mating of the housings, even in the dark! Mounting adapters have a keyway on one side and a key on the other side providing for easy assembly to the connector by touch alone if necessary. And the power terminals have a side tab that helps prevent the incorrect insertion of the terminated conductor into the housing.

Once inserted, the contacts firmly latch within the connector housing.

The WTW Connector system is available in six different and distinctive colors which makes circuit differentiation and identification possible. The crimped power terminals will accommodate either 10-12 AWG or 14-16-18 AWG stranded conductors. Depending upon the conductor size and the number of conductors in the connector configuration, the current rating ranges from 10 amperes to 55 amperes.

Technical Documents

Product Specification
108-1373 AMPINNERGY WTW Connectors

Application Specification
114-6051

Instruction Sheets
408-3277 AMPINNERGY Wire-To-Wire Stackable Connectors
408-3198 Inspection of AMPINNERGY System Power Contacts

Electronics

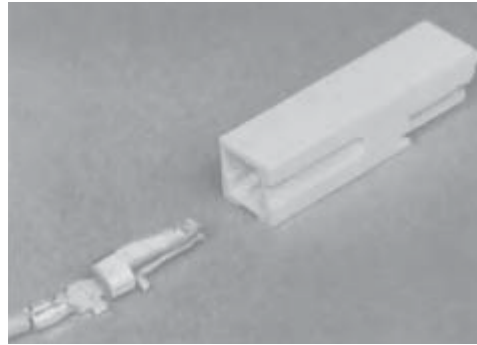
AMPINNERGY Wire-To-Wire Connectors (Continued)

Housings

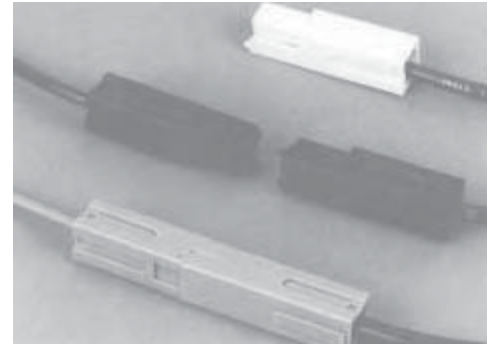
Material and Finish

Housing — Polycarbonate, 94V-0

For surface mounting and panel mounting information, see Instruction Sheet 408-3277, AMPINNERGY Wire-To-Wire Stackable Connectors.

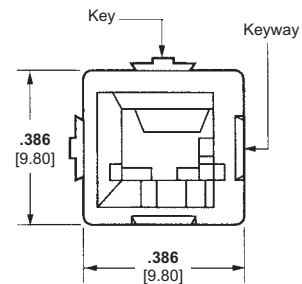
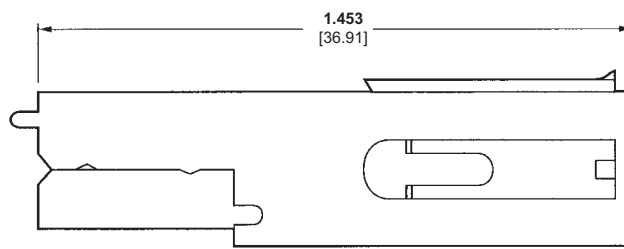


Customer terminated power contacts are inserted into housings



Free Hanging Interconnections

Color	Housing Part Numbers
White	556137-1
Black	556137-2
Green	556137-3
Red	556137-4
Blue	556137-6
Gray	556137-8



Wire-To-Wire Connector Housing

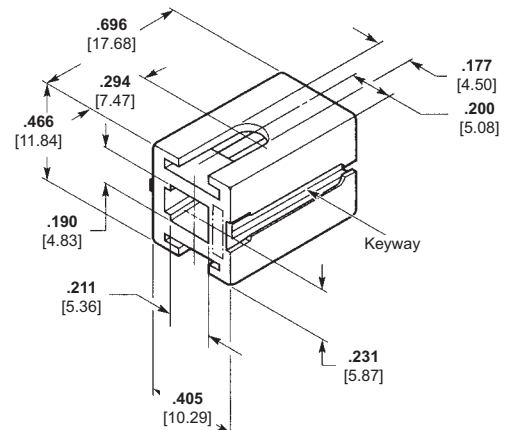
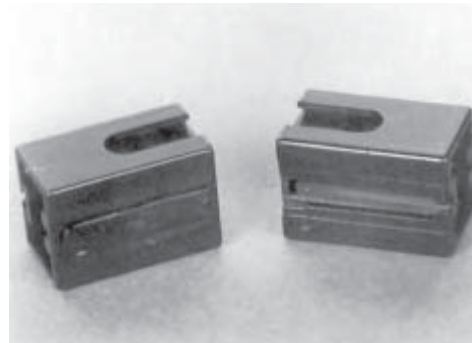
Mounting Adapters

Part Number 557313-1

Material and Finish:

Housing — Polycarbonate, Black

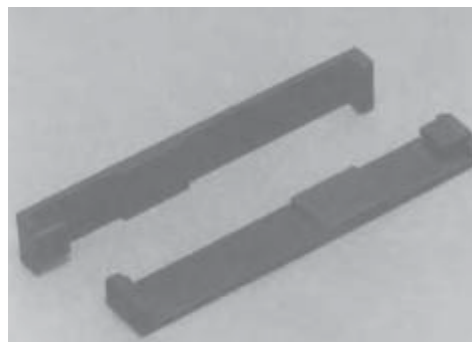
Two mounting adapters can be used with one or more connector housings to provide thru-panel or horizontal surface mounting capability of the completed assembly.



External Locking Latch Clip

Part Number 557640-1

AMPINNERGY Wire-To-Wire Connector Housings have an integral locking feature designed to keep housings mated in most applications. However, the External Locking Latch Clip may be used as needed in applications where severe vibration or tension may pull mated housings apart.



AMPINNERGY Wire-To-Wire Clips Part Number 557640-1



AMPINNERGY Wire-To-Wire Clips (Installed) Part Number 557640-1

AMPINNERGY Wire-To-Wire Connectors (Continued)

Power Terminals

Material and Finish

Contacts — Copper alloy plated with .000100 [0.00254] minimum tin

The Wire-To-Wire Connector Power Contacts are available in either strip form or in loose piece form.

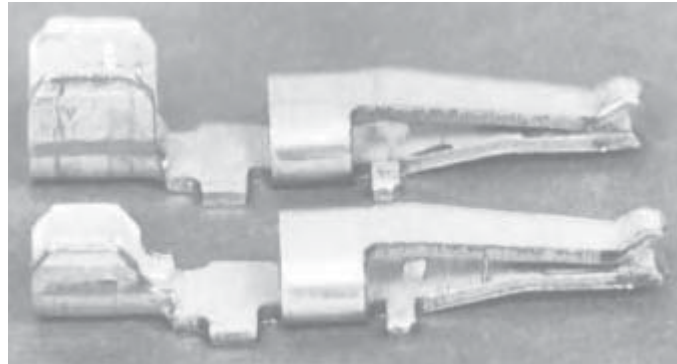
Contacts in strip form are terminated on continuous feed type terminators and the loose piece contacts are terminated with the hand tool or pneumatic tool.

For wire preparation and crimped contact inspection information, refer to Instruction Sheet 408-3198, Inspection of AMPINNERGY System Power Contacts.

Loose Piece

Part Number 556136-2

Part Number 556135-2

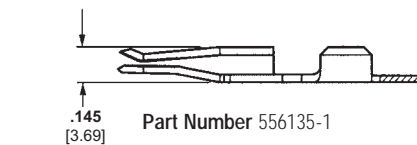


Contact Part Numbers	Wire Size (AWG)	Hand Tool Part Number	Pneumatic Tool Part Numbers	Die Set Part Numbers
556135-2 (loose piece)	18-16	69710-1	189721-2*	58493-1
	14			58492-1
556136-2 (loose piece)	12			58490-1
	10			58491-1

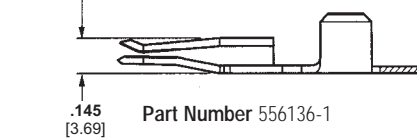
*Requires "C" Head Adapter Part No. 318161-1 and Adapter Holder Part No. 189928-1. See Catalog 124208 for more information.

Note: The same Hand Tool or Pneumatic Tool and Die Sets may be used to apply the Wire-To-Board Connector Terminals.

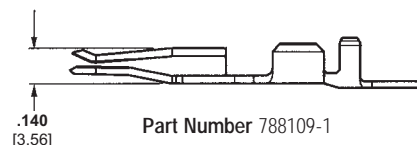
Strip Form



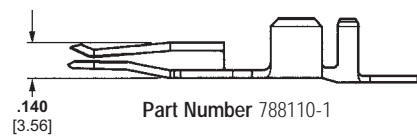
Part Number 556135-1



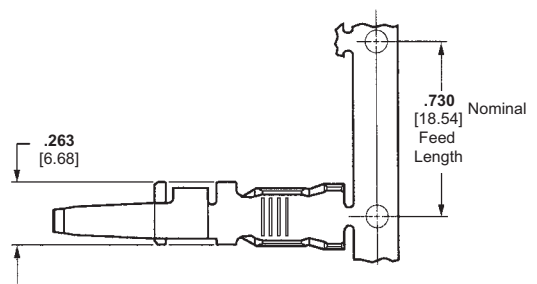
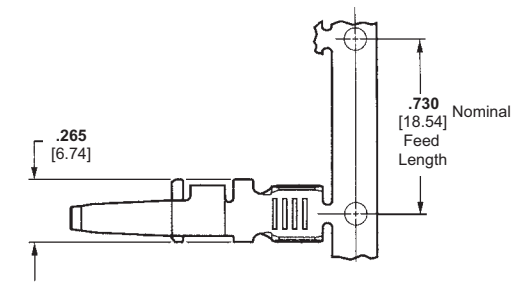
Part Number 556136-1



Part Number 788109-1





Part Number 788110-1



Contact Part Numbers	Wire Size (AWG)	AMP-O-LETRIC Model G Terminating Machine	Applicator Part Numbers
556135-1 (strip)	18-16-14	354500-1	567403-3
556136-1 (strip)	10-12	354500-1	567256-6
788109-1 (strip)	18-14	354500-1	680447-3
788110-1 (strip)	10-12	354500-1	680449-3

AMPINNERGY Wire-To-Board Connectors

Product Facts

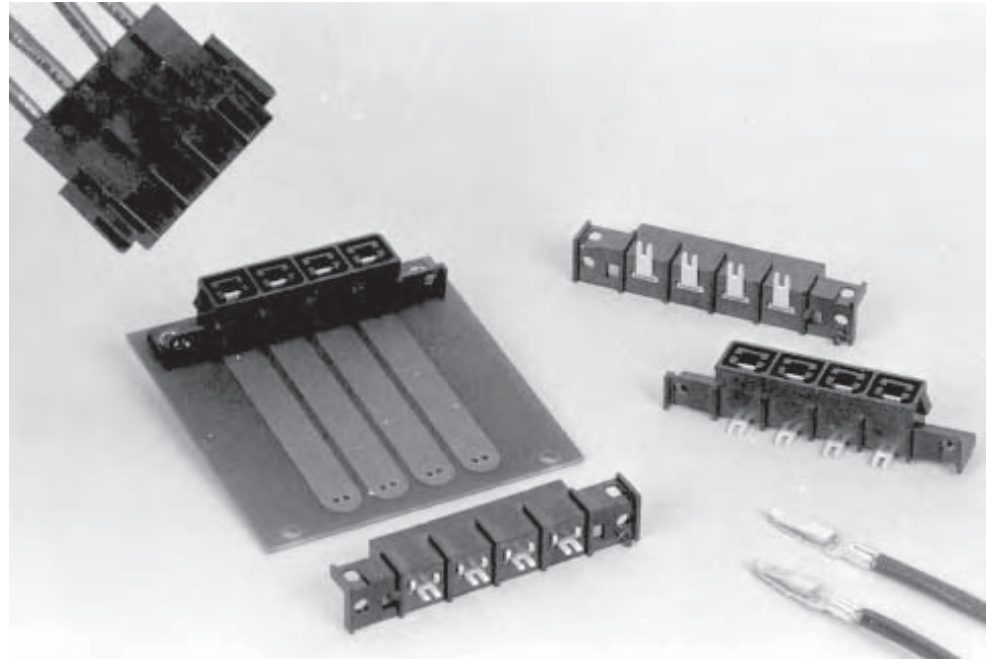
- Ratings: 600 VAC (RMS), current ratings range from 12-35 amps
- Receptacles polarized to plug
- Receptacles and plugs available in contact configurations of 2 through 8 positions
- Vertical receptacle polarized to PCB
- Receptacle contacts have dual solder posts for efficient heat dissipation, low millivolt drop and mechanical strength
- Receptacles may be mounted on PCBs .062 to .125 inch thick
- Plugs have positive latching to receptacles
- Removable crimp contacts latch firmly in plug
- Plugs are one-piece design
- Two ranges of crimp contacts accommodate either 10-12 AWG or 14-16-18 AWG conductors
- UL Recognized, File No. E28476 
- CSA Certified, File No. LR7189-239 

Technical Documents

Product Specification
108-1349 AMPINNERGY WTB Connectors

Application Specification
114-6044 AMPINNERGY WTB Connectors

Instruction Sheets
408-3236 Installation of AMPINNERGY WTB Connectors
408-3198 Inspection of AMPINNERGY Contacts



AMPINNERGY Wire-To-Board (WTB) Connectors

Connectors provide a convenient and efficient means of delivering up to 600 VAC to component printed circuit boards and other power distribution devices in computers and peripherals, telephone systems and appliances. The WTB connectors also have automotive and industrial applications.

Receptacles

The AMPINNERGY WTB connector receptacles can be installed on pc boards varying in thickness from .062 inch to .125 inch. A polarizing pin is provided on the vertical receptacle assembly to aid in proper positioning on the pc board. Both the vertical and right-angle assemblies are polarized for accurate mating to the plug assemblies. The receptacle

assemblies are available in contact configurations ranging from two to eight positions.

Plugs

The single piece plug housings are available in contact configurations to mate with the receptacles. The plug is equipped with positive latches to allow full and more secure mating to the respective receptacle.

A make-first/break-last feature is designed into position 1 of the plug assemblies to provide grounding protection.

Contacts

The crimp contacts will accommodate either 10-12 AWG or 14-16-18 AWG conductors. The contacts latch firmly within the plug housing.

Vertical PCB Receptacles

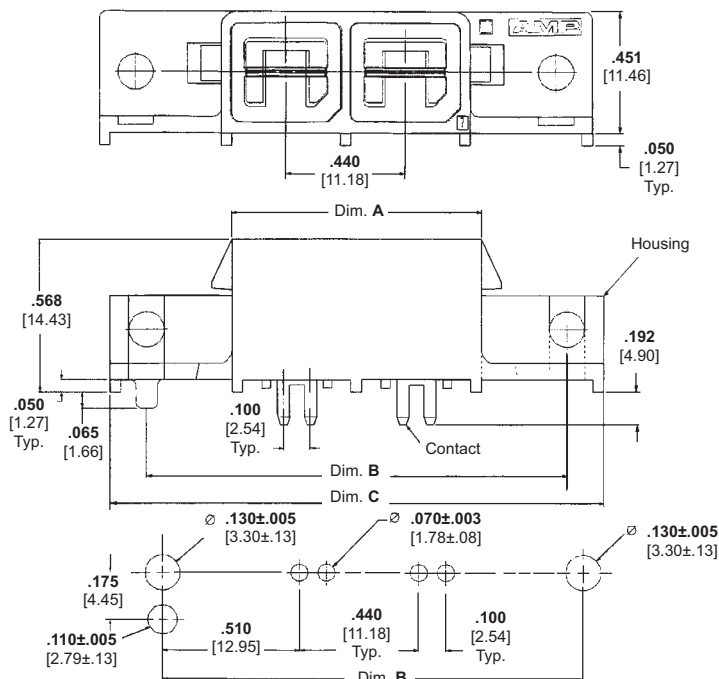
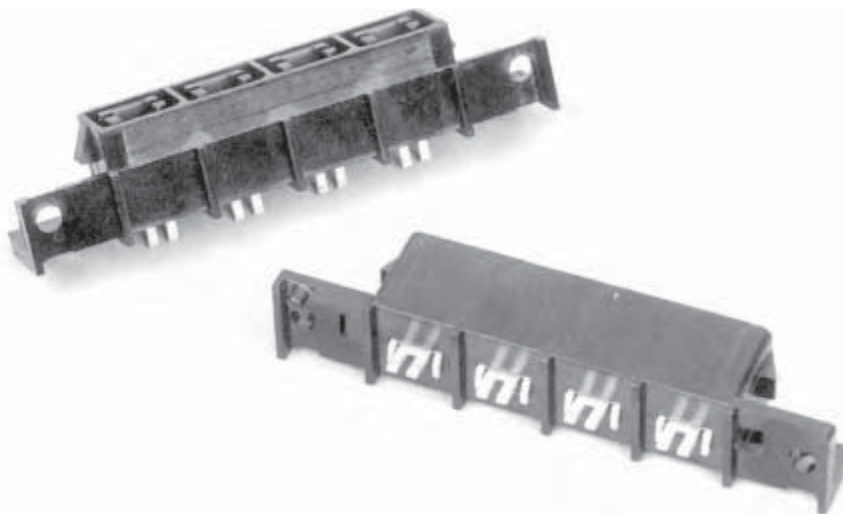
Product Facts

- Withstands vapor phase, infrared and wave soldering processes
- .040 minimum standoff to PCB
- Polarized to PCB; to plug
- Contact centerline spacing: .440
- Overall height on PCB: .600
- Fits PCB thickness .062 through .125
- Contacts have dual solder posts for efficient heat dissipation, low millivolt drop and mechanical strength
- Positive latching to mating plug

Material and Finish

Housing — Polyphenylene Sulfide, Black, 94V-0

Contacts — Tin Plated Copper Alloy



PCB Thickness — .062-.125

No. of Positions	Dimensions			Receptacle Part Numbers
	A	B	C	
2	.93 23.50	1.56 39.62	1.84 46.61	556881-2
3	1.37 34.68	2.00 50.80	2.28 57.79	556881-3
4	1.81 45.85	2.44 61.98	2.72 68.97	556881-4
5	2.25 57.03	2.88 73.15	3.16 80.14	556881-5
6	2.69 68.20	3.32 84.33	3.60 91.32	556881-6
7	3.13 79.38	3.76 95.50	4.04 102.49	556881-7
8	3.57 90.56	4.20 106.68	4.48 113.67	556881-8

PCB Thickness — .250

No. of Positions	Receptacle Part Numbers
4	558574-1
6	558084-1

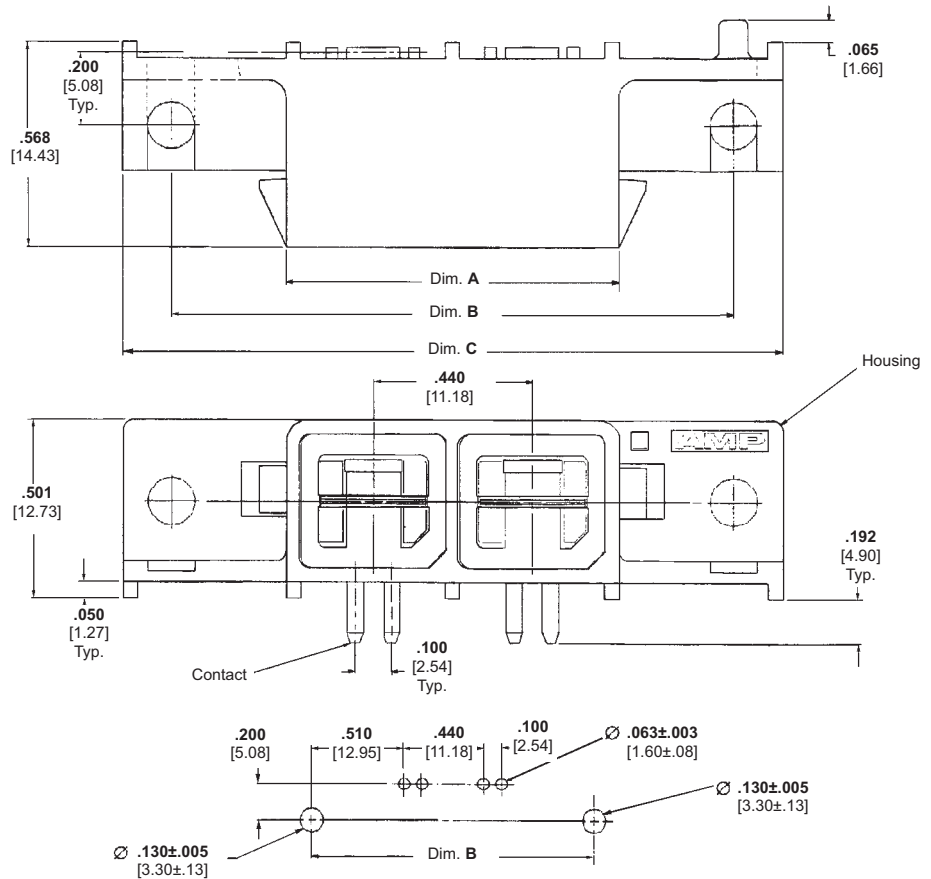
Right-Angle PCB Receptacles

Product Facts

- Withstands vapor phase, infrared and wave soldering processes
- .040 minimum standoff to PCB
- Receptacles polarized to plug
- Contact centerline spacing: .440
- Overall height on PCB: .600
- Fits PCB thickness .062 through .125
- Contacts have dual solder posts for efficient heat dissipation, low millivolt drop and mechanical strength
- Positive latching to mating plug

Material and Finish

Housing — Polyphenylene Sulfide, Black, 94V-0
Contacts — Tin Plated Copper Alloy



PCB Thickness — .062-.125

No. of Positions	Dimensions			Receptacle Part Numbers
	A	B	C	
2	.93 23.50	1.56 39.62	1.84 46.61	556882-2
3	1.37 34.68	2.00 50.80	2.28 57.79	556882-3
4	1.81 45.85	2.44 61.98	2.72 68.97	556882-4
5	2.25 57.03	2.88 73.15	3.16 80.14	556882-5
6	2.69 68.20	3.32 84.33	3.60 91.32	556882-6
7	3.13 79.38	3.76 95.50	4.04 102.49	556882-7
8	3.57 90.56	4.20 106.68	4.48 113.67	556882-8

AMPINNERGY Wire-To-Board Connectors (Continued)

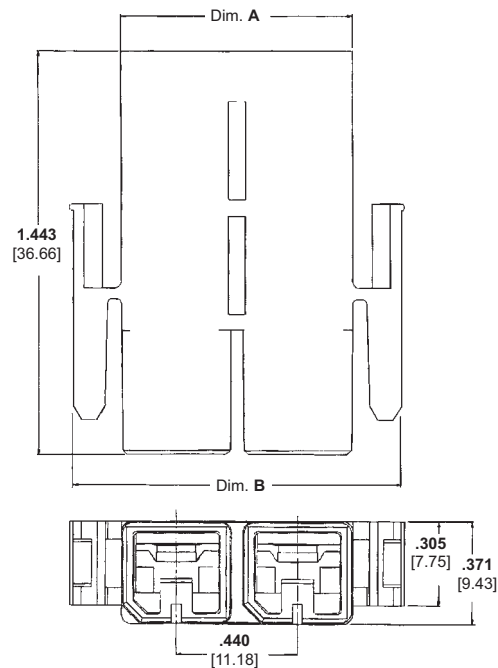
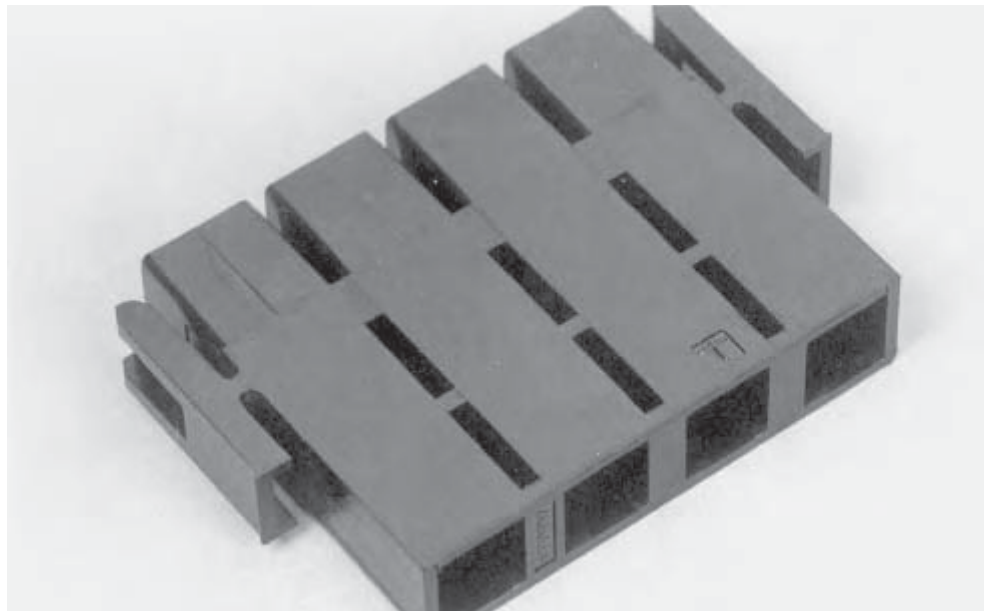
Plug Housings

Product Facts

- One-piece housing
- Polarized to mating receptacles
- Positive latching to mating receptacles
- Accepts crimp contacts P/N 556880-2 and 556883-1
- Internal latching of crimp contact

Material

Housing — Polycarbonate, Black, 94V-0



No. of Positions	Dimensions		Plug Part Numbers
	A	B	
2	.85 21.42	1.20 30.31	556879-2
3	1.29 32.59	1.64 41.48	556879-3
4	1.73 43.77	2.08 52.66	556879-4
5	2.17 54.94	2.52 63.83	556879-5
6	2.61 77.30	2.96 75.01	556879-6
7	3.05 77.30	3.40 86.19	556879-7
8	3.49 88.47	3.84 97.36	556879-8

Electronics

AMPINNERGY Wire-To-Board Connectors (Continued)

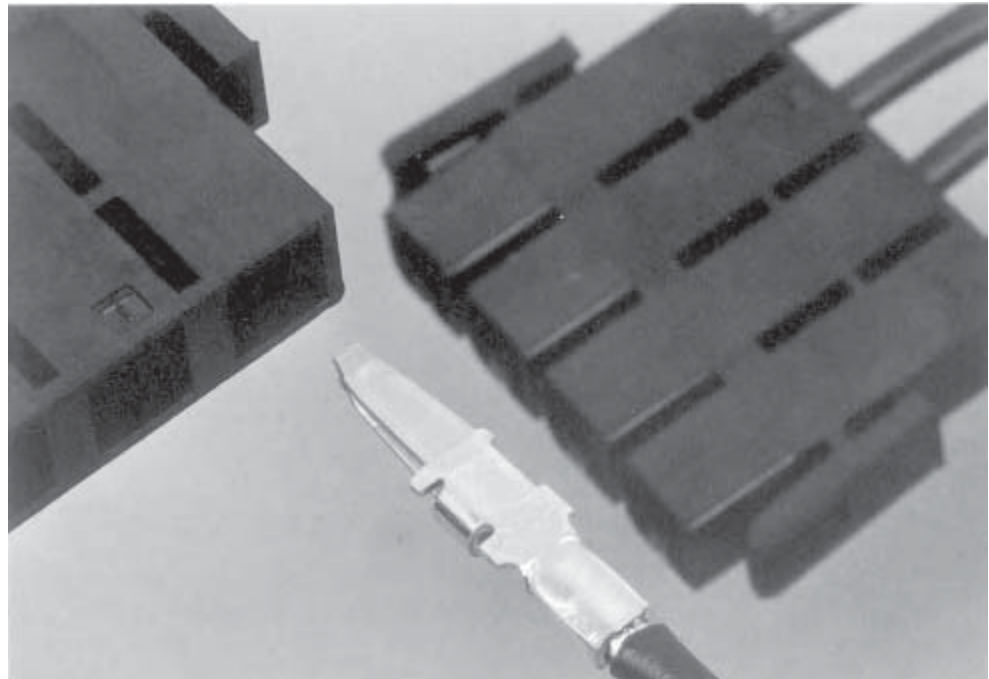
Crimp Contacts

Product Facts

- Contacts are dual beam design

Material and Finish

Contacts—Tin Plated Copper Alloy

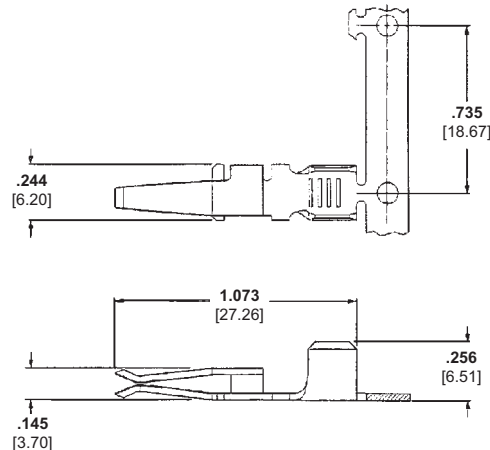


**Wire barrel accepts one
10 or 12 AWG stranded
copper conductor**

Part Number 556880-2 Strip
Part Number 556880-1 Loose Piece

**Application Tooling
Applicator Part No.**

- 567256-3 (for Lead Makers)
- 567256-4 (for AMP-O-LECTRIC Model K Machine)
- 567256-6 (for AMP-O-LECTRIC Model G Machine)

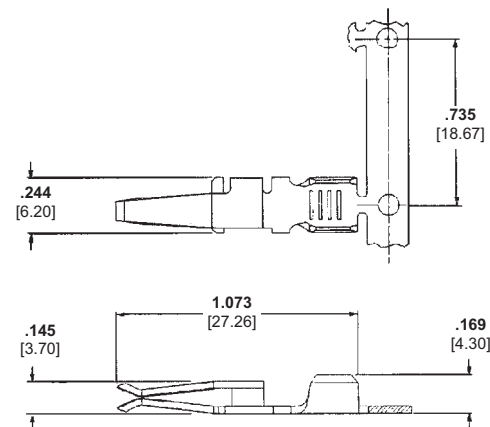


**Wire barrel accepts one
14, 16 or 18 AWG stranded
copper conductor**

Part Number 556883-1 Loose Piece
Part Number 556883-2 Strip

Application Tooling Part No.

- 69710-1 Hand Tool
- 58492-1 Die Set (14 AWG)
- 58493-1 Die Set (18-16 AWG)
- 91308-1 Extraction Tool



Technical Documents

Various technical documents are available for your use:

Product Specifications describe technical performance characteristics and verification tests. They are intended for the Design, Component and Quality Engineer.

108-1349 AMPINNERGY WTB Connectors

108-1373 AMPINNERGY WTW Connectors

Application Specifications describe requirements for using the product in its intended application and/or crimping information. They are intended for the Packaging and Design Engineer and the Machine Setup Person.

114-6044 AMPINNERGY WTB Connectors

114-6051 AMPINNERGY WTW Connectors

114-13071 AMP Power Series 50 (Double-Pole) and 75 (Single Pole) Connector Assemblies

114-13107 AMP Power Series 120 (Single- and Double-Pole) Connector Assemblies

114-13118 AMP Power Series 175 (Double-Pole) and 180 (Single-Pole) Connector Assemblies

114-13119 AMP Power Series 350 (Double-Pole) Connector Assemblies

114-13127 AMP Power Series 15, 30 and 45 (Single-Pole) Connector Assemblies

114-13149 AMP Power Series 180 (Single-Pole) Connector Assemblies

Instruction Sheets provide instructions for assembling or applying the product. They are intended for the Manufacturing Assembler or Operator.

408-3198 Inspection of AMPINNERGY System Power Contacts

408-3236 Installation of AMPINNERGY WTB Connectors

408-3277 AMPINNERGY Wire-To-Wire Stackable Connectors

408-8636 AMP Power Series 50 Connector Assemblies

408-8868 AMP Power Series 175 and 350 Connector Assemblies with Cable Clamp Kits

408-4557 Heavy Duty Cable Cutter Hand Tool 605743-1

408-4559 Heavy Duty Cable Cutter Hand Tool 605744-1

408-4561 Heavy Duty Cable Cutter Hand Tool 600769-1

408-8540 Crimp Tool 1526955-1

408-9688 Cable Stripper/Slitter Tool 606700-1

408-9816 Handling of Reeled Products

Test Summary

502-1136 50/75 Product Evaluation

502-1160 15/30/45 Product Evaluation

502-1166 120 Product Evaluation

502-1167 120 Competitive Evaluation

502-1172 AMP Power Series 175/180 Product Evaluation

502-1173 AMP Power Series 350 Product Evaluation

Customer Manual

409-5128 AMP-O-LECTRIC Model K Terminator Machine 1-471273-2

Electronics

Part Number Index

Note: This numerical index lists all cataloged parts by base no. only. Complete part nos. (with prefixes and/or suffixes) are shown on the page(s) indicated.

Part No.	Page
556135	20
556136	20
556137	19
556879	24
556880	24,25
556881	22
556882	23
556883	24,25
557313	19
557640	19
558084	22
558574	22
647688	13,15
647691	15
647692	15
647695	15
647697	15
647700	15
647703	15
647719	15
647720	15
647721	15
647722	15
647737	15
647743	14
647745	14
647746	14
647747	14
647754	6,7,8
647755	6,7,8
647756	6,7,8
647765	14
647840	14
647845	6
647877	6,7,8,14
647878	6,7,8
647879	6,7,8
647892	6
647893	6
680447	20
680449	20
788109	20
788110	20
1445715	8
1445716	8
1445729	14
1445762	14
1445763	14
1445886	14,15
1445957	5
1445959	14
1445960	14
1445962	5
1445994	10
1445995	9,10,17
1445996	9,10,17
1445997	9,10,17
1445998	10
1445999	10
1446000	10
1604001	9

Part No.	Page
1604002	9
1604037	11
1604038	11,12,17
1604039	11,12,17
1604040	11,12,17
1604041	11,12,17
1604042	11
1604043	11
1604044	11
1604045	11
1604050	13
1604051	13,17
1604052	13,17
1604053	13,17
1604054	13,17
1604055	13,17
1604056	13
1604057	13
1604058	13
1604059	13
1604060	13
1604062	12
1604072	15
1604077	14
1604078	14
1604079	14
1604080	14
1604081	14
1604082	14
1604083	14
1604084	14
1604085	14
1604112	5
1604113	5
1604121	13,15
1604342	7
1604395	12
1604396	12
1604397	12
1604398	12
1604433	6,7,8
1744041	5
1744042	5
1744077	14
1744090	15

Tooling

Part No.	Page
5989	17
5991	17
5992	17
58490	20
58491	20
58492	20,25
58493	20,25
68250	8
68265	17
68296	6,7,17
68313	8
68344	8
69710	20,25
91308	25
189721	20
189928	20
318161	20
354500	16,20
471273	16,26
567256	20,25
567403	20
600769	26
605742	17
605743	26
605744	26
606700	17,26
1385450	5
1385468	5
1385469	5
1385663	6,7,8
1385664	6,7,8
1526955	6,7,8,17,26
1527505	17
1527507	17
1527508	17
T-406	17

Related Product Catalogs



Heavy Duty Seamless Terminals and Splices Catalog 1308674

The Heavy Duty Seamless and Copper Compression Lug and Splice line provides a robust terminal line for applications in the many industries. The product is used in applications including industrial and welding equipment, transportation/marine cable harness, and general-purpose harnesses. The Heavy Duty Seamless line utilizes deep-draw stamping technology to create a robust terminal without butted seams along the wire barrel or along the outer edge of the ring tongue. The

Heavy Duty Splice line offers butt splice versions with either flared or chamfered wire barrels for ease of wire entry and dimpled wire stops to assist in proper wire placement.

The Copper Compression Lug and Splice line is a formed tubular line for use on cable assemblies in Commercial equipment and Industrial machinery. The thicker tongue and wire barrel of this line provide added strength and rigidity for more challenging applications.

The Battery Lug and Splice line offers the thickest material and strength for your industrial equipment and

transportation harness applications.

Tyco Electronics has extensive drawn sleeve capabilities to help meet your customized electrical sleeve needs. The company manufactures specialized sleeves used in general electrical application and electrical components. Tyco Electronics has the capability to manufacture sleeves in a range of copper alloys and has extensive post electroplating capabilities. Contact us to review your application and discuss the benefits we can provide.



Standard Terminals and Splices Catalog 82042

AMP solderless terminals and splices meet or exceed today's standards for reliable termination in applications ranging from control circuits to heavy duty power wiring.

The catalog describes only standard terminals and splices accommodating wire sizes from 26 AWG through 4/0 AWG

The terminals are pre-insulated and color coded by wire size for easy identification.

Funnel entry on many terminals allows for easy wire insertion for high speed production

Nylon or vinyl insulation provides high dielectric strength

The serration or dimple feature inside the terminal barrel provides maximum barrel contact and tensile strength

AMP's special plating process creates a high resistance to corrosion

Use of AMP application tooling is designed for uniform high quality terminations

UL, CSA, Military Approved



AMPOWER Terminals and Splices Catalog 82025

The AMPOWER product line is available in a variety of terminal and splice styles to suit your design requirements.

AMPOWER terminals and splices are ideally suited for power generation and distribution. This makes electrical equipment subject to continuous operation, such as generators, motors and welders,

a perfect application for AMPOWER products. In addition, other applications include interconnections of power supplies to computers and peripheral equipment.

Related Product Catalogs (Continued)**SOLISTRAND, Budget and DIAMOND GRIP Uninsulated Terminals and Splices Catalog 65505**

SOLISTRAND and Budget terminals and splices are specially designed to terminate solid and stranded wire, irregular shaped conductors, and combinations of these – retaining the superior performance characteristics of single-purpose terminals and splices.

Corrosion resistance, vibration resistance and tensile strength of these terminals and splices are well within the limits of commercial and military specifications.

The Budget terminal is primarily the same as the SOLISTRAND terminals without the brazed seam in the wire barrel. These terminals and splices fulfill the need for an economical and electrically superior

termination where extreme vibration and tension on the wires are not present.

DIAMOND GRIP utilizes a tin plated copper insulation support sleeve with "V" notches. The sleeve eliminates fraying of the insulation or breaking of the conductor. The "V" notches lock the wire insulation against vibration and pullout.

Tyco Electronics Power Connectors and Interconnection Systems Catalog 1773096

Tyco Electronics Power Connectors and Interconnection Systems Catalog 1773096 features the largest grouping of high performance power connectors from Tyco Electronics. Most of the products are geared specifically for the high-end

computer and telecommunications equipment markets, however, products for Industrial applications are included as well. The catalog includes power connectors mounted to printed circuit boards, discrete wires/cable assemblies and bus-bars. The "applications served" includes bulk power distribution from modular power supplies, low inductance con-

nectors designed for micro-processor power delivery, backplane power interconnects meeting today's latest industry standards, and more. The newest products sold under the AMP and ELCON brands are now combined into a single comprehensive catalog.

Engineering Notes



Americas

Argentina – Buenos Aires
 Phone: +54-11-4733-2200
 Fax: +54-11-4733-2211

Brasil – São Paulo
 Phone: +55-11-3611-1311
 Fax: +55-11-3611-0397

Canada – Markham
 Phone: +905-475-6222
 Fax: +905-474-5520

**Product Information Center:
 (Technical Support)**
 Phone: +905-470-4425
 Fax: +905-474-5525

Colombia – Bogota
 Phone: +57-1-231-9398
 Fax: +57-1-660-0206

Mexico – Mexico City
 Phone: +52-55-5-729-0400
 Fax: +52-55-5-361-8545

United States – Harrisburg, PA
 Phone: +717-564-0100
 Fax: +717-986-7575

**Product Information Center:
 (Technical Support)**
 Phone: +800-522-6752
 Fax: +717-986-7575

**For Latin/South American
 Countries not shown**
 Phone: +57-11-4733-2015
 Fax: +57-11-4733-2083

Asia/Pacific

Australia – Sydney
 Phone: +61-2-9554-2600
 Fax: +61-2-9502-2556

**Product Information Center:
 (Technical Support)**
 Phone: +61-2-9554-2600
 Fax: +61-2-9502-2556

India – Bangalore
 Phone: +91-80-28540800
 Fax: +91-80-28540820

Indonesia – Jakarta
 Phone: +6221-526-7852
 Fax: +6221-526-7856

Japan – Kawasaki, Kanagawa
 Phone: +81-44-844-8111
 Fax: +81-44-812-3207

**Product Information Center:
 (Technical Support)**
 Phone: +81-44-844-8013
 Fax: +81-44-812-3200

Raychem Products
 Phone: +81-44-900-5102
 Fax: +81-44-5025-5027

Korea – Seoul
 Phone: +82-2-3415-4500
 Fax: +82-2-3486-3810

Malaysia – Kuala Lumpur
 Phone: +60-3-78053055
 Fax: +60-3-78053066

New Zealand – Auckland
 Phone: +64-9-634-4580
 Fax: +64-9-634-4586

Philippines – Makati City
 Phone: +632-867-8641
 Fax: +632-867-8661

People's Republic of China
 Hong Kong
 Phone: +852-2735-1628
 Fax: +852-2735-0243

Shanghai
 Phone: +86-21-5383-8188
 Fax: +86-21-5383-8018

Shunde
 Phone: +86-765-775-1368
 Fax: +86-765-775-2823

Singapore – Singapore
 Phone: +65-6482-0311
 Fax: +65-6482-1012

Raychem Products
 Phone: +65-4866-151
 Fax: +65-6545-514

Taiwan – Taipei
 Phone: +886-2-2664-9977
 Fax: +886-2-2664-9900

Thailand – Bangkok
 Phone: +66-2-955-0500
 Fax: +66-2-955-0505

Vietnam – Ho Chi Minh City
 Phone: +84-8-930-5546
 Fax: +84-8-930-3443

Europe/Middle East/Africa

Austria – Vienna
 Phone: +43-190-560-0
 Fax: +43-190-560-1333

Belgium – Kessel-Lo
 Phone: +32-16-35-23-00
 Fax: +32-16-35-23-52

Bulgaria – Sofia
 Phone: +359-2-971-2152
 Fax: +359-2-971-2153

Czech Republic – Kurim
 Phone: +420-5-41-162-111
 Fax: +420-5-41-162-223

Denmark – Viby J
 Phone: +45-70-15-52-00
 Fax: +45-43-44-14-14

Egypt – Cairo
 Phone: +20-2-417-76-47
 Fax: +20-2-419-23-34

Estonia – Tallinn
 Phone: +372-65-05-474
 Fax: +372-65-05-470

Finland – Helsinki
 Phone: +358-95-12-34-20
 Fax: +358-95-12-34-250

France – Cergy-Pontoise
 Phone: +33-1-3420-8888
 Fax: +33-1-3420-8600
**Product Information Center:
 (Technical Support)**
 Phone: +33-1-3420-8943
 Fax: +33-1-3420-8623

France
Tyco Electronics Export –
 St Ouen L'Aumone
 Phone: +33-1-3440-7200
 Fax: +33-1-3440-7220 or
 +33-1-3440-7230

Germany – Bensheim
 Phone: +49-6251-133-0
 Fax: +49-6251-133-1600
**Product Information Center:
 (Technical Support)**
 Phone: +49-6251-133-1999
 Fax: +49-6251-133-1988

Germany – Langen
 Phone: +49-6103-709-0
 Fax: +49-6103-709-1223

Germany – Speyer
 Phone: +49-6232-30-0
 Fax: +49-6232-30-2243

Germany
HTS Division – Neunkirchen
 Phone: +49-2247-305-0
 Fax: +49-2247-305-122

Great Britain –
 Stanmore Middlesex
 Phone: +44-208-954-2356
 Fax: +44-208-954-8383
**Product Information Center:
 (Technical Support)**
 Freephone GB: 0800-267-666
 Phone: +44-141 810 8967...69
 Fax: +44-141 810 8971

Great Britain – Dorcan, Swindon
Raychem Products
 Phone: +44-1793-528171
 Fax: +44-1793-572516

Greece – Athens
 Phone: +30-1-9370-396/397
 Fax: +30-1-9370-655

Hungary – Budapest
 Phone: +36-1-289-1000
 Fax: +36-1-289-1010

Ireland – Dublin
 Phone: +353-1-820-3000
 Fax: +353-1-820-9790

Israel – Yokneam
 Phone: +972-4-959-0508
 Fax: +972-4-959-0506

Italy – Collegno (Torino)
 Phone: +39-011-4012-111
 Fax: +39-011-4031-116

Lithuania – Vilnius
 Phone: +370-5-2131-402
 Fax: +370-5-2131-403

Netherlands – 's-Hertogenbosch
 Phone: +31-73-6246-246
 Fax: +31-73-6212-365
**Product Information Center:
 (Technical Support)**
 Phone: +31-73-6246-999
 Fax: +31-73-6246-998

Norway – Nesbru
 Phone: +47-66-77-8899
 Fax: +47-66-77-8855

Poland – Warsaw
 Phone: +48-22-45-76-700
 Fax: +48-22-45-76-720

Romania – Bucharest
 Phone: +40-21-311-3479/3596
 Fax: +40-21-312-0574

Russia – Moscow
 Phone: +7-095-926-5506/07/08/09
 Fax: +7-095-926-5505

Russia – St. Petersburg
 Phone: +7-812-118-8192
 Fax: +7-812-118-8193

Scotland – Dundee
Madison Cable Products
 Phone: +44-1382-508080
 Fax: +44-1382-505060

Slovakia – Banská Bystrica
 Phone: +421-48-415-20-11/12
 Fax: +421-48-415-20-13

Slovenia – Ljubljana
 Phone: +386-1561-3270
 Fax: +386-1561-3240

South Africa – Port Elizabeth
 Phone: +27-41-405-4500
 Fax: +27-41-486-1314

Spain – Barcelona
 Phone: +34-93-291-0330
 Fax: +34-93-201-7879
**Product Information Center:
 (Technical Support):**
 Phone: +34-93-291-0330
 Fax: +34-93-200-3779

Sweden – Upplands Väsby
 Phone: +46-8-50-72-50-00
 Fax: +46-8-50-72-50-01

Switzerland – Steinach
 Phone: +41-71-447-0447
 Fax: +41-71-447-0444

Turkey – Istanbul
 Phone: +90-212-281-8181/2/3
 Fax: +90-212-281-8184

Ukraine – Kiev
 Phone: +38-044-238-6908
 Fax: +38-044-568-5740