



## Quick Reference Guide AMP CT Connector Series

勝特力材料 886-3-5753170  
勝特力电子(上海) 86-21-34970699  
勝特力电子(深圳) 86-755-83298787  
[Http://www.100y.com.tw](http://www.100y.com.tw)

The AMP CT connectors are a miniature wire-to-board and wire-to-wire interconnect solution. The AMP CT connector series has proven performance in its harness making capability. A variety of harness-making machines are available ranging from hand tools for low volume production to high-speed automatic crimping machines for medium to high volume productions. AMP high-speed automatic crimping machines are easy to operate, eliminating the need for tedious work of changing parts inside the equipment to adapt to changes in harness styles. Two types of housings are available, including Crimp and Mass Terminated (MT), which are preloaded with insulation displacement contacts. The box or shrouded headers are highly resistant to scooping at mating/unmating.

### FEATURES AND BENEFITS

- 2 kinds of termination method: IDC, Crimp
- Discrete wire interconnect
- Circuits range from 2-15 single row, 8-30 dual row
- AWG 22-30
- Kinks for self-retention on boards
- RoHS compliant
- Many components are recognized under the component program of Underwriters Laboratories Inc., file No. E28476
- Certified by Canadian Standards Association, File No. LR 7189

### PRODUCT APPLICATIONS

- Business Equipment
- Industrial Machines
- PC
- Printer
- Fax
- C-TV
- Audio
- Air conditioner
- Anywhere where signals or power are routed

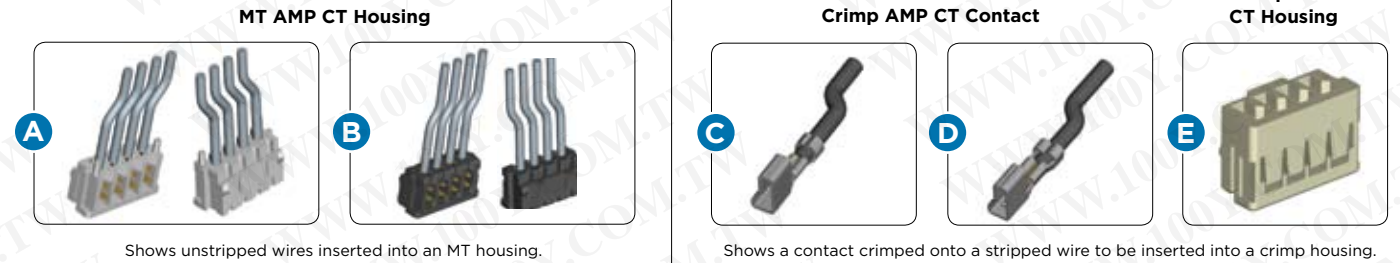
### How to select an AMP CT connector part number

The charts on this page highlight the relationship between the number of contacts (positions) to the part number. Please see the sample chart below that was designed to help you select the correct part number for your needs. For single digit position to dash numbers, attach the digit to the end base number. For double digit position to dash numbers, attach the first digit to the front of the part number, add a dash and the base part number, then follow the base part number with a dash and the second digit.

Example Base Part Number	Your Criteria	Example Position to Dash Selection						End Part Number Based on Criteria
		Position	8	9	10	11	12	
173977	You require and 8 position MT housing	Dash Number	-8	-9	-10	-11	-12	173977-8
173977	You require and 12 position MT housing	Dash Number	-8	-9	-10	-11	-12	1-173977-2

### Cable Side Connectors

#### Mass Termination (MT) vs. Crimp Poke



#### CRIMP TYPE CONNECTORS : Contacts

Description	PN	Photo	Specifications	
Receptacle Contact - Strip - AWG : 26-30	179609-1	C	D,Y	
Receptacle Contact - Loose Piece - AWG : 26-30	179610-1	C	D,Y	
Receptacle Contact - Strip - AWG : 22-26	179227-1	D	D,Y	
Receptacle Contact - Strip - AWG : 22-26 - Gold plated	179227-4	D	D,Y	
Receptacle Contact - Loose Piece - AWG : 22-26 - receptacle	179518-1	D	D,Y	

#### CRIMP TYPE CONNECTORS : Housing

Description	PN	Photo	Position to Dash														
			2	3	4	5	6	7	8	9	10	11	12	13	14	15	
Receptacle Housing	179228	E	-2	-3	-4	-5	-4	-7	-8	-9	-10	-11	-12	-13	-14	-15	
Mating PNS : 292253; 292161; 292250; 292164; 292133; 292132; 292165; 292173; 292171; 292172; 292134; 176394; 292138; 292252; 292141; 292254; 292156; 292204; 292177; 292178; 292185; 292182; 292181			Specifications : D,Y														

#### MASS TERMINATION (MT) CONNECTORS : Pre-Loaded Receptacle Housing

Description	PN	Photo	Position to Dash														
			2	3	4	5	6	7	8	9	10	11	12	13	14	15	
MT receptacle housing (wire application) = AWG : 26-28	173977	A	-2	-3	-4	-5	-4	-7	-8	-9	-10	-11	-12	-13	-14	-15	
Mating PNS : 292253; 292161; 292250; 292164; 292133; 292132; 292165; 292173; 292171; 292172; 292138; 292252; 292141; 292254; 292156; 292204; 292178; 292182; 175133; 179608			Specifications : C,X														
MT Receptacle Housing - Au Plated (Wire Application) = AWG: 26~28	176392	A	-2	-3	-4	-5	-4	-7	-8	-9	-10	-11	-12	-13	-14	-15	
Mating PNS : 292134; 176394			Specifications : C,X														

### Cable Side Connectors : Tooling Options

#### APPLICATION TOOLING

Connector PN	Tooling PN	Description	Application Spec.
1385047-3*	1385047-3*	Applicator	408-8040
1739772-2 thru -15	58074-1	Manual Handle without head	408-6790
	58372-1	2 mm AMP CT (IDC) Head	408-9426
176392-2 thru -15	58473-2	AMP CT MT Mini Air Terminator	-
179610-1	1385047-3*	Applicator	408-8040
179227-1	680216-3*	Applicator	408-8040
179227-4	680216-3*	Applicator	408-8040
179518-1	91572-1**	CERTI-CRIMP Hand Tool	408-8547

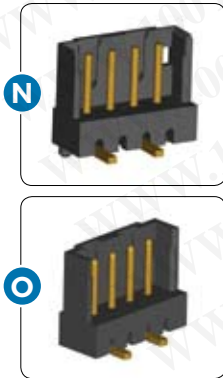
\* Applicators listed are used in the AMP-O-ELECTRIC Model G, AMP 3K/40 and AMP 5K/40 Terminators. Call the Tooling Assistance Center at 800-722-1111 for applicator numbers for Automatic Cut, Strip and Terminate Leadmakers.  
 \*\* Power tooling options are also available. Call Tooling Sales at 888-777-5917 (717-810-2080) for more information



## PCB Side Connectors (Single Row + Dual Row)

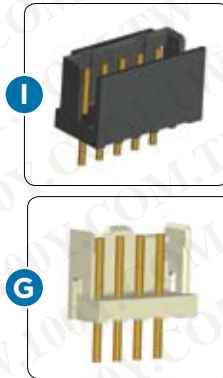
### Common AMP CT Terminology

#### Locating Boss



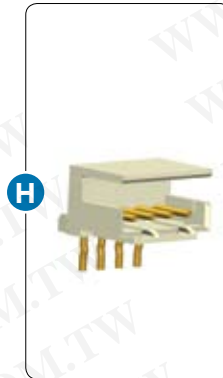
A boss is a mechanical feature that helps orientate the headers onto the PCB.

#### Without Kinked Leg

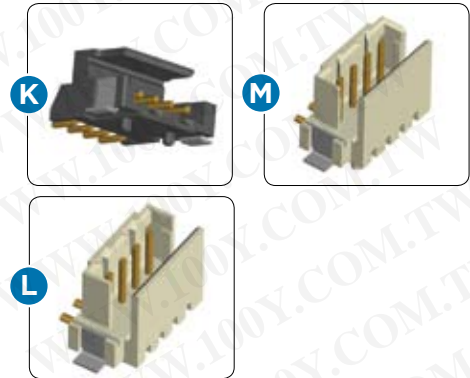


Kinked legs are designed to secure the T/H headers onto the PCB.

#### With Kinked Leg



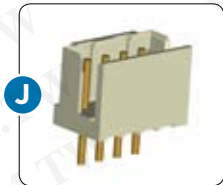
#### Solder Tabs



Solder tabs are designed to secure the SMT headers onto the PCB.

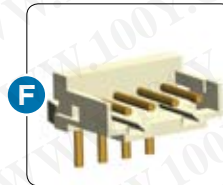
### Header Styles

#### Box



Box headers offer a front and back wall for polarization of the connector.

#### Standard



Standard headers offer only a single wall for polarization of the connector.

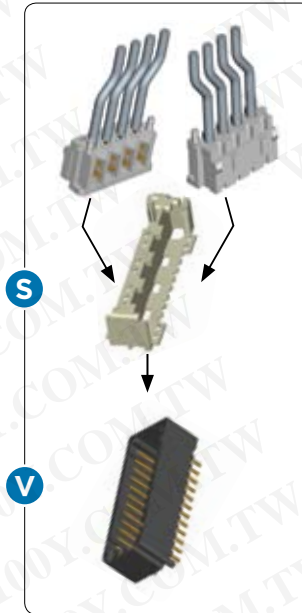
### Free Hanging



### Panel Mount



### Dual Row Assemblies



Two Single Row Housings

Captivating Holder

Dual Row Header

Requires a holder to be used along with two single row housings.

### Additional Parts



SINGLE ROW POST HEADER ASSEMBLIES BOARD-MOUNT																	
Description	Plating	PN	Photo	Position to Dash													
				2	3	4	5	6	7	8	9	10	11	12	13	14	15
TH Std Type - Horizontal Mount w/ Kink	TIN	292253	F	-2	-3	-4	-5	-6	-7	-8	-9	-10	-11	-12	-13	-14	-15
TH Std Type - Vertical Mount w/ Kink	TIN	292161	G	-2	-3	-4	-5	-6	-7	-8	-9	-10	-11	-12	-13	-14	-15
TH Box Type - Horizontal Mount w/ Kink	TIN	292250	H	-2	-3	-4	-5	-6	-7	-8	-9	-10	-11	-12	-13	-14	-15
TH Box Type - Vertical Mount w/o Kink	TIN	292133	I	-2	-3	-4	-5	-6	-7	-8	-9	-10	-11	-12	-13	-14	-15
TH Box Type - Vertical Mount w/ Kink	TIN	292132	J	-2	-3	-4	-5	-6	-7	-8	-9	-10	-11	-12	-13	-14	-15
SMT Box Type - Horizontal Mount Type w/ Solder Tab, w/o Boss	TIN	292173	K	-22	-23	-24	-25	-26	-27	-28	-29						
SMT Box Type - Horizontal Mount Type w/ Solder Tab, w/ Boss	TIN	292173	K	-2	-3	-4	-5	-6	-7	-8	-9						
SMT Box Type - Vertical Mount Type w/ Solder Tab, w/o Boss	TIN	292175	L	-22	-23	-24	-25	-26	-27	-28	-29						
SMT Box Type - Vertical Mount Type w/ Solder Tab, w/ Boss (Natural)	TIN	292174	M	-2	-3	-4	-5	-6	-7	-8	-9						
SMT Box Type - Vertical Mount Type w/ Solder Tab, w/ Boss (Black)	TIN	292174	M	-22	-23	-24	-25	-26	-27	-28	-29						
SMT Std Type - Vertical Mount w/ Boss	TIN	292171	N	-2	-3	-4	-5	-6	-7	-8	-9						
SMT Std Type - Vertical Mount w/o Boss	TIN	292172	O	-2	-3	-4	-5	-6	-7	-8	-9						
Mating PNS : (MT) 173977; 179694 or (Crimp) 179228 w/ contact Specifications : A, D																	
TH Box Type - Vertical Mount w/ Kink	Gold	292134	J	-2	-3	-4	-5	-6			-9	-10		-12			-15
TH Box Type - Horizontal Mount w/ Kink	Gold	176394	H	-2		-4		-6		-8		-10					
Mating PNS : (MT) 173977; 179694 or (Crimp) 179228 w/ 179227-4 Specifications : A (292134)/ C (176394), D																	

RECEPTACLE CONNECTOR HOLDERS FOR DUAL ROW HEADERS																	
Description	PN	Photo	Position to Dash														
			8	12	16	18	20	22	24	26	28	30					
Receptacle Housing Captivating Holder (MT)	175133	R	-8	-12	-16	-18	-20	-22	-24	-26	-28	-30					
Receptacle Housing Captivating Holder - Reinforced Retention (MT)	179608	S			-16	-18	-20	-22	-24	-26	-28	-30					
Mating PNS : 2x (MT) 173977, 176392 or 179695 Specifications : B																	
Receptacle Housing Captivating Holder - Reinforced Retention (Crimp)	179472	T	-8	-12	-16	-18	-20	-22	-24	-26	-28	-30					
Mating PNS : 2 x (Crimp) 179228 w/ contact Specifications : B																	

DUAL ROW POST HEADER ASSEMBLIES - BOARD-MOUNT																	
Description	PN	Photo	Position to Dash														
			8	12	16	18	20	22	24	26	28	30					
Horizontal Mount w/ Boardlocks	292138	U	-8	-12	-16	-18	-20	-22	-24	-26	-28	-30					
Vertical Mount w/o Boss	292252	V			-16	-18	-20	-22	-24	-26	-28	-30					
Vertical Mount w/ Boss	292141	V			-16	-18	-20	-22	-24	-26	-28	-30					
Complementary PNS : 175133, 179608 or 179472 w/ 2 x (MT) or 2 x (Crimp) HDRS Specifications : B																	

SINGLE ROW PANEL-MOUNT HEADERS																	
Description	PN	Photo	Position to Dash														
			2	3	4	5	6	7	8	9	10	11	12	13	14	15	
Panel Mount Header	292254	P	-2	-3	-4	-5	-6	-7	-8	-9	-10	-11	-12	-13	-14	-15	
Mating PNS : (MT) 173977; 179694 or (Crimp) 179228 w/ contact Specifications : A, D																	

SINGLE ROW POST FREE-HANGING WIRE TO WIRE HEADERS																	
Description	PN	Photo	Position to Dash														
			2	3	4	5	6	7	8	9	10	11	12	13	14	15	
Free Hanging Header	292156	Q	-2	-3	-4	-5	-6										
Mating PNS : (MT) 173977; 179694 or (Crimp) 179228 w/ contact Specifications : A, D																	

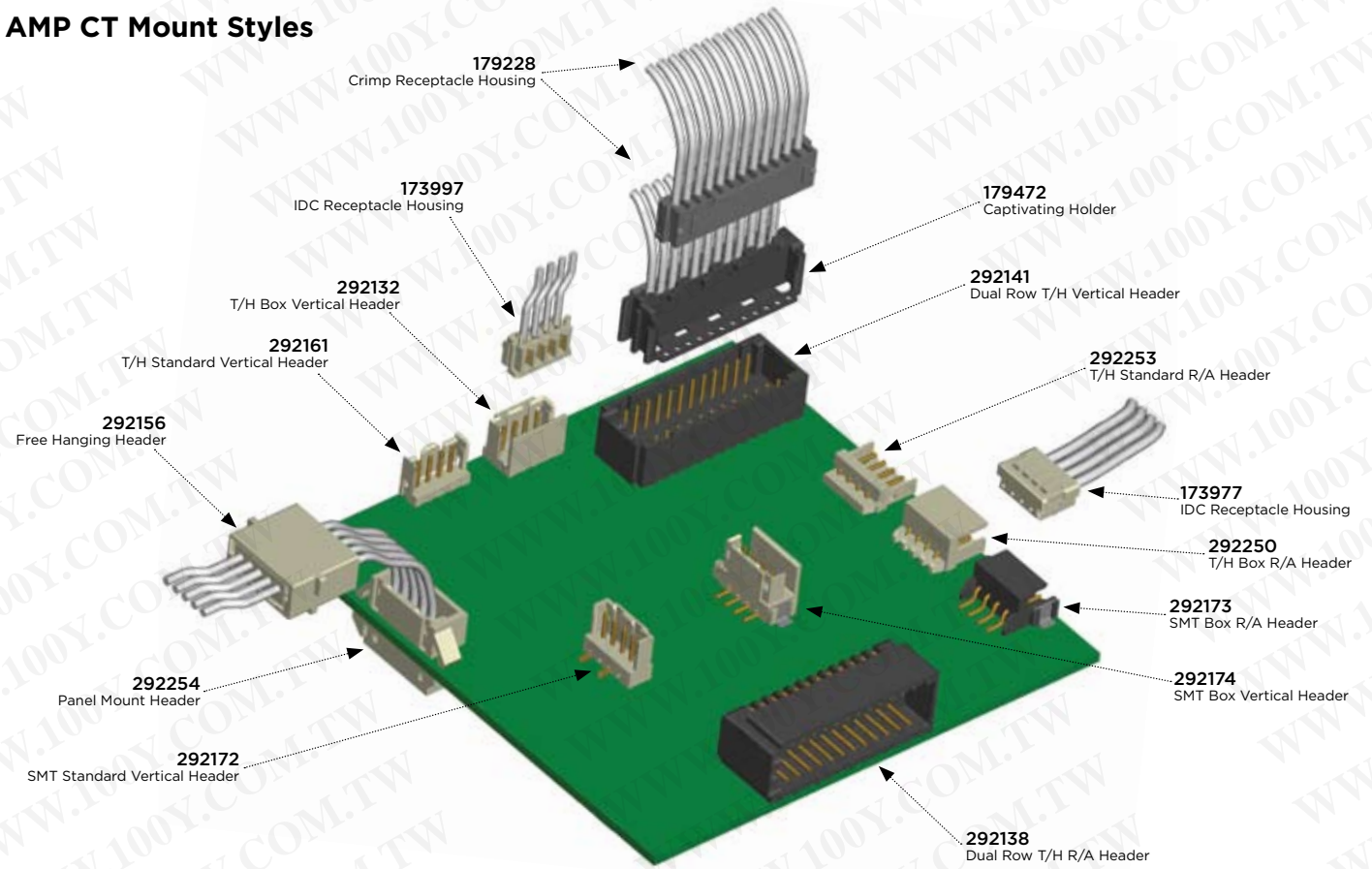
Product/Application Specification

RATINGS							
Product Specs		Voltage	Operating Current (Amps)				
			22 AWG	24 AWG	26 AWG	28 AWG	30 AWG
A	108-60016	125 V (AC/DC)		3	2	1	
B	108-60020	125 V (AC/DC)			1	1	
C	108-5218	125 V AC		3	2	1	
D	108-60029	125 V AC	4	3	2.5	1.5	1
E	108-60024	125 V AC			1		
F	108-60021	125 V AC			1		

Application Specs	
X	114-5014
Y	114-5179
Z	114-5103

AMP CT Mount Styles



AMP CT Design Kits\*

Design Kits	
PN	Description
2110829-1	AMP CT Deluxe Kit
2110829-2	AMP CT R/A Header
2110829-3	AMP CT Vertical Header
2110829-4	AMP CT R/A Box Header
2110829-5	AMP CT Box Vertical Header
2110829-6	AMP CT Panel Mount
2110829-7	AMP CT Dual Row R/A Header
2110829-8	AMP CT Dual Row Vertical Header

\*Design kits are designed and assembled by Waldom and are available for purchase through your local distribution channel.

## Frequently Asked Questions

### What wire gauge will you be using?

More flexibility with AWG when using Crimp vs. MT. Crimp housings accept 22-30 AWG and MT housings accept 24-28 AWG.

### Are the connectors available for IDC?

Yes, we offer a MT version that is preloaded with IDC contacts.

### Is your process automated?

MT housings are more suitable for automated processes.

### Where can I find information on current rating, voltage and operating temperatures?

Please see Product Specification Information on page 5 of this Quick Reference Guide.

### Which is a more standard header, with or without a locating boss?

The most standard headers tend to have a locating boss as it makes it easier for the customer to align the connector onto their board.

### What special retention mechanisms are available to help ensure PCB stability?

Most of the T/H headers have kinked legs, and the SMT headers have solder tabs to help ensure PCB stability.

### What are my tooling options?

TE offers comprehensive tooling options including Manual Pistol-Grips, manual Mini-Press, Pneumatic Mini-press, Semi-Auto DECAM and an Automatic DECAM tool. For more information, please visit [tooling.te.com](http://tooling.te.com)

### What is the benefit of choosing Box over Std type headers?

Box type headers have an extra wall, that is a more reliable connector design intended to prevent stubbing.

## FOR MORE INFORMATION

### TE Technical Support Center

USA:	+1 (800) 522-6752
Canada:	+1 (905) 475-6222
Mexico:	+52 (0) 55-1106-0800
Latin/S. America:	+54 (0) 11-4733-2200
Germany:	+49 (0) 6251-133-1999
UK:	+44 (0) 800-267666
France:	+33 (0) 1-3420-8686
Netherlands:	+31 (0) 73-6246-999
China:	+86 (0) 400-820-6015

Part numbers in this brochure are RoHS Compliant\*, unless marked otherwise.

\*as defined [www.te.com/leadfree](http://www.te.com/leadfree)

## te.com

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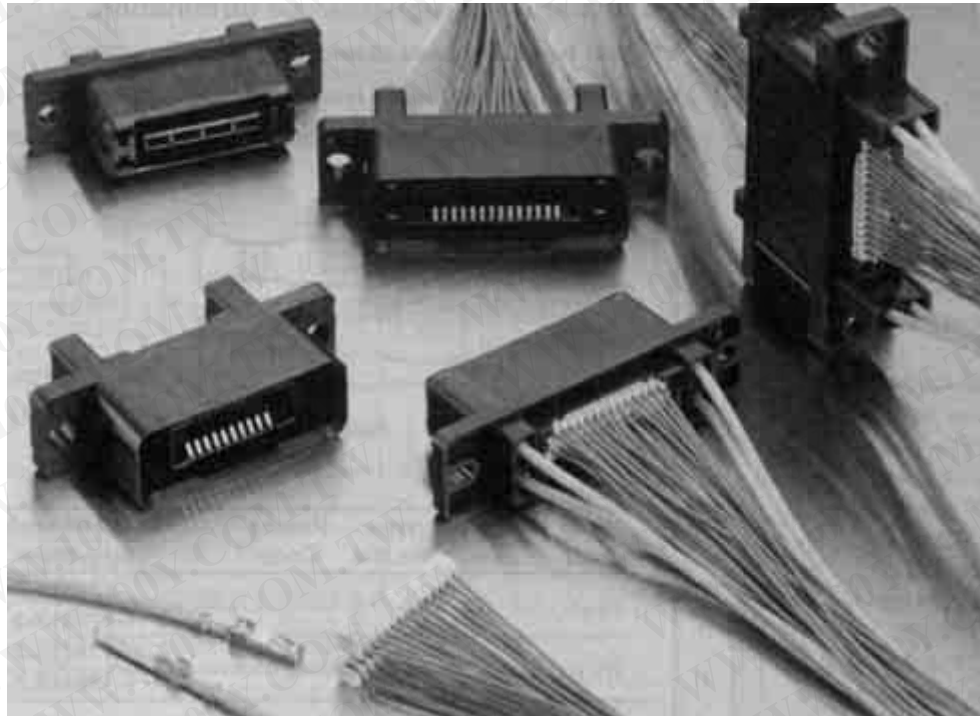
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## Hybrid Mini-Drawer Connectors

### Product Facts

- Combine signal circuits and power circuits into one connector
- Power circuits can be used for high current of up to 15A
- Signal circuits accept CT connector in the back, reducing harnessing costs
- Power circuits use crimp-type tab and receptacle contacts
- Meet requirements for creepage distance and spatial distance for primary power supply as set forth in IEC-950, safety specifications for business machines and OA equipment.  
Creepage distance on active power side: 5 mm  
Spatial distance on active power side: 4.5 mm



### Technical Documents

**Product Specification**  
108-60022

**Application Specification**  
114-5182

Hybrid mini-drawer connectors are designed for use in rack and panel application to serve as an I/O connector for copying machines, laser-beam printers and other OA equipment. They provide an economical means of combining into one connector signal circuits and power circuits which were packaged separately in the past.

A major design feature of these hybrid mini-drawer connectors is that mini-drawer connectors mate with one another on the connector mating side and in the back, signal circuits accept a pre-terminated CT receptacle connector.

Also, for power circuits, crimp-type power contacts are used by inserting them into the four corners of the mini-drawer connector.

The housing has an integrated guide-pin and socket to facilitate mating of the connector halves. Provision is also made to prevent dust from entering.

This product line includes:

- 12-position connector (4 positions for power and 8 positions for signal circuits)
- 24-position connector (4 positions for power and 20 positions for signal circuits)
- 32-position connector (4 positions for power and 28 positions for signal circuits)

Drawer connectors are available in the following types depending on application: (For details contact our sales department)

- Mini-drawer connectors
- Standard drawer connectors
- High current drawer connectors

### Performance Data

**Voltage Rating** —  
250V AC (power)  
30V AC (signal)

**Current Rating** —  
15A max. (power)  
2A max. (signal)

**Contact Resistance** —  
10 mm  $\Omega$  max. (power)  
40 mm  $\Omega$  max. (signal)

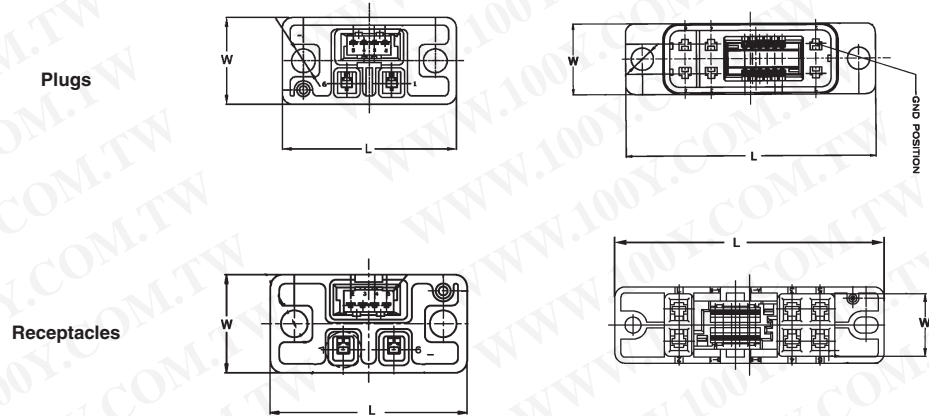
**Insulation Resistance** —  
100M  $\Omega$  max.

**Dielectric Withstanding Voltage** —  
1.8KV AC/min. (power)  
1.0KV AC/min. (signal)

**Durability** — 3,000 cycles min.

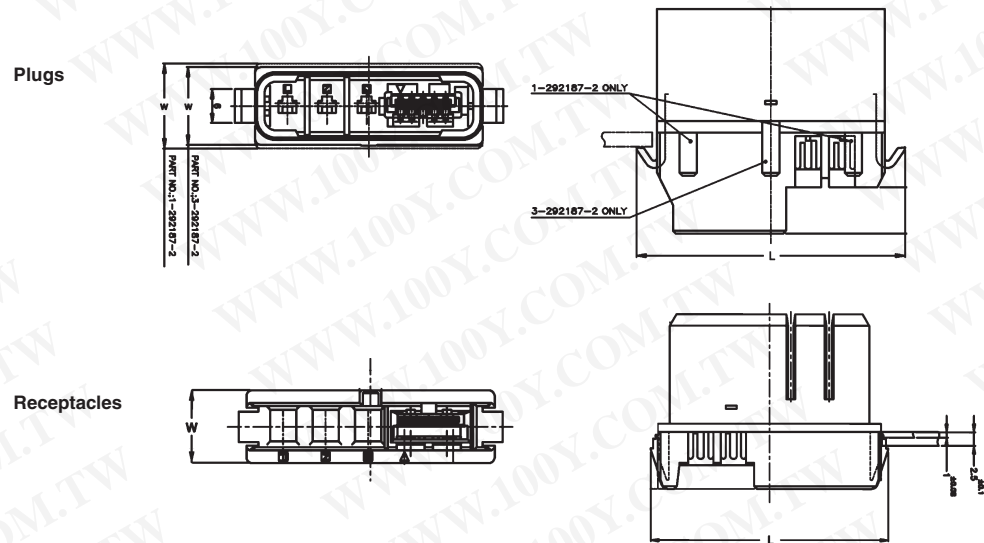
**Hybrid Mini-Drawer Connectors (Continued)**

**Standard Width**



Type	Part Number	Number of Power Contacts	Number of Signal Contacts	L	W
Plug	292180-1	2	4	1.299 [33.00]	.646 [16.40]
Receptacle	292184-1	2	4	1.299 [33.00]	.646 [16.40]
Plug	1-292183-2	6	12	2.638 [67.00]	.748 [19.00]
Receptacle	1-292186-2	6	12	2.638 [67.00]	.748 [19.00]

**Slim Width**



Type	Part Number	Number of Power Contacts	Number of Signal Contacts	L	W
Plug	1-292187-2	3	5	1.870 [47.50]	.591 [15.00]
Receptacle	2-292190-2	3	5	1.713 [43.50]	.472 [12.00]
Plug	3-292187-2	4	5	2.146 [54.50]	.531 [13.50]
Receptacle	4-292190-2	4	5	1.988 [50.50]	.472 [12.00]
Plug	2-292189-3	3	7	2.028 [51.50]	.591 [15.00]
Receptacle	1-292192-3	3	7	1.870 [47.50]	.472 [12.00]

**Note:** All part numbers are RoHS compliant.

**Hybrid Mini-Drawer Connectors (Continued)**

**Power Contacts**

**Material**

Copper alloy  
For finish, see table below.

**Finish Codes**

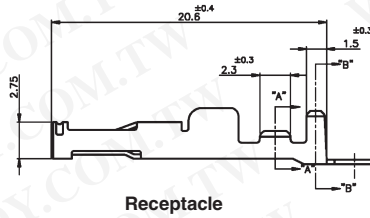
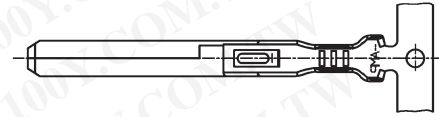
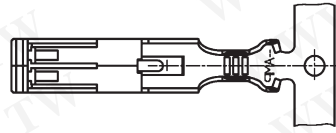
- 1) Over nickel underplated, contact area: gold plated, crimp area: tin plated
- 2) Tin plated all over.

Hand Tool AWG #20-24

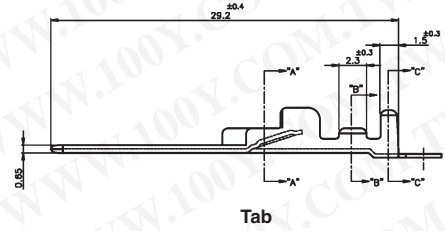
**Part No. 934199-1 (411-5662)**

AWG #16-20

**Part No. 934198-1 (411-5661)**



Receptacle



Tab

Wire Range AWG	Wire mm <sup>2</sup>	Wire Ins. Dia.	Plating Code	Receptacle Part Number	Tab Part Number
				Strip Form	Strip Form
24-20	0.2-0.5	1.4-2.6	1	179317-2	179322-2
				1-179317-2	1-179322-2
20-16	0.5-1.25	1.6-2.8	1	179316-2	179321-2
				1-179316-2	1-179321-2

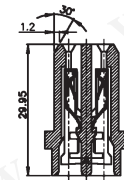
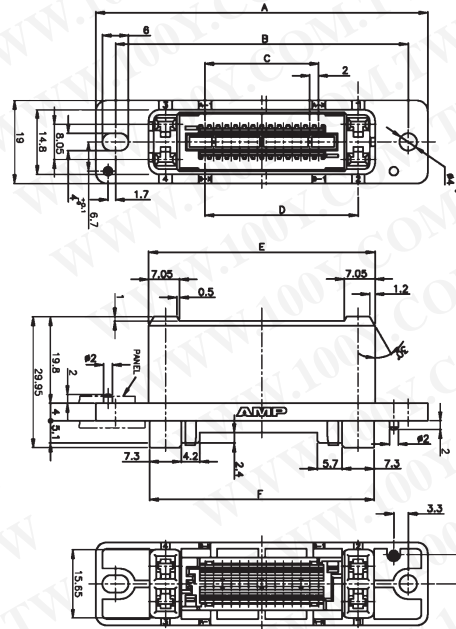
Cable Mounted Products

**Receptacle Assembly**

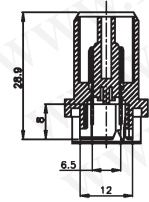
**Material and Finish**

**Housing** — Thermoplastic, black

**Contact** — Copper alloy, gold plated on mating side over nickel underplate, tin plated on CT mating side over nickel underplate.



Section X-X



Section Y-Y

No. of Pos. (Power/ Signal)	Dimensions								Mini-Drawer Receptacle Assembly Part No.	Required Number of Power Contact	Required Number of CT Connector
	A	B	C	D	E	F	G	H			
12 (4-8)	56.0	47.0	6.0	24.1	31.8	31.4	38.0	32.4	292185-8	4	4 Pos. x 2
24 (4-20)	68.0	59.0	18.0	36.1	43.8	43.4	50.0	44.4	2-292185-0	4	10 Pos. x 2
32 (4-28)	76.0	67.0	26.0	44.1	51.8	51.4	58.0	52.4	2-292185-8	4	14 Pos. x 2

**Note:** All part numbers are RoHS compliant.



**Hybrid Mini-Drawer Connectors (Continued)**

**CT Receptacle Connectors to Mate with Signal Circuit Terminator with Insulation Displacement Contacts**

**Receptacle Assemblies (Wire Application Side)**

**Material and Finish**

**Housing** — UL94V-0 rated, glass-filled P.B.T. see chart below for color.

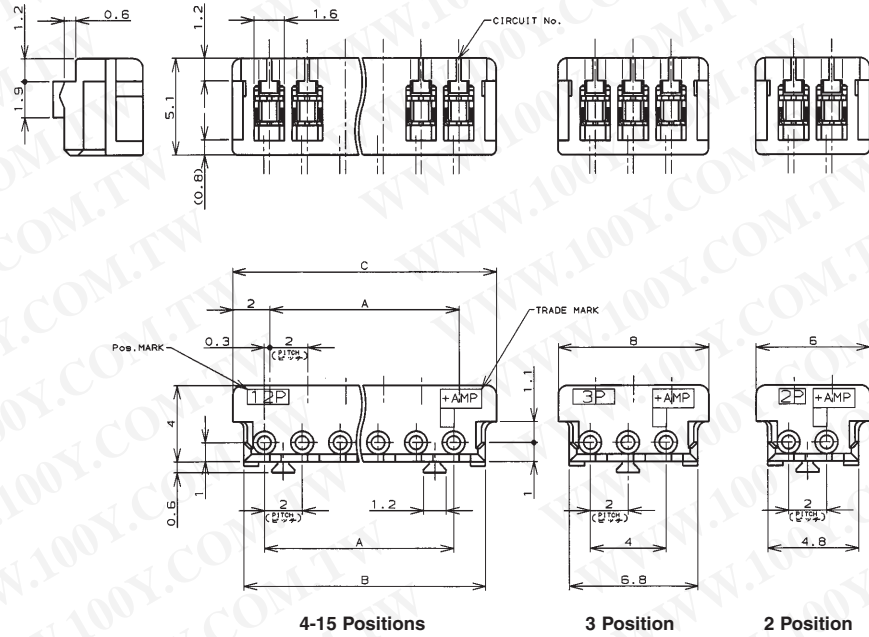
**Contact** — Pre-tinned phosphor bronze

**Wire Size** — AWG #28-26 (0.08-0.15 mm<sup>2</sup>)

**Insulation Dia.** — 0.85-1.05 mm

**Wire Size** — AWG #24 (0.20-0.22 mm<sup>2</sup>)

**Insulation Dia** — 0.95-1.05 mm<sup>2</sup> (For AWG #24 wire, see notes under the table)



No. of Positions	Dimensions			Part Number	
	A	B	C	Receptacle Assembly**	
				AWG #28-26*	AWG #24***
2	2.0	4.8	6.0	173977-2	2-179694-2
3	4.0	6.8	8.0	173977-3	2-179694-3
4	6.0	8.8	10.0	173977-4	2-179694-4
5	8.0	10.8	12.0	173977-5	2-179694-5
6	10.0	12.8	14.0	173977-6	2-179694-6
7	12.0	14.8	16.0	173977-7	2-179694-7
8	14.0	16.8	18.0	173977-8	2-179694-8
9	16.0	18.8	20.0	173977-9	2-179694-9
10	18.0	20.8	22.0	1-173977-0	3-179694-0
11	20.0	22.8	24.0	1-173977-1	3-179694-1
12	22.0	24.8	26.0	1-173977-2	3-179694-2
13	24.0	26.8	28.0	1-173977-3	3-179694-3
14	26.0	28.8	30.0	1-173977-4	3-179694-4
15	28.0	30.8	32.0	1-173977-5	3-179694-5

\* The color of housing is natural. Other colors available include blue, yellow and black. For details contact our Sales Department

\*\* For wire to be used, contact our Sales Department as there are wires that have been tested by Tyco Electronics and can be recommended for your use.

\*\*\* The color of housing is gray.

**Note:** All part numbers are RoHS compliant.

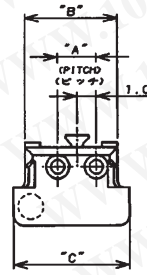
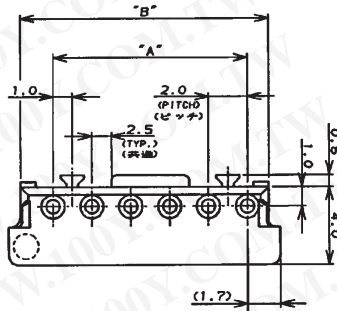
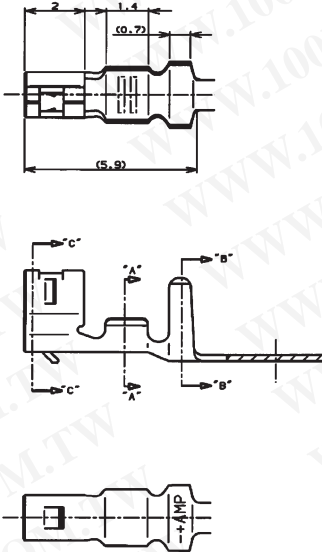
**Hybrid Mini-Drawer Connectors** (Continued)

**CT Receptacle Contacts to Mate with Signal Circuit Termination with Crimp Type Contacts**

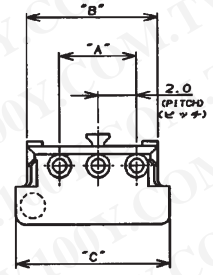
Wire Size AWG (mm <sup>2</sup> )	Insulation Dia. (mm)	Material and Finish	Part Number		
			Strip Form	Loose Piece	Hand Tool
30-26 (0.05-0.12)	0.65-1.35	Phosphor bronze (0.20 mm thickness), tin plated	179609-1	—	234169-1 (411-5711)
26-22 (0.12-0.35)	0.93-1.5		179227-1	179518-1	91572-1 (408-8547)

**Receptacle Contact**

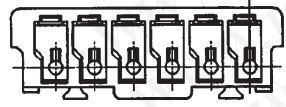
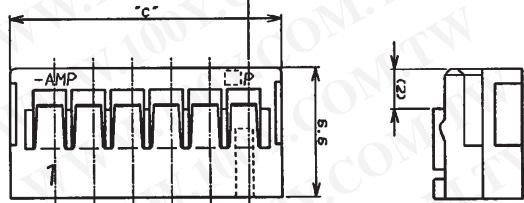
**Note:** Loose piece contacts, being small in size, are supplied in the form of a comb with 10 pieces on 7.5 mm pitch. There is a slit at the root of each contact and it can be snapped off easily.



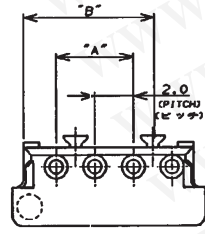
2 Position



3 Position



4-15 Positions



4 Position

**Receptacle Housing Material**

UL94-0 rated, 66 nylon, natural color (white)

No. of Positions	Dimensions			Part Number Receptacle Assembly*
	A	B	C	
2	2.0	4.8	6.0	179228-2
3	4.0	6.8	8.0	179228-3
4	6.0	8.8	10.0	179228-4
5	8.0	10.8	12.0	179228-5
6	10.0	12.8	14.0	179228-6
7	12.0	14.8	16.0	179228-7
8	14.0	16.8	18.0	179228-8
9	16.0	18.8	20.0	179228-9
10	18.0	20.8	22.0	1-179228-0
11	20.0	22.8	24.0	1-179228-1
12	22.0	24.8	26.0	1-179228-2
13	24.0	26.8	28.0	1-179228-3
14	26.0	28.8	30.0	1-179228-4
15	28.0	30.8	32.0	1-179228-5

\* The color of housing is natural. Other colors available include blue, yellow and black. For details contact our Sales Department

**Note:** All part numbers are RoHS compliant.