

# Amphenol

Amphenol-Tuchel Electronics GmbH

## Connectors

Series C 148 U



# Worldwide Performance

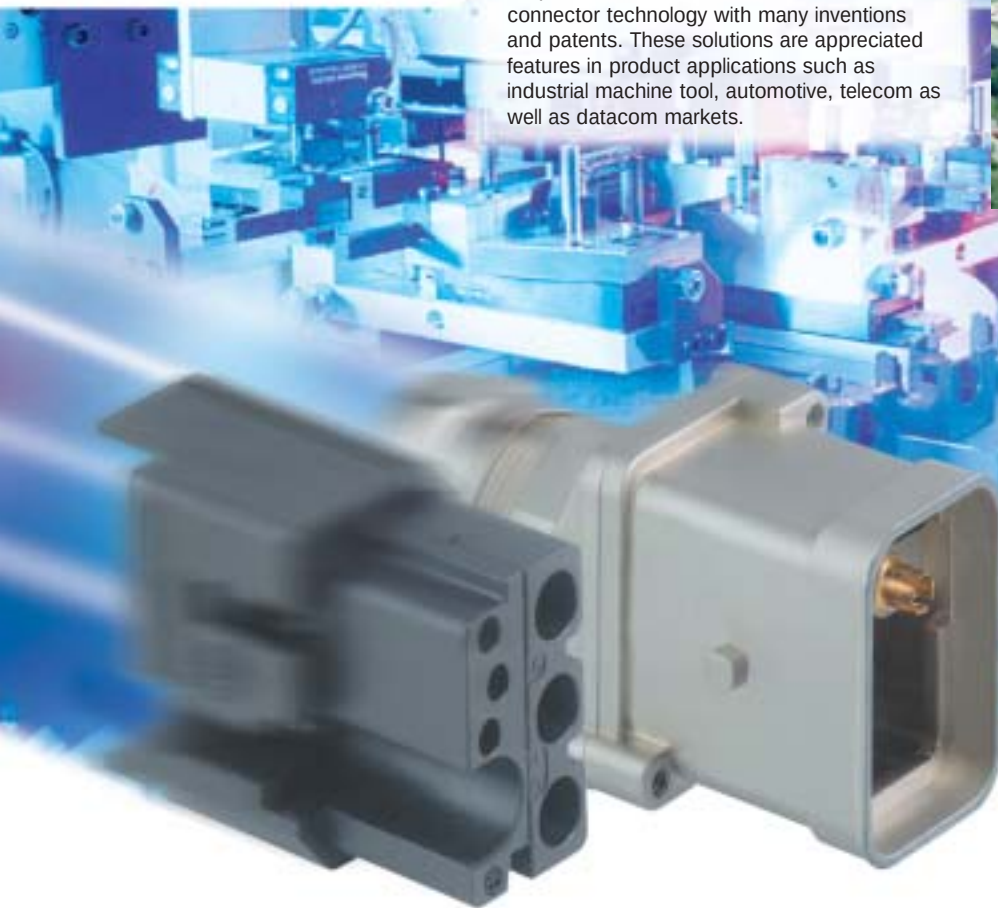
## The Company

Amphenol-Tuchel Electronics GmbH is a global company and a leading manufacturer of electrical connector solutions.

The superior quality of our product line is a result of state of the art engineering and technology in conjunction with leading edge production methods.

Our worldwide production and sales channels provide local competence in a global marketplace.

Amphenol has set standards in electrical connector technology with many inventions and patents. These solutions are appreciated features in product applications such as industrial machine tool, automotive, telecom as well as datacom markets.



## System description

The connectors of the Amphenol product series C 148 U are characterised by a robust and compact design, simple handling, and high mechanical and electrical strength. These connectors, designed for use in control systems and servo-drives, thus meet all requirements demanded of a decentralised plug-connector system for use under rough operating conditions. They are suitable for wire sizes of 0.5 mm<sup>2</sup> to 10 mm<sup>2</sup> and cover about 95% of all possible applications.

The modular usability of the individual components reduces the amount of stock which has to be kept. A further advantage is the simple, quick and reliable assembly of connectors for equipment and cables. No special tools are needed for inserting the contacts into the insulated body.

The proven crimp technology is very suitable for connecting wires to contacts for systems subject to vibration stresses. All of the connectors are designed for use in electromagnetic interference fields. The EMI protection is ensured by the metallic construction and the full connection of the cable shield within the connectors. The application sector for the C 148 U series extends from mechanical engineering to drive solutions and decentralised control systems with power buses.



## Main features

- Right angled and straight connectors
- Robust metal construction
- Meets IP 65 and IP 67 specifications
- Locking levers coupling
- Number of contacts 3 + PE (power contacts) + 3 (signal contacts)
- 630 V rated voltage
- 60 A rated current at  $T_U$  40°C
- Cable strain relief with cable clamp
- Cable dia. 8 - 23 mm
- EMI protected in mated and locked condition
- Crimp termination
- Excellent cost/value ratio
- Premating earth contact
- Cable and panel connector connected with premating earth contact

## C 148 U Technical Data

### General Characteristics

| General Characteristics   | Standard | Value                                  |
|---------------------------|----------|----------------------------------------|
| No. of contacts           |          | 3 + 3 + PE                             |
| Termination               |          | crimp                                  |
| Wire size power contacts  |          | 1.5 - 10 mm <sup>2</sup> ; 16 - 8 AWG  |
| Wire size signal contacts |          | 0.5 - 1.5 mm <sup>2</sup> ; 20 -16 AWG |
| Coupling                  |          | Locking levers                         |
| Flammability              | UL 94    | V-0                                    |

### Electrical Characteristics

|                                             |                        |                                           |
|---------------------------------------------|------------------------|-------------------------------------------|
| Rated voltage                               | IEC 60 664-1           | 630 V AC/DC (500 V AC/DC signal contacts) |
| Rated impulse voltage                       | IEC 60 664-1           | 6.0 KV                                    |
| Material group                              | IEC 60 664-1           | II                                        |
| Contact resistance                          | IEC 60 512-2, Test 2 a | ≤ 3 mΩ (≤ 5 mΩ signal contacts)           |
| Insulation resistance                       | IEC 60 512-2, Test 3 a | ≥ 10 <sup>8</sup> Ω                       |
| Current carrying capacity (power contacts)  | IEC 60 512-3, Test 5 b | approx. 60 A (see derating curves)        |
| Current carrying capacity (signal contacts) | IEC 60 512-3, Test 5 b | 5 A                                       |

### Climatic Conditions

| Climatic Conditions     | Contact Inserts         | Housing          |
|-------------------------|-------------------------|------------------|
| Climatic category       | IEC 60 068-1            | 25 / 125 / 21    |
| Lower temperature limit | IEC 60 512-6, Test 11 j | -25 °C / 16 h    |
| Upper temperature limit | IEC 60 512-6, Test 11 i | +125 °C / 1000 h |

### Mechanical Characteristics

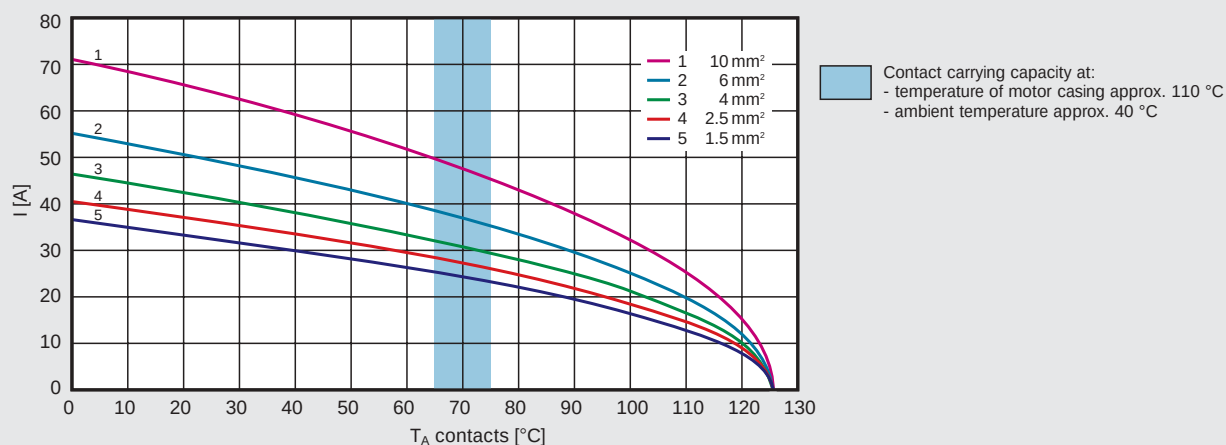
|                                |                         |                     |
|--------------------------------|-------------------------|---------------------|
| Insertion and withdrawn forces | IEC 60 512-7, Test 13 b | ≤ 30 N              |
| Mechanical life cycle          | IEC 60 512-5, Test 9 a  | ≥ 100 mating cycles |
| Locking force                  | IEC 60 512-7, Test 13 a | ≤ 150 N             |
| Protection class               | IEC 60 529              | IP 65 / IP 67       |

### Materials

|                 |             |
|-----------------|-------------|
| Contact insert  | PA 6.6      |
| Contacts        | Cu-alloy    |
| Contact plating | Ag          |
| Housing         | Zn die cast |
| Housing plating | Ni          |

Technical data refer to connectors in mated and locked condition.

## C 148 U Derating curves power contacts



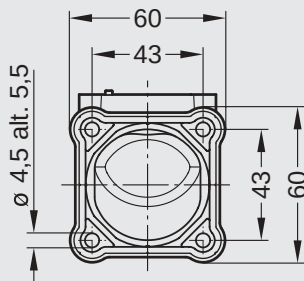
## C 148 U Panel Connectors



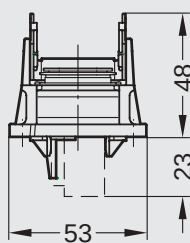
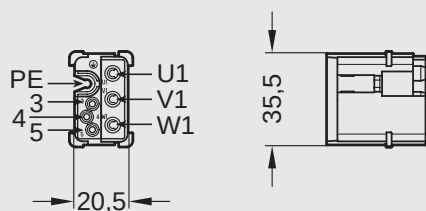
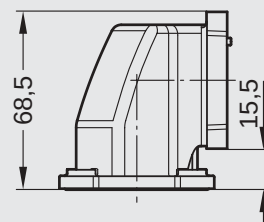
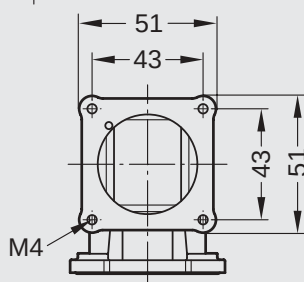
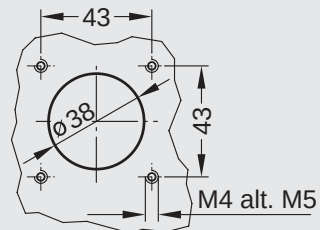
**Panel connectors for male contact inserts**, for wire sizes 0.5 - 10 mm<sup>2</sup>, 20 - 8 AWG. The straight panel connector housing can also be used without the angled housing. For contacts see page 7.

| Description         | Part No.          |
|---------------------|-------------------|
| Angled housing M5   | C148 G20 000 G1   |
| Straight housing    | C148 10F001 000 1 |
| Male contact insert | C148 10A006 000 1 |
| Angled housing M4   | upon request      |

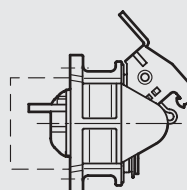
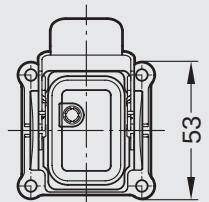
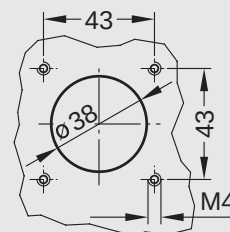
Each packaging contains 25 pieces.



MONTAGEAUSSCHNITT  
PANEL CUT - OUT

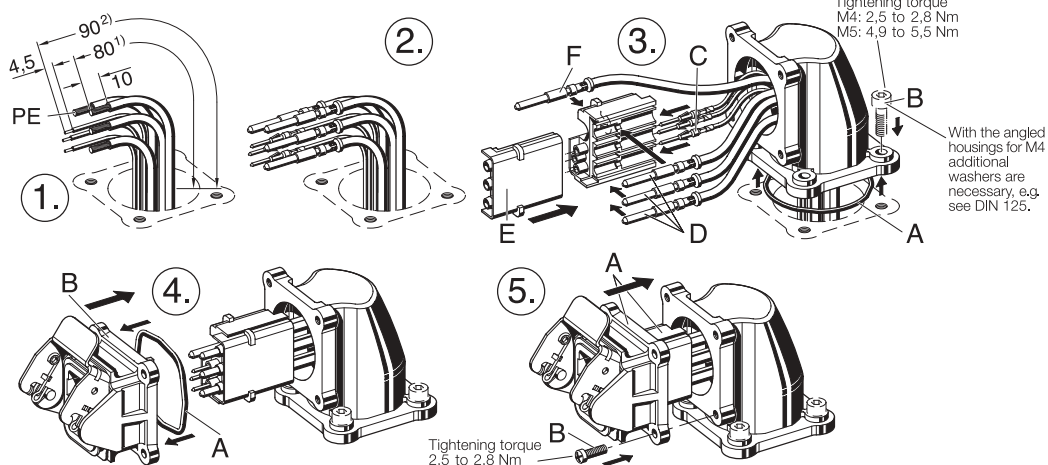


MONTAGEAUSSCHNITT  
PANEL CUT - OUT



### Assembly Instruction

Refer also page 8,  
Assembly + Termination



1) Power wire; PE = 83mm  
2) Signal wire

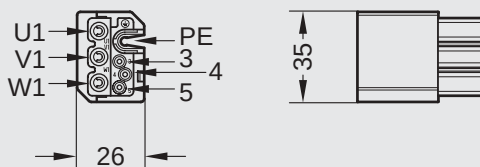
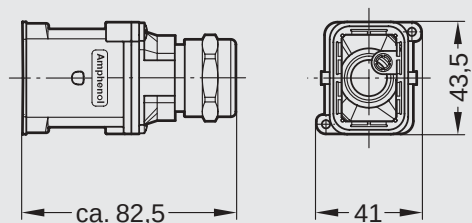
## C 148 U Cable Connectors



**Cable connectors for female contact inserts,**  
for cable diameter  
8 - 23 mm and wire sizes  
0.5 - 10 mm<sup>2</sup>, 20 - 8 AWG.  
For contacts see page 7.

| Description            | ø Cable    | Part No.                          |
|------------------------|------------|-----------------------------------|
| Female cable connector | 8 - 14 mm  | <a href="#">C148 10G006 200 1</a> |
| Female cable connector | 14 - 17 mm | <a href="#">C148 10G006 201 1</a> |
| Female cable connector | 17 - 20 mm | <a href="#">C148 10G006 202 1</a> |
| Female cable connector | 20 - 23 mm | <a href="#">C148 10G006 203 1</a> |
| Female contact insert  |            | <a href="#">C148 10B006 000 1</a> |

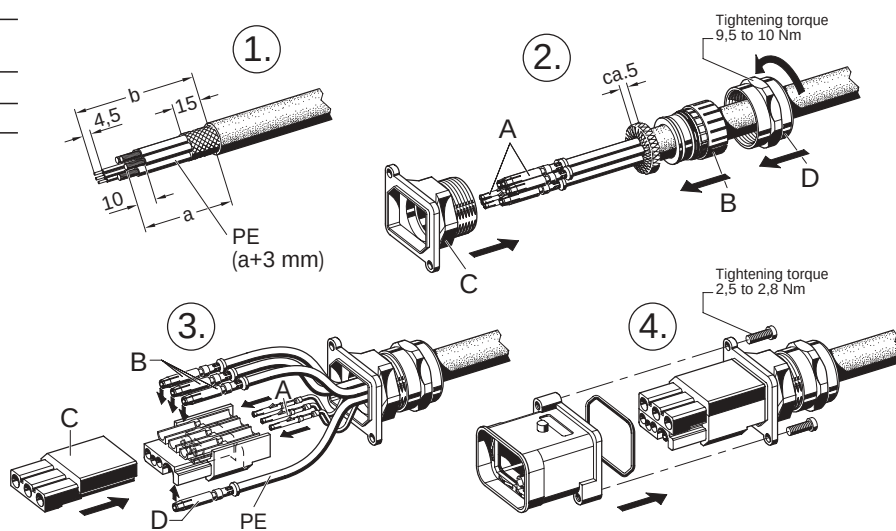
Each packaging contains 25 pieces.



### Assembly Instruction

Refer also page 8,  
Assembly + Termination

| ø Cable    | a<br>Power wire | b<br>Signal wire |
|------------|-----------------|------------------|
| 8 - 17 mm  | 43 mm           | 54 mm            |
| 17 - 23 mm | 52 mm           | 63 mm            |



## C 148 U Turned Crimp Contacts

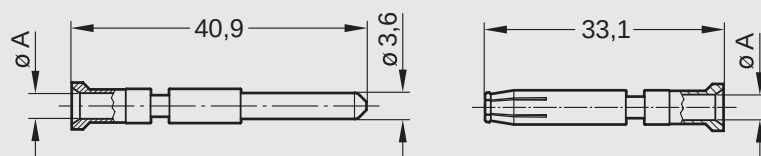


**Turned crimp contacts**  
for  $\varnothing 3.6$  mm

| Description    | Wire size<br>in mm <sup>2</sup> | AWG | A<br>in mm | Quantity | Part No.           |
|----------------|---------------------------------|-----|------------|----------|--------------------|
| Male contact   | 1.5                             | 16  | 1.75       | 100      | VN 01 036 0008 (1) |
|                | 2.5                             | 14  | 2.25       | 100      | VN 01 036 0009 (1) |
|                | 4                               | 12  | 2.85       | 100      | VN 01 036 0010 (1) |
|                | 6                               | 10  | 3.5        | 100      | VN 01 036 0011 (1) |
|                | 10                              | 8   | 4.4        | 100      | VN 01 036 0014 (1) |
| Female contact | 1.5                             | 16  | 1.75       | 100      | VN 02 036 0007 (1) |
|                | 2.5                             | 14  | 2.25       | 100      | VN 02 036 0008 (1) |
|                | 4                               | 12  | 2.85       | 100      | VN 02 036 0009 (1) |
|                | 6                               | 10  | 3.5        | 100      | VN 02 036 0010 (1) |
|                | 10                              | 8   | 4.4        | 100      | VN 02 036 0013 (1) |

### Crimping tools

|                            |                  |
|----------------------------|------------------|
| 4-Ident hand crimping tool | TB 0002          |
| Contact locator            | TB 0000 146 0007 |
| Calibration pin set        | TP 0000 146 1200 |

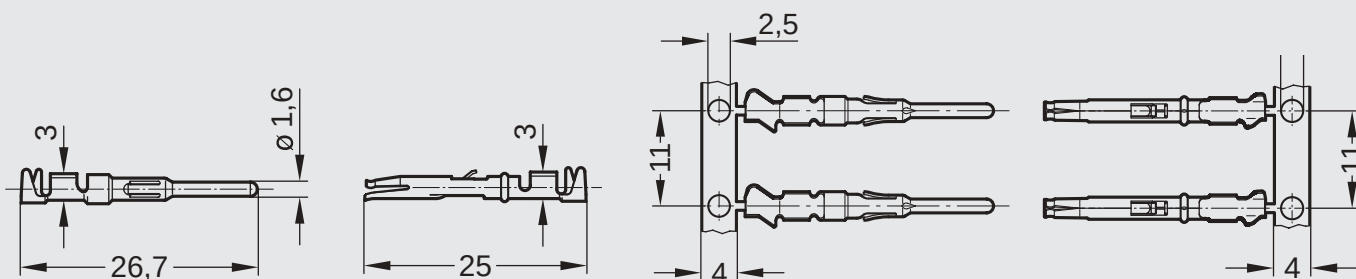


## C 148 U Stamped Crimp Contacts



| Description                                 | Wire size<br>in mm²      | Supplied<br>as   | Quantity | Part No.<br>Contacts | Crimping tool                             | Part No.<br>Crimping tools                |             |
|---------------------------------------------|--------------------------|------------------|----------|----------------------|-------------------------------------------|-------------------------------------------|-------------|
| Male contact                                | 0.5 - 1.5<br>20 - 16 AWG | single contact   | 100      | VN 01 016 0002 (1)   | Hand crimping tool                        | TA 0000                                   |             |
|                                             |                          |                  |          |                      | Crimping dies                             | TA 0000 163                               |             |
|                                             |                          | single contact   | 200      | ZN 01 016 0002 (1)   | Contact locator                           | TA 0002 146 0001                          |             |
|                                             |                          |                  |          |                      | Hand crimping tool                        | FA 0000 110                               |             |
|                                             |                          | contacts on reel | 2000     | HN 01 016 0002 (1)   | Crimping dies                             | FA 0000 163                               |             |
| Female contact                              | 0.5 - 1.5<br>20 - 16 AWG | single contact   | 100      | VN 02 016 0002 (1)   | Semi automated crimping tool upon request |                                           |             |
|                                             |                          |                  |          |                      |                                           | Hand crimping tool                        | TA 0000     |
|                                             |                          |                  |          |                      |                                           | Crimping dies                             | TA 0000 163 |
|                                             |                          | contacts on reel | 200      | ZN 02 016 0002 (1)   | Contact locator                           | TA 0002 146 0001                          |             |
|                                             |                          |                  |          |                      |                                           | Hand crimping tool                        | FA 0000 110 |
|                                             |                          | contacts on reel | 2000     | HN 02 016 0002 (1)   | Crimping dies                             | FA 0000 163                               |             |
|                                             |                          |                  |          |                      |                                           | Semi automated crimping tool upon request |             |
| Removal tool for all stamped crimp contacts |                          |                  |          |                      |                                           | FG 0300 146 1                             |             |

**Stamped crimp contacts**  
for  $\varnothing 1.6$  mm



### 1. General Remarks

The connectors of the C 148 U series are designed to meet the high demands of industrial applications under harsh environmental conditions. The connectors are designed and built in accordance with DIN VDE 0627. We reserve the right to change the design due to improvements in quality, product developments, or production requirements.

All technical details refer to connectors, which according to the regulated uses should not be mated or separated when electrical voltage is applied. The data and instructions as listed are to help the user select the correct product and to ascertain correct and matched applications.

### 2. Application

Connectors must only be used according to the specified calculated dimensions. Please note that calculated quantities are frequently only shown as initial values which have been determined under special test conditions and are subject to change especially under longer terms or different forces. The connectors of the C 148 U series are designed for applications in the equipment and machine tool industry as well as for instrumentation. Selection and testing of connectors and/or plug and panel devices are designed to meet specific product or industrial requirements, such as calculated voltage and the related clearances and creepage distances.

It is the responsibility of the user to check whether the connection differs to the specified requirements and therefore to judge whether the application is suitable.

All calculated data for the connectors listed in this catalog are based on overload category III and contamination level 3 (for machine tool applications). In the applications be sure the connectors are completely mated according to their respective safety locking mechanism. All technical data refer to mated connectors under locked conditions.

### 3. Assembly

Certain appliances and equipment include protective measures that relate to the coupling devices of the male and female receptacle housings.

Care must be taken to ensure the parts are correctly mated and screws are tightened with the proper torque.

In order to stop the loosening of the screw, we recommend the use of washers or screws which are supplied with a suitable secure glue.

In regards to the screwing together of angled housings and straight housings, we recommend our screws N 03 040 0022 (1), and to the screwing on of the angled housings screws with a suitable surface coating can be used, e.g. see DIN 912 or DIN 7985 (strength level 8.8).

### 4. Termination

Cable connectors are effectively secured when using the internal cable clamp. When the connector contains a simple gland bushing for retention, the cable should have a strain relief close behind the connector. All cable properties or specifications must be compatible with the connector design and materials. Designated wire conductors must be soldered to the correct positions. Crimped contacts must be terminated with the specified tools of the manufacturer.

Contacts must be fully inserted into the plastic housing and retention assured with a slight tug on the wire. Wire should be stripped correctly according to printed specifications to insure no electrical contact can be made between the conductors. There should be no cut strands during the stripping action.

### 7. EMI

The specified requirements according to the EMI-Law (EMI-Directive 89/336EWG) must be ensured by corresponding installation in the equipment.

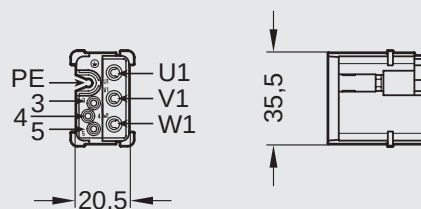
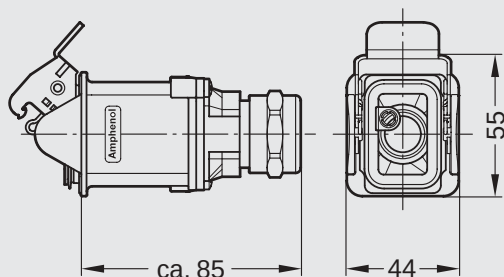
## C 148 U Cable Connectors



**Cable connectors for male contact inserts,**  
for cable diameters  
8 - 23 mm and wire sizes  
0.5 - 10 mm<sup>2</sup>, 20 - 8 AWG.  
For contacts see page 7.

| Description          | Ø Cable    | Part No.                          |
|----------------------|------------|-----------------------------------|
| Male cable connector | 8 - 14 mm  | <a href="#">C148 10G006 400 1</a> |
| Male cable connector | 14 - 17 mm | <a href="#">C148 10G006 401 1</a> |
| Male cable connector | 17 - 20 mm | <a href="#">C148 10G006 402 1</a> |
| Male cable connector | 20 - 23 mm | <a href="#">C148 10G006 403 1</a> |
| Male contact insert  |            | <a href="#">C148 10A006 000 1</a> |

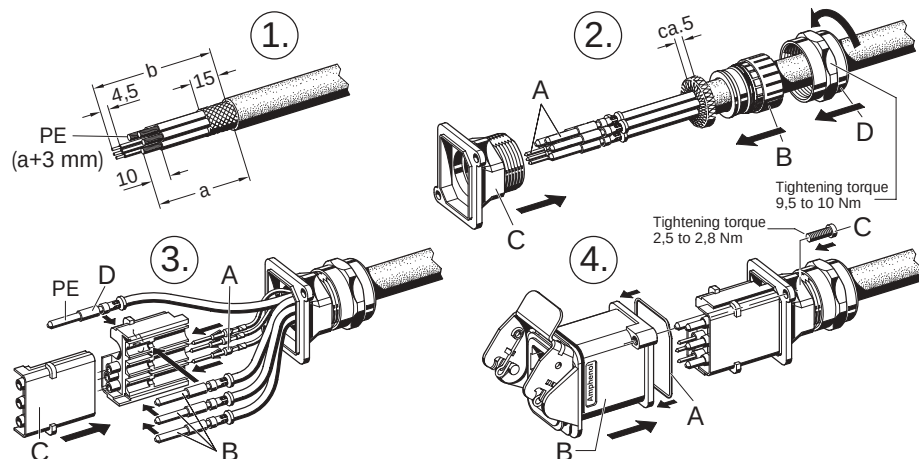
Each packaging contains 25 pieces.



### Assembly Instruction

Refer also page 8,  
Assembly + Termination

| Ø Cable    | a<br>Power wire | b<br>Signal wire |
|------------|-----------------|------------------|
| 8 - 17 mm  | 41 mm           | 52 mm            |
| 17 - 23 mm | 50 mm           | 61 mm            |



## International

### Argentina

Amphenol Argentina  
Av. Callao 930  
2nd Floor Office B "Plaza"  
C1023 AAP Buenos Aires  
Phone +54 / 11 / 4815 35 79  
Fax +54 / 11 / 4814 57 79

### Australia

Amphenol Australia Ltd.  
2 Fiveways Blvd  
Keysborough  
Victoria 31 73  
Phone +61 / 3 / 8796 / 8888  
Fax +61 / 3 / 8796 / 8801

### Brasilia

Amphenol do Brasil Ltda.  
Rua Diogo Moreira 132, 20th Floor  
CEP 05423-010 Sao Paulo SP  
Phone +55 / 11 / 3815.1003  
Fax +55 / 11 / 3815.1629

### France

Amphenol Socapex France  
21 Chemin du Défois  
B.P. 349  
39105 Dole Cedex  
Phone +33 / 3 / 8482 94 00  
Fax +33 / 3 / 8482 94 11

### Great Britain

Pyle-National  
A division of Amphenol Ltd.  
Unit D1, Crossgate Drive  
Queens Drive  
Industrial Estate  
Nottingham, NG2 1LW  
Phone: +44 / 115 / 986 6200  
Fax +44 / 115 / 986 6212

### Hongkong

Amphenol East Asia Limited  
Units 2201-02, Railway Plaza  
39 Chatham Road South  
Tsimshatsui, Kowloon  
Phone +852 / 2699 / 2663  
Fax +852 / 2688 / 0974

### India

Amphetronix Limited  
Plot No. 105 Bhosari Industrial Area  
Pune - 411 026  
Phone +91 / 20 / 7121418  
Fax +91 / 20 / 7120581

### Italy

Amphenol Italia S.p.A.  
Via Barbaiana n. 5  
I-20020 Lainate (MI)  
Phone +39 / 2 / 93 254.1  
Fax +39 / 2 / 93 254.445

### Japan

Amphenol Japan, K.K.  
2-3-27, Kudan Minami  
Chiyoda-Ku  
Tokyo 102  
Phone +81 / 3 / 32 63 / 56 11  
Fax +81 / 3 / 52 76 / 70 59

### Korea

Amphenol DaeShin Limited  
#802 Joong-Dong 1131-5  
Wonmi-Ku  
Bucheon-City  
Kyunggi-Do  
Korea 420-020  
Phone +82 / 2 / 785 / 1588  
Fax +82 / 2 / 589 / 1514

### Mexico

Amphenol Mexico  
Prolongacion Reforma 61 - 6 B2  
Col. Paseo de las Lomas  
C.P. 01330 Mexico D.F.  
Phone +52 / 55 / 5258.9984  
Fax +52 / 55 / 5081.6890

### Netherlands

Amphenol Benelux b.v.  
Hoofdveste 19  
3992 AK Houten  
Phone +31 / 30 / 6 35 80 00  
Fax +31 / 30 / 6 37 78 99

### Peoples Republic of China

Amphenol-Tuchel Electronics GmbH  
China Branch  
210-1 Taishan Road  
Changzhou 213022  
Phone +86 / 0519 / 5 11 03 01  
Fax +86 / 0519 / 5 11 02 99

### Singapore

Amphenol East Asia Limited  
Asia Pacific Sales Operation  
Singapore Branch  
300 Beach Road  
#25-07 The Concourse  
Singapore 199555  
Phone +27 / 11 / 305-95 74  
Fax +27 / 11 / 305-95 76

### Sweden

Amphenol Scandinavia  
Johanneslundsvägen 2  
194 61 Upplands Väsby  
Phone +46 / 8 / 59 41 04 40  
Fax +46 / 8 / 59 03 38 00

### Spain

Amphenol Ibérica  
C/Comunidad de Madrid, 35-bis  
oficina N° 55 "Edificio Burgosol"  
E-28230 las Rozas Madrid  
Phone +34 / 91 64 07 30 2  
Fax +34 / 62 90 54 62 9

### South Africa

Amphenol International Ltd  
Chislehurst  
30 Impala Road  
Chislehurst  
Sandton, 2146  
Phone +27 / 11 / 7 83 95 17  
Fax +27 / 11 / 7 83 95 19

### Taiwan

Amphenol East Asia Ltd.  
Taiwan Branch (H.K.)  
116 Zhong Shan Road  
Lane 956 Taoyuan City  
Taiwan R.O.C. 330  
Phone +886 / 3 / 370 / 7855  
Fax +886 / 3 / 360 7259

### USA

Amphenol-Tuchel Electronics  
Representative Office  
6900 Haggerty Road  
Suite 200  
Canton, Michigan 48187  
Phone +1 / 734 / 451 6400  
Fax +1 / 734 / 451 7197

Amphenol Corporation  
Corporate Headquarters  
358 Hall Avenue  
Wallingford, CT 06492  
Phone +1 / 203 / 2 65 / 89 00  
Fax +1 / 203 / 2 65 / 86 28

Your engineering sales representatives:

# Amphenol

Amphenol-Tuchel Electronics GmbH

August-Haeusser-Str. 10 · D-74080 Heilbronn · Germany · Phone +49 (0) 71 31/9 29-0 · Fax +49 (0) 71 31/9 29-486 · [www.amphenol.info](http://www.amphenol.info)