



**1. General Remarks**

These connectors are designed and produced in conformity with the low voltage directive (73/23/EWG) respectively Gerätesicherheitsgesetz (German law) and are especially in accordance with the standards DIN EN 61984 (VDE0627); IEC 60664-1 (VSE 0110-1) and IEC 60529. The connectors may be used only within the technical ratings. These connectors and/or plug and socket devices are designed and produced according to DIN EN 61984/VDE 0627. All technical data refer to mated connectors under live conditions. The safety of the connector system depends on the correct selection of products, proper assembly of the connector device, and a precise fit of the connectors.

**2. Application Remarks**

Connectors and/or plug and socket devices must be used according to specified technical ratings. The technical data represents the initial value of mated parts under predetermined conditions and length of time. These values could change with different test parameters or product requirements. The C 16-1/16-3 Series connectors are used in a wide variety of industries and equipment. Some of these include industrial machines and controls, data processing, instrumentation and test equipment, medical devices, telecommunication's network and equipment, plus outdoor and marine applications. All rated data for the connectors listed in this catalog are based on over-voltage category III <sup>1)</sup> and pollution degree 3 <sup>2)</sup> for electronic applications.

Connectors were completely mated according to their respective safety locking mechanism. Selection and testing of connectors and/or plug and socket devices to meet specific product or industrial requirements such as rated voltage and the related clearances and creepage distances are the responsibility of the user.

**3. Assembling Remarks**

Protection against electrical shock of the termination of the connectors shall be secured by correct mounting. Connectors of the same or different series being mounted side by side may be protected against incorrect mating by the use of coding options. Care must be taken to ensure the parts are correctly mated and screws are tightened with the proper torque.

**4. Termination Remarks**

Cable connectors are effectively secured when using the internal cable clamp. When the connector contains a simple gland bushing for retention without clamping ring 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 terminated to the correct poles in the connector. Crimp 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 nicked or cut strains during the stripping action.

**5. Safety Classification acc. to DIN EN 61984 VDE 0627**

Style	enclosed mated	enclosed unmated	protective earthing contact	finger safety mated	finger safety unmated	hand back safety mated	connector with breaking capacity <sup>1)</sup>	rewirable	Cable clamp	
									with	without
Male cable connector	X	X	X	X		X	X	X	X	X
Female cable connector	X		X	X	X	X	X	X	X	X
Male receptacle screw / crimp	X	X	X	X		X	X	X		X
Female receptacle screw / crimp	X		X	X	X <sup>3)</sup>	X	X	X		X
Male receptacle solder	X	X	X	X <sup>3)</sup>		X <sup>3)</sup>	X	X		X
Female receptacle solder	X		X	X <sup>3)</sup>	X <sup>3)</sup>	X <sup>3)</sup>	X	X		X

<sup>1)</sup> Overvoltage category III: Equipment intended for the use in installations or parts of it in which lightning overvoltages do not need to be considered, however switching overvoltages generated by the equipment, and for cases where the reliability and the availability of the equipment or its dependent circuits are subject to special requirements. Examples are protecting means, switches and sockets.  
<sup>2)</sup> Pollution degree 3: Conductive pollution occurs or dry non-conductive pollution occurs which becomes conductive due to condensation which is to be expected.  
<sup>3)</sup> Protection against electrical shock on the termination side has to be secured by proper mounting.



## Product description

The circular connectors of the C 16-1 series are designed to meet the high requirements of industrial applications under harsh environmental conditions. The range includes versions with screw, solder and crimp terminations. A selection of crimp contacts for hand crimp tools and crimp machines ensure a reliable termination resulting in qualitative, technical and economical advantages. A large selection of housing styles offers the user an optimal solution.

## Main features and advantages:

- Circular connectors with contact arrangements 3 + PE and 6 + PE for power and signal applications
- For applications in machine tools, measurement and control, process technology and medical equipment
- Housing are made from high grade plastic material
- Protected against unlocking by threaded coupling
- Cable housing straight with PG 9, 11 and 13,5 cable outlet, Cable housing 90° with PG 9 and 11 cable outlet
- Cable housing straight or right-angled with various cable outlets <sup>1)</sup>
- Protection degree IP 65/IP 67 per IEC 60529 in mated condition
- Internal strain relief with screw clamp or clamping ring provides a safe cable restraint

<sup>1)</sup> Other cable outlets upon request

# C 16-1

Product description  
Order information  
Approvals

## Order information

### Contact plating

The standard plating is silver. Gold plated contacts are available upon request.  
Min order quantity = 100 contacts per type.

### Color coding

Upon request the coupling ring of the plugs and the housings of the receptacles can be delivered in the colors red, green, blue, yellow and grey.  
Min order quantity = 250 pcs. per type.

### Mechanical coding

Achieved with special coding pins which are inserted into contact cavities.  
Min. order quantity = 250 pcs. per type.

### Crimp version

Order numbers do not include crimp contacts. Please order separately (see page 33/34).  
Crimp contact for higher currents are available upon request.


### Crimp tooling

Ask for our catalog "Tools"

## Testhouse

## Characteristics

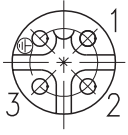
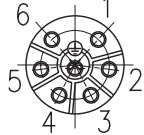
## Approval No.

VDE		3+PE, 400 V, 16 A 6+PE, 250 V, 10 A	1781 1780
SEV		3+PE, 400 V, 16 A 6+PE, 250 V, 6 A	00.0394
UL		3+PE, 250 V, 12 A 6+PE, 250 V, 8 A	E 63093
CSA		3+PE, 250 V, 12 A 6+PE, 250 V, 8 A 6+PE, 250 V, 15 A	48932
German LLyod		3+PE, 250 V, 16 A 6+PE, 50 V, 8 A	14108 / 84

In general approvals refer to representative versions of the connector series. Extail and specifications of test upon request.

# C 16-1

## Characteristics

General Characteristics	Standard	Characteristics		
Number of contacts		3 + PE	6 + PE	
				
<b>Electrical Characteristics</b>		screw type	solder type	crimp type
Rated insulation voltage	IEC 60664-1 <sup>1)</sup>	400 V	250 V	200 V
Rated impulse withstand voltage	IEC 60664-1 <sup>1)</sup>	6000 V	4000 V	
Pollution degree	IEC 60664-1 <sup>1)</sup>	3	3	
Installation (overvoltage) category	IEC 60664-1 <sup>1)</sup>	III	III	
Material group	IEC 60664-1 <sup>1)</sup>	II	II	
Current carrying capacity	IEC 60512-5-2, Test 5b	16 A / + 55 °C	10 A / + 55 °C	13 A / + 55 °C
Insulation resistance	IEC 60512-3-1	≥ 10 <sup>8</sup> Ω	≥ 10 <sup>8</sup> Ω	
Contact resistance	IEC 60512-2-1	≤ 5 m Ω	≤ 5 m Ω	
<b>Climatical Characteristics</b>				
Climatic category	IEC 60068-1	40 / 100 / 56	40 / 125 / 56	
Operating temperature		-40°C ... +100°C		
<b>Mechanical Characteristics</b>				
IP-degree of protection	IEC 60529	IP 65 / IP 67		
Insertion and withdrawal force	IEC 60512-13-2, Test 13b	≤ 15 N	≤ 30 N	
Mechanical operation	IEC 60512-9-1, Test 9a	≥ 500 mating cycles		
<b>Materials</b>				
Housing material		Polyamid 6.6		
Dielectric material		Polyamid 6.6		
Gasket material		Neoprene		
Contact plating		silver plated / gold plated		
<b>Other Characteristics</b>				
Termination technique		schrauben	löten	crimpen
Wire gauge mm <sup>2</sup> / AWG		max. 2,5 mm <sup>2</sup>	0,75 mm <sup>2</sup>	0,14 - 1,5 mm <sup>2</sup>
Flammability	UL 94	VO		
Locking system		round thread DIN 405		
Fire protection	DIN 5510 Part 2 DIN 53438 Part 1-3	S1		

<sup>1)</sup> IEC 60664-1 ≙ VDE 0110-1 ≙ DIN EN 60664-1



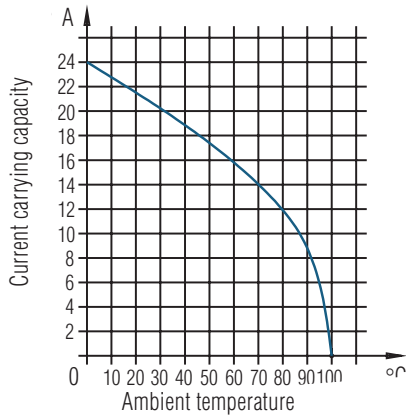
The stated technical values refer to the use as connector.

If these components are used as plug and socket device a reduced current carrying capacity has to be considered.

# C 16-1

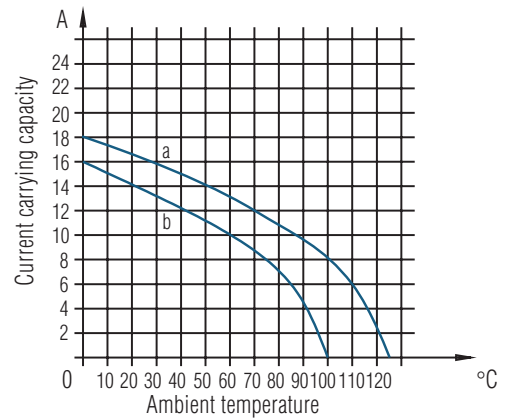
## Derating curves

### No of contacts 3 + PE



all contacts  
wire gauge 2,5 mm<sup>2</sup>, 14 AWG

### No of contacts 6 + PE



all contacts

a) wire gauge 1,5 mm<sup>2</sup>, 16 AWG  
b) wire gauge 0,75 mm<sup>2</sup>, 20 AWG

# C 16-1

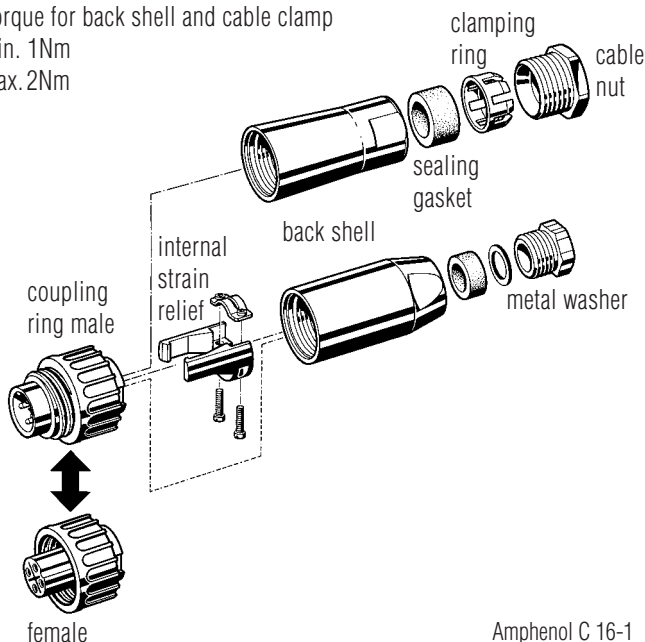
## Mounting instructions

### Shinning lengths

Screw contacts		7,0+1 mm <sup>1)</sup>
Solder contacts		4,0+1 mm
Crimp contacts	0,14 - 0,50 mm <sup>2</sup>	3+0,5 mm
	0,50 - 2,50 mm <sup>2</sup>	3,5+1 mm

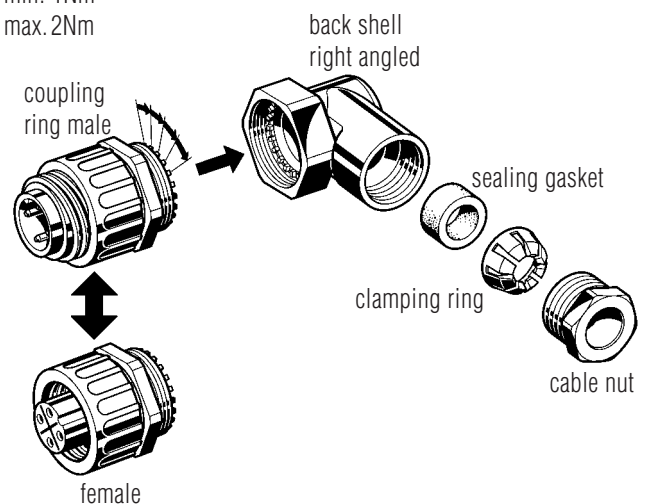
<sup>1)</sup>end splice recommended

Torque for back shell and cable clamp  
min. 1Nm  
max. 2Nm



Amphenol C 16-1

Torque for back shell and cable clamp  
min. 1Nm  
max. 2Nm



Amphenol C 16-1

# C 16-1

## Female cable connectors



Description	Drawing	No. of cont.	Part No. Cable outlet		
			Ø 8-10	Ø 10-12	Ø 10-12
Female cable connector, 3+PE screw, 6+PE solder termination, with cable clamp or clamping ring		3 + PE	T 3109 001	T 3109 101	T 3109 200 (with clamping ring)
		6 + PE	T 3105 001	T 3105 101	T 3105 200 (with clamping ring)
Female cable connector, 3+PE screw, 6+PE solder termination, without cable clamp		3 + PE	T 3109 000	T 3109 100	–
		6 + PE	T 3105 000	T 3105 100	–
Female cable connector, crimp version without contacts <sup>1)</sup> , with cable clamp or clamping ring		6 + PE	T 3105 501	T 3105 601	T 3105 701 (with clamping ring)
			Ø 6-8	Cable outlet Ø 8-10	
Female cable connector, right-angled, 3+PE screw, 6+PE solder termination, with clamping ring		3 + PE	T 3109 081	T 3109 091	–
		6 + PE	T 3105 081	T 3105 091	–
Female cable connector, right-angled, crimp version, without contacts <sup>1)</sup> , with clamping ring		6 + PE	T 3105 581	T 3105 591	–

<sup>1)</sup> Please order crimp contacts separately, see page 33/34, part numbersystem for crimpcontacts see page 35.