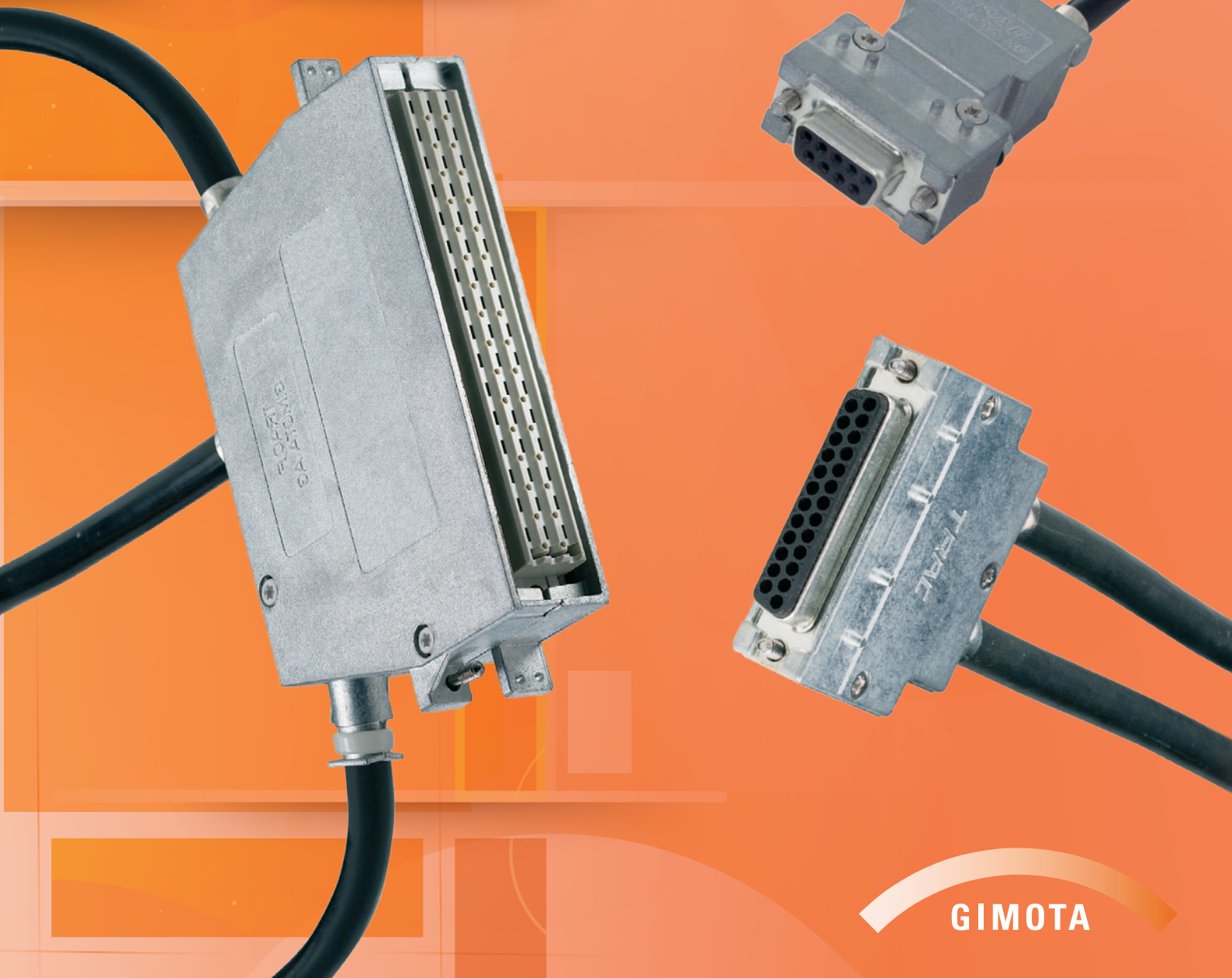
GIMOTA AG

Data connectors 2022



GIMOTA

This Data connectors-Catalogue replaces all previous editions.
All data are provided without guarantee and are for information only and can be subject to change.

Valid from 02.2022

Data connector Catalogue 2022

www.gimota.com

Content

1 General information

1.1 GIMOTA AG

GIMOTA situated near Zurich Switzerland was founded in 1961 by Otto Schoch. The company has been amongst others specialized in supplying connectors for the use in railway applications. These are for example CIRCULAR CONNECTORS for power and data signal transmission or DATA CONNECTORS.

Continuing in-house developments focused on the same field of activities, particularly with regard to connectors for high-current and data transmission circuits for example the GIMOTA TRAC-Series, and EMI shielded connectors.

GIMOTA connectors are used worldwide in various railway vehicles for many different applications. For example with conventional and electronic control systems, with measuring devices of all kinds and within jumper cable applications.

GIMOTA supplies it's products to most of the world's leading railway manufacturers and railway operators worldwide.

GIMOTA is known for it's high flexibility and comprehensive knowledge in railweng engineering requirements. The company develops and manufactures connectors for specialized applications according to customer specifications and needs.

Even small batches are welcome to be realized.

GIMOTA takes all possible efforts to provide appropriate logistics solution, such as «just-in-time» deliveries based on an order contracts and forecasts, or maintaining minimum inventory levels specified with the customer.

GIMOTA is today one of the leading providers of industrial traction connectors, and is continuously expanding its market share due to solutions with close focus on customers demand.

2 Data connectors general

2.1 Introduction

GIMOTA data connectors with the brand nome TRAC are well known for more than 25 years and characterized by a 360° EMC shielding system with integrated straincablerelieve. These connectors are available in the following versions:

• D-SUB series TRAC:
Standard version, socket / pin for housing, for example used in MITRAC vehicle control systems

• D-SUB series TRAC H:
Modified design for increased voltage requirements, for example used in vehicle control systems

• TRAC series F:
Housing for frame connectors type F, H, and DM according to EN IEC 60603-2 (DIN 41612)

The connectors comply with EN 60529 according to protection class IP44. Each cable can be applied with a 360° EMC shielding. All connectors are codeable if required.

The essential characteristics of these railway specific connectors are:

- Solid zinc cast housing (self passivating)
- Strain relieve on each cable
- Connection of cable screen to cable clamp
- Excellent contact between the housing and the cable clamp (also at higher EMI currents)
- Easy codable (also after assembling a field)
- All accessories screws of stainless steel
- RoHS-Compliance acc. directive: 2011/65/EU

3 D-SUB Data signal connectors

3.1 Introduction

TRAC D-SUB connectors have been specially developed for use in supervisory control systems. TRAC connectors are characterised by a sturdy cast-zinc covers for 360° EMI screening and coding capability if required.

The connectors comply with ingress protection class IP44 as per EN 60529 and are approved for indoor applications.

D-SUB connectors from the TRAC series can be ordered either as single components or as comprehensive assembly sets.

When ordering connector sets, it is required to separately order the contacts (single or strip) and shielding sleeve (different sizes).

Basically, there are two types of contact housing:

TRAC socket/pin housing, the standard design for use up to 1 kV.

TRAC H socket/pin housing, designed for more demanding applications with up to 1.5 kV.

3.1.1 General technical data

Electrical properties

All electric data are valid at sea level and an environment temperature of 20 °C.
Deviating environment conditions are to be taken into account at the plug evaluation.

		D-SUB TRAC	**D-SUB TRAC H**
Socket housing		Type SUH...S	Type SUHV...S
Pin housing		Type SUH...P	Type SUHV...P
Test voltage	[V] 1 Min	1000	1500
Service voltage	[V] AC/DC	125	125
Operation current at 20 °C	[A]	max. 5	max. 5
Potential drop accross contacts	[mV]	max. 24	max. 24
Creepage distance in connecting zone	[mm]	min. 1.5	min. 3
Creep resistance acc. to IEC 60664	CTI-Wert	>300	>300
Insulatior resistance	[MΩ]	>5000	>5000

Thermal properties / Fire characteristic

		D-SUB TRAC / TRAC H
Contact housing material		Thermoplastic
Service temperature	[°C]	-55 to +105
Fire resistance class	UL94	V-0

Mechanical properties of contacts

		D-SUB TRAC / TRAC H acc. to DIN IEC 60512-5
Mechanical contact-lifespan	mating cycles	min. 500
Separating force per contact	[N]	> 0.2
Mating force per contact	[N]	< 3.4
Conductor cross-section: Data-Signal contacts	[mm²]	0.2 to 0.56 AWG24-20
Conductor cross-section: Power contacts	[mm²]	0.8 to 8 AWG18-8

Mechanical properties connectors

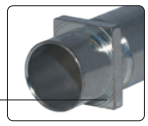
	D-SUB TRAC / TRAC H
Cover	3 sizes (1, 2, 3), screw-on cover
Cover material	zinc cast (self-passivating)
Contact housing materials	thermoplastic / steel tin plated
Screw material	stainless steel V2
EMI shielding	with compressible shielding sleeve: 360°
Coding	at least 24 possibilities (mechanically)
Cable strain relieve	crimpable or with cable tie up to 150 N

Strain relieve

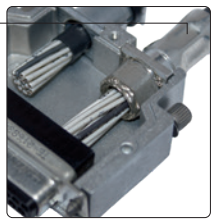
The cable is held in the cable clamp with strain relieve compression onto the cable. The cable clamps have different diameters for use with various cables. Cable diameters can be adapted to the cable clamp size using heat-shrinkable tubes. In such cases and when cable types are used the first time, the strain relieve crimp should be tested by means of a tensile test. During the test, the cable should resist a pull-out value of approximately 150 N for 1 minute. The appropriate compression tools guarantee a constant compression value by the two dies touching each other at the end of the compressing process.

The cable clamp shall be tightly pressed into the guiding grooves of the connector cover

Elevated spikes at the corners ensure a proper contact with the connector cover

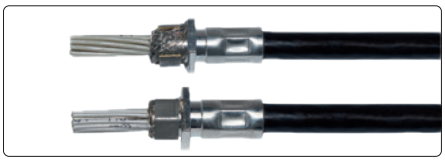


Strain relieve compression

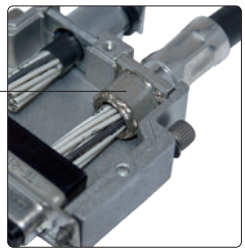


EMI-shielding

To provide 360° EMI connection, the TRAC connector has a separate crimp for proper contact of the cable shield to the cable clamp by using a shielding sleeve. The cable clamp features small side spikes which guarantee a conductive connection to the connector shell. The appropriate compression tools ensure easy positioning and compression of the shield bushing.



Compressable shielding sleeve

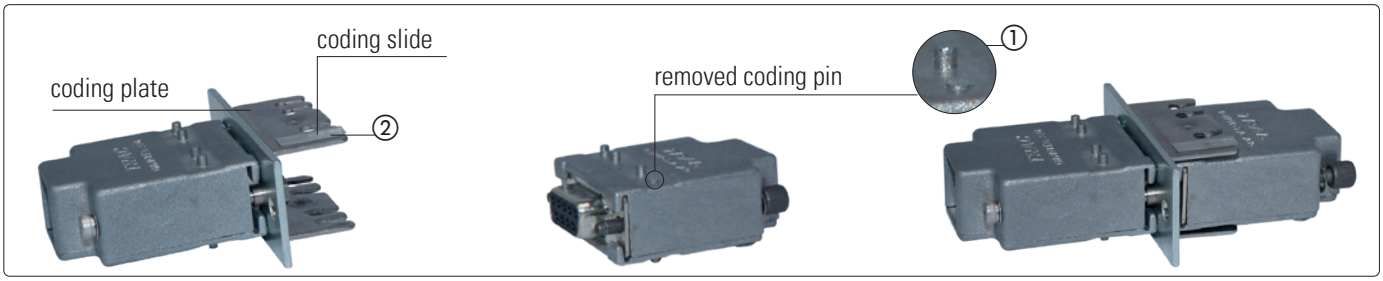


Coding

Coding is applicable to ensure errorless mating of the TRAC connecters to pannels wher several receptacles are arranged side by side.

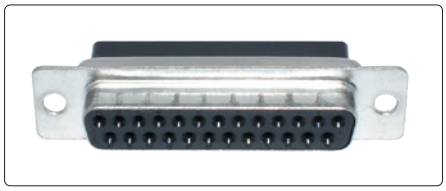
Coding a TRAC D-SUB connector:
1. Remove coding pins on D-SUB cover using the coding pliers GIW901 (trant cutter)
2. Insert coding slide corresponding to this position in the coding plate using the coding tool

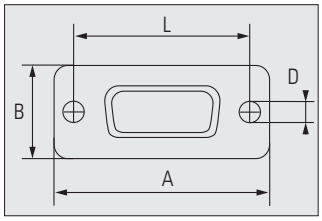
Coding of TRAC connectors can be carried out on site.

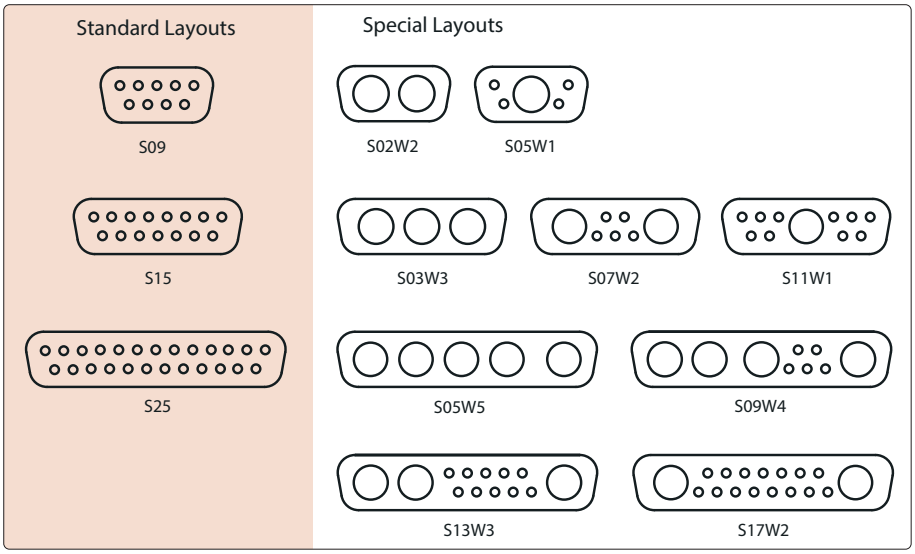


3.2 Single parts and contacts for data signal connectors D-SUB

3.2.1 Socket contact housings D-SUB TRAC



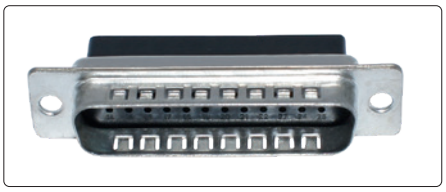


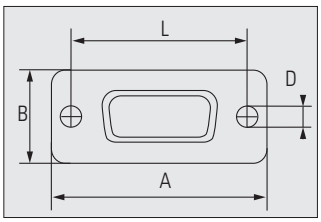


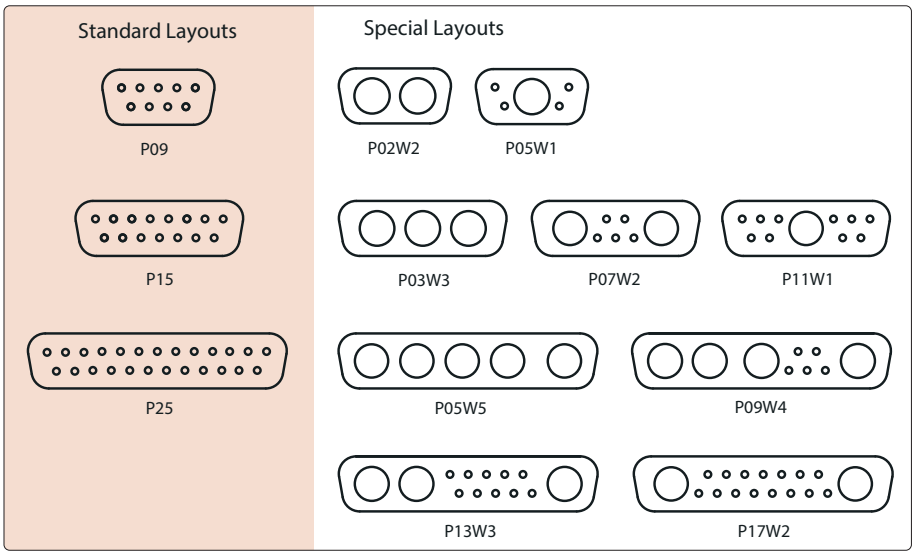
Material: Thermoplastic / steel tin plated

Item number	Cover size	Poles	L [mm]	D [mm]	A [mm]	B [mm]	Layout code for set items
SUH09S	1	9-poles	25.8	3	30.8	12.5	S09
SUH02W2S	1	2-poles	25.8	3	30.8	12.5	S02W2
SUH05W1S	1	5-poles	25.8	3	30.8	12.5	S05W1
SUH15S	2	15-poles	33.3	3	39.1	12.5	S15
SUH03W3S	2	3-poles	33.3	3	39.1	12.5	S03W3
SUH07W2S	2	7-poles	33.3	3	39.1	12.5	S07W2
SUH11W1S	2	11-poles	33.3	3	39.1	12.5	S11W1
SUH25S	3	25-poles	47.0	3	53.0	12.5	S25
SUH05W5S	3	5-poles	47.0	3	53.0	12.5	S05W5
SUH09W4S	3	9-poles	47.0	3	53.0	12.5	S09W4
SUH13W3S	3	13-poles	47.0	3	53.0	12.5	S13W3
SUH17W2S	3	17-poles	47.0	3	53.0	12.5	S17W2

Electrical, thermal, mechanical properties: refer to chapter: 3.1.1
Other layouts or configurations are available on request





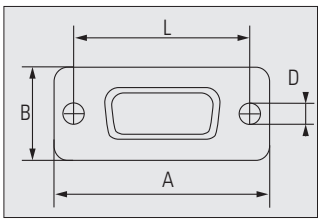


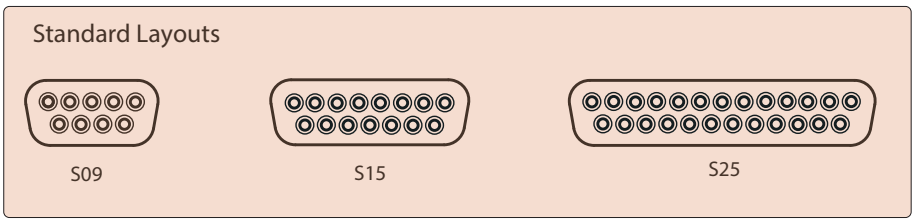
Material: Thermoplastic / steel tin plated

Item number	**Cover size**	**Poles**	**L** [mm]	**D** [mm]	**A** [mm]	**B** [mm]	**Layout code** for set item
SUH09P	1	9-poles	25.8	3	30.8	12.5	P09
SUH02W2P	1	2-poles	25.8	3	30.8	12.5	P02W2
SUH05W1P	1	5-poles	25.8	3	30.8	12.5	P05W1
SUH15P	2	15-poles	33.3	3	39.1	12.5	P15
SUH03W3P	2	3-poles	33.3	3	39.1	12.5	P03W3
SUH07W2P	2	7-poles	33.3	3	39.1	12.5	P07W2
SUH11W1P	2	11-poles	33.3	3	39.1	12.5	P11W1
SUH25P	3	25-poles	47.0	3	53.0	12.5	P25
SUH05W5P	3	5-poles	47.0	3	53.0	12.5	P05W5
SUH09W4P	3	9-poles	47.0	3	53.0	12.5	P09W4
SUH13W3P	3	13-poles	47.0	3	53.0	12.5	P13W3
SUH17W2P	3	17-poles	47.0	3	53.0	12.5	P17W2

Electrical, thermal, mechanical properties: refer to chapter: 3.1.1
Other layouts or configurations are available on request

3.2.3 Socket contact housings D-SUB TRAC H, high voltage



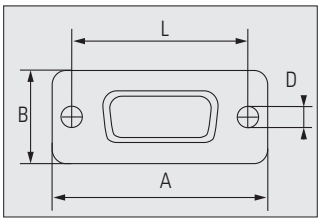


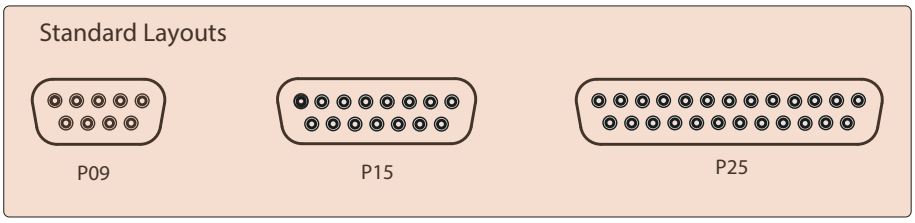
Material: Thermoplastic / steel tin plated

Item number	Cover size	Poles	L [mm]	D [mm]	A [mm]	B [mm]	Layout code for set item
SUHV09S	1	9-poles	25.8	3	30.8	12.5	S09
SUHV15S	2	15-poles	33.3	3	39.1	12.5	S15
SUHV25S	3	25-poles	47.0	3	53.0	12.5	S25

Electrical, thermal, mechanical properties: refer to chapter: 3.1.1

3.2.4 Pin contact housing D-SUB TRAC H, high voltage





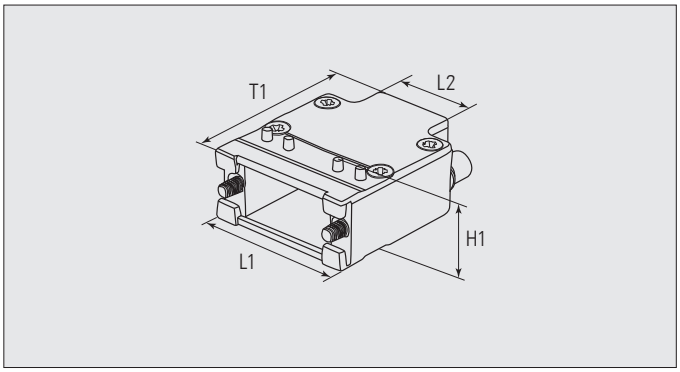
Material: Thermoplastic / steel tin plated

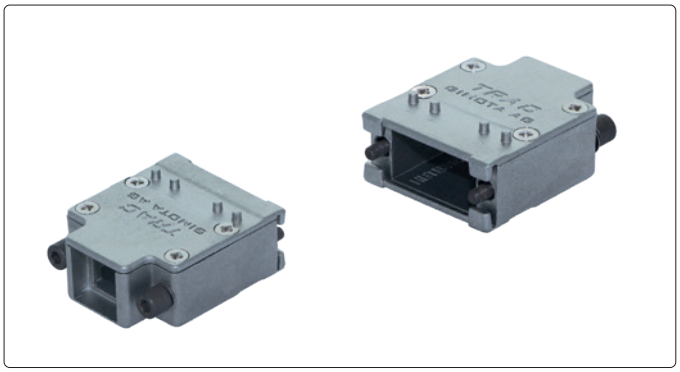
Item number	Cover size	Poles	L [mm]	D [mm]	A [mm]	B [mm]	Layout code for set item
SUHV09P	1	9-poles	25.8	3	30.8	12.5	P09
SUHV15P	2	15-poles	33.3	3	39.1	12.5	P15
SUHV25P	3	25-poles	47.0	3	53.0	12.5	P25

Electrical, thermal, mechanical properties: refer to chapter: 3.1.1

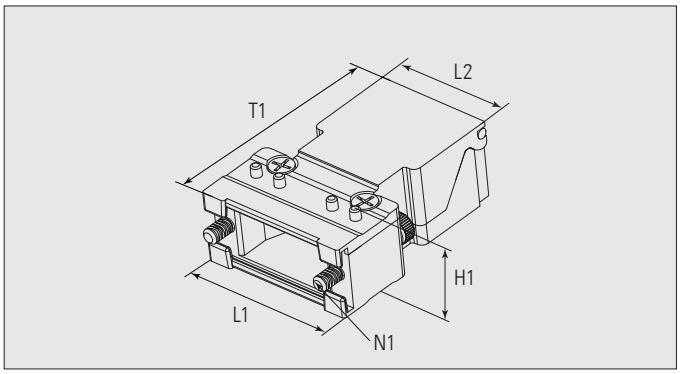
3.2.5 TRAC Covers D-SUB

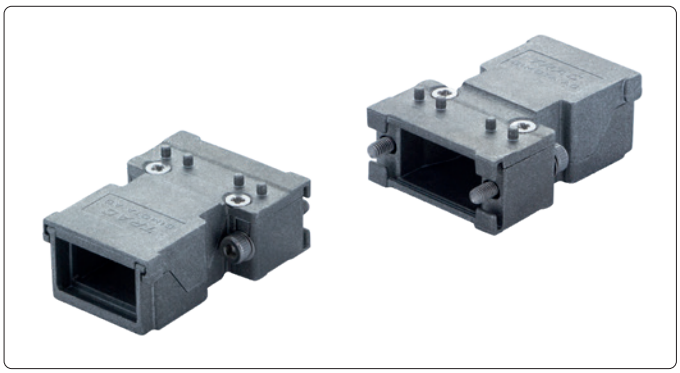
Material: Zinc cast (self passivating)





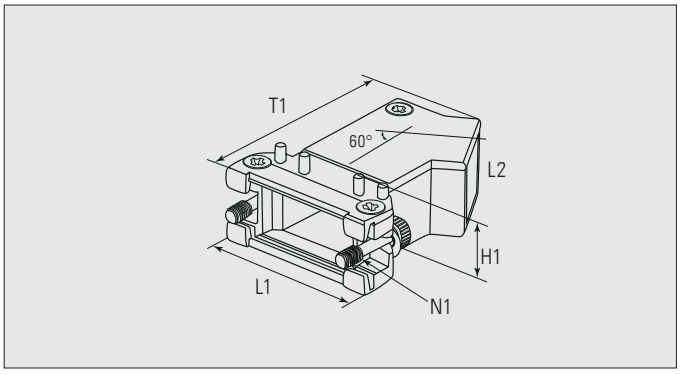
Item number	Hoods	L1 [mm]	L2 [mm]	T1 [mm]	H1 [mm]	Cable entrances
TRAC1	size 1	31.0	14.2	37.6	17.9	1

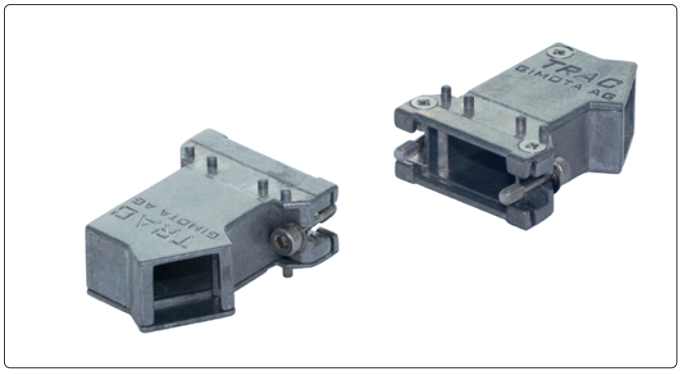




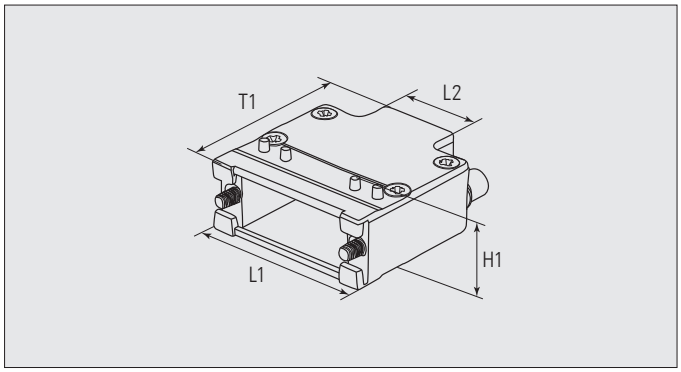
Item number	Hoods	L1 [mm]	L2 [mm]	T1 [mm]	H1 [mm]	N1 thread	Cable entrances
TRAC2ST1-8	size 1	31.0	19.6	42.5	18.0	M3	2
TRAC2ST1-9	size 1	31.0	19.6	42.5	18.0	4-40UNC	2

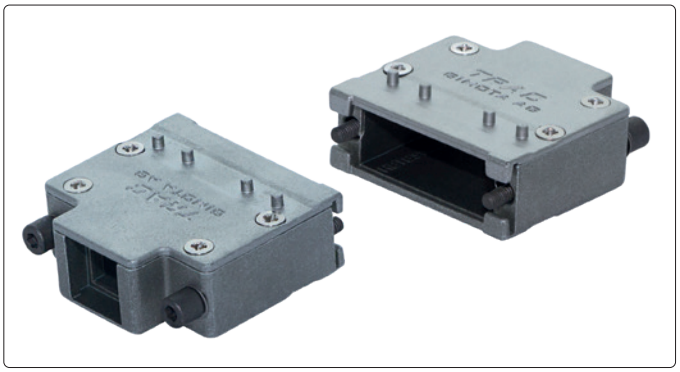
All screws are part of the set, cable clamps, shielding sleeves, contacts and connectors have to be ordered separately.



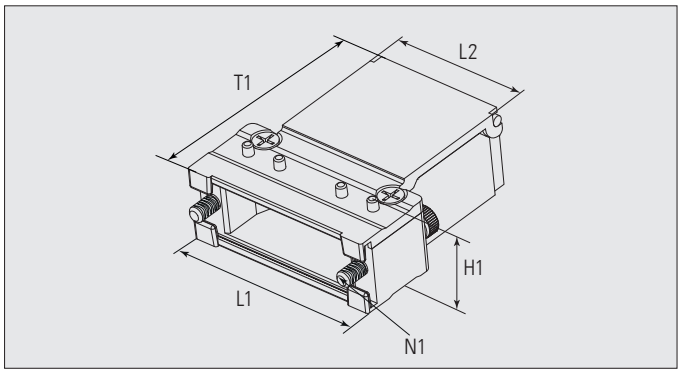


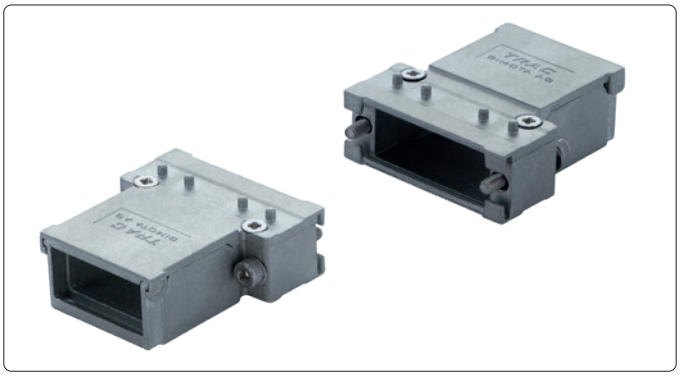
Item number	Hoods	L1 [mm]	L2 [mm]	T1 [mm]	H1 [mm]	N1 thread	Cable entrances
TRAC60ST1-5	size 1	31.0	14.2	42.2	17.9	M3	1
TRAC60ST1-7	size 1	31.0	14.2	42.2	17.9	4-40UNC	1





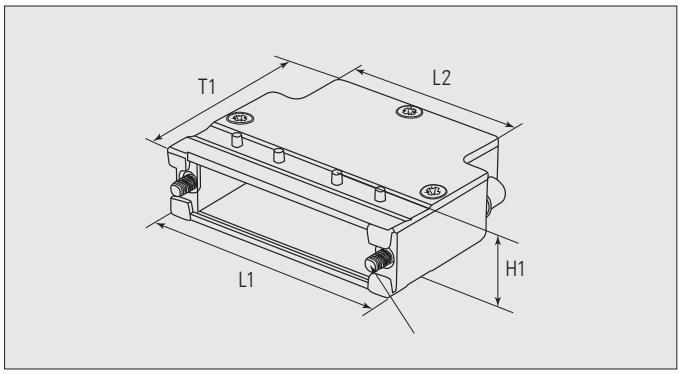
Item number	Hoods	L1 [mm]	L2 [mm]	T1 [mm]	H1 [mm]	Cable entrances
TRAC2	size 2	39.3	14.2	37.6	17.9	1

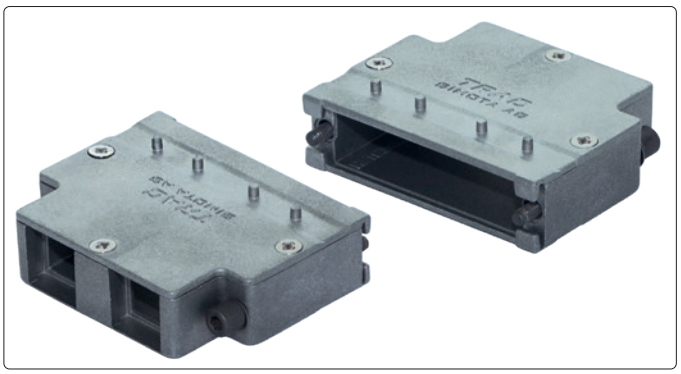




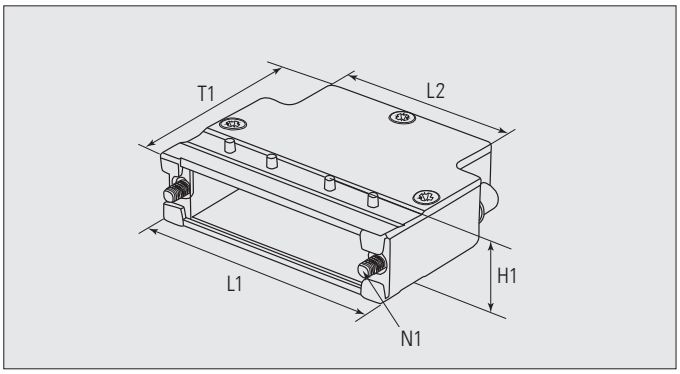
Item number	Hoods	L1 [mm]	L2 [mm]	T1 [mm]	H1 [mm]	N1 thread	Cable entrances
TRAC2ST2-8	size 2	39.3	24.1	42.5	18.0	M3	2
TRAC2ST2-9	size 2	39.3	24.1	42.5	18.0	4-40UNC	2

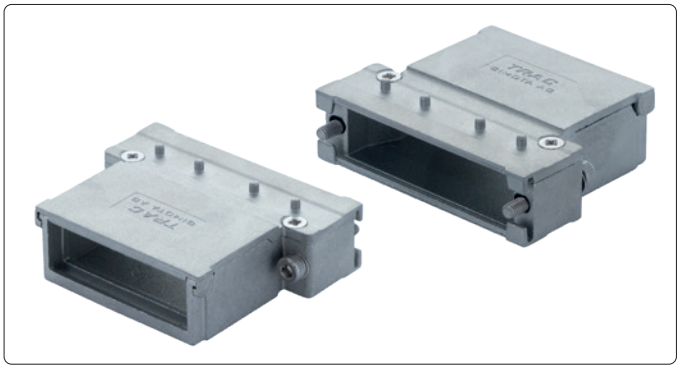
All screws are part of the set, cable clamps, shielding sleeves, contacts and connectors have to be ordered separately.





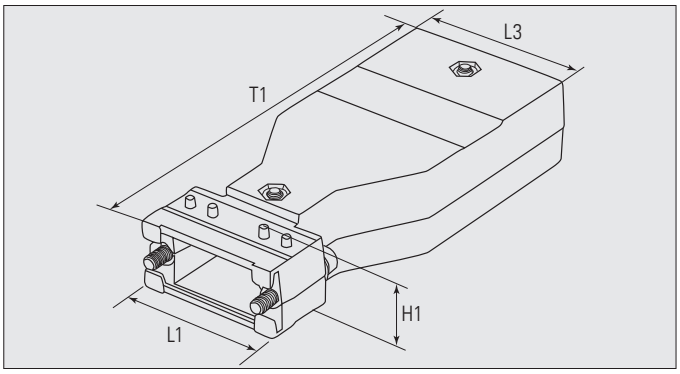
Item number	Hoods	L1 [mm]	L2 [mm]	T1 [mm]	H1 [mm]	Cable entrances
TRAC3	size 3	53.3	40.0	37.6	17.9	2

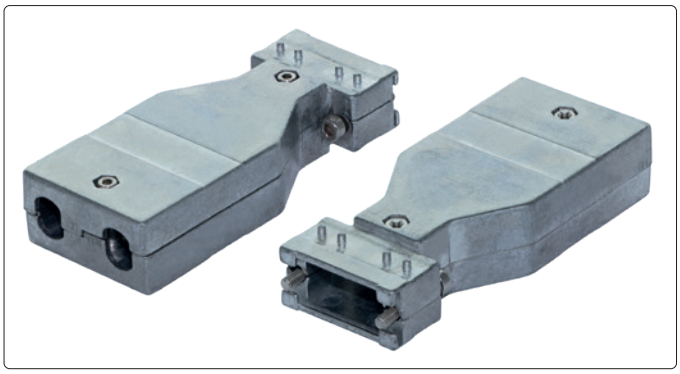




Item number	Hoods	L1 [mm]	L2 [mm]	T1 [mm]	H1 [mm]	N1 thread	Cable entrances
TRAC3ST3-8	size 3	53.3	36.0	42.5	18.0	M3	3
TRAC3ST3-9	size 3	53.3	36.0	42.5	18.0	4-40UNC	3

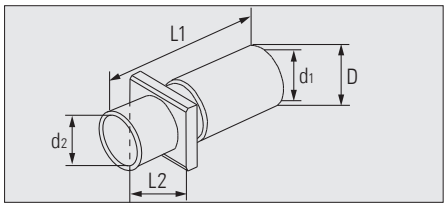
All screws are part of the set, cable clamps, shielding sleeves, contacts and connectors have to be ordered separately.

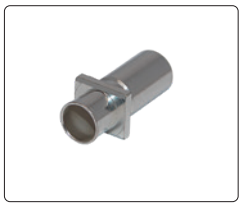




Item number	Hoods	L1 [mm]	L3 [mm]	T1 [mm]	H1 [mm]	Cable entrances
TRAC1-BK	Grösse 1	31.0	36.4	84.8	17.9	2

Cable clamps for TRAC D-SUB covers

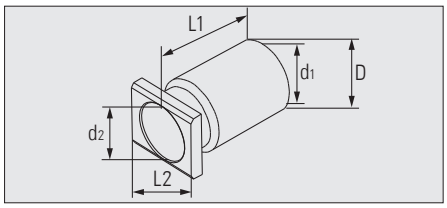


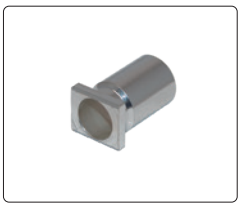


Material: Brass tin-plated

Item number	D [mm]	d1 [mm]	d2 [mm]	L1 [mm]	L2 [mm]	OD cable [mm]	Strain relieve compression	EMI shield compression
SUKABC06S-21 *	7.4	6.0	6.0	20.5	9.77	5.0...5.8	yes	yes
SUKABC06S	7.4	6.0	6.0	20.5	14.05	5.0...5.8	yes	yes
SUKABC067S	7.4	6.7	6.0	20.5	14.05	5.7...6.5	yes	yes
SUKABC082S-21 *	9.0	8.2	6.0	21.0	9.77	7.5...8.1	yes	yes
SUKABC09S	10.0	9.0	9.0	20.4	14.05	8.0...8.8	yes	yes
SUKABC10S	11.0	10.0	9.0	30.4	14.05	9.0...9.8	yes	yes

* Use only with TRAC2ST1 when 2 cable entries are required

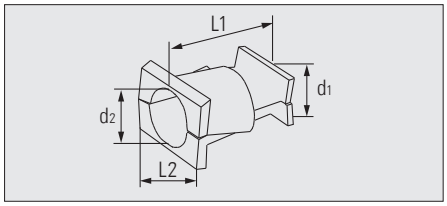


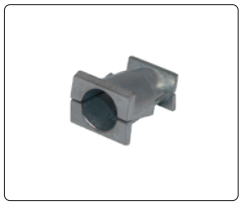


Material: Brass tin-plated

Item number	D [mm]	d1 [mm]	d2 [mm]	L1 [mm]	L2 [mm]	OD cable [mm]	Strain relieve compression	EMI shield compression
SUKABC12	13.0	12.0	10.0	22.4	14.05	11.0...11.8	yes	no
SUKABC12X	13.5/14.0	12.0	10.0	29.4	14.05	11.0...11.8	yes	yes*

* with internal shield support bushing. Item no. SUGSC375



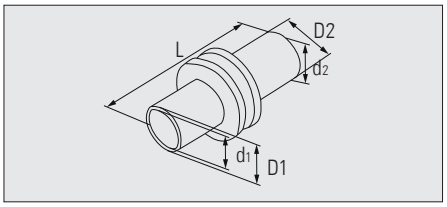


Material: zinc cast (self passivating)

Item number	d1 [mm]	d2 [mm]	L1 [mm]	L2 [mm]	OD cable [mm]	Strain relieve	EMI shield compression
SUKABV69	6-9	6-9	18.0	14.00	6...9	yes*	no

* with cable tie SUKABV69K

Cable clamps for TRAC Buscoupler covers

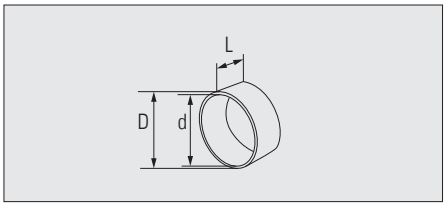


Material: Brass tin-plated

Item number	D1 [mm]	d1 [mm]	D2 [mm]	d2 [mm]	L [mm]	OD cable [mm]	Strain relieve compression	EMI Shield compression
SUKABC06S-BK	7.4	6.0	6.8	6.0	22.5	5.0-5.8	yes	yes
SUKABC062S-BK	7.0	6.2	6.8	6.0	22.5	5.2-6.0	yes	yes
SUKABC067S-BK	7.4	6.7	6.8	6.0	22.5	5.7-6.5	yes	yes
SUKABC08S-BK	10.0	8.0	6.8	6.2	22.5	7.5-7.8	yes	yes

others on request

Shielding sleeves / supporting sleeves

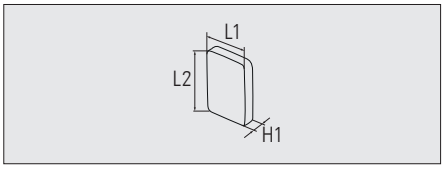


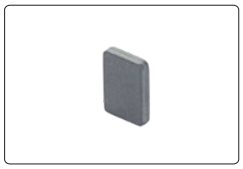
Material: Brass tin-plated

Item number	for cable clamp	d [mm]	D [mm]	L [mm]
SUGSC297	SUKABC06S-21[1] SUKABC06S / SUKABC06S-BK SUKABC067S / SUKABC067S-BK SUKABC082S-21[1]	7.5	8.5	6.4
SUGSC460	SUKABC08S-BK SUKABC09S SUKABC10S	11.7	13.0	6.4
SUGSC500	SUKABC12S	12.7	14.0	6.4
SUGSC375*	SUKABC12X	9.5	10.3	6.4

* Support bushing for internal shielding at SUKABC12X
[1] Use only with TRAC2ST1 when 2 cable entries are required

Wire hole plugs

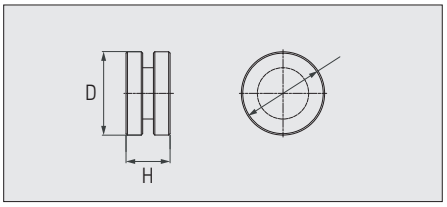


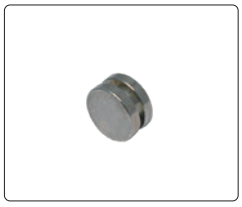


Material: Zinc cast (self passivating)

Item number	Description	L1 [mm]	L2 [mm]	H1 [mm]
SUBL08	Wire hole plug for TRAC2ST1 with SUKABCxxS	7.6	14.0	2.5
SUBL10	Wire hole plug for TRAC2ST1 with SUKABCxxS-21	9.8	14.0	2.5
SUBL12	Wire hole plug for TRAC1, TRAC2, TRAC3, TRAC1-60, TRAC2ST2 and TRAC3ST3	12.0	14.0	2.5
SUBL20	Wire hole plug for TRAC2ST1	19.6	14.0	2.5

Wire hole plugs for Buscoupler



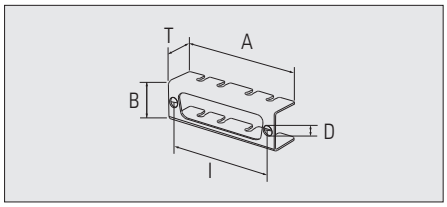


Material: Brass tin-plated

Item number	Description	D [mm]	H [mm]
SUBL-BK	Wire hole plug for closing unused cable entries	12.0	5.6

3.2.7 Coding plates / Coding slides / Fixing plates

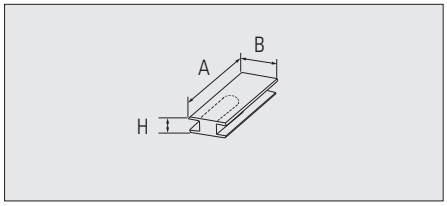
Coding plates

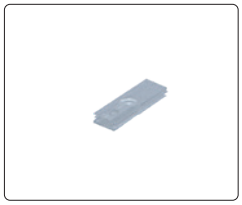


Material: Stainless steel

Item number	Cover Size	A [mm]	B [mm]	D [mm]	I [mm]	T [mm]
SUCB1	1	31.0	17.0	4.1	25.0	14.8
SUCB2	2	39.5	17.0	4.1	33.3	14.8
SUCB3	3	53.0	17.0	4.1	47.0	14.8

Coding slides

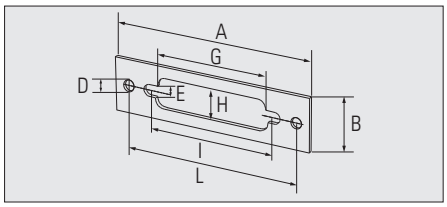


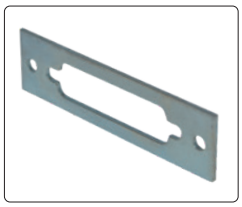


Material: Polyamide

Item number	A [mm]	B [mm]	H [mm]
SUCR	12.0	4.0	1.6
SUCR-L	14.5	4.0	1.6

Fixing plates



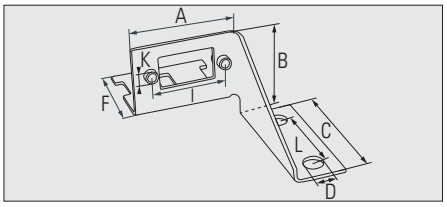


Material: Stainless steel
Material thickness: 1.5 mm

Item number	Size	A [mm]	B [mm]	D [mm]	E [mm]	G [mm]	H [mm]	I [mm]	L [mm]
SUBB1		51.0	20.0	4.0	4.1	20.0	11.0	25.0	41.0
SUBB2		60.0	20.0	4.0	4.1	28.0	11.0	33.3	50.0
SUBB3		73.0	20.0	4.0	4.1	42.0	11.0	47.0	63.0
SUBB21	2 to 1*	60.0	20.0	4.0	4.1	20.0	11.0	25.0	50.0
SUBB31	3 to 1*	73.0	20.0	4.0	4.1	20.0	11.0	25.0	63.0
SUBB32	3 to 2*	73.0	20.0	4.0	4.1	28.0	11.0	33.3	63.0

* Reducing fixing plates for smaller D-SUB housing application

Fixing plates

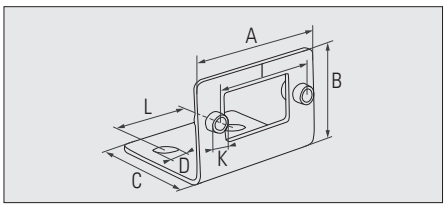


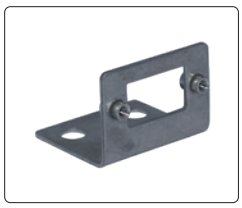
Material: Stainless steel
Material thickness: 1.5 mm

Item number	Size	A [mm]	B [mm]	C [mm]	D [mm]	F [mm]	I [mm]	L [mm]	K
SUSS09-2	1	33.5	31.0	45.0	6.5	28.5	25.0	29.0	M3

other sizes and shapes on request

Fixing plates



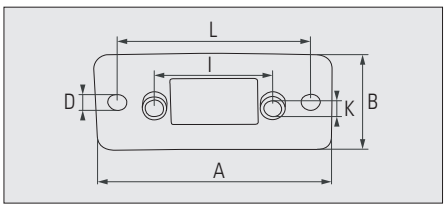


Material: Stainless steel
Material thickness: 1.5 mm

Item number	Size	A [mm]	B [mm]	C [mm]	D [mm]	I [mm]	L [mm]	K
SUSS09-4	1	33.5	25.0	30 .0	6.5	25.0	20.0	M3

other sizes and shapes on request

Fixing plates

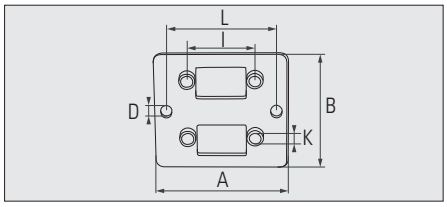


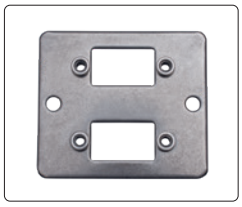
Material: Stainless steel
Material thickness: 1.5 mm

Item number	Size	A [mm]	B [mm]	D [mm]	I [mm]	L [mm]	K
SUSS09-5	1	50.0	22.0	4.1	25.0	41.0	M3

other sizes and shapes on request

Fixing plates



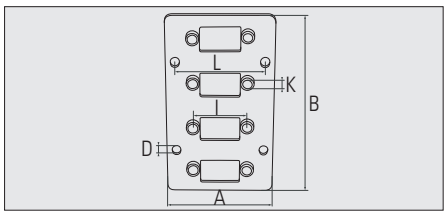


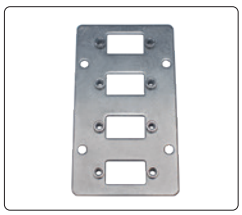
Material: Stainless steel
Material thickness: 1.5 mm

Item number	Size	A [mm]	B [mm]	D [mm]	I [mm]	L [mm]	K
SUSS09-5-2	1	50.0	44.0	4.1	25.0	41.0	M3

other sizes and shapes on request

Fixing plates



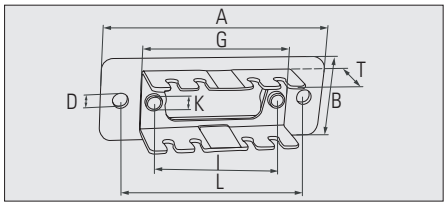


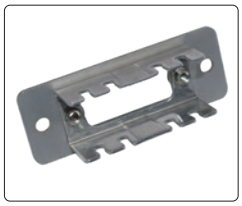
Material: Stainless steel
Material thickness: 1.5 mm

Item number	Size	A [mm]	B [mm]	D [mm]	I [mm]	L [mm]	K
SUSS09-5-4	1	50.0	88.1	4.1	25.0	41.0	M3

other sizes and shapes on request

Fixing plates with coding plates



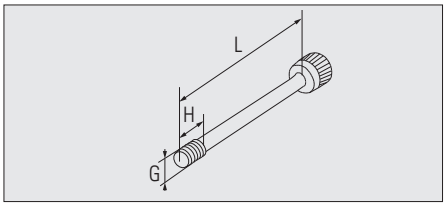


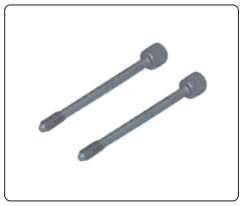
Material: Stainless steel

Item number	A [mm]	B [mm]	D [mm]	G [mm]	T [mm]	I [mm]	L [mm]	K
SUSS09-5-CB1	50.0	22.0	4.1	31.0	14.8	25.0	41.0	M3
SUSS15-5-CB2	60.0	22.0	4.1	39.5	14.8	33.3	50.0	M3
SUSS25-5-CB3	73.0	22.0	4.1	53.0	14.8	47.0	63.0	M3

other sizes and shapes on request

TRAC Plug screws (hex, socket screws)

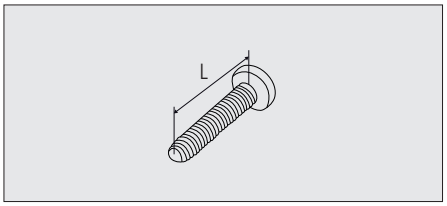




Material: Stainless steel

Item number	G thread	L [mm]	H [mm]	surface treatment
SUI6KTM3x32.4	M3	32.4	6.0	coated
SUI6KT4-40UNCx32.4	4-40UNC	32.4	6.0	browned
FI6KTM3x12	M3	12.0	5.0	coated
FI6KT4-40UNCx12	4-40UNC	12.0	4.4	coated
SUI6KTM3x19	M3	19.0	5.0	coated
SUI6KT4-40UNCx19	4-40UNC	19.0	5.0	coated
SUI6KT-BKM3x18	M3	18.0	5.0	coated

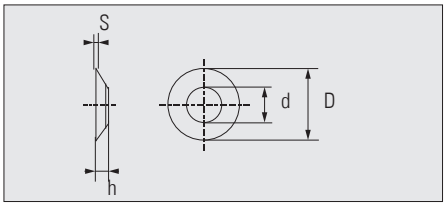
TRAC Receptacle screws (hex, socket screws)

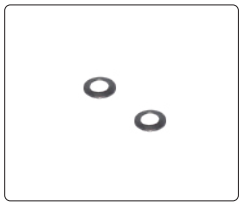


Material: Stainless steel

Item number	thread	L [mm]
SUI6KTM2.5x20	M2.5	20.0

Spring washer for plug- / receptacle- screws

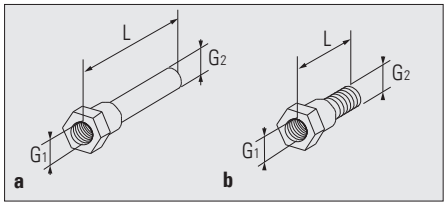


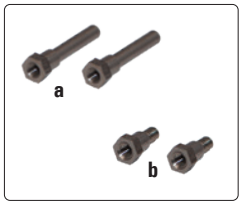


Material: Stainless steel

Item number	D [mm]	d [mm]	h [mm]	s [mm]
SUSN212748M2.5	5.1	2.7	0.40	0.2
SUSN212748M3	5.7	3.2	0.45	0.3

TRAC Receptacle fixing screws, nuts



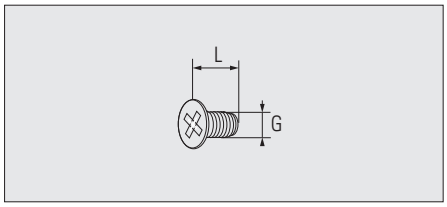


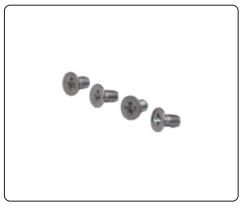
Material: Stainless steel

Item number	L [mm]	G1 thread	G2 thread	picture
SUB21	21.3	M3 inside	M2.5 inside	a
SUB11	11.0	M3 inside	M3 outside	b

Hex. nut to SUB11: SUM6KTM3

Screws for TRAC D-SUB covers

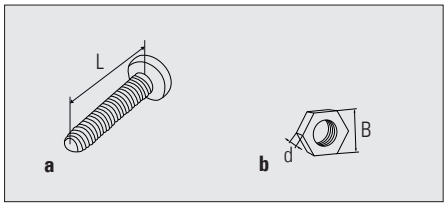


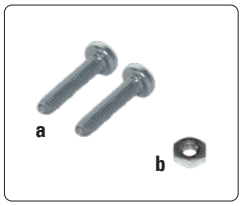


Material: Stainless steel

Item number	Description	G thread	L [mm]
SUCHM2.5x5	Thread-cutting countersunk cross-head screw	M2.5	5.0

Screws for TRAC Buscoupler covers

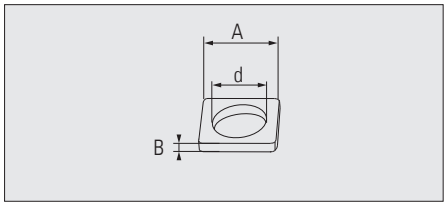


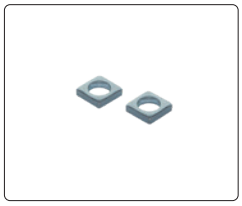


Material: Stainless steel

Item number	Description	thread	L [mm]	B [mm]	d [mm]	picture
FSCI6KTM2.5x16	Screws for Buscoupler covers	M2.5	16.0	-	-	a
SUM6KTM2.5	Locknut for Buscoupler covers	M2.5	-	4.8	2.1	b

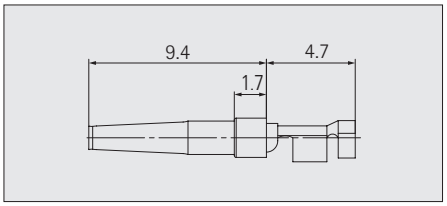
Square washers for mounting strip assemblies





Item number	A [mm]	d [mm]	B [mm]	Material
SUUQ1.0	6.0	4.1	1.0	Stainless steel
SUUQ1.5	6.0	4.1	1.5	Stainless steel, galvanised

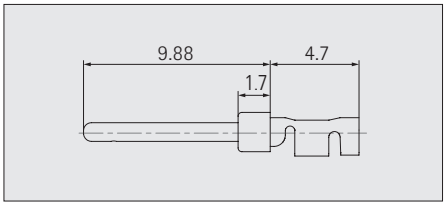
Data-signal-socket contacts



Material: Cu alloy

Item number	Description	AWG Section [mm²]	Contact surface / surface of contact zone	MOQ [pcs]
SUPCS20-24AU2	Single contact	20-24 0.2 - 0.56	gold-plated / ≥ 0.8 µm Au on 1.3 µm Ni	100
SUPCS20-24AU2-3	Contact strip, reel with 350 pcs	20-24 0.2 - 0.56	gold-plated / ≥ 0.8 µm Au on 1.3 µm Ni	1
SUPCS20-24AU2-100	Contact strip, reel with 10000 pcs	20-24 0.2 - 0.56	gold-plated / ≥ 0.8 µm Au on 1.3 µm Ni	1

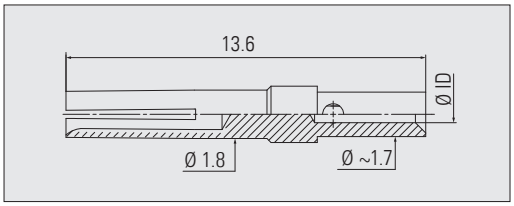
Data-signal-pin contacts



Material: Cu alloy

Item number	Description	AWG Section [mm²]	Contact surface / surface of contact zone	MOQ [pcs]
SUPCP20-24AU2	Single contact	20-24 0.2 - 0.56	gold-plated / ≥ 0.8 µm Au on 1.3 µm Ni	100
SUPCP20-24AU2-3	Contact strip, reel with 350 pcs	20-24 0.2 - 0.56	gold-plated / ≥ 0.8 µm Au on 1.3 µm Ni	1
SUPCP20-24AU2-100	Contact strip, reel with 10000 pcs	20-24 0.2 - 0.56	gold-plated / ≥ 0.8 µm Au on 1.3 µm Ni	1

Machined data-signal-socket contacts

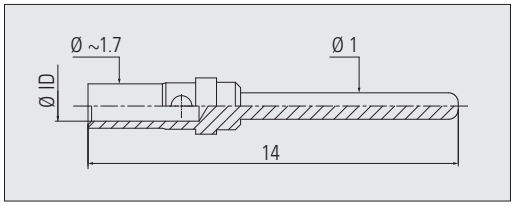


Material: Cu alloy

Item number	Description	Quality grade	Crimp ID [mm]	Crimp ID [inch]	AWG Section [mm²]	Contact surface / surface of contact zone	MOQ [pcs]
SUMCS18-22AU1	Machined socket contact D-SUB	1	1.35	0.053	18-22 1.00 - 0.34	gold-plated / ≥ 1.3 µm Au over 2.0 µm Ni	100
SUMCS20-24AU1	Machined socket contact D-SUB	1	1.12	0.044	20-24 0.75 - 0.25	gold-plated / ≥ 1.3 µm Au over 2.0 µm Ni	100
SUMCS24-28AU1	Machined socket contact D-SUB	1	0.63	0.024	24-28 0.08 - 0.20	gold-plated / ≥ 1.3 µm Au over 2.0 µm Ni	100
SUMCS18-22AU2	Machined socket contact D-SUB	2	1.35	0.053	18-22 1.00 - 0.34	gold-plated / ≥ 0.8 µm Au over 1.2 µm Ni	100
SUMCS20-24AU2	Machined socket contact D-SUB	2	1.12	0.044	20-24 0.75 - 0.25	gold-plated / ≥ 0.8 µm Au over 1.2 µm Ni	100
SUMCS24-28AU2	Machined socket contact D-SUB	2	0.63	0.024	24-28 0.08 - 0.20	gold-plated / ≥ 0.8 µm Au over 1.2 µm Ni	100

Grade: 1 > 500 mating cycles 2 > 200 mating cycles (standardtype)

Machined data-signal-pin contacts

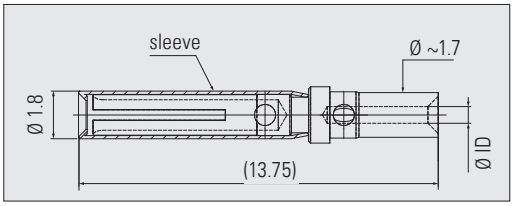


Material: Cu alloy

Item number	Description	Quality grade	Crimp ID [mm]	Crimp ID [inch]	AWG Section [mm²]	Contact surface / surface of contact zone	MOQ [pcs]
SUMCP18-22AU1	Machined pin contact D-SUB	1	1.35	0.053	18-22 1.00 - 0.34	gold-plated / ≥ 1.3 µm Au over 2.0 µm Ni	100
SUMCP20-24AU1	Machined pin contact D-SUB	1	1.12	0.044	20-24 0.75 - 0.25	gold-plated / ≥ 1.3 µm Au over 2.0 µm Ni	100
SUMCP24-28AU1	Machined pin contact D-SUB	1	0.63	0.024	24-28 0.08 - 0.20	gold-plated / ≥ 1.3 µm Au over 2.0 µm Ni	100
SUMCP18-22AU2	Machined pin contact D-SUB	2	1.35	0.053	18-22 1.00 - 0.34	gold-plated / ≥ 0.8 µm Au over 1.2 µm Ni	100
SUMCP20-24AU2	Machined pin contact D-SUB	2	1.12	0.044	20-24 0.75 - 0.25	gold-plated / ≥ 0.8 µm Au over 1.2 µm Ni	100
SUMCP24-28AU2	Machined pin contact D-SUB	2	0.63	0.024	24-28 0.08 - 0.20	gold-plated / ≥ 0.8 µm Au over 1.2 µm Ni	100

Grade: 1 > 500 mating cycles 2 > 200 mating cycles (standardtype)

Machined data-signal-socket contacts with sleeve

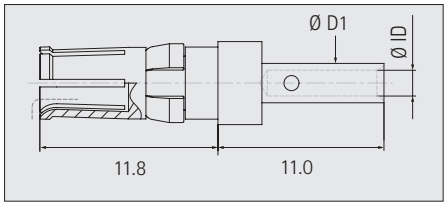


Material: Cu alloy

Item number	Description	Quality grade	Crimp ID [mm]	Crimp ID [inch]	AWG Section [mm²]	Contact surface / surface of contact zone	MOQ [pcs]
SUMCS18-22AU1-S	Machined socket contact D-SUB	1	1.35	0.053	18-22 1.00 - 0.34	gold-plated / ≥ 1.3 µm Au over 2.0 µm Ni	100
SUMCS20-24AU1-S	Machined socket contact D-SUB	1	1.12	0.044	20-24 0.75 - 0.25	gold-plated / ≥ 1.3 µm Au over 2.0 µm Ni	100
SUMCS24-28AU1-S	Machined socket contact D-SUB	1	0.63	0.024	24-28 0.08 - 0.20	gold-plated / ≥ 1.3 µm Au over 2.0 µm Ni	100

Grade: 1 > 500 mating cycles

Power-socket contacts size 8

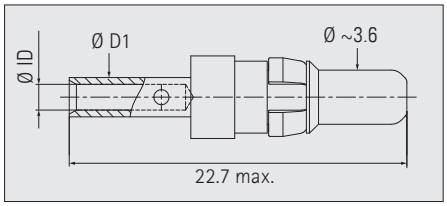


Material: Cu alloy

Item number	Description	Quality grade	D1	Crimp ID [mm]	Crimp ID [inch]	AWG Section [mm²]	Contact surface / surface of contact zone	MOQ [pcs]
SUMCS8-18AU1	Single contact 10A	1	2.6	1.7	0.067	20-16 0.5 - 1.3	gold-plated / ≥ 1.3 µm Au over 2.0 µm Ni	50
SUMCS8-14AU1	Single contact 20A	1	3.6	2.6	0.102	14-12 2.0 - 3.3	gold-plated / ≥ 1.3 µm Au over 2.0 µm Ni	50
SUMCS8-11AU1	Single contact 30A	1	4.7	3.7	0.146	12-10 3.3 - 6.6	gold-plated / ≥ 1.3 µm Au over 2.0 µm Ni	50
SUMCS8-8AU1	Single contact 40A	1	5.8	4.6	0.181	10-8 5.2 - 8.3	gold-plated / ≥ 1.3 µm Au over 2.0 µm Ni	50
SUMCS8-18AU2	Single contact 10A	2	2.6	1.7	0.067	20-16 0.5 - 1.3	gold-plated / ≥ 0.8 µm Au over 1.2 µm Ni	50
SUMCS8-14AU2	Single contact 20A	2	3.6	2.6	0.102	14-12 2.0 - 3.3	gold-plated / ≥ 0.8 µm Au over 1.2 µm Ni	50
SUMCS8-11AU2	Single contact 30A	2	4.7	3.7	0.146	12-10 3.3 - 6.6	gold-plated / ≥ 0.8 µm Au over 1.2 µm Ni	50
SUMCS8-8AU2	Single contact 40A	2	5.8	4.6	0.181	10-8 5.2 - 8.3	gold-plated / ≥ 0.8 µm Au over 1.2 µm Ni	50

Grade: 1 > 500 mating cycles 2 > 200 mating cycles (standardtype)
other Grade on request

Power-pin contacts size 8



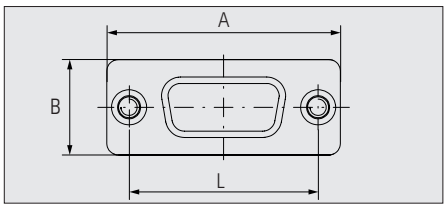
Material: Cu alloy

Item number	Description	Quality grade	D1	Crimp ID [mm]	Crimp ID [inch]	AWG Section [mm²]	Contact surface / surface of contact zone	MOQ [pcs]
SUMCP8-18AU1	Single contact 10A	1	2.6	1.7	0.067	20-16 0.5 - 1.3	gold-plated / ≥ 1.3 µm Au over 2.0 µm Ni	50
SUMCP8-14AU1	Single contact 20A	1	3.6	2.6	0.102	14-12 2.0 - 3.3	gold-plated / ≥ 1.3 µm Au over 2.0 µm Ni	50
SUMCP8-11AU1	Single contact 30A	1	4.7	3.7	0.146	12-10 3.3 - 6.6	gold-plated / ≥ 1.3 µm Au over 2.0 µm Ni	50
SUMCP8-8AU1	Single contact 40A	1	5.8	4.6	0.181	10-8 5.2 - 8.3	gold-plated / ≥ 1.3 µm Au over 2.0 µm Ni	50
SUMCP8-18AU2	Single contact 10A	2	2.6	1.7	0.067	20-16 0.5 - 1.3	gold-plated / ≥ 0.8 µm Au over 1.2 µm Ni	50
SUMCP8-14AU2	Single contact 20A	2	3.6	2.6	0.102	14-12 2.0 - 3.3	gold-plated / ≥ 0.8 µm Au over 1.2 µm Ni	50
SUMCP8-11AU2	Single contact 30A	2	4.7	3.7	0.146	12-10 3.3 - 6.6	gold-plated / ≥ 0.8 µm Au over 1.2 µm Ni	50
SUMCP8-8AU2	Single contact 40A	2	5.8	4.6	0.181	10-8 5.2 - 8.3	gold-plated / ≥ 0.8 µm Au over 1.2 µm Ni	50

Grade: 1 > 500 mating cycles 2 > 200 mating cycles (standardtype)
other Grade on request

3.2.11 Shielded dust cap

Dust cap SUBD-MC-x-EMV



Dust cap for the sealing of socket connectors

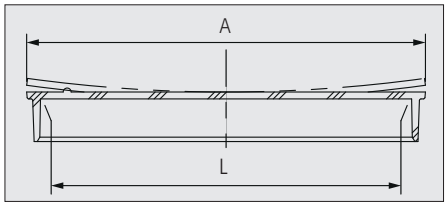
Item number	Shell size	L [mm]	A [mm]	B [mm]
SUBD09-MC-S-EMV	1	25.00	30.8	12.5
SUBD15-MC-S-EMV	2	33.30	39.1	12.5
SUBD25-MC-S-EMV	3	47.04	53.0	12.5

Dust cap for the sealing of pin connectors

Item number	Shell size	L [mm]	A [mm]	B [mm]
SUBD09-MC-P-EMV	1	25.00	30.8	12.5
SUBD15-MC-P-EMV	2	33.30	39.1	12.5
SUBD25-MC-P-EMV	3	47.04	53.0	12.5

3.2.12 Nonshielded dust cap

Dust cap plastic SUDCC



Dust cap for the sealing of socket connectors

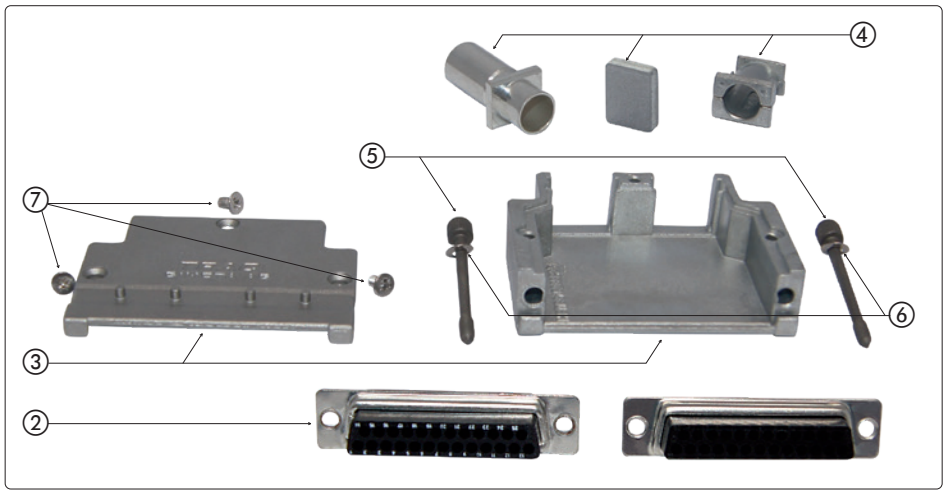
Item number	Shell size	L [mm]	A [mm]
SUDCC-01	1	16.4	20.3
SUDCC-02	2	24.6	28.4
SUDCC-03	3	38.3	42.4

Dust cap for the sealing of pin connectors

Item number	Shell size	L [mm]	A [mm]
SUDCC-11	1	17.8	21.8
SUDCC-12	2	26.5	30.5
SUDCC-13	3	39.6	37.3

3.3 D-SUB Connector sets, TRAC

3.3.1 Plug set TRACST



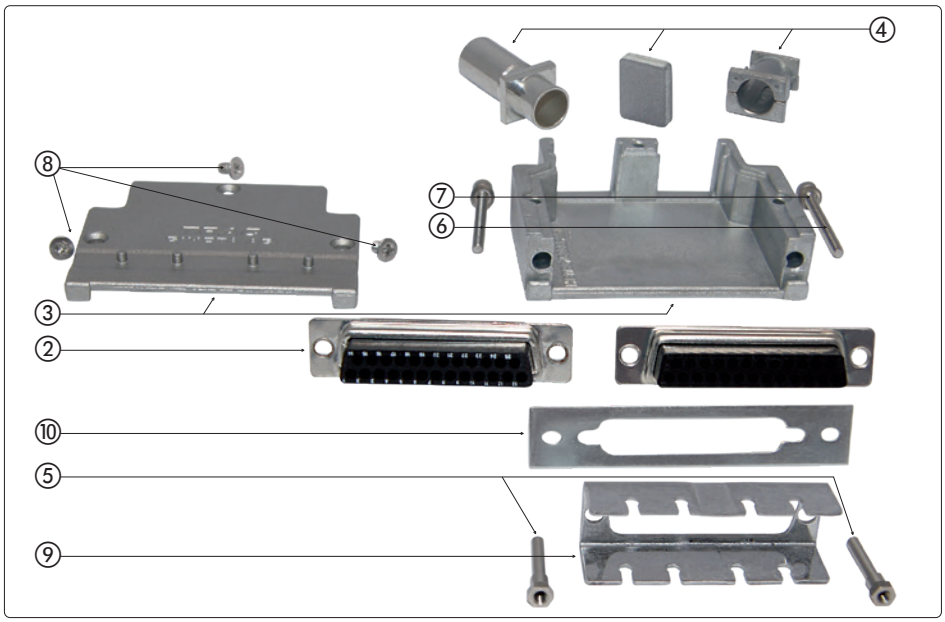
				Set code configuration			
Pos.	**Description**	**Item number**	**Qty.**	**Size 1**	**Size 2**	**Size 3**	**Size 1 / 60°**
1	D-SUB plug set	TRACST		**TRACST**	**TRACST**	**TRACST**	**TRAC60ST**
2*	Socket housing 9-poles	SUH09S	1	**S09**			**S09**
	Socket housing 15-poles	SUH15S	1		**S15**		
	Socket housing 25-poles	SUH25S	1			**S25**	
	Pin housing 9-poles	SUH09P	1	**P09**			**P09**
	Pin housing 15-poles	SUH15P	1		**P15**		
	Pin housing 25-poles	SUH25P	1			**P25**	
3	Cover		1	TRAC1	TRAC2	TRAC3	TRAC1-60
4	No. of cable entrances per cover			1	1	2	1
	Cable clamp Di= 6 mm	SUKABC06S			**C06S**		
	Cable clamp Di= 6.7 mm	SUKABC067S			**C067S**		
	Cable clamp Di= 9 mm	SUKABC09S			**C09S**		
	Cable clamp Di= 10 mm	SUKABC10S			**C10S**		
	Cable clamp Di= 12 mm	SUKABC12			**C12**		
	Cable clamp Di= 12 mm	SUKABC12X			**C12X**		
	Cable clamp Di= 6-9 mm	SUKABV69			**V69**		
	Wire hole plug	SUBL12			**BL**		
5	Screw M3x32.4 mm	SUI6KTM3x32.4	2		**2**		
	Screw 4-40UNC-2Ax32.4 mm	SUI6KT4-40UNCx32.4	2		**4**		
	Screw M3x12 mm	FI6KTM3x12	2		-		**5**
	Screw 4-40UNC-2Ax12 mm	FI6KT4-40UNCx12	2		-		**7**
6**	Spring washer M3	SUSN212748M3	2		-		-
7**	Screw M2.5x5 mm	SUCHM2.5x5	3/4		-		-

* Layout code for special layouts: socket housing chapter 3.2.1 / pin housing chapter 3.2.2
** Included in the set

Ordering example:
D-SUB plug (**TRACST**), 25-poles/socket housing (**S25**), cable clamp SUKABC12 (**C12**), wire hole plug (**BL**),
screw M3x32.4 mm (**2**) = Item number: **TRACSTS25C12BL2**

Contacts and Shielding sleeves for crimping EMI-shielding braids to cable clamp have to be ordered separately according individual requirements.
Shielding sleeves: chapter 3.2.6
Contacts: chapter 3.2.9 + 3.2.10

3.3.2 Receptacle set TRACDO



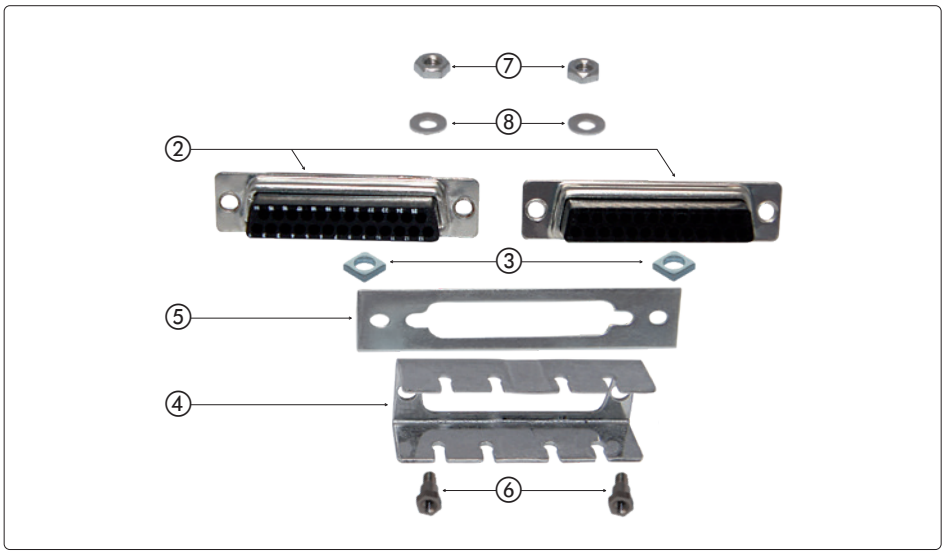
				Set code configuration		
Pos.	**Description**	**Item number**	**Qty.**	**Size 1**	**Size 2**	**Size 3**
1	D-SUB receptacle set	TRACDO		**TRACDO**	**TRACDO**	**TRACDO**
2*	Socket housing 9-poles	SUH09S	1	**S09**		
	Socket housing 15-poles	SUH15S	1		**S15**	
	Socket housing 25-poles	SUH25S	1			**S25**
	Pin housing 9-poles	SUH09P	1	**P09**		
	Pin housing 15-poles	SUH15P	1		**P15**	
	Pin housing 25-poles	SUH25P	1			**P25**
3	Cover		1	TRAC1	TRAC2	TRAC3
4	No. of cable entrances per cover			1	1	2
	Cable clamp Di= 6 mm	SUKABC06S			**C06S**	
	Cable clamp Di= 6.7 mm	SUKABC067S			**C067S**	
	Cable clamp Di= 9 mm	SUKABC09S			**C09S**	
	Cable clamp Di= 10 mm	SUKABC10S			**C10S**	
	Cable clamp Di= 12 mm	SUKABC12			**C12**	
	Cable clamp Di= 12 mm	SUKABC12X			**C12X**	
	Cable clamp Di= 6-9 mm	SUKABV69			**V69**	
	Wire hole plug	SUBL12			**BL**	
5**	Bolt large	SUB21	2		-	
6**	Screw M2.5x20 mm	SUI6KTM2.5x20	2		-	
7**	Spring washer M2.5	SUSN212748M2.5	2		-	
8**	Screw M2.5x5 mm	SUCHM2.5x5	3/4		-	
9**	Coding plate	SUCB1 / SUCB2 / SUCB3	1		-	
10**	Fixing plate	SUBB1 / SUBB2 / SUBB3	1		-	

* Layout code for special layouts: socket housing chapter 3.2.1 / pin housing chapter 3.2.2
** Included in the set

Ordering example:
D-SUB receptacle (**TRACDO**), 25-poles/pin housing (**P25**), cable clamp SUKABC10S (**C10S**), cable clamp SUKABC12 (**C12**)
= Item number: **TRACDOP25C10SC12**

Contacts and Shielding sleeves for crimping EMI-shielding braids to cable clamp have to be ordered separately according individual requirements.
Shielding sleeves: chapter 3.2.6
Contacts: chapter 3.2.9 + 3.2.10

3.3.3 Mounting strip TRACBE for direct fixation to pannels / boards



				Set code configuration		
Pos.	**Description**	**Item number**	**Qty.**	**Size 1**	**Size 2**	**Size 3**
1	D-SUB mounting strip	TRACBE		**TRACBE**	**TRACBE**	**TRACBE**
2*	Socket housing 9-poles	SUH09S	1	**S09**		
	Socket housing 15-poles	SUH15S	1		**S15**	
	Socket housing 25-poles	SUH25S	1			**S25**
	Pin housing 9-poles	SUH09P	1	**P09**		
	Pin housing 15-poles	SUH15P	1		**P15**	
	Pin housing 25-poles	SUH25P	1			**P25**
3	Square washer 6x6x1.5 mm	SUUQ1.5	2	**U1.5**	**U1.5**	**U1.5**
4**	Coding plate	SUCB1 / SUCB2 / SUCB3	1		-	
5**	Fixing plate	SUBB1 / SUBB2 / SUBB3	1		-	
6**	Bolt, small	SUB11	2		-	
7**	Hexagonal nut	SUM6KTM3	2		-	
8**	Spring washer	SUSN212748M3	2		-	

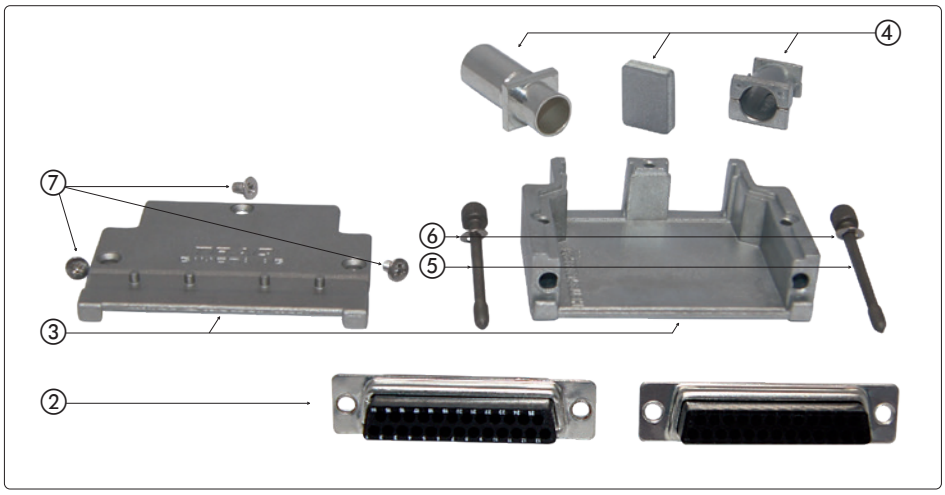
* Layout code for special layouts: socket housing chapter 3.2.1 / pin housing chapter 3.2.2
** Included in the set

Ordering example:
D-SUB mounting strip (**TRACBE**), 25-poles/pin housing (**P25**), square washer 1.5 mm (**U1.5**)
= Item number: **TRACBEP25U1.5**

Contacts have to be ordered separately according individual requirements.
Contacts: chapter 3.2.9 + 3.2.10

3.4 TRAC H, D-SUB Connector sets for increased voltage requirements

3.4.1 Plug set TRACHST



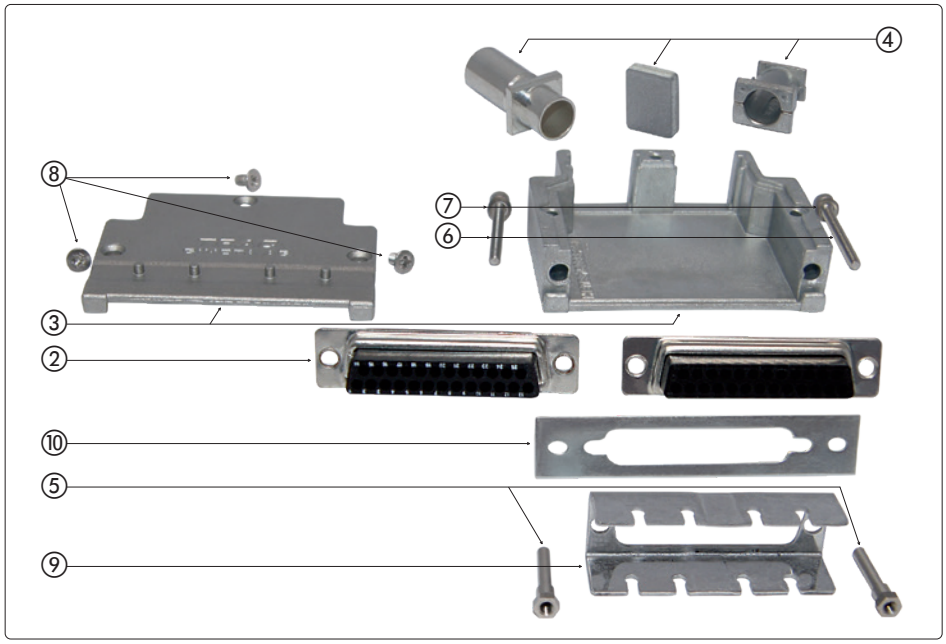
				Set code configuration			
Pos.	**Description**	**Item number**	**Qty.**	**Size 1**	**Size 2**	**Size 3**	**Size 1 / 60°**
1	D-SUB plug set	TRACHST		**TRACHST**	**TRACHST**	**TRACHST**	**TRACH60ST**
2	Socket housing 9-poles	SUHV09S	1	**S09**			**S09**
	Socket housing 15-poles	SUHV15S	1		**S15**		
	Socket housing 25-poles	SUHV25S	1			**S25**	
	Pin housing 9-poles	SUHV09P	1	**P09**			**P09**
	Pin housing 15-poles	SUHV15P	1		**P15**		
	Pin housing 25-poles	SUHV25P	1			**P25**	
3	Cover		1	TRAC1	TRAC2	TRAC3	TRAC1-60
4	No. of cable entrances per cover			1	1	2	1
	Cable clamp Di= 6 mm	SUKABC06S			**C06S**		
	Cable clamp Di= 6.7 mm	SUKABC067S			**C067S**		
	Cable clamp Di= 9 mm	SUKABC09S			**C09S**		
	Cable clamp Di= 10 mm	SUKABC10S			**C10S**		
	Cable clamp Di= 12 mm	SUKABC12			**C12**		
	Cable clamp Di= 12 mm	SUKABC12X			**C12X**		
	Cable clamp Di= 6-9 mm	SUKABV69			**V69**		
	Wire hole plugs	SUBL12			**BL**		
5	Screw M3x32.4 mm	SUI6KTM3x32.4	2		**2**		
	Screw 4-40UNC-2Ax32.4 mm	SUI6KT4-40UNCx32.4	2		**4**		
	Screw M3x12 mm	FI6KTM3x12	2		-		**5**
	Screw 4-40UNC-2Ax12 mm	FI6KT4-40UNCx12	2		-		**7**
6**	Spring washer M3	SUSN212748M3	2		-		-
7**	Screw M2.5x5 mm	SUCHM2.5x5	3/4		-		-

** Included in the set

Ordering example:
D-SUB plug (**TRACHST**), 25-poles/socket housing (**S25**), cable clamp SUKABC12 (**C12**), wire hole plug (**BL**),
screw M3x32.4 mm (**2**) = Item number: **TRACHSTS25C12BL2**

Contacts and Shielding sleeves for crimping EMI-shielding braids to cable clamp have to be ordered separately according individual requirements.
Shielding sleeves: chapter 3.2.6
Contacts: chapter 3.2.9 + 3.2.10

3.4.2 Receptacle set TRACHDO



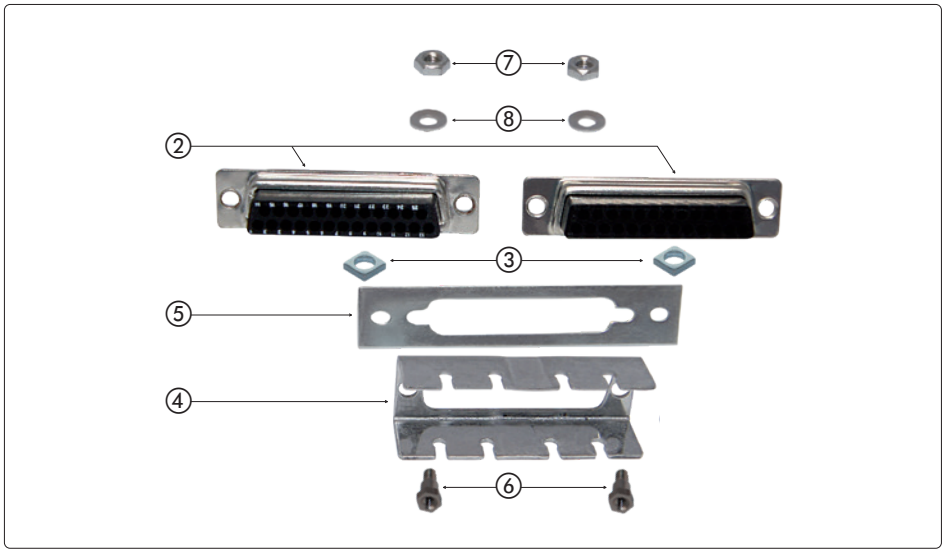
				Set code configuration		
Pos.	**Description**	**Item number**	**Qty.**	**Size 1**	**Size 2**	**Size 3**
1	D-SUB receptacle set	TRACHDO		**TRACHDO**	**TRACHDO**	**TRACHDO**
2	Socket housing 9-poles	SUHV09S	1	**S09**		
	Socket housing 15-poles	SUHV15S	1		**S15**	
	Socket housing 25-poles	SUHV25S	1			**S25**
	Pin housing 9-poles	SUHV09P	1	**P09**		
	Pin housing 15-poles	SUHV15P	1		**P15**	
	Pin housing 25-poles	SUHV25P	1			**P25**
3	Cover		1	TRAC1	TRAC2	TRAC3
4	No. of cable entrances per cover			1	1	2
	Cable clamp Di= 6 mm	SUKABC06S			**C06S**	
	Cable clamp Di= 6.7 mm	SUKABC067S			**C067S**	
	Cable clamp Di= 9 mm	SUKABC09S			**C09S**	
	Cable clamp Di= 10 mm	SUKABC10S			**C10S**	
	Cable clamp Di= 12 mm	SUKABC12			**C12**	
	Cable clamp Di= 12 mm	SUKABC12X			**C12X**	
	Cable clamp Di= 6-9 mm	SUKABV69			**V69**	
	Wire hole plug	SUBL12			**BL**	
5**	Bolt, large	SUB21	2		-	
6**	Screw M2.5x20 mm	SUI6KTM2.5x20	2		-	
7**	Strain washer M2.5	SUSN212748M2.5	2		-	
8**	Screw M2.5x5 mm	SUCHM2.5x5	3/4		-	
9**	Coding plate	SUCB1 / SUCB2 / SUCB3	1		-	
10**	Fixing plate	SUBB1 / SUBB2 / SUBB3	1		-	

** Included in the set

Ordering example:
D-SUB receptacle (**TRACHDO**), 25-poles/pin housing (**P25**), cable clamp SUKABC10S (**C10S**), cable clamp SUKABC12 (**C12**)
= Item number: **TRACHDOP25C10SC12**

Contacts and Shielding sleeves for crimping EMI-shilding braids to cable clamp have to be ordered separately according individual requirements.
Shielding sleeves: chapter 3.2.6
Contacts: chapter 3.2.9 + 3.2.10

3.4.3 Mounting strip TRACHBE for direct fixation to casing/boards



				Set code configuration		
Pos.	**Description**	**Item number**	**Qty.**	**Size 1**	**Size 2**	**Size 3**
1	D-SUB mounting strip	TRACHBE		**TRACHBE**	**TRACHBE**	**TRACHBE**
2	Socket housing 9-poles	SUHV09S	1	**S09**		
	Socket housing 15-poles	SUHV15S	1		**S15**	
	Socket housing 25-poles	SUHV25S	1			**S25**
	Pin housing 9-poles	SUHV09P	1	**P09**		
	Pin housing 15-poles	SUHV15P	1		**P15**	
	Pin housing 25-poles	SUHV25P	1			**P25**
3	Square washer 6x6x1.5 mm	SUUQ1.5	2	**U1.5**	**U1.5**	**U1.5**
4**	Coding plate	SUCB1 / SUCB2 / SUCB3	1		-	
5**	Fixing plate	SUBB1 / SUBB2 / SUBB3	1		-	
6**	Bolt, small	SUB11	2		-	
7**	Hexagonal nut	SUM6KTM3	2		-	
8**	Spring washer	SUSN212748M3	2		-	

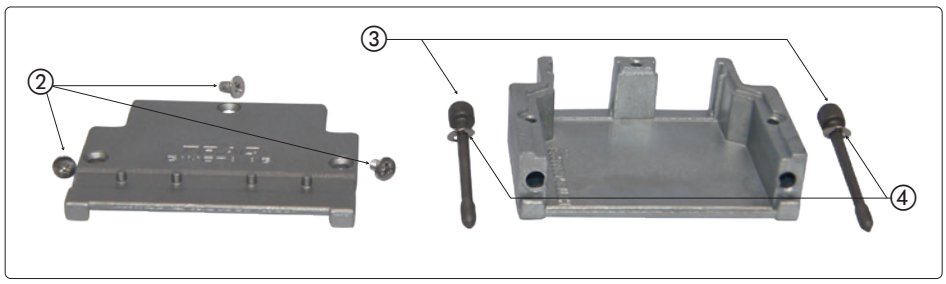
** Included in the set

Ordering example:
D-SUB mounting strip (**TRACHBE**), 25-poles/pin housing (**P25**), square washer 1.5mm (**U1.5**)
= Item number: **TRACHBEP25U1.5**

Contacts have to be ordered separately according individual requirements.
Contacts: chapter 3.2.9 + 3.2.10

3.5 D-SUB Cover set

3.5.1 Plug cover set TRACST

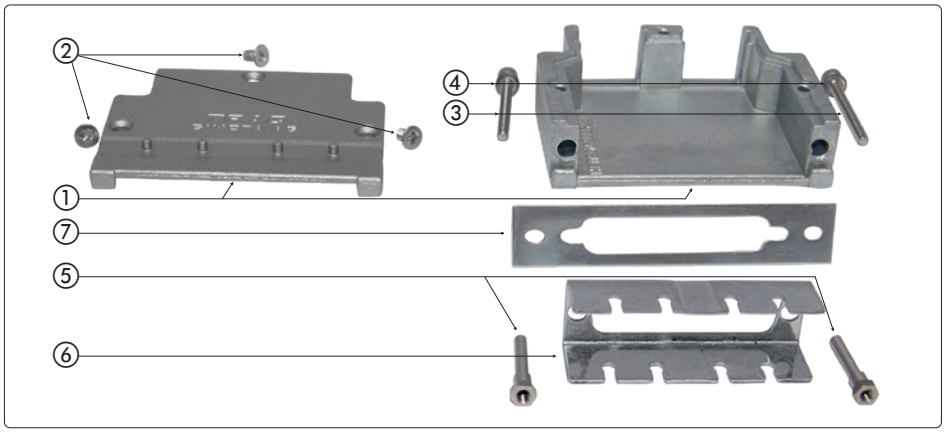


				Set code configuration			
Pos.	**Description**	**Item number**	**Qty.**	**Size 1**	**Size 2**	**Size 3**	**Size 1 / 60°**
	D-SUB plug cover set	TRACST		**TRACST**	**TRACST**	**TRACST**	**TRAC60ST**
1	Cover size 1	TRAC1	1	**1**			**1-60**
	Cover size 2	TRAC2	1		**2**		
	Cover size 3	TRAC3	1			**3**	
2**	Screw M2.5x5 mm	SUCHM2.5x5	3/4				
3	Screw M3x32.4 mm	SUI6KTM3x32.4	2		**2**		
	Screw 4-40UNC-2Ax32.4 mm	SUI6KT4-40UNCx32.4	2		**4**		
	Screw M3x12 mm	FI6KTM3x12	2		-		**5**
	Screw 4-40UNC-2Ax12 mm	FI6KT4-40UNCx12	2		-		**7**
4**	Spring washer M3	SUSN212748M3	2		-		-

** Included in the set

Ordering example:
D-SUB plug (**TRACST**), size 1 (**1**), screw M3x32.4 mm (**2**) = Item number: **TRACST1-2**
Other components have to be ordered separately according individual requirements.

3.5.2 Receptacle cover set TRACDO

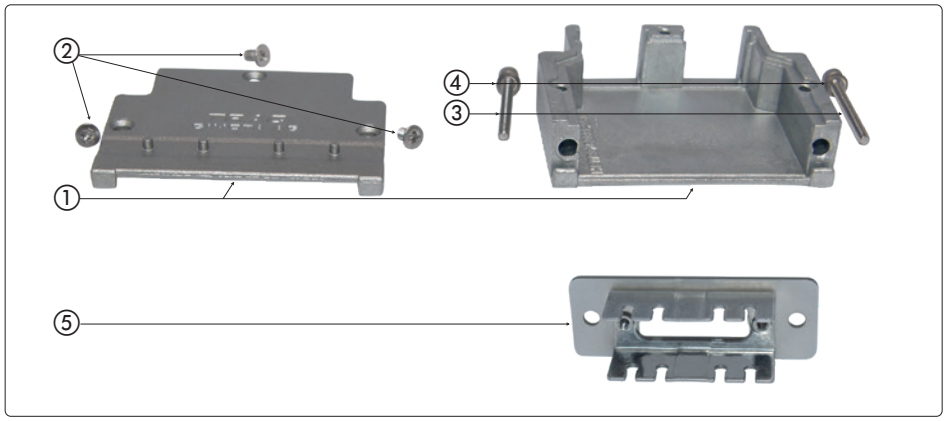


				Set code configuration		
Pos.	**Description**	**Item number**	**Qty.**	**Size 1**	**Size 2**	**Size 3**
	D-SUB socket cover set	TRACDO		**TRACDO**	**TRACDO**	**TRACDO**
1	Cover size 1	TRAC1	1	**1**		
	Cover size 2	TRAC2	1		**2**	
	Cover size 3	TRAC3	1			**3**
2**	Screw M2.5x5 mm	SUCHM2.5x5	3/4		-	
3**	Screw M2.5x20 mm	SUI6KTM2.5x20	2		-	
4**	Strain washer M2.5	SUSN212748M2.5	2		-	
5**	Bolt, large	SUB21	2		-	
6**	Coding plate size 1-3	SUCB1 / SUCB2 / SUCB3	1		-	
7**	Fixing plate size 1-3	SUBB1 / SUBB2 / SUBB3	1		-	

** Included in the set

Ordering example:
D-SUB plug (**TRACDO**), size 1 (**1**)= Item number: **TRACDO1**
Other components have to be ordered separately according individual requirements.

3.5.3 Receptacle cover set TRACDO-CB



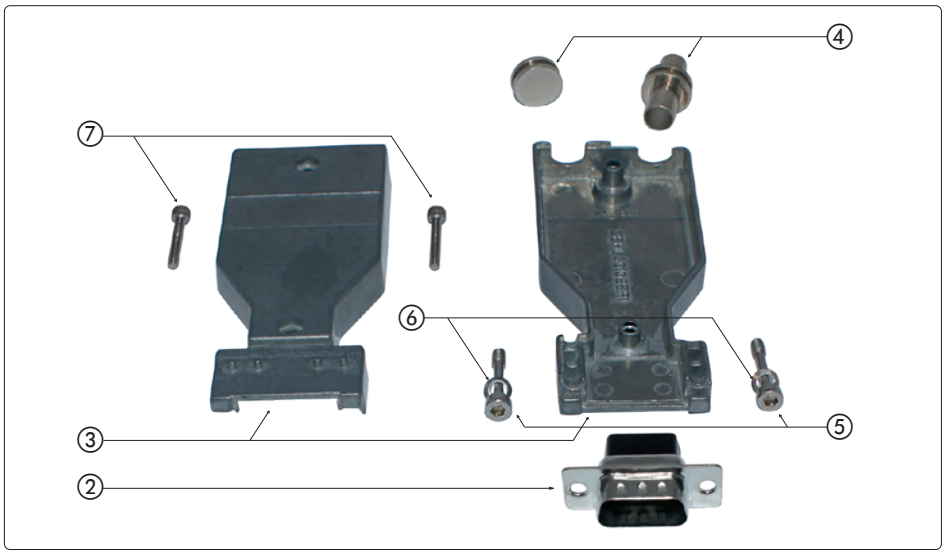
				Set code configuration		
Pos.	**Description**	**Item number**	**Qty.**	**Size 1**	**Size 2**	**Size 3**
	D-SUB socket cover set	TRACDO		**TRACDO**	**TRACDO**	**TRACDO**
1	Cover size 1	TRAC1	1	**1**		
	Cover size 2	TRAC2	1		**2**	
	Cover size 3	TRAC3	1			**3**
2**	Screw M2.5x5 mm	SUCHM2.5x5	4/3		-	
3**	Screw M3x32.4 mm	SUI6KTM3x32.4	2		-	
4**	Strain washer M3	SUSN212748M3	2		-	
5	Fixing- with Coding plate size 1	SUSS09-5-CB1	1	**CB**		
	Fixing- with Coding plate size 2	SUSS15-5-CB2	1		**CB**	
	Fixing- with Coding plate size 3	SUSS25-5-CB3	1			**CB**

** Included in the set

Ordering example:
D-SUB plug (**TRACDO**), size 1 (**1**), fixing plate with coding plate (**CB**) = Item number: **TRACDO1CB**
Other components have to be ordered separately according individual requirements.

3.6 TRACBK, Buscoupler connector sets

3.6.1 Plug set TRACBK



				Set code configuration
Pos.	**Description**	**Item number**	**Qty.**	**Size 1**
1	D-SUB plug set	TRACBKST		**TRACBKST**
2*	Socket housing 9-poles	SUH09S	1	**S09**
	Pin housing 9-poles	SUH09P	1	**P09**
3	Cover		1	TRAC1-BK
4 ***	No. of cable entrances per cover			2
	Cable clamp Di= 6 mm	SUKABC06S-BK		**C06S**
	Wire hole plug	SUBL-BK		**BL**
5	Screw M3x18 mm	SUI6KT-BKM3x18	2	**6**
6**	Spring washer M3	SUSN212748M3	2	-
7**	Screw M2.5x16 mm	FSCI6KTM2.5x16	2	-
8**	Hex. lock nut	SUM6KTM2.5	2	-

* Layout code for special layouts: socket housing chapter 3.2.1 / pin housing chapter 3.2.2
** Included in the set
*** others on request

Ordering example:
D-SUB plug (**TRACBKST**), 9-poles/socket housing (**S9**), cable clamp SUKABC06-BK (**C06S**), wire hole plug (**BL**),
screw M3x12 mm (**6**) = Item number: **TRACBKSTS9C06BL6**

Contacts and Shielding sleeves for crimping EMI-shielding braids to cable clamp have to be ordered separately according individual requirements.
Shielding sleeves: chapter 3.2.6
Contacts: chapter 3.2.9 + 3.2.10

3.7 Tools for D-SUB TRAC / TRAC H

3.7.1 Crimping tool for cable clamps and shielding sleeves

Mechanical hand crimping tool

Item number	Twin-Die for strain relieve and shield compression	for cable clamp strain relieve	for shielding sleeve compression
GIW30L	GIM30K06	SUKABC06S	SUGSC297
GIW30L	GIM30K06	SUKABC067S	SUGSC297
GIW30L	GIM30K08	SUKABC082S-21	-
GIW30L	GIM30K09	SUKABC09S	-
GIW30L	GIM30K10	SUKABC10S	-
GIW30L	GIM30K12	SUKABC12	SUGSC460
GIW30L	on request	SUKABC12X	SUGSC375

3.7.2 Crimping tool for contacts

Crimping tool for punched datasignal contacts (HD20)


a


b

Item number crimping tool	Item number presshead	Mechanical crimping tool for	Item number contacts	picture
GIW20BC-HD20		Pin contact strip, reel with 350 pcs.	SUPCP20-24AU2-3	a
GIW10V	GIM10VHD20	Single pin contact	SUPCP20-24AU2	b
GIW20BC-HD20		Socket contact strip, reel with 350 pcs.	SUPCS20-24AU2-3	a
GIW10V	GIM10VHD20	Single socket contact	SUPCS20-24AU2	b

on request are tools for rolls of 10'000 pcs. available

Crimping tool for power contacts size 8 and machined contacts size 20 HD


a

b

Item number Crimpingtool	Item number Locator	Item number contacts	Contact type	Section [mm²]	picture
GIW-M300BT	GIW-M300BT-SP994	SUMCS8-8AU1	Socket contact	8.0	a
GIW-M300BT	GIW-M300BT-SP994	SUMCS8-11AU1	Socket contact	5.0	a
GIW-M300BT	GIW-M300BT-SP994	SUMCS8-14AU1	Socket contact	2.0 - 3.0	a
GIW-AF8	TP731	SUMCS8-18AU1	Socket contact	0.8 - 1.4	b
GIW-AF8		SUMCS20-24AU1	Socket contact	0.75 - 0.25	b
GIW-M300BT	GIW-M300BT-SP994	SUMCP8-8AU1	Pin contact	8.0	a
GIW-M300BT	GIW-M300BT-SP994	SUMCP8-11AU1	Pin contact	5.0	a
GIW-M300BT	GIW-M300BT-SP994	SUMCP8-14AU1	Pin contact	2.0 - 3.0	a
GIW-AF8	TP731	SUMCP8-18AU1	Pin contact	0.8 - 1.4	b
GIW-AF8		SUMCP20-24AU1	Pin contact	0.75 - 0.25	b

GIW-M300BT-SP994 replaces SP689

3.7.3 Extraction tools

Extraction tool for contacts (HD20)

Item number	Description	Contact type
WMLEI-GR20	Extraction tool for contacts size 20	SUPCS20 / SUPCP20

Extraction-tool for contacts (size 8)

Item number	Description	Contact type
WMLE-GR8	Extraction-tool for contacts size 8	SUMCS8 / SUMCP8

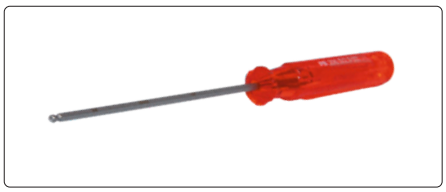
Cutting pliers for removing coding pins

Item number	Description
GIW901	Tool for cutting of the coding pins on the cover (special shape of front cutting head)

Coding tool

Item number	Description
GIW902	Tool for inserting coding slides into coding plate

Hex.socket screw driver for fixing screws



Item number	Description	Application for
GIW903	For hex. socket screws M3	Plug screws
GIW904	For hex. socket screws M2.5	Receptacle screws, Buscoupler cover screws

Wire stripper for fine strands and wires (AWG20-30) GIW-ACK

Item number	Dimensions [mm]	Weight [g]	Use with	wire sections [mm²]
GIW-ACK	98 x 45 x 21	30	wires / strands	0.05 - 0.5 (AWG30 - AWG20)

Shield scissors SC5X

Item number	Description
SC5X	Professional scissors SC5X, ergonomic handle, micro-toothed blades and 58 HRC degree of hardness, cable Ø up to 50mm², incl. Protective sleeve

4 Data connector TRAC F

4.1 Introduction

GIMOTA AG developed the plug-case TRAC F, to carry standard contact-insert of the types F, DM and H according to EN IEC 60603-2 (DIN 41612). Particularly the assembled plug is conceived for connecting electronic control devices. Each cable (up to 6 entries)can be applied with 360° EMI-shielding.

The two-piece TRAC F case in zinc-cast allows to connect up to six cables, with an outer diameters of up to 14mm. The case can also be coded if necessary, to avoid connecting failures.

For cable diameters up to <12 mm the same cable-clamps are used as with the data connectors D-SUB TRAC. The same compression tools are therefore applicable.

Ensure correct mounting of the TRAC F plug use: suitable fixation frame is FSMF-41612.

Assembled connectors correspond to the following requirements:
- EN 60529 Protection class IP44/for indoor application only
- IEC 61373, VDE 0115-106 shock and vibrationtest)

TRAC F plugs may be supplied as single components or connectors sets.
To order connector-sets, the following information is necessary:

- number of required cable entrances
- outer diameters of cables and type of cable with/without EMC-shielding for each admittance
- standard number of contacts (48/31/15) - others layouts available on request

and, if required:
- type and number of contacts (single contacts or strip-contacts)
- supply of coding components
- supply of fixation frames

4.1.1 Technical information

Electrical properties

All electric data are valid at sea level and an environment temperature of 20 °C. Deviating environment conditions are to be taken into account at the connector evaluation.

		TRAC F-48	TRAC F-31		TRAC F-15
Contact insert		FKEF48	FKEF31		FKEH15
Type of contacts		Signal	Signal	Power	Power
Test voltage	[V] AC 1 Min	1500	1500	1500	1500
Service voltage	[V] AC/DC	125	125	125	125
Operating current at 20 °C*	[A]	5.5	5.5	12	12
Contact resistance	[mΩ]	≤ 8	≤ 8		≤ 8
Creepage distances in contacting zone	[mm]	≥ 3	≥ 3		≥ 3
Creep resistance acc. to IEC60664	CTI-value	≥ 300	≥ 300		≥300
Insulation resistance	[MΩ]	> 5000	> 5000		> 5000

*) Valid for signal contact, consider the rating curves according to EN IEC 60603-2 for connectors

Thermal properties / Fire characteristic

		TRAC F
Contact housing material		reinforced Polyester
Service temperature	[°C]	-65 to + 125
Fire resistance class	acc. UL94 acc. NF F 16-101/102	V-0 F2/I3

Mechanical properties - connector

	TRAC F
Cover	2-half-shells, screwed together
Cover material	zinc cast (self passivating)
Screws	stainless steel V2A
EMC shielding	with shielding sleeves: 360° for each cable
Coding	7 possibilities
Pressed cable clamp	Strain relieve up to 150 N
Cable clamps with cable tie	specially suitable for single wire bundles

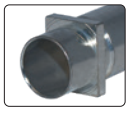
Mechanical properties - contacts

		TRAC F
Number of contacts		48 (Signal contacts) 31 (7 Power + 24 Signal contacts) 15 (15 Power contacts)
Mechanical contact-lifespan	mating cycles	min. 500 (specification class 1)
Separation force per contact	[N]	~ 1.5
Conductor cross-sections signal contacts	[mm^2]	0.14 up to 1.50
Conductor cross-sections power contacts	[mm^2]	0.8 up to 6 using FASTON-sleeves of size 6.3x0.8 mm

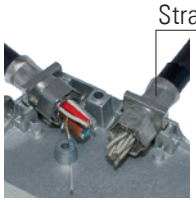
Signal contacts are available as single contacts or for automated processing, as contact-strips.

Cable strain relieve

Elevated spikes at the corners ensure a proper contact with the connector cover



The cable clamp shall be tightly pressed into the guiding grooves of the connector cover



The cable is fixed to the cable clamp by a strain relieve compression. Cable clamps are available in diameter from 6 up to 12 mm. This allows to connect cables of any diameters, 6 up to 12 mm. If necessary, we recommend the use of heat shrinking tube to adjust the cable diameter to the cable clamp. In this case a verification of the strain relieve with a test force of at least 150 N during 1 Minute shall be considered.

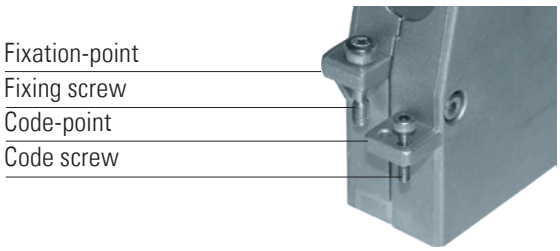
Our pressing tools ensure an invariant pressing process result if properly operated to achieve clear surface contact of the two die shells.

EMI-shielding

To guarantee a 360° EMC protection, the TRAC F connector conclude a separate compressable shieldingsleeves that tightly connects the cable shield to the cable clamp. The cable clamp shoulder is additionally equipped with small spikes to provide an adequate and secure contact between case and cable clamp.

The shielding sleeve are easily positioned and pressed with the appropriate GIMOTA compression tool.

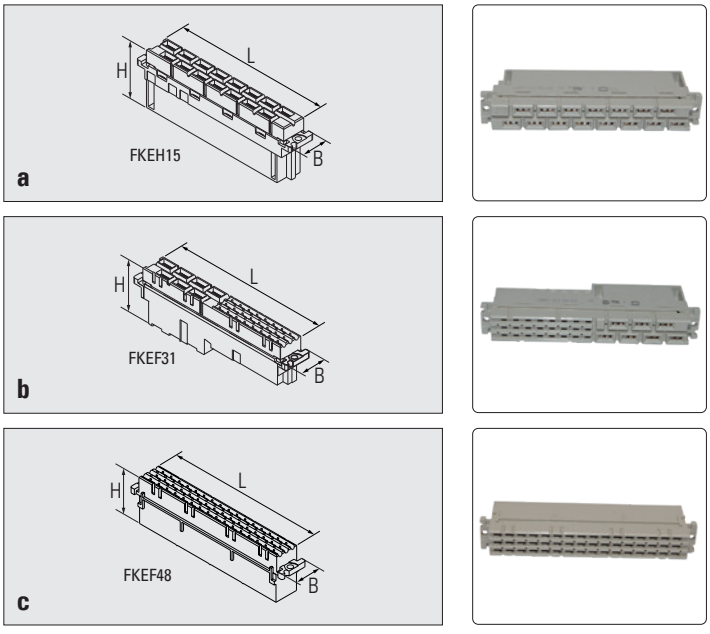
Coding



To code the TRAC F connector code screw at the connectorhood and code pins at the fixation frame are required. The coding of TRAC F connectors is preferably to be set during the final assembling, to avoid false coding configurations.
Coding is very easy:
1. Screw the code-screws in the code-point at the plug as per coding plan.
2. Fill the unused code-holes at the fixation-frame with the corresponding code-pins

4.2 Single parts and contacts for data signal connectors TRAC F

4.2.1 Contact housings TRAC F

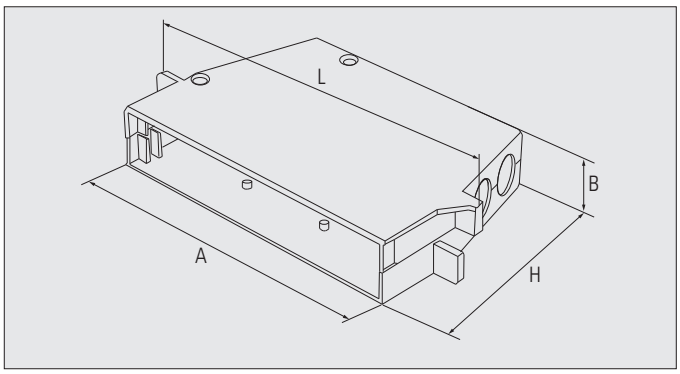


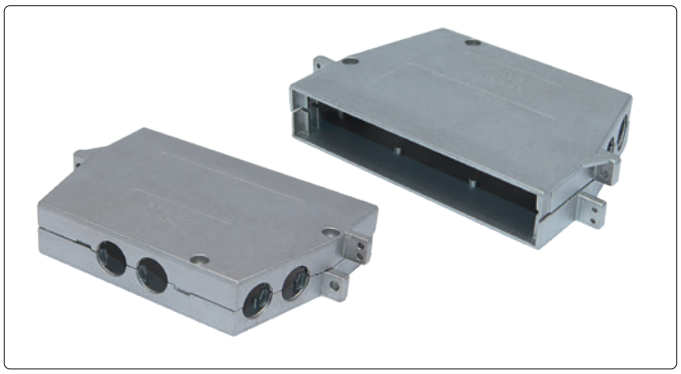
Material: Reinforced polyester

Item number	Poles	Contacts		L [mm]	B [mm]	H [mm]	Illustration
		Signal	Power				
FKEH15	15-poles		15	84.7	14.8	31.0	a
FKEF31	31-poles	24	7	84.9	14.7	31.0	b
FKEF48	48-poles	48		85.1	14.6	25.0	c

Electrical, thermal, mechanical properties: (see 4.1.1)

4.2.2 Cover TRAC F





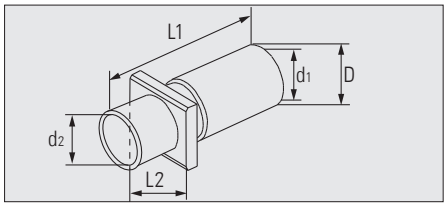
Material: Zinc-cast (self passivating)

Item number	A [mm]	B [mm]	H [mm]	L [mm]	Cable entrances
TRACF00	98.55	20.0	69.4	113.5	6

Consisting of:
2 half shells TRACF0-H, 4 case screws FSCTX8M2.5x12,
2 fixing screws FI6KTM3x12, 2 washers SUBN2312

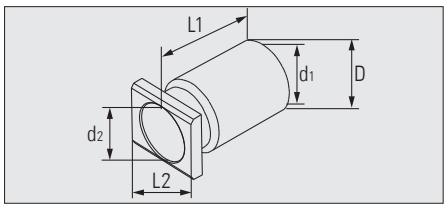
4.2.3 Cable clamps / Shielding sleeves / Wire hole plug

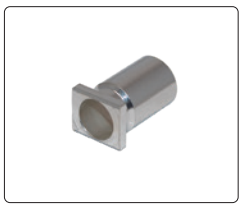
Cable clamps



Material: Brass, tin-plated

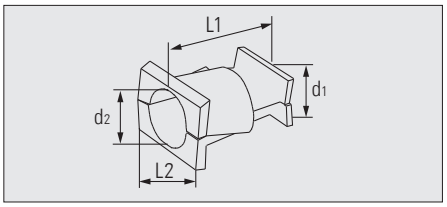
Item number	D [mm]	d1 [mm]	d2 [mm]	L1 [mm]	L2 [mm]	OD cable [mm]	Strain relieve compression	EMI shield compression
SUKABC06S	7.4	6.0	6.0	20.5	14.05	5.8	yes	yes
SUKABC067S	7.4	6.7	6.0	20.5	14.05	6.5	yes	yes
SUKABC09S	10.0	9.0	9.0	20.4	14.05	8.8	yes	yes
SUKABC10S	11.0	10.0	9.0	30.4	14.05	9.8	yes	yes
SUKABC12S	13.0	12.0	10.8	30.4	14.05	11.8	yes	yes

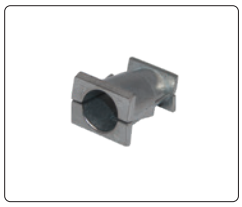




Material: Brass tin-plated

Item number	D [mm]	d1 [mm]	d2 [mm]	L1 [mm]	L2 [mm]	OD cable [mm]	Strain relieve compression	EMI shield compression
SUKABC12	13.0	12.0	10.0	22.4	14.05	11.8	yes	no



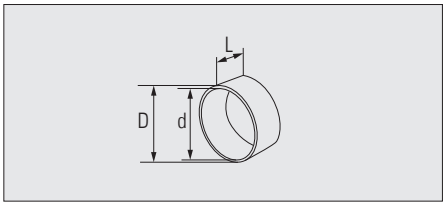


Material: Zinc cast

Item number	d_1 [mm]	d_2 [mm]	L1 [mm]	L2 [mm]	OD cable [mm]	Strain relieve	EMI shield compression
SUKABV69	6-9	6-9	18.0	14.00	9	yes*	no

* with cable tie SUKABV69K

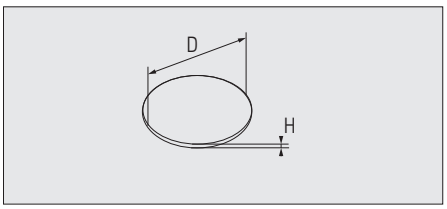
Shielding sleeves / supporting sleeves

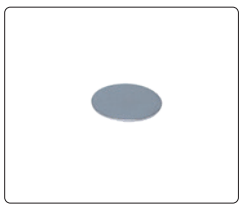


Material: Bronze tin-plated

Item number	for cable clamp	d [mm]	D [mm]	L [mm]
SUGSC297	SUKABC06S SUKABC067S	7.5	8.5	6.4
SUGSC460	SUKABC09S SUKABC10S	11.7	13.0	6.4
SUGSC500	SUKABC12S	12.7	14.0	6.4

Wire hole plugs

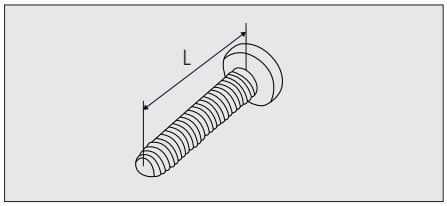




Material: Stainless steel

Item number	Description	D [mm]	H [mm]
FBL12.8x0.4	Wire hole plug to close the non used cable entrances	12.80	0.40

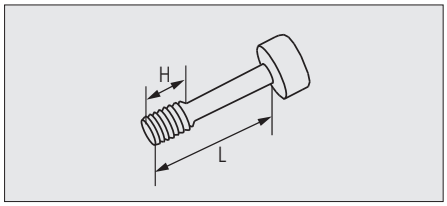
Cover screws (hexagonal socket screws)



Material: Stainless steel

Item number	Thread	L [mm]
FSCTX8M2.5x12	M2.5	12.0

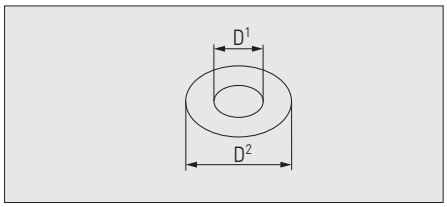
Plug fixing screws (hexagonal socket screws)

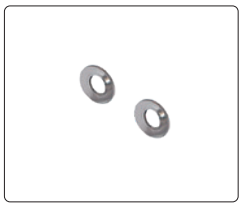


Material: Stainless steel

Item number	Thread	L [mm]	H [mm]
FI6KTM3x12	M3	12.0	5

Spring washer to plug fixing screws (hexagonal socket screws)



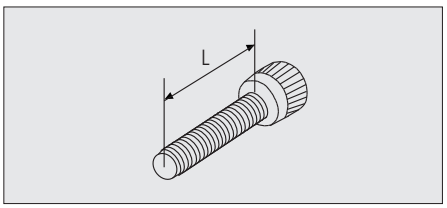


Material: Stainless steel

Item number	D^1 [mm]	D^2 [mm]
SUBN2312	3.2	5.7

4.2.5 Code screw / Code pin

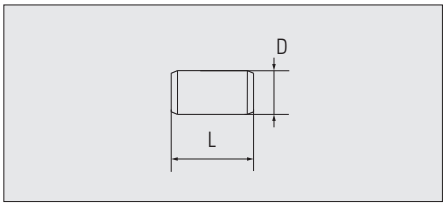
Code screw (hexagonal socket screws)

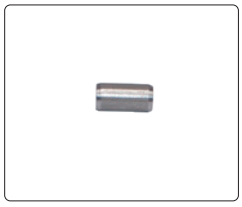


Material: Stainless steel

Item number	Thread	L [mm]
FSCI6KTM2x10	M2	10.0

Code pin





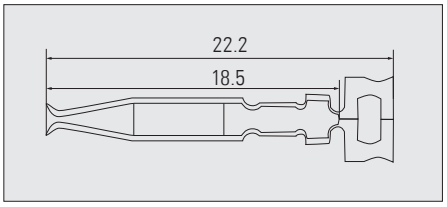
Material: Stainless steel

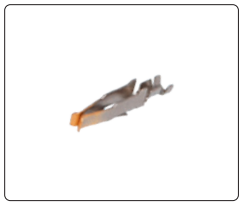
Item number	D [mm]	L [mm]
FSCZS3x6	3.0	6.0

to be applied at the mounting frame

4.2.6 Contacts

Snap-In Contacts (signal) type F

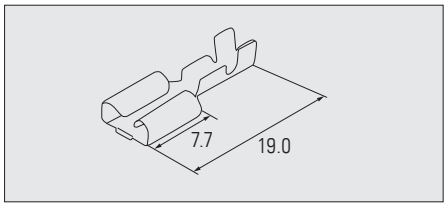




Material: Phosphorus bronze, nickle-plated

Item number	Description	AWG Section [mm²]	Contact surface / surface of contact zone	VPE [pcs]
FSCS-26AU1	Single contact	20-26 0.12 - 0.50	gold-flashed / ≥ 1.25 µm Au on 1.25 µm Ni	**100**
FSCS-26AU1-50	Contact strip, roll 5000 pcs.	20-26 0.12 - 0.50	gold-flashed / ≥ 1.25 µm Au on 1.25 µm Ni	**1**
FSCS-20AU1	Single contact	15-20 0.50 - 1.50	gold-flashed / ≥ 1.25 µm Au on 1.25 µm Ni	**100**
FSCS-20AU1-50	Contact strip, roll 5000 pcs.	15-20 0.50 - 1.50	gold-flashed / ≥ 1.25 µm Au on 1.25 µm Ni	**1**

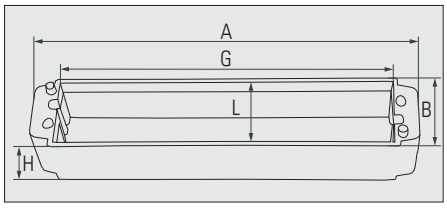
FASTON Contacts (power)



Material: Brass

Item number	Description	AWG Section [mm²]	Contact surface / surface of contact zone	VPE [pcs]
FSCF-20	Single contact, 6.3 mm	17-20 0.5 - 1.0	brass	100
FSCF-17	Single contact, 6.3 mm	14-17 1.0 - 2.5	brass	100

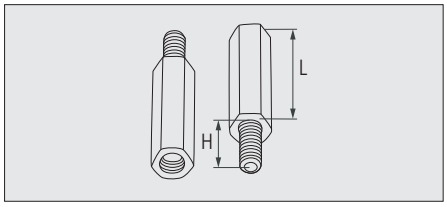
Mounting frame



Material: Polyamide

Item number	A [mm]	B [mm]	G [mm]	L [mm]	H [mm]
FSMF-41612	115.2	24.2	100.4	20.4	20.0

Mounting bolts

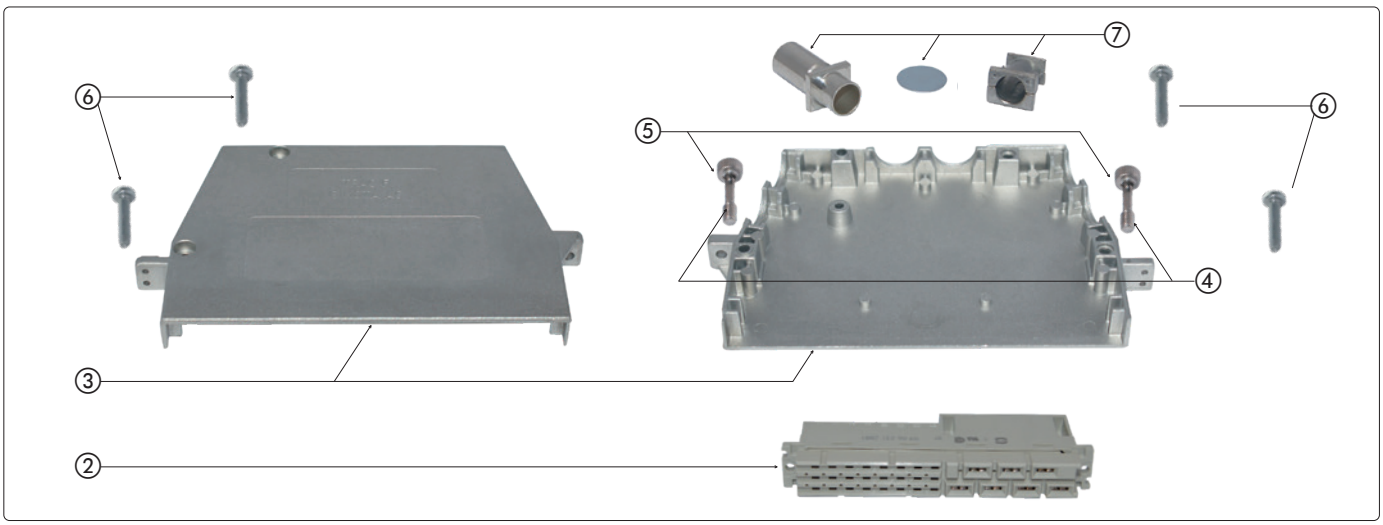


Material: Stainless steel

Item number	Thread	L [mm]	H [mm]
FSMB-M3-M3	M3	20.0	8.0

4.3 Connector sets TRAC F

4.3.1 Connector parts set TRAC F



				Set code configuration		
Pos.	**Description**	**Item number**	**Quantity**	**a**	**b**	**c**
1*	TRAC F Connector set	TRACF		**TRACF**	**TRACF**	**TRACF**
2*	Housing H 15	FKEH15	1	**15**		
	Housing F 31	FKEF31	1		**31**	
	Housing F 48	FKEF48	1			**48**
3*	Cover	TRACF00	1	-	-	-
4*	Screw M3x12 mm	FSCI6KTM3x12	2	-	-	-
5*	Washer M3	SUBN2312	2	-	-	-
6*	Screw M2.5x12 mm	FSCTX8M2.5x12	4	-	-	-
7**	Cable clamps / Wire hole plugs				6 (individual)	
	Contact Snap-In			-	24	48
	Contact FASTON			15	7	-
	Shielding sleeves				up to 6	

* Included in the set
** These parts have to be ordered separately as required.

Ordering example:
TRAC F connector (**TRACF**), 48-poles F-housing (**48**) = Part No.: **TRACF48**

4.4 Tools for data connectors TRAC F

4.4.1 Crimping tool for cable clamps and shielding sleeves

Mechanical hand crimping tool

Item number	Twin-Die for strain relieve and shield compression	for cable clamps	for shielding sleeves
GIW30L	GIM30K06	SUKABC06S	SUGSC297
GIW30L	GIM30K06	SUKABC067S	SUGSC297
GIW30L	GIM30K09	SUKABC09S	-
GIW30L	GIM30K10	SUKABC10S	-
GIW30L	GIM30K12	SUKABC12	SUGSC460
GIW30L	GIM30S12	-	SUGSC500
GIW30L	GIM30K12	SUKABC12S	-

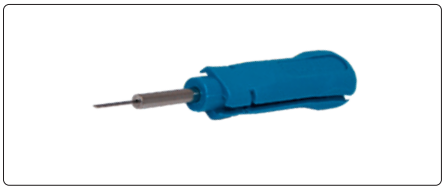
4.4.2 Crimping tool for contacts

Crimping tool for Snap-In / FASTON Contacts

Item number Handle	Item number Presshead	Description	Item number contacts
GIW10V	GIM10VFSCS	Mechanical crimping tool for Snap-In contacts Type F	FSCS-26AU1 FSCS-20AU1
GIW10V	GIM10VFSCF	Mechanical crimping tool for FASTON contacts	FSCF-20 FSCF-17

4.4.3 Extraction tool for contacts

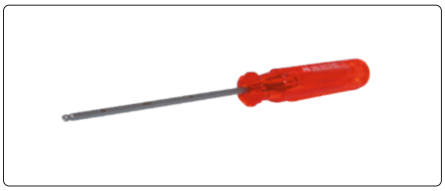
Extraction tool for Snap-In contacts type F



Item number	Description	Contact type
WMLE-FS	Extraction tool for Snap-In contacts	FSCS-26AU1 / FSCS-20AU1

4.4.4 Supporting tools

Hex. socket screw driver



Item number	Description	Application
GIW903	for hex. socket screws M3	plug fixings screws
GIW904	for hex. socket screws M2.5	cover screws
GIW905	for hex. socket screws M2	code screws

5 Connector kit F9

5.1 Introduction

The electronics connector with the designation F9 are a complement to the broad range of the TRAC F products. The 9-pin male multipoint PCB receptacles are available with angled dip soldring contacts, the female multipoint plug are supplied with crimp snap-in contacts. Therefore the appropriate crimp contacts Type FSCS can be used. The connectors comply with protection class IP44 acc. to IEC EN 60529, they are onlyqualified for indoor application. This connectors are not considered for EMI shielding purposes.

The application areas include:
- Industrial Electronics
- Power Electronics
- Railway Engineering

Advantages:
- Elimination of an additional contact with the male multipoint connector compared to the FASTON connection
- Easy crimping of the female multipoint plugs on manual or automated facilities
- Space saving compared to the standard type F connectors
- The male multipoint PCB receptacles are easy to engage with the female multipoints connectors

5.1.1 Technical Information

Electrical properties

All electric data are valid at sea level and an environment temperature of 20 °C. Deviating environment conditions are to be taken into account at the connector evaluation.

		F9
Contact insert		multipoint connector
Type of contacts		Signal
Number plug contacts		9
Test voltage	[V] AC 1 Min	1500
Operating voltage	[V] AC/DC	125
Operating current at 20 °C*	[A]	5.5
Contact resistance	[mΩ]	≤ 8
Creeping distances	[mm]	≥ 3
Creepage resistance acc. to IEC60664	CTI-value	> 300
Insulation resistance	[MΩ]	> 5000

*) Valid for single Contact, consider the rating according to IEC 60603-2 (DIN 41612) for connectors.

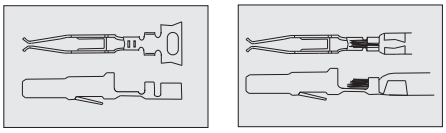
Thermal properties

		F9
Contact housing material		reinforced polyester
Fire resistance class	acc. UL94 acc. NF F 16-101/102	V-0 F2/I3
Service temperature	[°C]	-40 to + 105

Mechanical properties connector

	F9 (Plug)
Cover	2 - shells, screwed together
Cover material	Latamid 68 H2-V0
Screws	stainless steel V2A
EMC shielding	not applicable
Coding	not applicable
Cable clamp screwed	Strain relieve up to 50 N

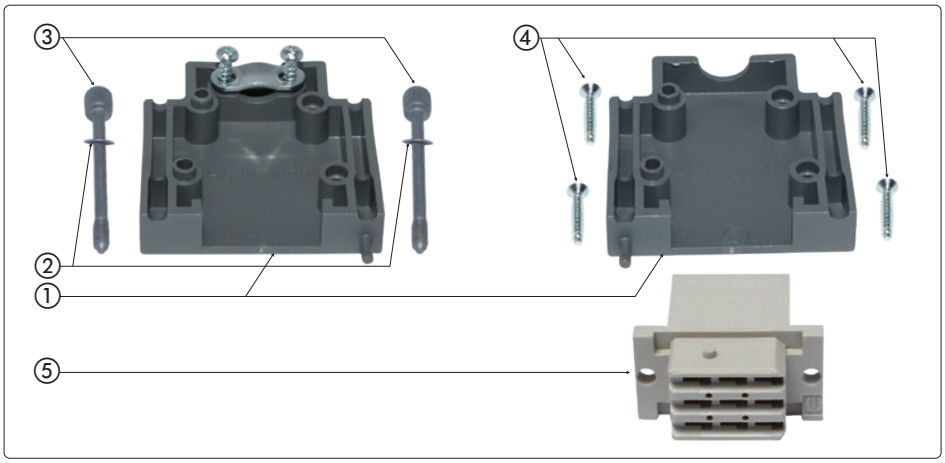
Mechanical properties contact



		F9 (Contacts)
Mechanical contact-lifespan	Mating cycles	min. 500 (specification class 1)
Mating force per contact	[N]	~ 1.5
Conductor cross-sections	[mm^2]	0.14 up to 1.50

5.2 Connector set F9

5.2.1 Plug parts set F9

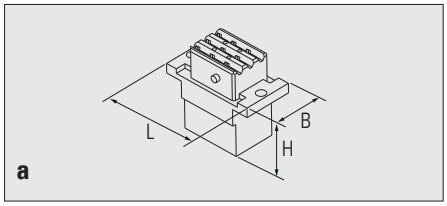


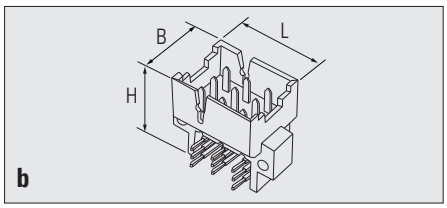
Pos.	Description	Item number	Qty.
1	Cover (bottom part)	3BHC860070R0001	1
1	Cover (top part)	3BHC860070R0002	1
2	Washer M3	SUSN212748M3	2
3	Screw M3x34 mm	SUI6KTM3x34	2
4	Cover screw	3BHC860070R0006	4
5	Female multipoint connector F9	3BHC860070R0003	1

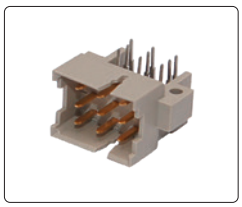
Order Number: **3BHC860070R0100**

Contacts and male multipoint PCB receptacles have to be ordered separate if required.

5.2.2 Multipoint plug / PCB receptacle F9



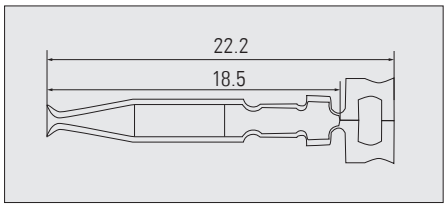




Item number	Description	Pin	L [mm]	B [mm]	H [mm]	Illustration
3BHC860070R0003	Female multipoint plug F9	9-pin	28	14.8	24.8	a
3BHC860049R1303	90° Male multipoint plug F9	9-pin	25.3	14.8	22.1	b

5.2.3 Contacts

Snap-In Contacts (signal) type F



Material: Phosphorus bronze, nickle-plated

Item number	Description	AWG Section [mm²]	Contact surface / surface of contact zone	VPE [pcs]
FSCS-26AU1	Single contact	20-26 0.12 - 0.50	gold-flashed / ≥ 1.25 µm Au on 1.25 µm Ni	100
FSCS-26AU1-50	Contact strip, roll 5000 pcs.	20-26 0.12 - 0.50	gold-flashed / ≥ 1.25 µm Au on 1.25 µm Ni	1
FSCS-20AU1	Single contact	15-20 0.50 - 1.50	gold-flashed / ≥ 1.25 µm Au on 1.25 µm Ni	100
FSCS-20AU1-50	Contact strip, roll 5000 pcs.	15-20 0.50 - 1.50	gold-flashed / ≥ 1.25 µm Au on 1.25 µm Ni	1

6.1 General terms & conditions of sale

Deliveries, services and quotations provided by GIMOTA AG are made exclusively on the basis of these terms & conditions, even if they are not again explicitly agreed. These terms & conditions will be deemed to have been accepted when goods or services are ordered. We herewith reject any terms and conditions of purchase of the customer. Any deviations from these terms & conditions will not be valid unless confirmed by us in writing.
We reserve the right to supply up to 10% more or less of an order when products are made to the customer's specifications.

General
The information in our sales material (drawings, diagrams, dimensions, weights and other features) are intended as approximate values and do not constitute any assurance of properties unless they are explicitly designated as binding in writing.

Offer and conclusion of contract
Unless agreed otherwise, our offers are binding for 1 month. We reserve the right to change prices in exceptional circumstances (raw materials). Orders will only be binding on GIMOTA AG after written confirmation is issued.

Prices / packaging / terms of payment / supplements
The prices listed in our order confirmation are definitive. Unless otherwise agreed, prices are quoted in Swiss francs (CHF) and are subject to transport and packing costs in accordance, with INCOTERMS 2010, FCA Geroldswil, and do not include statutory VAT.

As a general principle, we deliver in standard packaging units and we reserve the right to adjust the quantity in the event of a deviation. We charge a supplement of CHF 10.00 per line item for part packaging units.

We will charge a lump sum of CHF 20.00 on orders with a value below CHF 100.00 to cover general costs of the order.

Invoices are payable net within 30 days of the date of invoice unless otherwise agreed. As a general principle, delivery is effected at the customer's expense by parcel post, shipping company or our vehicle unless explicitly agreed otherwise. Payment is only deemed to have been made when we have the due invoice amount at our disposal.

If the customer is in default, we will be entitled to charge interest of 5 % from the date in question. In addition, during the period of default GIMOTA AG will be entitled to terminate the contract at any time, to demand the return of the goods supplied and to claim damages for the void contract. All outstanding claims will become due immediately if the customer is in default of payment, culpably fails to meet essential obligations arising from the contract or circumstances become known to us that are likely to diminish the customer's credit standing, in particular suspension of payment, or if insolvency or bankruptcy proceedings are instituted. In such cases, we will be entitled to withhold outstanding deliveries or to execute them only against prepayment or other security.

Transfer of benefit and risk, shipment and insurance
In accordance with Incoterms 2010, FCA Geroldswil, unless agreed otherwise.

Delivery periods / delivery date
The delivery periods quoted in our offers apply from receipt of the order. The delivery period will be deemed to have been met if the shipment has been made available for dispatch in our factory when the period expires.
Any possible overrun of the delivery deadlines indicated does not justify claims for damages or a cancellation of the order in question. Shortages of raw materials, damage to tools, transport difficulties and similar causes of disruption that make delivery impossible, or make it disproportionately more difficult or more expensive, release us from our delivery obligations without compensation. Notification of identifiable delays will, wherever possible, be given immediately.

Framework agreements will only be accepted with call-off periods. If the call-off period is not precisely defined, it will end 12 months after conclusion of the agreement. In this case, the call-off quantity specified in the agreement must be accepted. If acceptance does not take place within the agreed period, GIMOTA AG will be entitled to deliver finished shipments without any further notification.

Documents / samples
Our catalogues, drawings, sketches etc. are our intellectual property and may not be modified or used for other purposes without our written consent. Samples are only provided against payment.

Inspection and acceptance of delivery
Any apparent defects detected must be reported to GIMOTA AG within 10 days. If the customer fails to do so, the delivery will be deemed to have been accepted.

Any further inspections of the goods prior to shipment and/or certificates (e.g. acceptance inspections, factory test certificates etc.) must be agreed beforehand in writing and specified on the order. Any costs incurred will be invoiced. Any return of goods by the customer requires the prior consent of GIMOTA AG and must be effected in accordance with the guidelines for the return of articles.

Retention of title
Goods supplied will remain our property until complete payment has been effected. The customer assures that it will cooperate in any measures required to protect our property

Cancellation / returns in accordance with the guidelines for the return of goods
Any return of goods by the customer requires the prior consent of GIMOTA AG and must be effected in accordance with the guidelines for the return of articles.

The cancellation of orders requires our prior written consent. Any parts that have already been produced will be invoiced. If customer-specific raw materials were purchased, they will also be invoiced. GIMOTA AG is entitled to withdraw from delivery obligations if the customer's financial situation deteriorates substantially or turns out to be different to what was presented to us.

Guarantee / warranty
GIMOTA AG undertakes, on receipt of written notification from the customer within the warranty period and at its discretion, to replace or repair all parts that are defective or unusable as a result of design, material or production faults as rapidly as possible. The warranty period is 12 months from receipt of delivery unless other legal provisions apply.

The warranty does not cover damage resulting from improper storage, normal wear and tear, faulty processing and failure to comply with regulations.

Any modifications or repairs performed without our written consent and failure to comply with our operating instructions will release us from the guarantee obligation. Our liability is limited to the replacement of the faulty objects or the reimbursement of the value of the invoice.

No new warranty periods apply as a result of the replacement of parts, assemblies or entire devices. Warranty is limited exclusively to the repair or exchange of the damaged objects that were delivered.

Exclusion of further liability
These "General terms & conditions of sale" govern the customer's rights to assert a claim in their entirety. All claims for compensation, reduction, rescission of or withdrawal from the contract are excluded.

Data privacy
Your acceptance of these terms & conditions also constitutes your acceptance of the data privacy policy of GIMOTA AG.

Jurisdiction
Zurich is the sole place of jurisdiction for all disputes arising directly or indirectly in connection with this contractual relationship. The contractual relationship is subject to **Swiss law**. The general terms & conditions valid at the time of the conclusion of the contract will apply. You can view these on the Internet at www.gimota.ch

Final provisions
The general terms & conditions of sale were modified with effect from March 1st 2022 and replace all previous versions. They are an integral part of all offers and/or order confirmation documents. This version replaces all previous terms & conditions. If there are any difference between a foreign-language version and the German text, the German text will be definitive.

Geroldswil, March 2022

6.2 Product Safety

Information and advice given in the following is applicable in connection with the use of our products and data contained in our data sheets and catalogue. Failure to comply with the advice can put people and equipment at severe risk.

1. Materials
Electrical plug-type connectors contain no substances that could be dangerous in normal operation. The connectors consist of conducting and non-conducting materials.

Data signal connectors:
The insulators are generally made of a fiber glass-reinforced plastic in a metal frame; covers can be made of die cast metal (zinc, aluminum) or of plastic.

2. Hazards
When plug-type connectors are correctly wired and are used and handled with due regard to the given parameters, there will be generally no risk.

Incorrect wiring or assembly of connectors can lead to electric shock, burns or fire. The same applies to careless handling of metal tools or conductive fluids, as well as to the use of defective parts, e.g. damaged during transport or storage.

Live circuits may not be made or broken by means of plug-in connectors. This can lead to ionization and arcing, causing electric shock, burns or fire. Such manipulations can also cause electronic circuits to be destroyed.

Only contacts in correctly assembled plug-in connectors may be energized. Abnormal rises in resistance in a plug-in connector can cause it to become overheated.

An increase in resistance can be caused by cracked, broken or deformed contacts or by broken wires in the conductor strand, as well as by badly made crimps due to the wrong or defective crimping tool being used, by poor solder joints or by screw connections not being properly tightened. Oxide films and the presence of contamination on the contacts or crimps can also lead to rises in resistance and therefore to local overheating. Overheating can further be caused by the formation of creepage paths or short circuits in the plug due to:

- water entering through badly sealed cable clamps or due to the capillary effect along the conductor wires;
- contamination of the insulator or residues left over from processing (e.g. bits of wire) in the connector.

We warn against exceeding the continuous currents given in our documentation, as this too can cause overheating of the connector.

Overheating of a plug-type connector causes the insulator to be destroyed. This can result in spurious signals; also, there is the danger of electric shock or of fire, with toxic gases formed in combination with other materials. Since overheating is not necessarily visually apparent, there is a risk of burns being caused if overheated parts are touched.

3. Handling
Components of electrical plug-type connectors must be carefully handled during transport, storage and use to avoid damage. Although these parts normally have no sharp edges or corners, care should be taken to ensure that no injury to fingers can occur.

Plug-type connectors can be damaged in transit to the customer. Such damage can be a source of danger. These products should therefore be checked before installation or use, and damaged ones removed.

4. Disposal and scrapping of waste
Dangerous or even toxic gases can be formed when certain materials are burned. Such materials must therefore be disposed of in the proper manner.

5. Application
Plug-type connectors with accessible contacts should not be used on the supply side of the electric circuit.

Touching the exposed contacts of an unconnected plug-type connector can result in an electric shock. Voltages above 30 V AC or 42.5 V DC are generally dangerous. It must be ensured that such voltages cannot under any circumstances reach the accessible metal parts of the connector housing. Before energizing with voltage, plug-type connectors and the wiring should be checked. It must be ensured that metal parts and insulators are not damaged, and that no soldering jumper, loose wire strands, conductive fluids or other conducting materials can form an electrical bond. The circuit should be checked for insulation resistance and electrical continuity. It is essential that the correct working tools are used, in accordance with our catalogues and data sheets.

Only qualified personnel should be allowed to wire, assemble or modify plug-type connectors.

The pertinent national regulations should be referred to in order to determine the permitted operating voltage.

6. Important general note
6.1 Product design
We are committed to a policy of continuous improvement and further development of our products. Because of this, our products may differ from the descriptions, technical data and figures in this catalogue and in the data sheets. Unless otherwise stated, all dimensions in this catalogue are approximate values in mm.

6.2 Insulation clearances, ambient conditions
The permitted operating voltages depend on the specific application and on the applicable national safety regulations. For this reason, the clearances and creepage distances are given as reference values. Attention should therefore be given to reductions in the clearances and creepage distances due to the circuit board and/or wiring.

All voltage data are valid at sea level and a temperature of 20°C. The given temperatures are temperature limits. The permitted operating temperature will depend on the actual application.

6.3 Fabrication instructions
Our detailed fabrication instructions should be referred to when processing work is carried out.

Notes

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