Inserts with incorporated terminal block for multipole connectors (16A max versions)

45° CT - CTSE series multipole connectors (with incorporated terminal block) are recommended for greater cost-saving and safety for use on machines and command and control panels.

The CT - CTSE series inserts (16A max versions) are supplied in the plug or socket versions and may be mounted with insertion from the front of the enclosure (**Figure 1** for all the polarities of the inserts) or with insertion from the rear of the enclosure (**Figure 2**, only for 16 and 24-pole inserts).

As an alternative to the traditional terminal blocks, the inserts can be mounted inside the control panels on DIN EN rails (**Figure 5**) using suitable accessories providing the added advantage of easy sectioning.

The special structure of the CT - CTSE inserts has all the conductor connections on the same side providing for easier wiring and a complete view of the work area.

The terminal block has also slots for housing the identification wire markers of each contact.

Wire markers of different manufacturers may be used such as: Cabur, Grafoplast, Modernotecnica, Phoenix Contact, Siemens, Wago, Weidmüller.

The CT - CTSE series is available in the versions “left” and “right” for mounting on the left (**Figure 3**) or on the right (**Figure 4**) of the control panel walls.

This characteristic is determined by the position of contact “1” and the ground terminal in the upper part of the insert terminal block for both left and right mounting.

The installation of inserts on DIN rails (**Figure 5**) inside the control panels is usually made to facilitate the wiring into sectionable parts.

In this case the degree of protection for coupled connectors is IP20 (in accordance with EN 60529).

This type of mounting requires supports (CT APE) suitable for mounting on DIN EN 60715 rails.

Furthermore, to ensure a stable and secure mating between the CT and CTSE inserts installed on DIN rails and counterparts CNE, CCE, CSH, CSS mating screws CRBF (female) and CRBM (male) are recommended, to replace the ordinary fastening screws to the enclosures (**Figure 5**).

Figure 1 (front mounting)

The insert is inserted into the bulkhead housing without wired conductors or with pre-wired conductors that are not connected at the opposite end.

Mounting for inserts of 06, 10, 16 and 24 poles

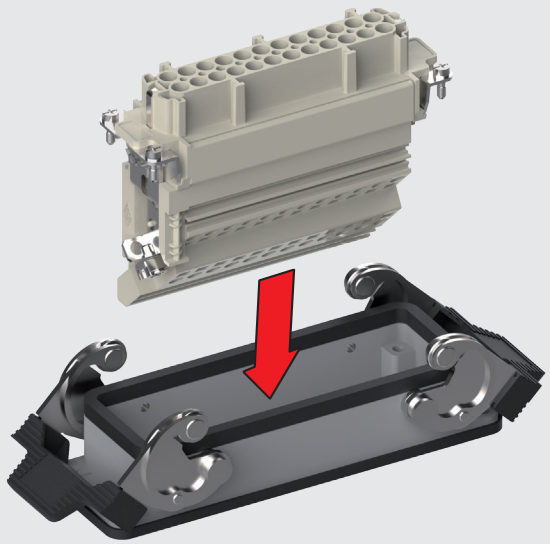


Figure 2 (rear mounting)

The insert is inserted into the bulkheadhousing with pre-wired conductors connected at the opposite end.

Mounting for inserts of 16 and 24 poles

Except version T-TYPE

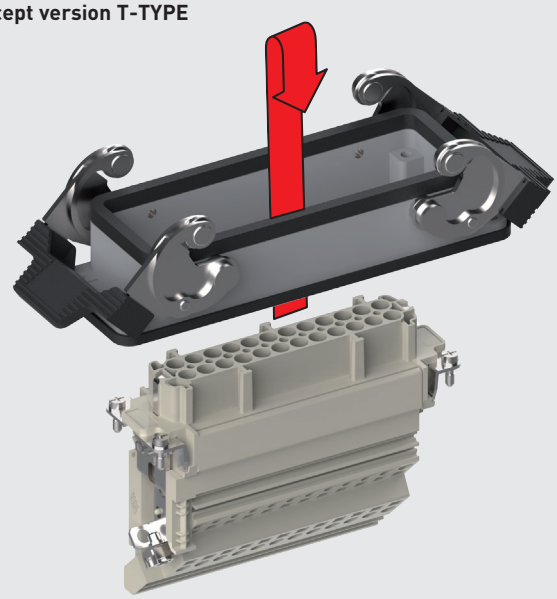


Figure 3 (left mounting)

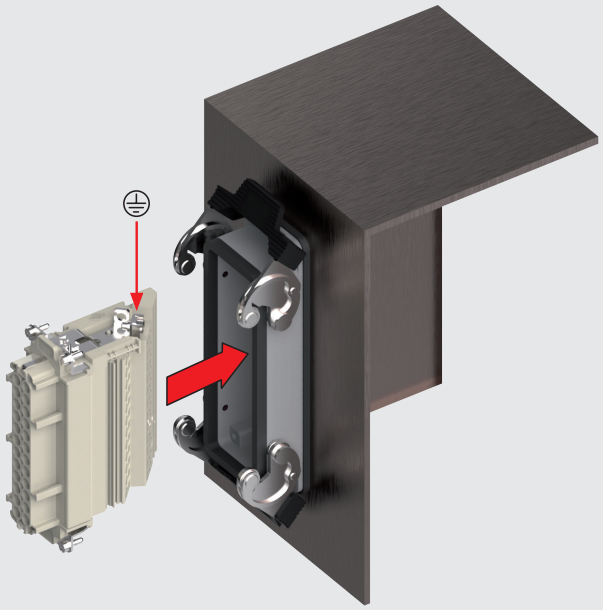


Figure 4 (right mounting)

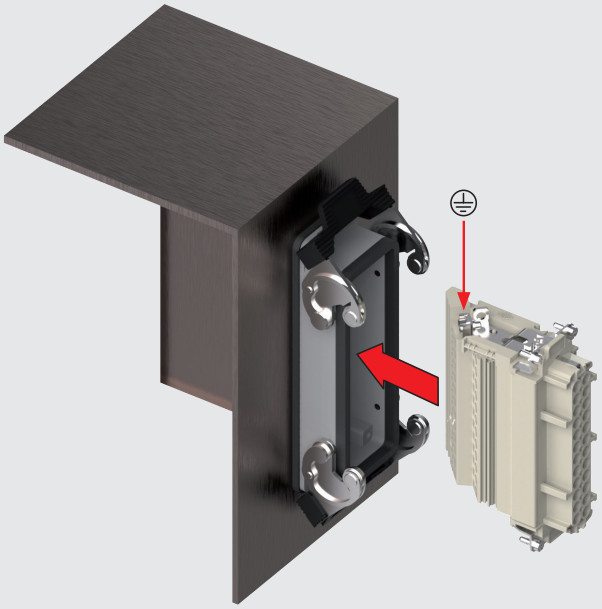
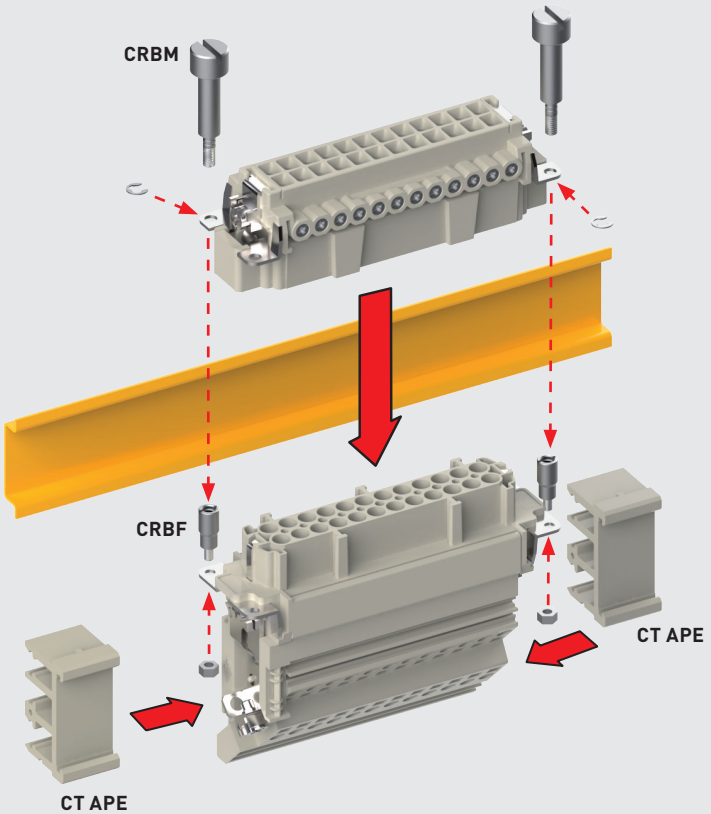
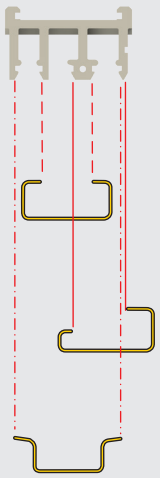


Figure 5 (mounting on DIN rail)





CT APE
possibility of coupling to DIN EN 60715 rail (for a greater stability of the CT, CTSE inserts of 16 and 24 poles we recommend using the two CT APE supports)

EN 60715
C 30

EN 60715
G 32

EN 60715
TH 35-7,5 and TH 35-15

Accessories for CT inserts
- support for mounting on DIN rail (**CT APE** page 669)
- inserts coupling screws (**CRBM** and **CRBF** page 669)
- cable-clamping plates (**CRAD** and **CRAS** page 669)

CT 6 poles + ⏚ 16A - 400V CTSE 6 poles + ⏚ 16A - 500V

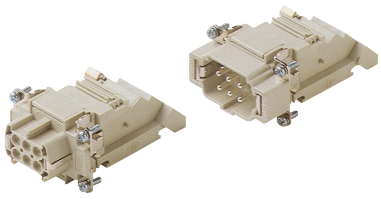
enclosures *):
size “44.27”

	page:
C-TYPE IP65 or IP66/IP69	387
C7 IP67, single lever	436 - 437
V-TYPE IP65 or IP66/IP69, single lever	444 - 445
BIG hoods	466 - 467
T-TYPE IP65 insulating	480 - 481
T-TYPE / W IP66/IP69 insulating	489
HYGIENIC T-TYPE / H IP66/IP69	501
HYGIENIC T-TYPE / C IP66/IP69, -50 °C	506
W-TYPE for aggressive environments	521
E-Xtreme® corrosion proof	530, 542
EMC	578
Central lever	603
LS-TYPE	618

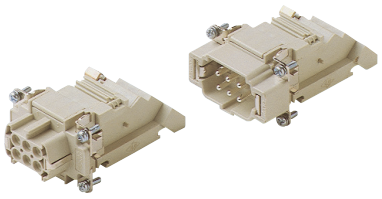
***) only bulkhead mounted housings and BIG hoods**

- can be mated with CNE, CCE, CSS, CSH inserts
- inserts may be fitted from front of enclosure

terminal block inserts
screw terminal connection



terminal block inserts
spring terminal connection



Q SILVER PLATED CONTACTS

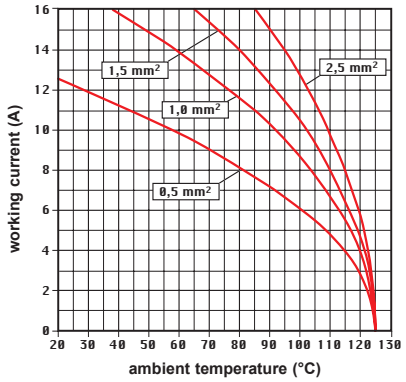
Q SILVER PLATED CONTACTS

description	part No.	part No.	part No.	part No.
mounting side (see page 159)	left	right		
female inserts with female contacts [1]	**CTF 06 L**	**CTF 06 R**		
male inserts with male contacts [1]	**CTM 06 L**	**CTM 06 R**		
mounting side (see page 159)			left	right
female inserts with female contacts			**CTSEF 06 L**	**CTSEF 06 R**
male inserts with male contacts			**CTSEM 06 L**	**CTSEM 06 R**

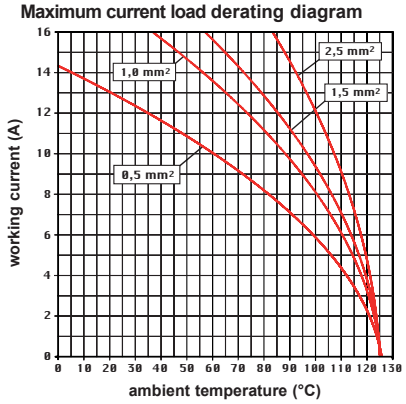
[1] for non-prepared conductors

- characteristics according to EN 61984:
  16A 230/400V 4kV 3 (CT)
  16A 400V 4kV 2 (CT)
  16A 500V 6kV 3 (CTSE)
  16A 400/690V 6kV 2 (CTSE)
- certified (**CT**)
- certified (**CTSE**)
- rated voltage according to UL/CSA: 600V
- insulation resistance: ≥ 10 GΩ
- ambient temperature limit: -40 °C ... +125 °C
- made of self-extinguishing thermoplastic resin UL 94V-0
- mechanical life: ≥ 500 cycles
- contact resistance: ≤ 4 mΩ
- for max. current load see the connector inserts derating diagrams below; for more information see page 28

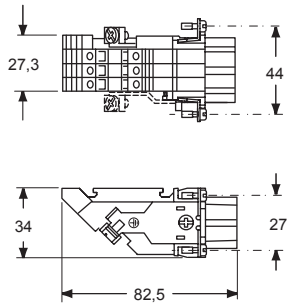
CT 06 poles connector inserts
Maximum current load derating diagram



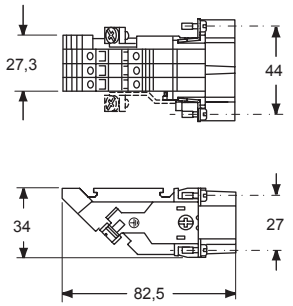
CTSE 06 poles connector inserts
Maximum current load derating diagram



female inserts (CTF and CTSEF)

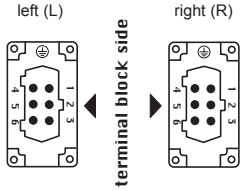


male inserts (CTM and CTSEM)

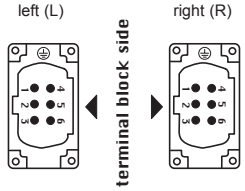


contacts side (front view)

female inserts (CTF and CTSEF)



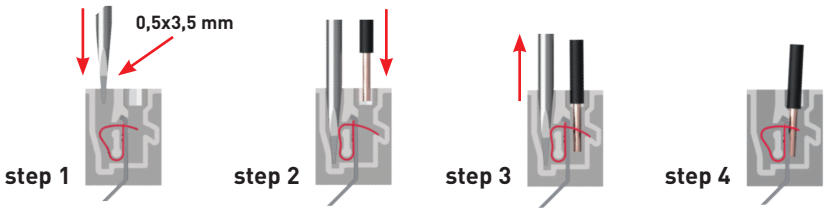
male inserts (CTM and CTSEM)



- CT inserts with plate, for conductor cross-sections: 0,75 - 2,5 mm² - AWG 18 - 14
- conductors stripping length: 12 mm
- terminal screw torque: 0,4 Nm (3,54 lb.in), for more information see page 20 and 21

- CTSE spring inserts for conductor cross-sections: 0,14 - 2,5 mm² - AWG 26 - 14
- conductors stripping length: 9...11 mm

Connection technology with spring terminal



CT 10 poles + ⏚ 16A - 400V CTSE 10 poles + ⏚ 16A - 500V

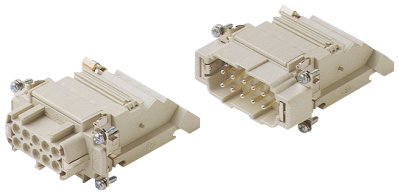
enclosures *):
size “57.27”

	page:
C-TYPE IP65 or IP66/IP69	393
C7 IP67, two levers	438
V-TYPE IP65 or IP66/IP69, single lever	448 - 449
BIG hoods	468 - 469
T-TYPE IP65 insulating	482 - 483
T-TYPE / W IP66/IP69 insulating	490
HYGIENIC T-TYPE / H IP66/IP69	502
HYGIENIC T-TYPE / C IP66/IP69, -50 °C	507
W-TYPE for aggressive environments	522
E-Xtreme® corrosion proof	532, 543
EMC	579
Central lever	606
LS-TYPE	620

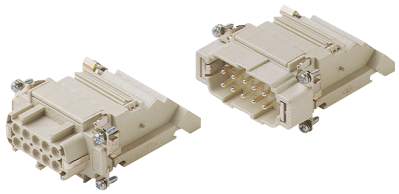
*) only bulkhead mounted housings and BIG hoods

- can be mated with CNE, CCE, CSS, CSH inserts
- inserts may be fitted from front of enclosure

terminal block inserts
screw terminal connection



terminal block inserts
spring terminal connection



Q SILVER PLATED CONTACTS

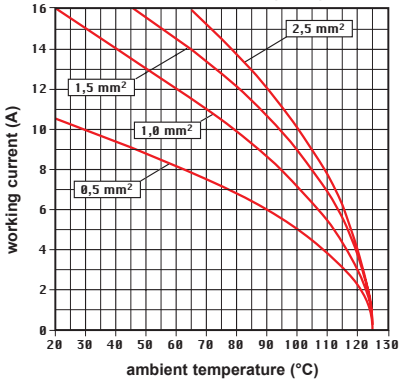
Q SILVER PLATED CONTACTS

description	part No.	part No.	part No.	part No.
mounting side (see page 159)	left	right		
female inserts with female contacts 1)	**CTF 10 L**	**CTF 10 R**		
male inserts with male contacts 1)	**CTM 10 L**	**CTM 10 R**		
mounting side (see page 159)			left	right
female inserts with female contacts			**CTSEF 10 L**	**CTSEF 10 R**
male inserts with male contacts			**CTSEM 10 L**	**CTSEM 10 R**

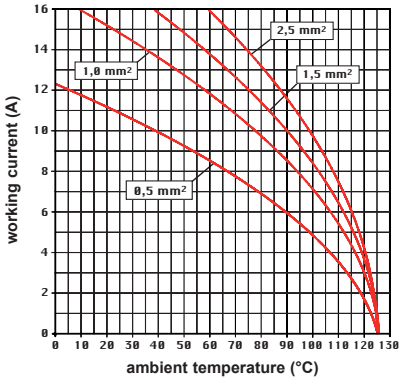
1) for non-prepared conductors

- characteristics according to EN 61984:
  16A 230/400V 4kV 3 (CT)
  16A 400V 4kV 2 (CT)
  16A 500V 6kV 3 (CTSE)
  16A 400/690V 6kV 2 (CTSE)
- certified (**CT**)
- certified (**CTSE**)
- rated voltage according to UL/CSA: 600V
- insulation resistance: ≥ 10 GΩ
- ambient temperature limit: -40 °C ... +125 °C
- made of self-extinguishing thermoplastic resin UL 94V-0
- mechanical life: ≥ 500 cycles
- contact resistance: ≤ 4 mΩ
- for max. current load see the connector inserts derating diagrams below; for more information see page 28

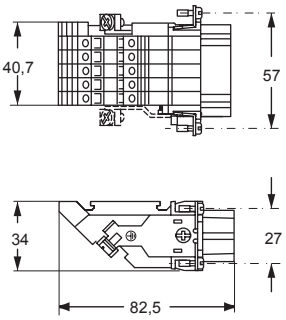
CT 10 poles connector inserts
Maximum current load derating diagram



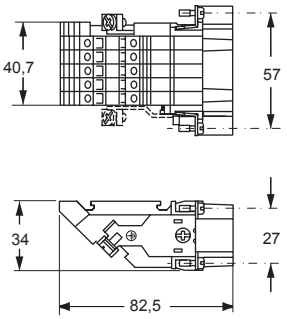
CTSE 10 poles connector inserts
Maximum current load derating diagram



female inserts (CTF and CTSEF)

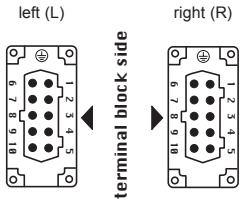


male inserts (CTM and CTSEM)

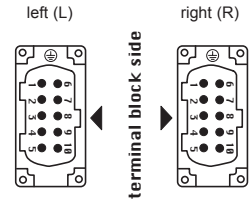


contacts side (front view)

female inserts (CTF and CTSEF)



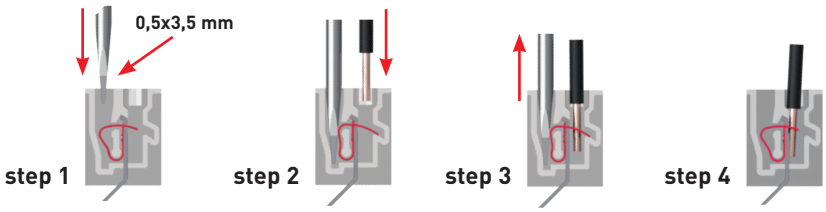
male inserts (CTM and CTSEM)



- CT inserts with plate, for conductor cross-sections: 0,75 - 2,5 mm² - AWG 18 - 14
- conductors stripping length: 12 mm
- terminal screw torque: 0,4 Nm (3,54 lb.in), for more information see page 20 and 21

- CTSE spring inserts for conductor cross-sections: 0,14 - 2,5 mm² - AWG 26 - 14
- conductors stripping length: 9...11 mm

Connection technology with spring terminal



CT 16 poles + ⏚ 16A - 400V CTSE 16 poles + ⏚ 16A - 500V

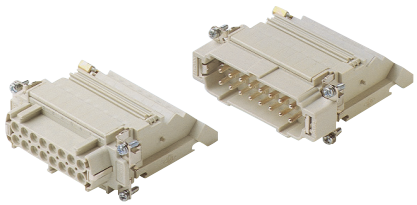
enclosures *):
size “77.27”

	page:
C-TYPE IP65 or IP66/IP69	402
C7 IP67, two levers	439 - 440
V-TYPE IP65 or IP66/IP69, single lever	454 - 455
BIG hoods	470 - 471
T-TYPE IP65 insulating	484 - 485
T-TYPE / W IP66/IP69 insulating	491
HYGIENIC T-TYPE / H IP66/IP69	503
HYGIENIC T-TYPE / C IP66/IP69, -50 °C	508
W-TYPE for aggressive environments	523
E-Xtreme® corrosion proof	534, 544
EMC	580
Central lever	609
LS-TYPE	622

***) only bulkhead mounted housings and BIG hoods**

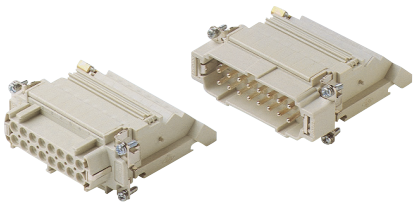
- can be mated with CNE, CCE, CSS, CSH inserts
- inserts may be fitted from front of enclosure

terminal block inserts
screw terminal connection



Q SILVER PLATED CONTACTS

terminal block inserts
spring terminal connection



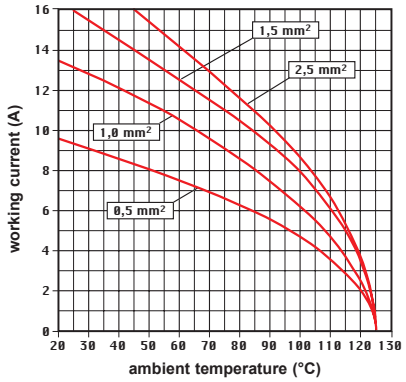
Q SILVER PLATED CONTACTS

description	part No.	part No.	part No.	part No.
mounting side (see page 159)	left	right		
female inserts with female contacts [1]	**CTF 16 L**	**CTF 16 R**		
male inserts with male contacts [1]	**CTM 16 L**	**CTM 16 R**		
mounting side (see page 159)			left	right
female inserts with female contacts			**CTSEF 16 L**	**CTSEF 16 R**
male inserts with male contacts			**CTSEM 16 L**	**CTSEM 16 R**

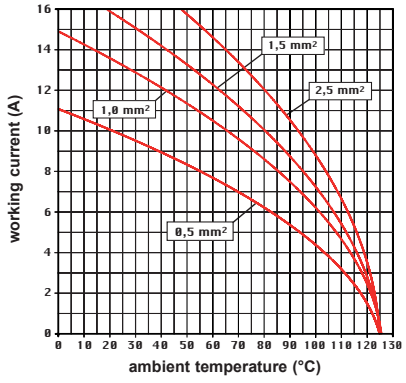
[1] for non-prepared conductors

- characteristics according to EN 61984:
  16A 230/400V 4kV 3 (CT)
  16A 400V 4kV 2 (CT)
  16A 500V 6kV 3 (CTSE)
  16A 400/690V 6kV 2 (CTSE)
- certified (**CT**)
- certified (**CTSE**)
- rated voltage according to UL/CSA: 600V
- insulation resistance: ≥ 10 GΩ
- ambient temperature limit: -40 °C ... +125 °C
- made of self-extinguishing thermoplastic resin UL 94V-0
- mechanical life: ≥ 500 cycles
- contact resistance: ≤ 4 mΩ
- for max. current load see the connector inserts derating diagrams below; for more information see page 28

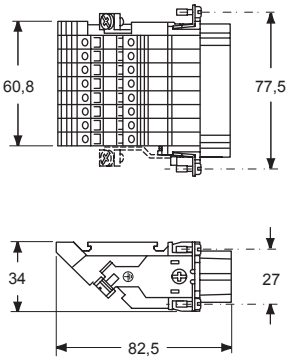
CT 16 poles connector inserts
Maximum current load derating diagram



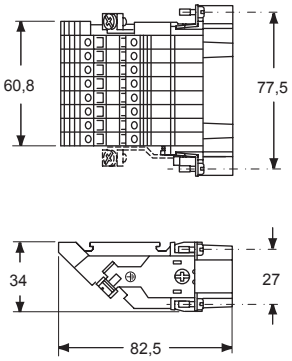
CTSE 16 poles connector inserts
Maximum current load derating diagram



female inserts (CTF and CTSEF)

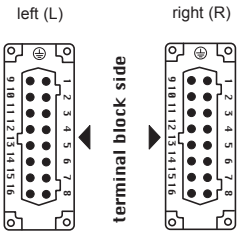


male inserts (CTM and CTSEM)

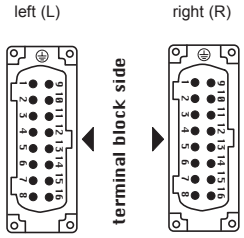


contacts side (front view)

female inserts (CTF and CTSEF)



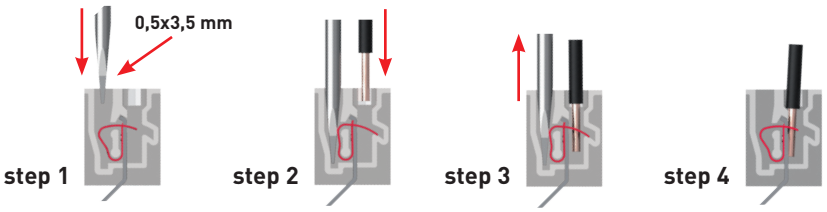
male inserts (CTM and CTSEM)



- CT inserts with plate, for conductor cross-sections: 0,75 - 2,5 mm² - AWG 18 - 14
- conductors stripping length: 12 mm
- terminal screw torque: 0,4 Nm (3,54 lb.in), for more information see page 20 and 21

- CTSE spring inserts for conductor cross-sections: 0,14 - 2,5 mm² - AWG 26 - 14
- conductors stripping length: 9...11 mm

Connection technology with spring terminal



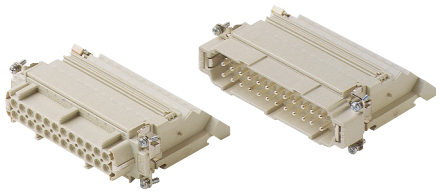
CT 24 poles + ⏚ 16A - 400V CTSE 24 poles + ⏚ 16A - 500V

enclosures *): size "104.27"	page:
C-TYPE IP65 or IP66/IP69	412
C7 IP67, two levers	441 - 442
V-TYPE IP65 or IP66/IP69, single lever	459 - 460
BIG hoods	472 - 473
T-TYPE IP65 insulating	486 - 487
T-TYPE / W IP66/IP69 insulating	492
HYGIENIC T-TYPE / H IP66/IP69	504
HYGIENIC T-TYPE / C IP66/IP69, -50 °C	509
W-TYPE for aggressive environments	524
E-Xtreme® corrosion proof	536, 545
EMC	581
Central lever	612
LS-TYPE	624

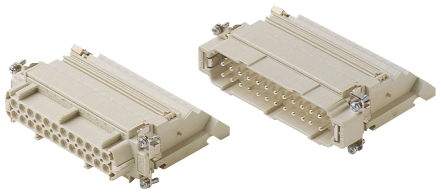
*) only bulkhead mounted housings and BIG hoods

- can be mated with CNE, CCE, CSS, CSH inserts
- inserts may be fitted from front of enclosure

terminal block inserts
screw terminal connection



terminal block inserts
spring terminal connection



Q SILVER PLATED CONTACTS

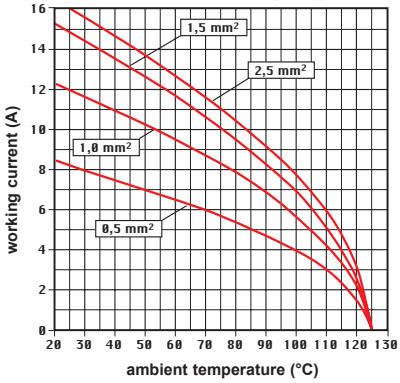
Q SILVER PLATED CONTACTS

description	part No.	part No.	part No.	part No.
mounting side (see page 159)	left	right		
female inserts with female contacts 1)	**CTF 24 L**	**CTF 24 R**		
male inserts with male contacts 1)	**CTM 24 L**	**CTM 24 R**		
mounting side (see page 159)			left	right
female inserts with female contacts			**CTSEF 24 L**	**CTSEF 24 R**
male inserts with male contacts			**CTSEM 24 L**	**CTSEM 24 R**

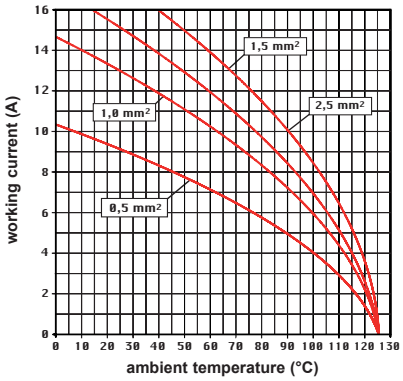
1) for non-prepared conductors

- characteristics according to EN 61984:
  16A 230/400V 4kV 3 (CT)
  16A 400V 4kV 2 (CT)
  16A 500V 6kV 3 (CTSE)
  16A 400/690V 6kV 2 (CTSE)
- certified (**CT**)
- certified (**CTSE**)
- rated voltage according to UL/CSA: 600V
- insulation resistance: ≥ 10 GΩ
- ambient temperature limit: -40 °C ... +125 °C
- made of self-extinguishing thermoplastic resin UL 94V-0
- mechanical life: ≥ 500 cycles
- contact resistance: ≤ 4 mΩ
- for max. current load see the connector inserts derating diagrams below; for more information see page 28

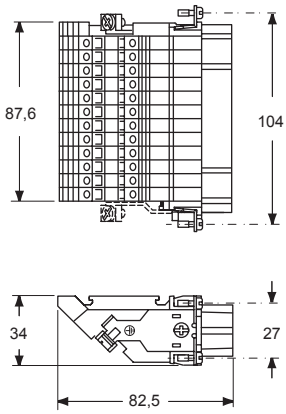
CT 24 poles connector inserts
Maximum current load derating diagram



CTSE 24 poles connector inserts
Maximum current load derating diagram

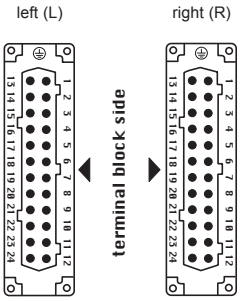


female inserts (CTF and CTSEF)



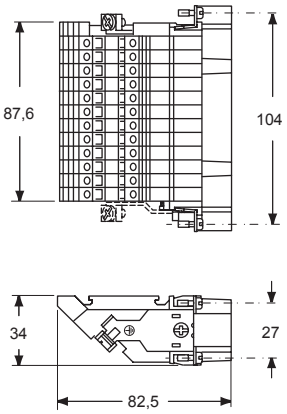
contacts side (front view)

female inserts (CTF and CTSEF)

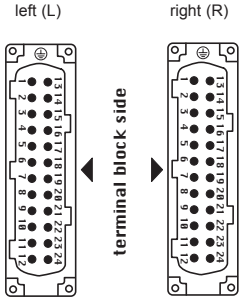


- CT inserts with plate, for conductor cross-sections: 0,75 - 2,5 mm² - AWG 18 - 14
- conductors stripping length: 12 mm
- terminal screw torque: 0,4 Nm (3,54 lb.in), for more information see page 20 and 21

male inserts (CTM and CTSEM)

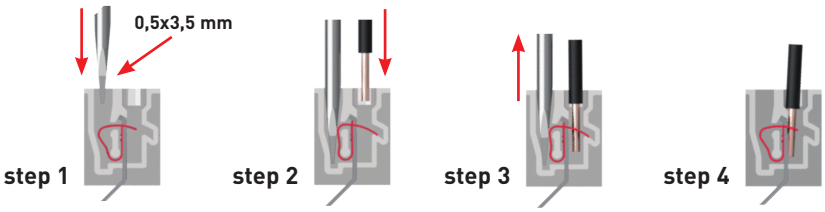


male inserts (CTM and CTSEM)



- CTSE spring inserts for conductor cross-sections: 0,14 - 2,5 mm² - AWG 26 - 14
- conductors stripping length: 9...11 mm

Connection technology with spring terminal



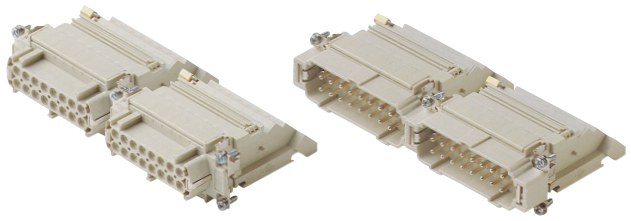
CTSE 32 poles + ⏚ 16A - 500V

enclosures *):
size “77.62” **page:**

C-TYPE IP65 or IP66/IP69	**424**
W-TYPE for aggressive environments	**525**
E-Xtreme® corrosion proof	**546**

***) only bulkhead mounted housings**

terminal block inserts
spring terminal connection



- CT screw version: on request
- can be mated with CNE, CCE, CSS, CSH inserts
- inserts may be fitted from front of enclosure

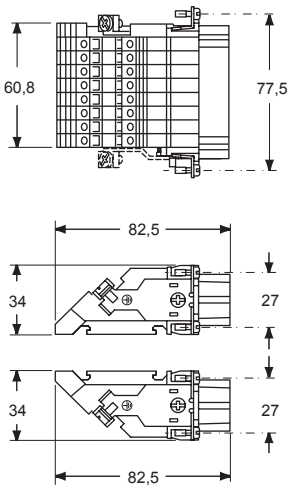
SILVER PLATED CONTACTS

description	part No.	part No.	part No.	part No.
mounting side (see page 159)	left	right	left	right
female inserts with female contacts, No. (1-16) and (17-32) [1]	**CTSEF 16 LN**	**CTSEF 16 R**	**CTSEF 16 L**	**CTSEF 16 RN**
male inserts with male contacts, No. (1-16) and (17-32) [1]	**CTSEM 16 LN**	**CTSEM 16 R**	**CTSEM 16 L**	**CTSEM 16 RN**

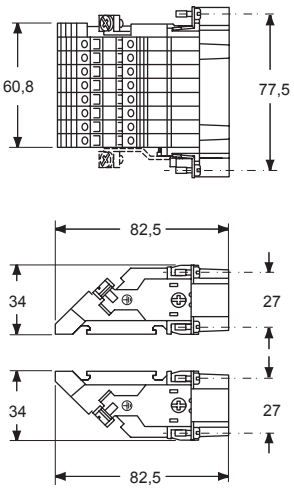
[1] for non-prepared conductors

- characteristics according to EN 61984:
  16A 500V 6kV 3
  16A 400/690V 6kV 2
- certified
- rated voltage according to UL/CSA: 600V
- insulation resistance: ≥ 10 GΩ
- ambient temperature limit: -40 °C ... +125 °C
- made of self-extinguishing thermoplastic resin UL 94V-0
- mechanical life: ≥ 500 cycles
- contact resistance: ≤ 4 mΩ
- for max. current load see the connector inserts derating diagrams below; for more information see page 28

female inserts (CTSEF)

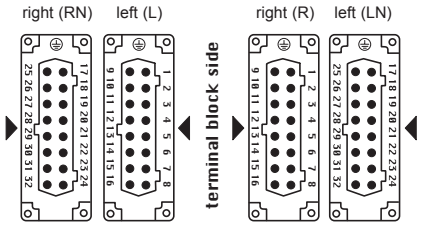


male inserts (CTSEM)

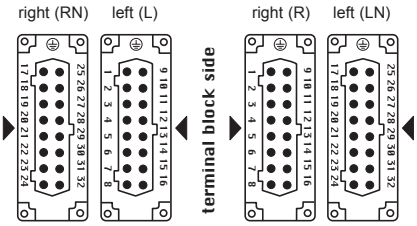


contacts side (front view)

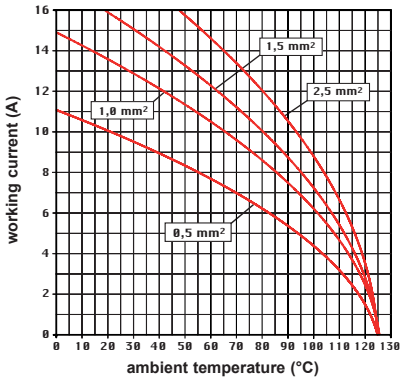
female inserts (CTSEF)



male inserts (CTSEM)

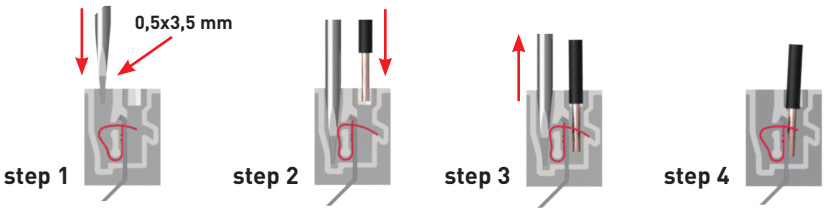


CTSE 32 poles connector inserts
Maximum current load derating diagram



- CTSE spring inserts for conductor cross-sections: 0,14 - 2,5 mm² - AWG 26 - 14
- conductors stripping length: 9...11 mm

Connection technology with spring terminal



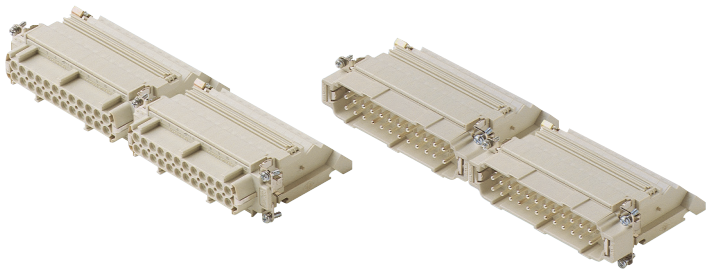
CTSE 48 poles + ⏚ 16A - 500V

enclosures *):
size “104.62” **page:**

C-TYPE IP65 or IP66/IP69 **430**
W-TYPE for aggressive environments **526**
E-Xtreme® corrosion proof **547**

***) only bulkhead mounted housings**

terminal block inserts
spring terminal connection



- CT screw version: on request
- can be mated with CNE, CCE, CSS, CSH inserts
- inserts may be fitted from front of enclosure

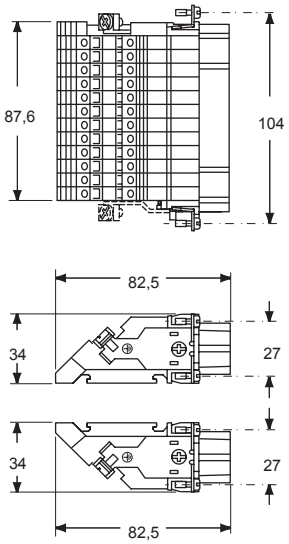
SILVER PLATED CONTACTS

description	part No.	part No.	part No.	part No.
mounting side (see page 159)	left	right	left	right
female inserts with female contacts, No. (1-24) and (25-48) [1]	**CTSEF 24 LN**	**CTSEF 24 R**	**CTSEF 24 L**	**CTSEF 24 RN**
male inserts with male contacts, No. (1-24) and (25-48) [1]	**CTSEM 24 LN**	**CTSEM 24 R**	**CTSEM 24 L**	**CTSEM 24 RN**

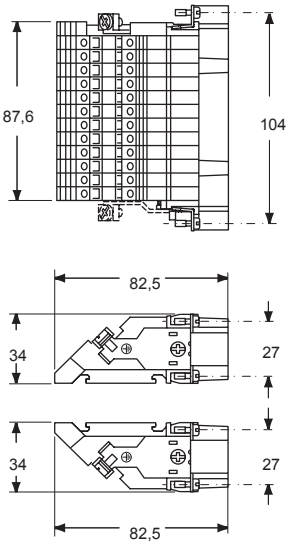
1) for non-prepared conductors

- characteristics according to EN 61984:
  16A 500V 6kV 3
  16A 400/690V 6kV 2
- cULus CSA cec DNV BUREAU VERITAS EAC certified
- rated voltage according to UL/CSA: 600V
- insulation resistance: ≥ 10 GΩ
- ambient temperature limit: -40 °C ... +125 °C
- made of self-extinguishing thermoplastic resin UL 94V-0
- mechanical life: ≥ 500 cycles
- contact resistance: ≤ 4 mΩ
- for max. current load see the connector inserts derating diagrams below; for more information see page 28

female inserts (CTSEF)

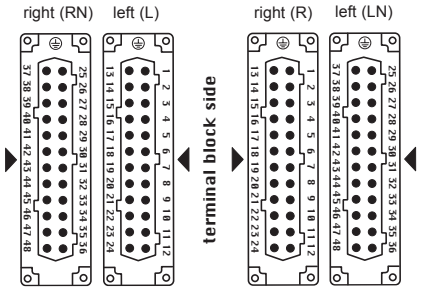


male inserts (CTSEM)

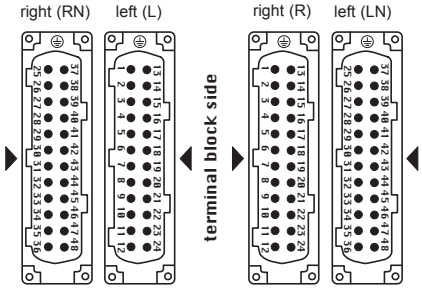


contacts side (front view)

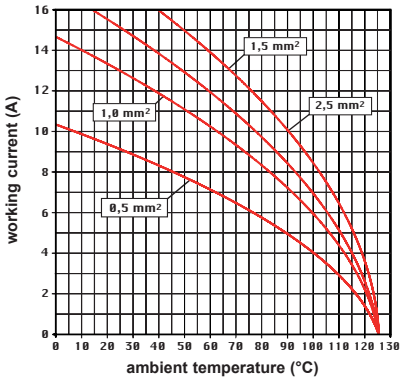
female inserts (CTSEF)



male inserts (CTSEM)

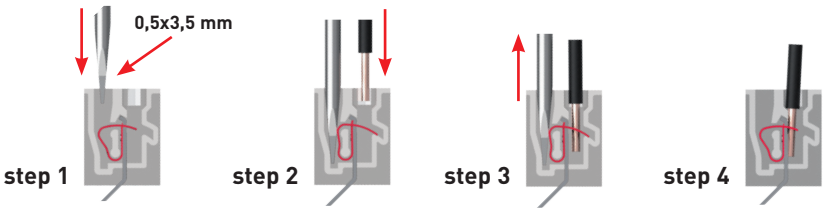


CTSE 48 poles connector inserts
Maximum current load derating diagram



- CTSE spring inserts for conductor cross-sections: 0,14 - 2,5 mm² - AWG 26 - 14
- conductors stripping length: 9...11 mm

Connection technology with spring terminal



RECOMMENDED TIGHTENING TORQUE

- insert terminal screws, including PE terminal and fixing screws
- axial screw insert, MIXO series CX 02 4A / CX 02 4B
- enclosures assembly screws

Insert terminal screws, including PE terminal and fixing screws

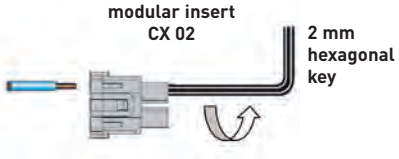
Increasing the tightening torque of terminal screws does not considerably improve the contact resistance. The screw torques are selected according to standard EN 60999-1, to provide excellent mechanical, thermal and electric behaviour. The conductor or terminal may be damaged if the recommended values are significantly exceeded.

Screw size	Connector type	Recommended tightening torque		Recommended size of screwdriver
		(Nm)	(lb.in)	
	LINE TERMINALS			
M2,5	CT 40, 64	0,4	3,5	0,5 x 3
M2,6	CT 06..24	0,4	3,5	0,5 x 3
M3	CK	0,5	4,4	0,5 x 3
M3	CDA	0,5	4,4	Ph0 or 0,6 x 3,5
M3	CNE, CME	0,5	4,4	Ph0 or 0,8 x 4
M3	CX 4/2, CX 4/8 (16A)	0,5	4,4	0,6 x 3,5
M3	CX 4/8 Q (16A)	0,5	4,4	Ph0
M4	CP	1,2	10,6	Ph1 or 0,8 x 4
M6	CX 4/.. (80A)	2,5	22,1	1,0 x 5,5
	PE TERMINAL			
M3	CK, CQ 05, CQ 07, CQ 12	0,5	4,4	0,5x3
M4	all series except CD 15, CD 25, CDA, CDC, CSAH, MIXO	1,2	10,6	Ph2 or 1,0 x 5,5
M3,5	series CD 15, CD 25, CDA, CDC, CSAH	0,8	7,1	Ph1 or 0,8 x 5,5
M3	small PE terminal, MIXO frames series	0,5	4,4	Ph1 or 1,0 x 4,5
M4	large PE terminal, MIXO frames series	1,2	10,6	Ph1 or 1,0 x 5,5
M4	PE terminal, MIXO ONE enclosures	1,2	10,6	Ph1 or 1,0 x 5,5
	FASTENING SCREWS			
M3	CK, CKS, CKSH, CD 07, CD 08, CQ 05, CQ 07, CQ 12, CQ 21, CQ4 02 /02 H, CQ4 03, CX 1/2 BD	0,5	4,4	Ph1 or 0,8 x 5,5
M3	screw for fastening inserts to enclosures of all series except T-TYPE, CQ-MQ 08 and MIXO ONE	0,8	7,1	Ph1 or 0,8 x 4
Ø 2,9	screws for fastening "32.13" inserts CQ 04/2, CQ 08, CQ 17 to CQ-MQ 08 enclosures	0,7	6,2	Ph1
M3	screw for fastening inserts to T-TYPE enclosures	0,5	4,4	Ph1 or 0,8 x 4
Ø 2,9	series MIXO ONE enclosures, assembly of top and bottom parts	0,8	7,1	Ph1
M4	CYR 16.3, CYR 24.4 cable pass-through hoods, assembly of two halves	1,2	10,6	Ph2 or 1,0 x 5,5
M4	CYG 16 in-line joint, assembly of two halves and mounting of two bulkhead mounting housings size "77.27"	1,2	10,6	Ph2 or 1,0 x 5,5
M5	series BIG enclosures, assembly of top and bottom parts	1,0	8,8	Ph2

Axial screw insert, MIXO series CX 02 4A / CX 02 4B

The connections of the conductors to the female and male inserts are made via axial screw. Fully insert the stripped wire in the back of the contact (axial screw terminals are supplied fully opened); while holding the wire down, insert a 2 mm hexagonal key in the front of the contact and tighten to recommended torque. After assembling the complete connector periodically check that the contact is screwed tight by re-applying the proper tightening torque.

— Usable conductor cross-sections (EN 60228 Class 5):
  from 2,5 to 8 mm^2 (14 AWG to 10 AWG) (CX 02 4AF/M)
  from 6 to 10 mm^2 (10 AWG to 8 AWG) (CX 02 4BF/M)
  (extra-flexible EN 60228 class 6: 2,5... 6 mm^2 (14 AWG to 10 AWG)
— Use only stranded flexible copper conductors
— Do not twist the strands!
— Tightening torque with 2 mm hexagonal Allen key:
  1,5 Nm (13,3 lb.in) max for conductors with section 2,5 ... 4 mm^2 (14 AWG to 12 AWG)
  2 Nm (17,7 lb.in) max for conductors with section 6 ... 10 mm^2 (10 AWG to 8 AWG)
— Stripping length: 8^{+1} mm



Enclosures assembly screws

In the table below, the recommended minimum and maximum tightening torque to apply to the fixing screws of ILME bulkhead mounting housings are shown, assuming the use of steel screws with 8.8 resistance class and a good fixing panel surface according to the requirements mentioned therein.

Series	Number of screws	Screw size	Recommended torque		Flange sealing element
			(Nm)	(lb.in)	
CK/MK, CKX, CKA/MKA, CQ	2	M3	0,8 – 1,0	7,1 – 8,9	Gasket
MIXO ONE	4	M3	0,5 – 0,9	4,4 - 8,0	Gasket
CZI 15 /25	4	M3	0,8 – 1,0	7,1 – 8,9	Gasket
CHI 50	4	M4	1,2 – 1,8	10,6 – 15,9	Gasket
CHI 06 /10 /16 /24	4	M4	0,8 – 1,2	7,1 – 10,6	Gasket
CHI 32	4	M4	1,2 – 1,8	10,6 – 15,9	Gasket
CHI 48	4	M6	3,0 – 3,6	26,6 – 31,9	Gasket
CGK/MGK (IP68)	2	M4	0,8 – 1,2	7,1 – 10,6	O-ring
CGI/ MGI 06/ 10/ 16/ 24 (IP68)	2	M6	3,0 – 3,6	26,6 – 31,9	O-ring
T-TYPE, T-TYPE/H, T-TYPE/C, T-TYPE/ W	4	M4	0,8 – 1,2	7,1 – 10,6	Gasket

To guarantee the declared IP degree of protection of the housings reported in this catalogue, according to EN IEC 60529 or to the relevant Type rating per ANSI/UL 50 and 50E (for those products bearing approval to those ratings), the surface of the mounting panel must meet the following requirements (definitions are provided in ISO 4287 standard):

– Waviness Wt ≤ 0,2 mm over a distance of 200 mm (measured on the panel without load)

– Roughness Ra ≤ 16 µm

NOTE: The values of tightening torque indicated in the above table are just recommended values, that must be related – by the designer of the final application – to the resistance class of the screws (not included in the delivery), with the assumption that the mounting panel is sufficiently rigid (stiff). If the deflection of the panel, under the effect of tightening the screws, is greater than 0,7 mm over a distance of 100 mm, it is necessary to use the counter-flanges mentioned in our catalogue or the special flange gaskets available upon request (please contact our Sales Department). For the CGI/MGI IP68 enclosures the specific counter-flanges mentioned in our catalogue are always recommended.

Enclosures locking screws

Series	Number of screws	Screw size	Recommended tightening torque		Recommended size of screwdriver
			(Nm)	(lb.in)	
CGK/MGK	2	M4	1,2	10,6	1,0 x 5,5 or 7 mm hexagonal key
CG/MG	2	M6	2,5	22,1	1,6 x 10 or 10 mm hexagonal key

RANGE OF CONDUCTOR CROSS-SECTIONAL AREA AND STRIPPING LENGTH

Connector inserts connection technique	Range of conductor cross-sectional area		Stripping length
Screw	**(mm^2)**	**AWG**	**(mm)**
CK	0,75 – 2,5	18 – 14	6
CX 4/2, CX 4/8 (poles 16A) [1]	0,75 – 4	18 – 12	7
	0,75 – 2,5	18 – 14	7
CNE [1]	0,5 – 4	20 – 12	7
CNE..X	0,25 – 2,5	24 – 14	7
CDA [1]	0,5 – 4	20 – 12	7
CDA..X	0,25 – 2,5	24 – 14	7
CT 06..24	0,75 – 2,5	18 – 14	12
CT 40 and 64	0,75 – 2,5	18 – 14	12
CME [1]	0,5 – 4	20 – 12	7
CME..X	0,5 – 2,5	20 – 14	7
CP [1]	0,75 – 6	18 – 10	10,5
CX 4/.. (80A poles)	4 – 16	12 – 5	14
Crimp			
MIXO (5A), CX 25 IB	0,08 – 0,75	28 – 18	4
CQ 21	0,08 – 0,5	28 – 20	4
CDD, CD, MIXO (10A), CQ 12, CQ 07	0,14 – [2,5]*	26 – 14	8 – *[6 for 2,5 mm^2]
CCE, CDC, CMCE, CQ, CQE, CQEE, MIXO (16A)	0,14 – 4	26 – 12	7,5
CX, MIXO (40A), CQ4 03	1,5 – 2,5	16 – 14	9
	4 – 6	12 – 10	9.6
MIXO (70A)	10 – 25	7 – 4	15
MIXO (100A), CX 6/6	10 – 35	7 - 2	15
MIXO (200A)	16 – 70	6 - 2/0	15
Spring			
CSE, CSH, CTSE 06..24, CMSH, MIXO [CX 05 S [2], CX 05 SH], CSS	0,14 – 2,5	26 – 14	9 - 11
CTS 40/64	0,14 – 2,5 unprepared 0,14 – 1 prepared	26 – 14 unprepared 26 – 18 prepared	9 - 11
CKS, CKSH, CDS, CDSH, CSAH	0,14 – 2,5 unprepared 0,14 – 1,5 prepared	26 – 14 unprepared 26 – 16 prepared	9 - 11

[1] For CNE, CDA, CP, CME, "CX 4/8 – pole 16A" series connectors with screw terminal and conductor protection plate, the use of ferrules is not necessary (= unprepared conductor). The use of ferrules (= prepared conductor) causes a reduction in maximum useful cross-section to the lower size (e.g. 4 mm^2 unprepared - 2,5 mm^2 prepared).

[2] Available upon request.

LOAD CURVES

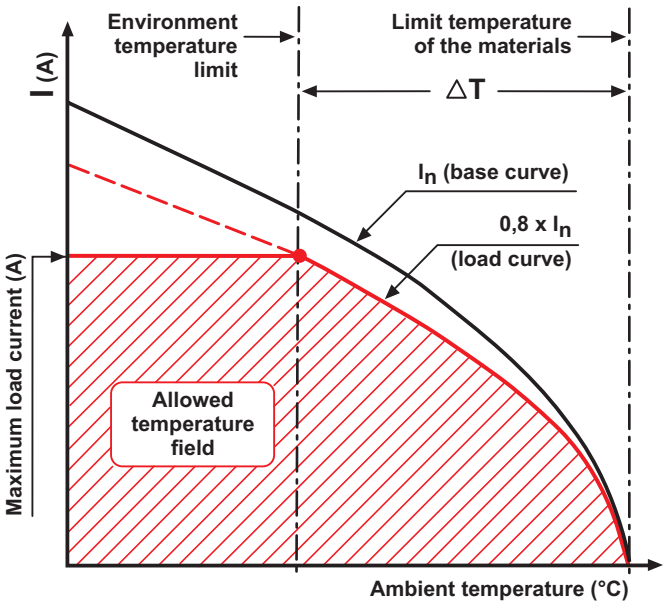
The permitted current carrying capacity for connectors is variable: it becomes lower with the increase of the number of poles and of the ambient temperature in which the connector is installed and it depends upon the thermal properties of the material used for the contacts and the insulating parts including those of the type of conductor used. The current carrying capacity is obtained from the load curves which are constructed according to standard IEC 60512-5-2 for currents circulating simultaneously in all poles.

The limit current curves express current values that determine the achievement of the upper limit temperature of the materials. The choice of the permanent load applicable on the contacts **must be made within the field of operation possible delimited by the above mentioned curves.**

Since use of connectors at the limit values of their characteristics is not recommended, the **base curve** is de-rated. The reduction of the load currents to 80% defines the correction curve where both the maximum permissible contact resistances and the inaccuracy of the temperature measurements are sufficiently taken into consideration.

The correction curve represents the final **limit current curve (load curve)** as defined by standard IEC 60512-5-2. It therefore bears in consideration the differences between the various connector inserts, as well as errors in the temperature measurements.

All the load curves presented in this catalogue include the correction. See figure below.



Legend

Maximum load current (A)
Value for which the connector reaches the upper limit temperature of the material at the corresponding ambient temperature intersected on the load curve.

Limit temperature of the materials
Value determined by the characteristics of the material used. The sum of the environmental temperature and the increase of the ΔT (temperature rise) caused by the current flow must not exceed the limit temperature of the materials.

Environment temperature limit
The environmental conditions must not exceed this value. It may be known and determines the maximum load current, or it may be directly obtained from the load curve.

Base curve
Set of current and temperature values obtained from laboratory tests and influenced by the connector's characteristics (number of poles, construction shape, thermal conductivity of the materials, etc.) and the cross-section of the conductor used.

Load curve (limit current curve)
Obtained from the base curve via the safety coefficient.

ΔT (temperature rise)
Temperature rise produced by a permanent current circulating through all the poles of a connector coupling; difference between the upper limit temperature of the material and the ambient temperature obtained on the limit current curve.