Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!

Contact us

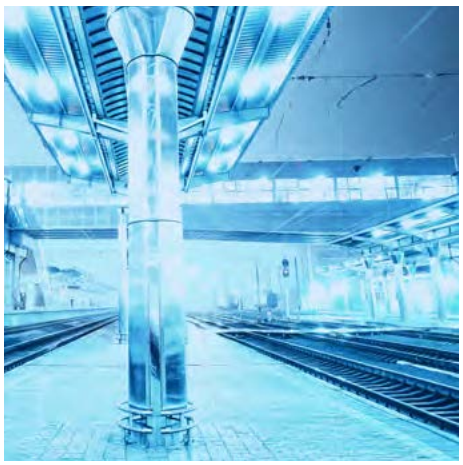
Tel: +86-755-8981 8866 Fax: +86-755-8427 6832
Email & Skype: info@chipsmall.com Web: www.chipsmall.com
Address: A1208, Overseas Decoration Building, #122 Zhenhua RD., Futian, Shenzhen, China

INDUSTRIAL@AMPHENOL
TRUSTED GLOBALLY

Amphenol
Amphenol-Tuchel Industrial GmbH

heavy|mate®

Heavy Duty Connectors



www.amphenol-industrial.com

Note from the CEO

Ladies and Gentlemen,

For over 75 years Amphenol has enjoyed success as the interconnection technology provider of choice to industry-leading companies around the world. One of our key strategic areas of focus has been and is the Industrial market. Our organization works with leading manufacturers across a wide range of applications - including Energy Generation & Distribution, Transportation, Heavy Equipment, Factory Automation, Wireless Outdoor, ChipCard Readers - enabling smarter, faster and better technologies to connect products to customer solutions.

The Industrial market footprint of Amphenol covers over facilities in more than 12 different European countries and more than 30 countries worldwide. Our successful expansion into new regions as well as new industrial applications is a direct reflection of our agile, entrepreneurial management team and our unwavering commitment to execute Amphenol's strategies for the benefit of our customers, shareholders and employees.

Thank you for partnering with Amphenol. Our entire organization is at your service.

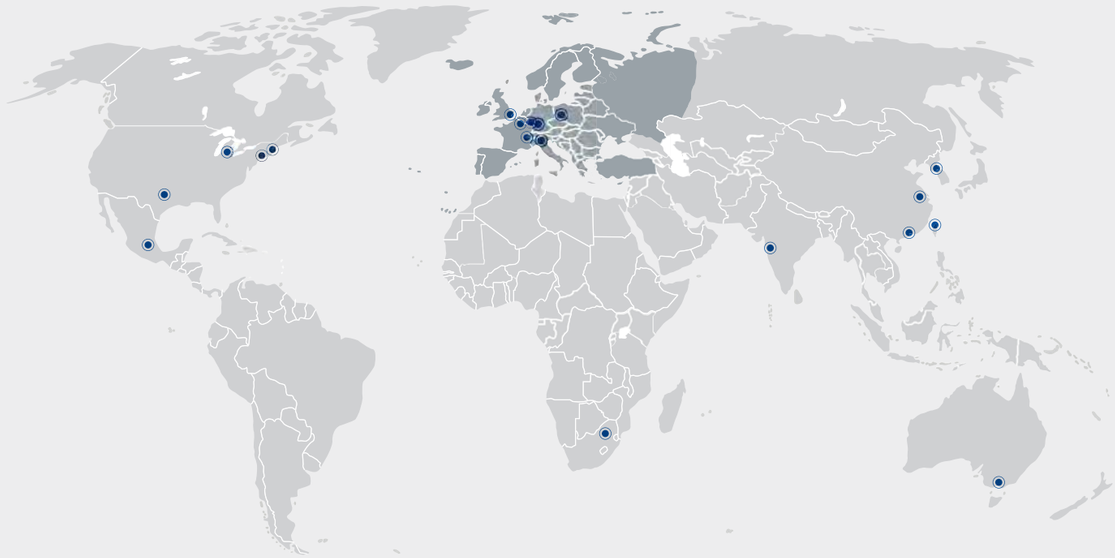
R. Adam Norwitt
President and CEO, Amphenol Corporation

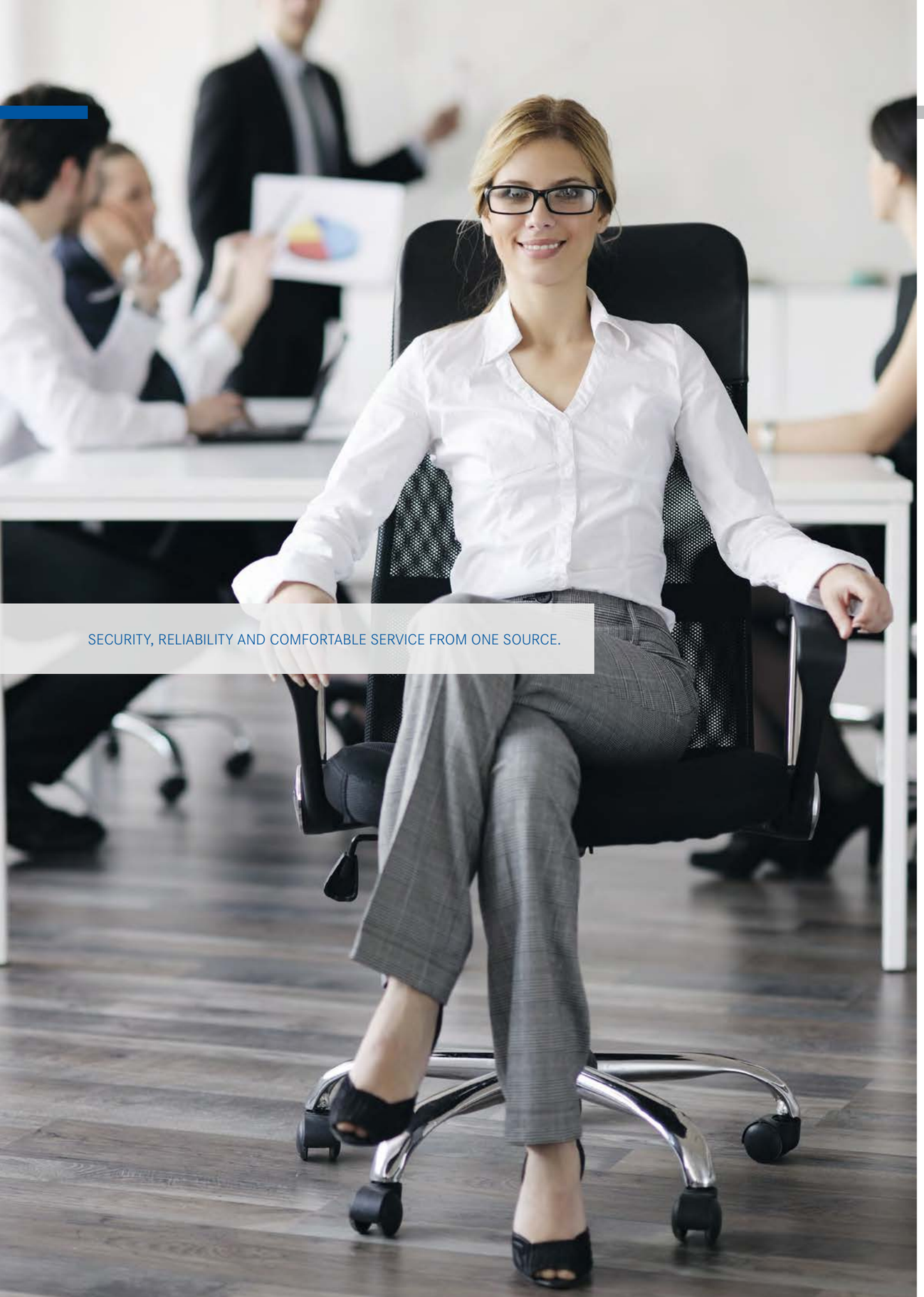
Make use of the best
Use our global resources

"Think global, act local!" Independently from where you are in Europe, we offer you our global expertise and great variety of products and technologies. And in comfort with your personal contact. Our numerous European offices are your access to our global resources.

OUR OFFICES IN EUROPE AND WORLDWIDE

FRANCE	CHINA	AUSTRALIA	SOUTH AFRICA
GERMANY	KOREA	MEXICO	INDIA
UNITED KINGDOM	TAIWAN	USA	ITALY





More time for important things: benefit from our service and diversity

Enjoy security, reliability and comfortable service from one source. INDUSTRIAL@AMPHENOL offers one of the most individual and most diversified service programmes in the market – exclusively for industrial customers. Access all possibilities of the Amphenol group through your personal expert adviser.

WIDE PRODUCT RANGE

Take advantage of a choice of Amphenol products. Our broad product portfolio offers individual solutions from more than 85 member companies in the global Amphenol group.

EXCLUSIVENESS AND FLEXIBILITY

One face to the customer: every inquiry is handled on an individual service level by your personal key account service partner. This ensures maximum transparency and best-in-class flexibility in the whole process.

QUALITY

Interconnect systems need reliability, speed and flawless data transmission. We continuously test and guarantee the required standard in our products – and also in our personal services.

INDIVIDUAL SOLUTIONS

Your project requires an individual solution that is not available off-the-shelf? As your think tank and discussion partner we provide engineering support and solution-oriented development for your tailor-made Amphenol product.

SPEED AND AVAILABILITY

Smart and intelligent processes are the secret behind our service programme. Flexible planning and distribution, perfect logistics and highest availability are our key factors for best customer service.

GLOBAL KEY ACCOUNT SERVICE

Our key account service is your individual entrance to global know-how, products and services. More than 85 Amphenol companies around the world offer an extensive range of technologies and products. We offer access to our worldwide resources through one individual contact person.

heavy|mate® is a Modular Metal Connector Line for Applications in Industrial Environments.

What is heavy|mate®?

heavy|mate® is a modular connector line, consisting of:
- Hoods & Housings
- Inserts
- Contacts

Why heavy|mate®?

- Connections in harsh industrial environment
- Robust design necessary
- High number of poles or different kinds of signals transmitted
- Very good EMC protection required
- Power and signal transmission outdoor
- Very safe locking system required

Major product features

- Interconnections for power, signal and data
- Good costs
- Voltage up to 1000V
- VDE, UL, CSA approvals
- Vibration proof
- High pole sizes
- IP65 to IP69K
- Corrosion resistance
- Robust

What can heavy|mate® offer?

- Connectors for industrial applications indoor & outdoor
- A wide range of inserts for signal, data and power transmission
- A large variety in pole sizes from 3 up to 280 poles per connector
- Current ratings up to 250A per contacts and voltages up to 1000V
- A modular connector system to configure customized solutions

How to select a solution with series heavy|mate®.

Theory

- Select an insert that meets your requirements.
- Choose the related contacts if not included in inserts.
- Choose related housings.
- Choose related cable gland.
- If you are interested in a cable assembly, please ask us.

Practice 1

Requirements
- 250V
- 5A
- 60 contacts
- Termination: crimp

Solution
- Check: Make a pre-selection on the overview page of the series, s. p. 10/11
  Possible series: heavy|mate® D, DD and M
- Check: Details on the overview pages of the sub-series, see pages 22, 38, 154

All 3 variants are possible; Selection heavy|mate® D
- Check: Contact inserts on the detail page of the sub-series
  Selection: C146 10A064 000 2
- Check: Contacts on the same double page
  Selection: VN01 016 0002 1
- Check: Housings via crosslink at contact inserts
  Selection: C146 21R024 600 8
- Check: Gland bushing via crosslink at housings
  Selection: VN16 320 0126X

Practice 2

Requirements
- 3 x 400V; 50A; 6mm² wire gauge
- 8 x 250V; 8A; 1.5mm² wire gauge
- 5 x 400V; 15A; 4mm² wire gauge

Solution
- Check: Make a pre-selection on the overview page of the series, see pages 10/11
  Possible series: heavy|mate® M
- Check: How 16 contacts can be realized, see modules overview on page 130
  Possible selection: a) 1 x 20 contacts
  b) 2 x 10 contacts
  c) 1 x 10 contacts + 2 x 5 contacts
  d) 1 x 3 contacts + 1 x 5 contacts + 1 x 10 contacts
- Check: Technical parameters / solution, see detail pages of the modules on page 166
  Possible selection: a) not possible due to voltage
  b) not possible due to voltage
  c) not possible due to current
  d) POSSIBLE
- Check: Choose matching contact, see detail page of the modules on page 166
  Possible selection: a) C146 A03 001 E8 – VN01 036 0002 1C
  b) C146 A05 001 E8 – VN01 025 0033 1C
  c) C146 A10 001 E8 – VN01 016 0027 1C
- Check: Choose matching frame, see frames on page 166
  Solution: C146 P10 001 G8
- Check: Choose matching housing, see housings on page 214
  Solution: C146 21R010 600 8

Make your selection out of the heavy | mate® series!

Characteristic / Series	Voltage						Current					
	250V	400V	500V	690V	830V	1000V	10A	16A	35A	80A	100A	200A
A (page 14)	●	●					●	●				
D (page 22)	●						●					
DD (page 38)	●						●					
E (page 44)	●	●	●				●	●				
EE (page 62)	●	●	●				●	●				
EEE (page 68)	●	●	●				●	●				
E / FE / KO (page 74)	●	●					●					
F (page 80)	●	●	●	●	●	●	●	●	●	●	●	●
HSE (page 132)	●	●					●	●	●			
HvE (page 136)	●	●	●	●			●	●				
K (page 144)	●	●	●	●	●		●	●	●	●		
M (page 154)	●	●	●	●	●	●	●	●	●	●	●	●
Q (page 198)	●	●	●	●			●	●	●			

Number of contacts	Termination				Characteristic / Series	
	Crimp	Screw	Tension spring	Push in		
3 / 4 / 10 / 16		●			A (page 14)	A
7 / 8 / 15 / 25 / 40 / 64	●				D (page 22)	D
24 / 42 / 72 / 108	●				DD (page 38)	DD
6 / 10 / 16 / 24	●	●	●	●	E (page 44)	E
10 / 18 / 32 / 46	●				EE (page 62)	EE
40 / 64	●				EEE (page 68)	EEE
6 / 10 / 16 / 24		●			E / FE / KO (page 74)	E / FE / KO
1 / 2 / 3 / 4 / 6 / 7 / 2x4 / 8 / 12 / 17 / 20 / 36	●				F (page 80)	F
6		●			HSE (page 132)	HSE
3+2 / 6+2 / 10+2 / 16+2		●			HvE (page 136)	HvE
4/0 / 4/2 / 6/36 / 4/8 / 8/24	●	●			K (page 144)	K
1 / 2 / 3 / 4 / 5 / 10 / 20 / 2x4	●			●	M (page 154)	M
5 / 4/2 / 7 / 8 / 12 / 17	●				Q (page 198)	Q

The highlights of the series heavy|mate®.

Contact technology

- Turned contacts, which correspond to the market standard.
- Turned female contacts of copper for higher current-carrying capacity – specifically for the modular system heavy|mate® M.
- Radsok contact technology: These are laminated contacts with very low transition resistance, suitable for high current applications.
- Stamped contacts with high performance for semi-automatic processing at great cost savings.
- Selectively coated gold plating stamped contacts offer great savings.

Housings

Surface coatings available in two versions:
Standard or High-End with a salt mist resistance up to 500 hours.

Flexible cable entry in different positions – possible on request.

Tightness classes in IP65, IP67 or IP68 or IP69K!

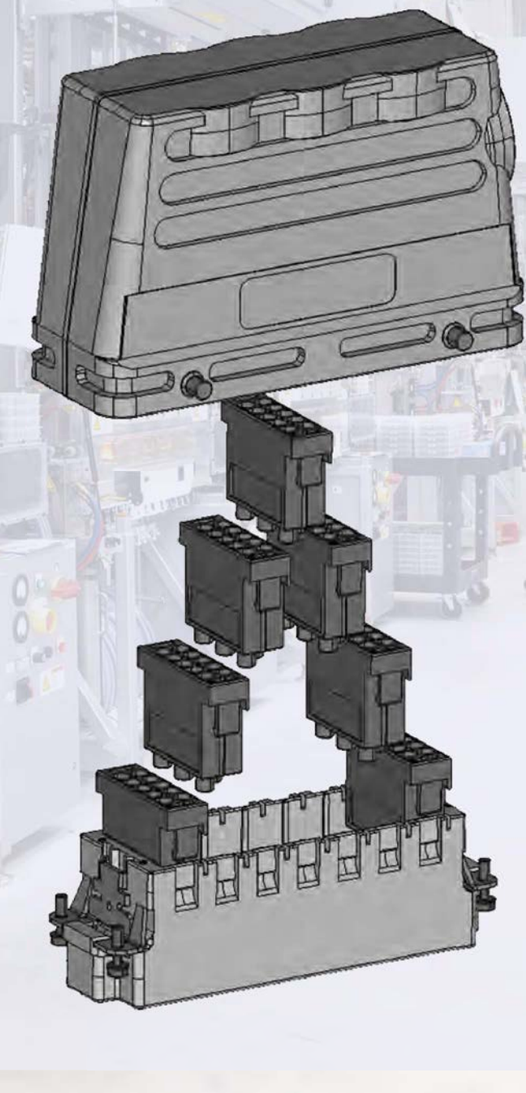
Robust metal levers in 1 and 2 locking-lever-system.

Quality EMC solutions.

Modular system

With the new series heavy|mate® F Amphenol offers a new modular system that is compatible with the market leader. With the series heavy|mate® M Amphenol offers a system with many benefits:

- More module slots in the connector.
- Large selection of contact-safe male contacts
- Stamped contacts and the Radsok contact technology
- Great cost savings potential



heavy | mate® A

- Rated voltage 250 / 400 V
- Rated current 10 A ... 16 A
- Termination: screw
- Number of contacts: 3, 4, 10, 16, 32

Approvals, Testhouse	Characteristics	Approval-Number
UL	600 V	E 63093

General information

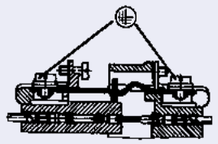
- For series heavy | mate® A connectors may be engaged or disengaged when live but without electrical load. If these connectors are used as plug and socket device, the load shall be reduced to 10 % of the rated current.
- Low and high profile housing for heavy | mate® A series inserts for 10 and 16 contacts.

No standard for this series, but:

- Interchangeable with other makes
  a) contact insert to contact insert
  b) contact insert to housing 10 & 16 contacts

Housings are designed according to DIN EN 175 301 - 801

First-to-mate last-to-break protective ground contact

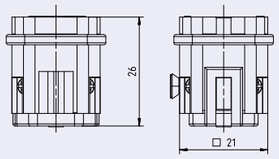
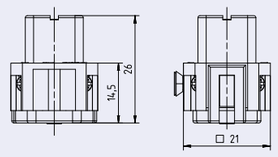


Range of housings

Size A3/4	Size A10	Size A16
		

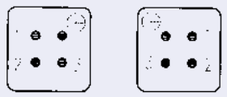
General Characteristics	Standard	Value			
Number of contacts		3/4 + ⏚	10 + ⏚	16 + ⏚	32 + ⏚
Termination technique		screw			
Wire gauge		0.5 - 1.5 mm² (AWG 20 - 16)[1)]	0.5-2.5 mm² (AWG 20 - 14)		
Tightening torque		0.3 Nm	0.5 Nm		
Max. wire diameter		3.6 mm	4.6 mm		
Flammability	UL 94	V-0			
Electrical Characteristics					
Rated voltage	IEC 60664-1	230 V (L-E) 400 V (E-E) (UL 600 V)	250 V (UL 600 V)		
Rated impulse withstand voltage	IEC 60664-1	4 KV			
Rated Current T_{amp} = 40 °C		10 A	16 A		
Current carrying capacity	IEC 60512-5-2	see derating curves			
Installation (overvoltage) category	IEC 60664-1	III			
Material group	IEC 60664-1	III b			
Contact resistance	IEC 60512-2-1	≤ 5 m Ω			
Insulation resistance	IEC 60512-3-1	≥ 10^{10} Ω			
Pollution degree	IEC 60664-1	3			
Climatical Characteristics					
Climatic category	IEC 60068-1	40 / 125 / 21			
Upper temperature	IEC 60512-11-9	+ 125 °C			
Lower temperature	IEC 60512-11-10	- 40 °C			
Mechanical Characteristics					
IP-degree of protection pin insert[2)]	IEC 60529	unmated IP00, mated IP20			
IP-degree of protection socket insert[2)]	IEC 60529	unmated IP20, mated IP20			
Weight pin insert		13 g	48 g	68 g	136 g
Weight socket insert		13 g	52 g	73 g	146 g
Mechanical operation	IEC 60512-9-1	≥ 500 mating cycles			
Materials					
Insert		PA			
Colour insert		Grey			
Contacts		CuZn (brass)			
Contact plating		Ag (silver)			

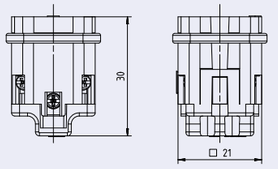
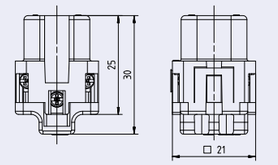
[1)] up to 2.5 mm² without wire end sleeve
[2)] IP-degree of protection on termination side of screw version IP10

Description	Part Number	Drawing	Figure
Contact insert 3 + ⏚			
Pin insert for screw termination	C146 10A003 002 4		
Socket insert for screw termination	C146 10B003 002 4		

Pin layout

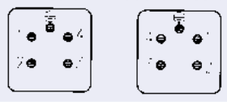
Pin insert Socket insert



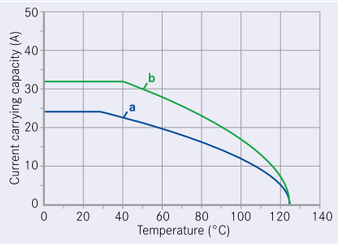
Description	Part Number	Drawing	Figure
Contact insert 4 + ⏚			
Pin insert for screw termination	C146 10A004 002 4		
Socket insert for screw termination	C146 10B004 002 4		

Pin layout

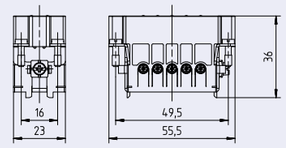
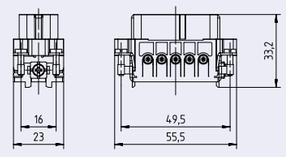
Pin insert Socket insert



Derating curves

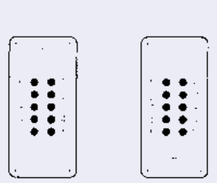


Curve	Wire gauge
a	1.5 mm²
b	2.5 mm²

Description	Part Number	Drawing	Figure
Contact insert 10 + ⏚			
Pin insert for screw termination	C146 10A010 002 4		
Pin insert with wire protection for screw termination	C146 10A010 102 4		
Socket insert for screw termination	C146 10B010 002 4		
Socket insert with wire protection for screw termination	C146 10B010 102 4		

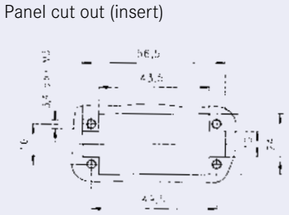
Pin layout

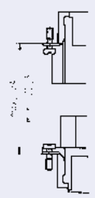
Pin insert Socket insert



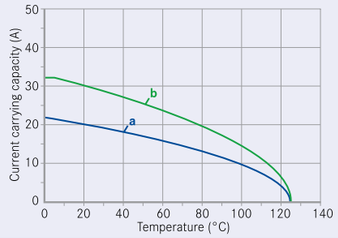
Assembly instruction

Panel cut out (insert)

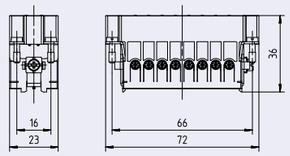
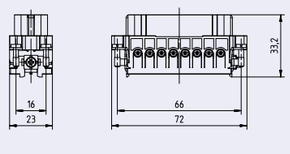




Derating curves

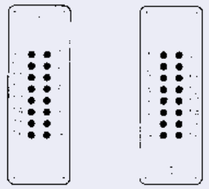


Curve	Wire gauge
a	1.5 mm²
b	2.5 mm²

Description	Part Number	Drawing	Figure
Contact insert 16 + ⏚			
Pin insert for screw termination	C146 10A016 002 4		
Pin insert with wire protection for screw termination	C146 10A016 102 4		
Socket insert for screw termination	C146 10B016 002 4		
Socket insert with wire protection for screw termination	C146 10B016 102 4		

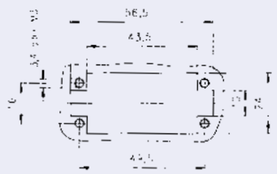
Pin layout

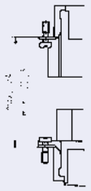
Pin insert Socket insert



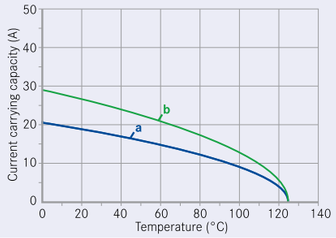
Assembly instruction

Panel cut out (insert)

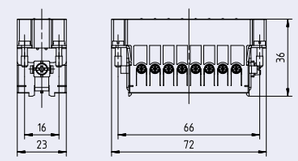
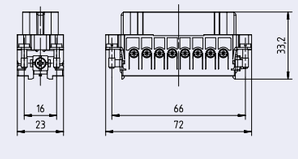




Derating curves

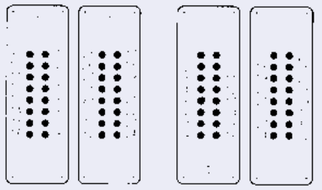


Curve	Wire gauge
a	1.5 mm²
b	2.5 mm²

Description	Part Number	Drawing	Figure
Contact insert 32 + ⏚			
Pin insert for screw termination	C146 10A016 002 4 (1 - 16) + C146 10A016 004 4 (17 - 32)		
Pin insert with wire protection for screw termination	C146 10A016 102 4 (1 - 16) + C146 10A016 104 4 (17 - 32)		
Socket insert for screw termination	C146 10B016 002 4 (1 - 16) + C146 10B016 004 4 (17 - 32)		
Socket insert with wire protection for screw termination	C146 10B016 102 4 (1 - 16) + C146 10B016 104 4 (17 - 32)		

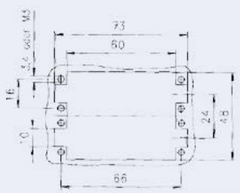
Pin layout

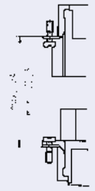
Pin insert Socket insert



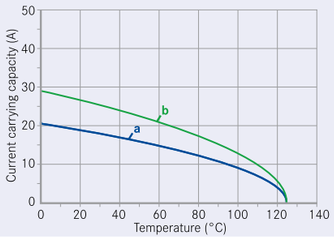
Assembly instruction

Panel cut out (insert)

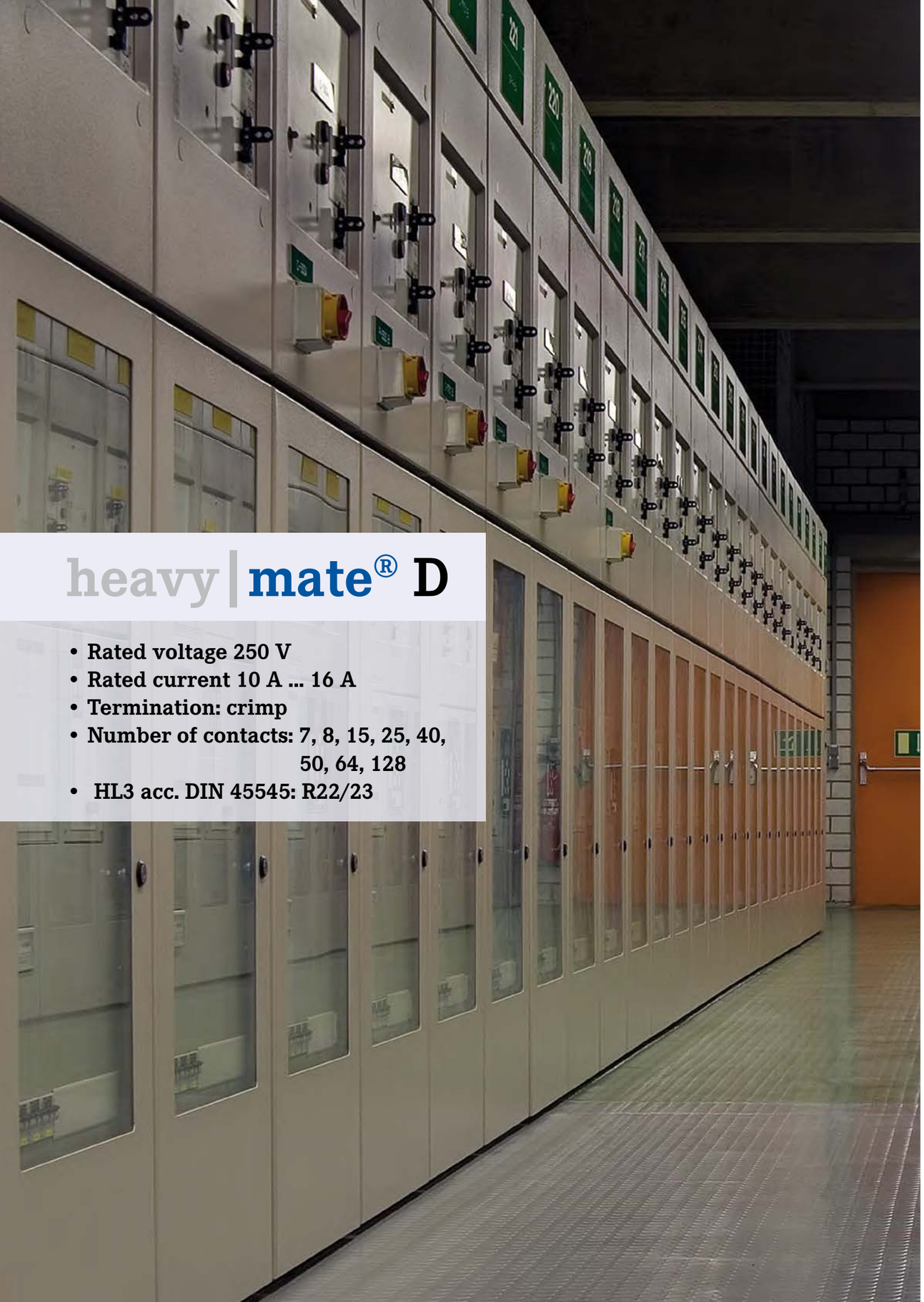




Derating curves



Curve	Wire gauge
a	1.5 mm²
b	2.5 mm²



heavy | mate® D

- Rated voltage 250 V
- Rated current 10 A ... 16 A
- Termination: crimp
- Number of contacts: 7, 8, 15, 25, 40, 50, 64, 128
- HL3 acc. DIN 45545: R22/23

Approvals, Testhouse	Characteristics	Approval-Number
UL	600 V	E 63093
CSA	600 V	48932

General information

- Contact inserts without crimp contacts, crimping tools see separate catalogue „Tools“.
- Contacts must be ordered separately, processing instructions see catalogue „Tools“.
- We recommend using the high profile housings / hoods for the heavy|mate® D inserts.
- Connectors series heavy|mate® D may be engaged or disengaged when live but without electrical load.
  If these connectors are mated or unmated under load, the load shall be reduced to 10 % of the rated current.
- For contact inserts for turned contacts, guide pins and guide socket are recommended (see page 290).
- By using contact inserts with two PE-connections without hoods, it is necessary to connect the facing of each PE-connection.
- If connectors are mounted in non conductive housings both protective earthing terminals shall be mounted.

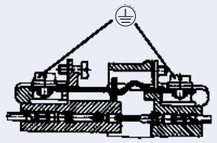
Standardised connectorsaccording to DIN EN 175 301 - 801 (DIN 43652)

Interchangeable with all other products which are according to the standard.
a) Contact insert to contact insert 15-, 25-, 40-, 64- way
b) Contact insert to housing 15-, 25-, 40-, 64- way

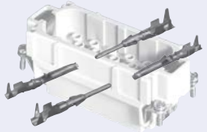
High protection against mismating

- Socket inserts with funnel shaped contact entry avoids mismating with stamped contacts.

First-to-mate last-to-break protective ground contact



Contact inserts for stamped contacts and for turned contacts



Range of housings

Size A3/4

Size A10

Size A16

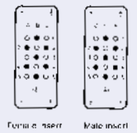
Size E16

Size E24

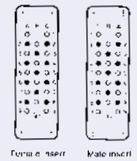
Size E48

Modified contact arrangement for rated voltages of 400 V

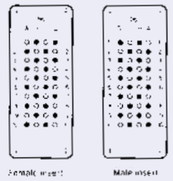
(15) ➛ 7 +⏚



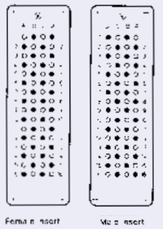
(25) ➛ 11 +⏚



(40) ➛ 20 +⏚



(64) ➛ 32 +⏚

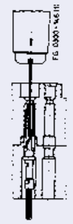


● full load contact
○ unoccupied

Removal of contacts, front releas

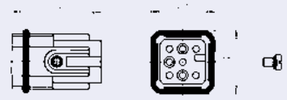
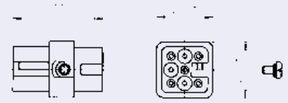
stamped pin contacts
all turned contacts

stamped socket contacts

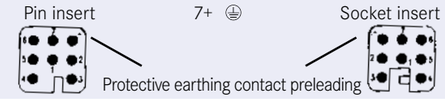


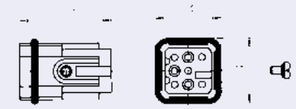
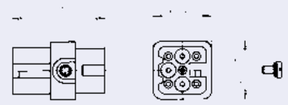
General Characteristics	Standard	Value						
Number of contacts		7+⏚ 8-Pol	15 +⏚	25 +⏚	40 +⏚	50+⏚ 2x25	64 +⏚	128 +⏚ 2x64
Contact arrangement	DIN EN 175 301-801 (DIN 43652)		•	•	•		•	
Termination technique		crimp						
Wire gauge		0.14 mm^2 - 2.5 mm^2 (AWG 26 - 14)						
Max. wire diameter		4.1 mm						
Flammability	UL 94	V-0						
Electrical Characteristics								
Rated voltage [1]	IEC 60664-1	250 V (400 V~[2]) (UL/CSA 600V)[1]						
Rated impulse withstand voltage	IEC60664-1	4 kV						
Rated Current T_u = 40 °C		16 A	10 A					
Current carrying capacity	IEC 60512-5-2	see derating curves						
Installation (overvoltage) category	IEC 60664-1	III						
Material group	IEC 60664-1	III a						
Contact resistance		≥ 5 m Ω						
Insulation resistance	IEC 60512-3-1	≥ 10^{10} Ω						
Pollution degree	IEC 60664-1	3						
Climatical Characteristics								
Climatic category	IEC 60068-1	40/125/21						
Upper temperature	IEC 60512-11-9	+ 125°C						
Lower temperature	IEC 60512-11-10	- 40°C						
Mechanical Characteristics								
IP-degree of protection pin insert	IEC 60529	unmated IP00, mated IP20						
IP-degree of protection socket insert	IEC 60529	unmated IP20, mated IP20						
Weight pin insert		8 g	28 g	34 g	53 g	68 g	65 g	130 g
Weight socket insert		8 g	30 g	38 g	64 g	76 g	82 g	164 g
Mechanical operation	IEC 60512-9-1	≥ 500 mating cycles						
Materials								
Insert	IEC 60664-1	PBT	PC					
Colour insert	IEC 60664-1	grey						
Contacts		CuZn (Messing)						
Contact plating		Ag (Silber) / Au (Gold)						

[1] Restriction for 8 contacts in metal housing see page 27 [2] Modified contact arrangement, see page 25

Description	Part Number	Drawing	Figure
Contact insert 7 + ⏚			
Pin insert for stamped crimp contacts	C146 10A007 000 2		
Socket insert for turned crimp contacts	C146 10A007 500 2		
Socket insert for stamped crimp contacts	C146 10B007 000 2		
Socket insert for turned crimp contacts	C146 10B007 500 2		

Pin layout

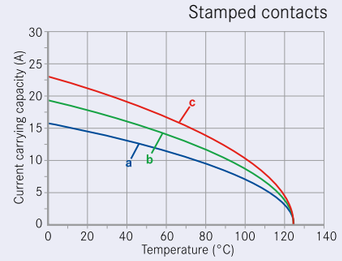


Description	Part Number	Drawing	Figure
Contact insert 8 contacts, 42 V~ in metal housings/250 V in thermoplastic housings (Please order contacts separately, see page 34)			
Pin insert for stamped crimp contacts	C146 10A008 000 2		
Pin insert for turned crimp contacts	C146 10A008 500 2		
Socket insert for stamped crimp contacts	C146 10B008 000 2		
Socket insert for turned crimp contacts	C146 10B008 500 2		

Pin layout (Note: For use up to 42 V~, the PE contact can be used as regular contact.)

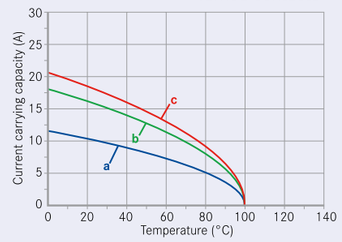
Derating curves

Stamped contacts

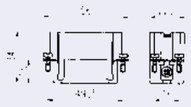
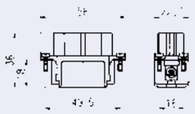
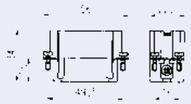
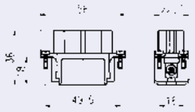


Curve	Wire gauge
a	0.5 mm^2
b	1.5 mm^2 & 2.5 mm^2
c	1.5 mm^2 - 2.5 mm^2 (High current)

Turned contacts

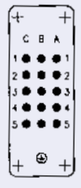


Curve	Wire gauge
a	0.5 mm^2
b	1.5 mm^2
c	2.5 mm^2

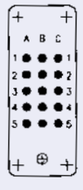
Description	Part Number	Drawing	Figure
Contact insert 15 + ⏚ (Please order contacts separately, see page 34)			
Pin insert for stamped crimp contacts	C146 10A015 000 2		
Pin insert for turned crimp contacts	C146 10A015 500 2		
Socket insert for stamped crimp contacts	C146 10B015 000 2		
Socket insert for turned crimp contacts	C146 10B015 500 2		
Contact insert 15 + ⏚, 2 x PE-termination (Please order contacts separately, see page 34)			
Pin insert for stamped crimp contacts	C146 10A015 060 2		
Socket insert for stamped crimp contacts	C146 10B015 060 2		

Pin layout

Pin insert

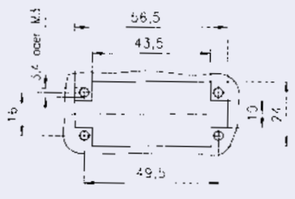


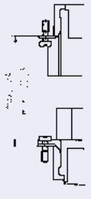
Socket insert



Assembly instruction

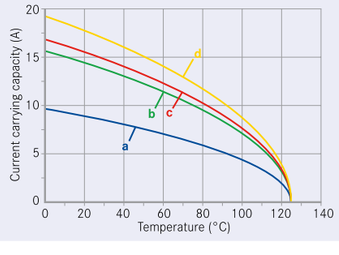
Panel cut out (insert)





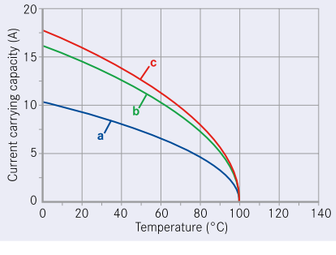
Derating curves

Stamped contacts

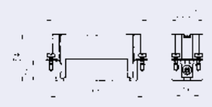
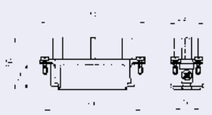
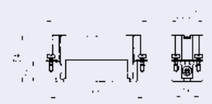
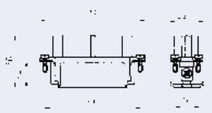


Curve	Wire gauge
a	0.5 mm²
b	1.5 mm²
c	2.5 mm²
d	1.5 mm² - 2.5 mm² (High current)

Turned contacts

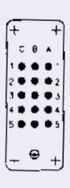


Curve	Wire gauge
a	0.5 mm²
b	1.5 mm²
c	2.5 mm²

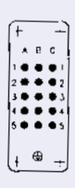
Description	Part Number	Drawing	Figure
Contact insert 25 + ⏚ (Please order contacts separately, see page 34)			
Pin insert for stamped crimp contacts	C146 10A025 000 2		
Pin insert for turned crimp contacts	C146 10A025 500 2		
Socket insert for stamped crimp contacts	C146 10B025 000 2		
Socket insert for turned crimp contacts	C146 10B025 500 2		
Contact insert 25 + ⏚, 2 x PE-termination (Please order contacts separately, see page 34)			
Pin insert for stamped crimp contacts	C146 10A025 060 2		
Socket insert for stamped crimp contacts	C146 10B025 060 2		

Pin layout

Pin insert

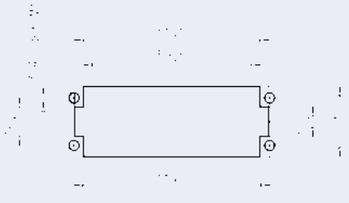


Socket insert



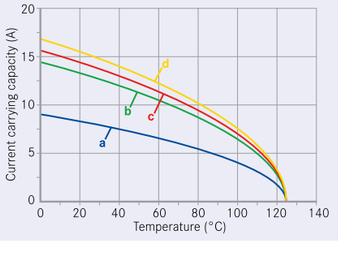
Assembly instruction

Panel cut out (insert)



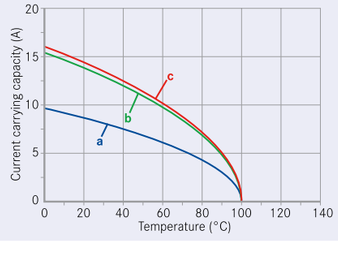
Derating curves

Stamped contacts

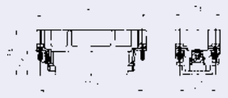


Curve	Wire gauge
a	0.5 mm²
b	1.5 mm²
c	2.5 mm²
d	1.5 mm² - 2.5 mm² (High current)

Turned contacts

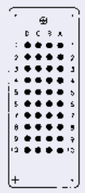


Curve	Wire gauge
a	0.5 mm²
b	1.5 mm²
c	2.5 mm²

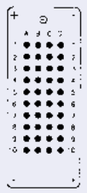
Description	Part Number	Drawing	Figure
Contact insert 40 + ⏚ (Please order contacts separately, see page 34)			
Pin insert for stamped crimp contacts	C146 10A040 000 2		
Pin insert for turned crimp contacts	C146 10A040 500 2		
Socket insert for stamped crimp contacts	C146 10B040 000 2		
Socket insert for turned crimp contacts	C146 10B040 500 2		
Contact insert 40 + ⏚, 2 x PE-termination (Please order contacts separately, see page 34)			
Pin insert for stamped crimp contacts	C146 10A040 060 2		
Socket insert for stamped crimp contacts	C146 10B040 060 2		

Pin layout

Pin insert

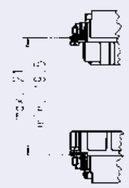


Socket insert



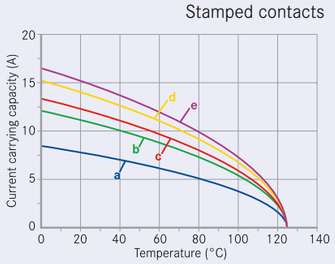
Assembly instruction

Panel cut out (insert)



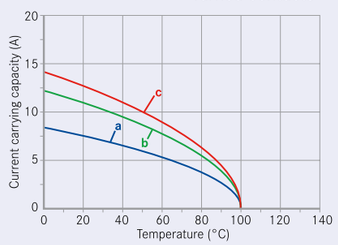
Derating curves

Stamped contacts

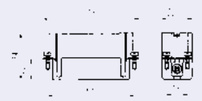
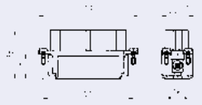


Curve	Wire gauge
a	0.5 mm²
b	1.5 mm²
c	2.5 mm²
d	1.5 mm² (High current)
e	2.5 mm² (High current)

Turned contacts

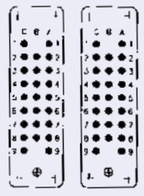


Curve	Wire gauge
a	0.5 mm²
b	1.5 mm²
c	2.5 mm²

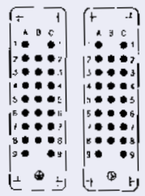
Description	Part Number	Drawing	Figure
Contact insert 50 + ⏚ (Please order contacts separately, see page 34)			
Pin insert for stamped crimp contacts	C146 10A025 000 2 + C146 10A025 005 2		
Pin insert for turned crimp contacts	C146 10A025 500 2 + C146 10A025 505 2		
Socket insert for stamped crimp contacts	C146 10B025 000 2 + C146 10B025 005 2		
Socket insert for turned crimp contacts	C146 10B025 500 2 + C146 10B025 505 2		

Pin layout

Pin insert

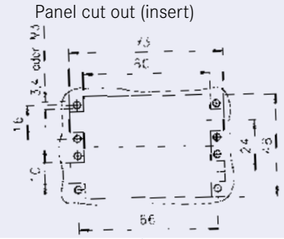


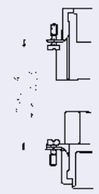
Socket insert



Assembly instruction

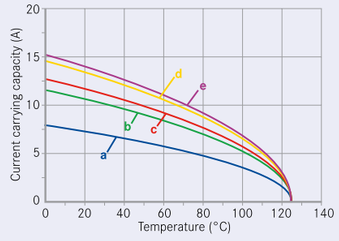
Panel cut out (insert)





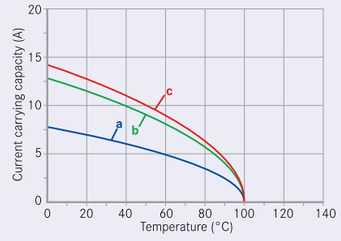
Derating curves

Stamped contacts

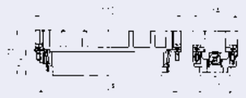
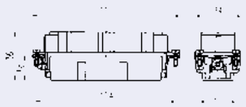
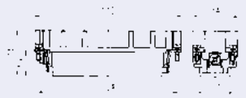
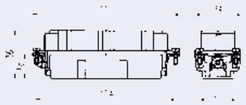


Curve	Wire gauge
a	0.5 mm²
b	1.5 mm²
c	2.5 mm²
d	1.5 mm² (High current)
e	2.5 mm² (High current)

Turned contacts



Curve	Wire gauge
a	0.5 mm²
b	1.5 mm²
c	2.5 mm²

Description	Part Number	Drawing	Figure
Contact insert 64 + ⏚ (Please order contacts separately, see page 34)			
Pin insert for stamped crimp contacts	C146 10A064 000 2		
Pin insert for turned crimp contacts	C146 10A064 500 2		
Socket insert for stamped crimp contacts	C146 10B064 000 2		
Socket insert for turned crimp contacts	C146 10B064 500 2		
Contact insert 64 + ⏚, 2 x PE-termination (Please order contacts separately, see page 34)			
Pin insert for stamped crimp contacts	C146 10A064 060 2		
Socket insert for stamped crimp contacts	C146 10B064 060 2		

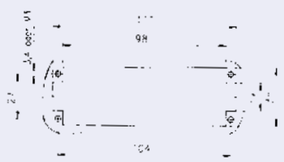
Pin layout

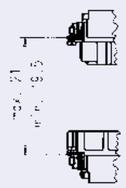
Pin insert

Socket insert

Assembly instruction

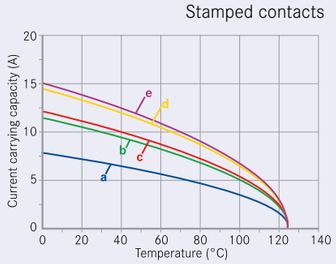
Panel cut out (insert)





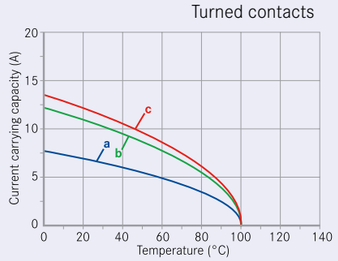
Derating curves

Stamped contacts

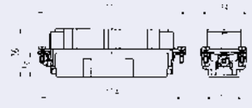


Curve	Wire gauge
a	0.5 mm²
b	1.5 mm²
c	2.5 mm²
d	1.5 mm² (High current)
e	2.5 mm² (High current)

Turned contacts

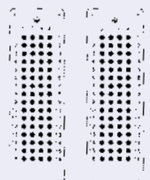


Curve	Wire gauge
a	0.5 mm²
b	1.5 mm²
c	2.5 mm²

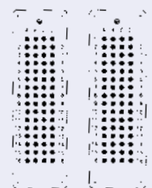
Description	Part Number	Drawing	Figure
Contact insert 128 + ⏚ (Please order contacts separately, see page 34)			
Pin insert for stamped crimp contacts	C146 10A064 000 2 + C146 10A064 005 2		
Pin insert for turned crimp contacts	C146 10A064 500 2 + C146 10A064 505 2		
Socket insert for stamped crimp contacts	C146 10B064 000 2 + C146 10B064 005 2		
Socket insert for turned crimp contacts	C146 10B064 500 2 + C146 10B064 505 2		

Pin layout

Pin insert

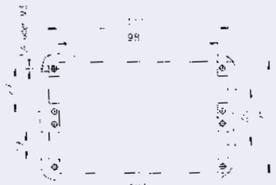


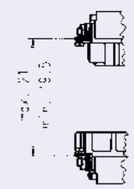
Socket insert



Assembly instruction

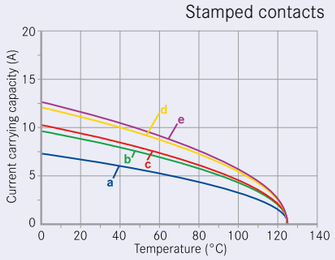
Panel cut out (insert)





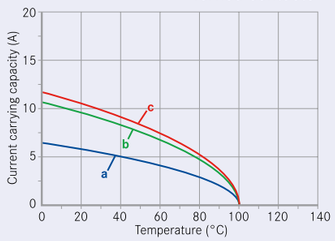
Derating curves

Stamped contacts



Curve	Wire gauge
a	0.5 mm²
b	1.5 mm²
c	2.5 mm²
d	1.5 mm² (High current)
e	2.5 mm² (High current)

Turned contacts



Curve	Wire gauge
a	0.5 mm²
b	1.5 mm²
c	2.5 mm²

Large range of wire gauges

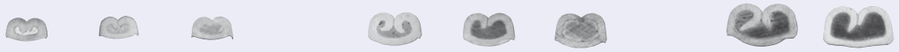
VN01 016 0003 1C

VN01 016 0002 1C

VN01 016 0005 1C

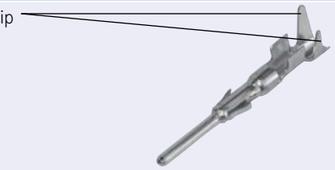
Gas-tight (coldwelding)

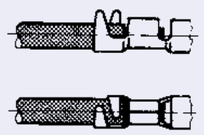
0.14 0.25 0.5 0.5 1.0 1.5 1.5 2.5



Stamped crimp contacts with insulation crimp, to absorbe mechanical stress from the crimped connection

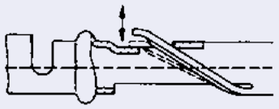
Insulation grip



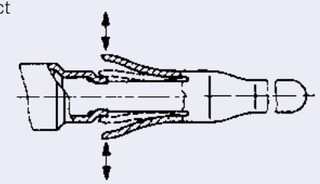


Mechanical retention spring stop on Socket and Pin contact

Socket contact

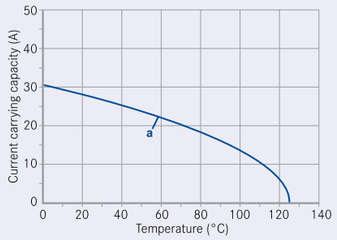


Pin contact

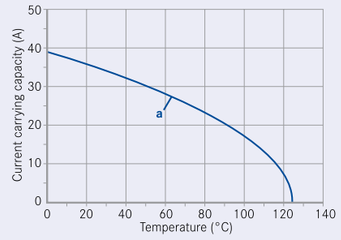


High current carrying capacity

Example single contact



Curve a: 2.5 mm² Standard contact. wire gauge



Curve a: 2.5 mm2 High current contact, wire gauge

Stamped crimp contacts		
Electrical Characteristics		
Contact resistance	IEC 60512-2-1	≤ 5 m Ω
Climatical Characteristics		
Upper temperature	IEC 60512-11-9	+ 125 °C
Lower temperature	IEC 60512-11-10	- 40 °C
Mechanical Characteristics		
Mechanical operation	IEC 60512-9-1	≥ 500 mating cycles
Materials		
Pin contact		CuZn (brass)
Socket contact		CuSn (tin bronce)
Contact plating		Ag (silver) / Au (gold)

Turned crimp contacts		
Electrical Characteristics		
Contact resistance	IEC 60512-2-1	≤ 5 m Ω
Climatical Characteristics		
Upper temperature	IEC 60512-11-9	+ 100 °C
Lower temperature	IEC 60512-11-10	- 40 °C
Mechanical Characteristics		
Mechanical operation	IEC 60512-9-1	≥ 500 mating cycles
Materials		
Pin contact		CuZn (brass)
Socket contact		CuZn (brass)
Contact plating		Ag (silver) / Au (gold)

D

Stamped crimp contacts

Supplied as	for wire gauge	AWG	Pieces	Part Number		Figure
				Pin contact	Socket contact	
Stamped single contacts						
silver plating standard	0.14 - 0.5 mm²	26 - 20	100	VN01 016 0003 1	VN02 016 0003 1	
	0.5 - 1.5 mm²	20 - 16	100	VN01 016 0002 1	VN02 016 0002 1	
	1.5 - 2.5 mm²	16 - 14	100	VN01 016 0005 1	VN02 016 0005 1	
silver plating high current	0.5 - 1.5 mm²	20 - 16	100	VN01 016 0015 1	VN02 016 0015 1	
	1.5 - 2.5 mm²	16 - 14	100	VN01 016 0016 1	VN02 016 0016 1	
gold plating standard	0.14 - 0.5 mm²	26 - 20	100	VN01 016 0003 2	VN02 016 0003 2	
	0.5 - 1.5 mm²	20 - 16	100	VN01 016 0002 2	VN02 016 0002 2	
	1.5 - 2.5 mm²	16 - 14	100	VN01 016 0005 2	VN02 016 0005 2	
Stamped Contacts on reel for hand crimp tools						
silver plating standard	0.14 - 0.5 mm²	26 - 20	200	ZN01 016 0003 1	ZN02 016 0003 1	
	0.5 - 1.5 mm²	20 - 16	200	ZN01 016 0002 1	ZN02 016 0002 1	
	1.5 - 2.5 mm²	16 - 14	100	ZN01 016 0005 1	ZN02 016 0005 1	
silver plating high current	0.5 - 1.5 mm²	20 - 16	200	ZN01 016 0015 1	ZN02 016 0015 1	
	1.5 - 2.5 mm²	16 - 14	100	ZN01 016 0016 1	ZN02 016 0016 1	
gold plating standard	0.14 - 0.5 mm²	26 - 20	200	ZN01 016 0003 2	ZN02 016 0003 2	
	0.5 - 1.5 mm²	20 - 16	200	ZN01 016 0002 2	ZN02 016 0002 2	
	1.5 - 2.5 mm²	16 - 14	100	ZN01 016 0005 2	ZN02 016 0005 2	
Stamped contacts on reel for crimp machines contact feeding left hand side						
silver plating standard	0.14 - 0.5 mm²	26 - 20	2000	TN01 016 0003 1	TN02 016 0003 1	
	0.5 - 1.5 mm²	20 - 16	2000	TN01 016 0002 1	TN02 016 0002 1	
	1.5 - 2.5 mm²	16 - 14	2000	TN01 016 0005 1	TN02 016 0005 1	
silver plating high current	0.5 - 1.5 mm²	20 - 16	2000	TN01 016 0015 1	TN02 016 0015 1	
	1.5 - 2.5 mm²	18 - 14	2000	TN01 016 0016 1	TN02 016 0016 1	
gold plating standard	0.14 - 0.5 mm²	26 - 20	2000	TN01 016 0003 2	TN02 016 0003 2	
	0.5 - 1.5 mm²	20 - 16	2000	TN01 016 0002 2	TN02 016 0002 2	
	1.5 - 2.5 mm²	16 - 14	2000	TN01 016 0005 2	TN02 016 0005 2	

Tools for stamped crimp contacts

Description	for wire gauge	Part Number		
		Contact locator	Crimping dies	Tool
Removal tool for contacts	0,14 - 2.5 mm²	-	-	FG 0300 146 1
Service crimping tool	0.14 - 0.5 mm² 0.5 - 1.5 mm²	-	-	TA 0100 146
Crimping tool for single contacts	0.14 - 0.5 mm² 0.5 - 1.5 mm² 1.5 - 2.5 mm²	TA 0001 146 000 1 TA 0002 146 000 1 TA 0007 146 000 3	TA 0000 202 TA 0000 163 TA 0000 141	TA 0000 or TA 0500

Further tools see catalogue "Tools"

Turned crimp contacts

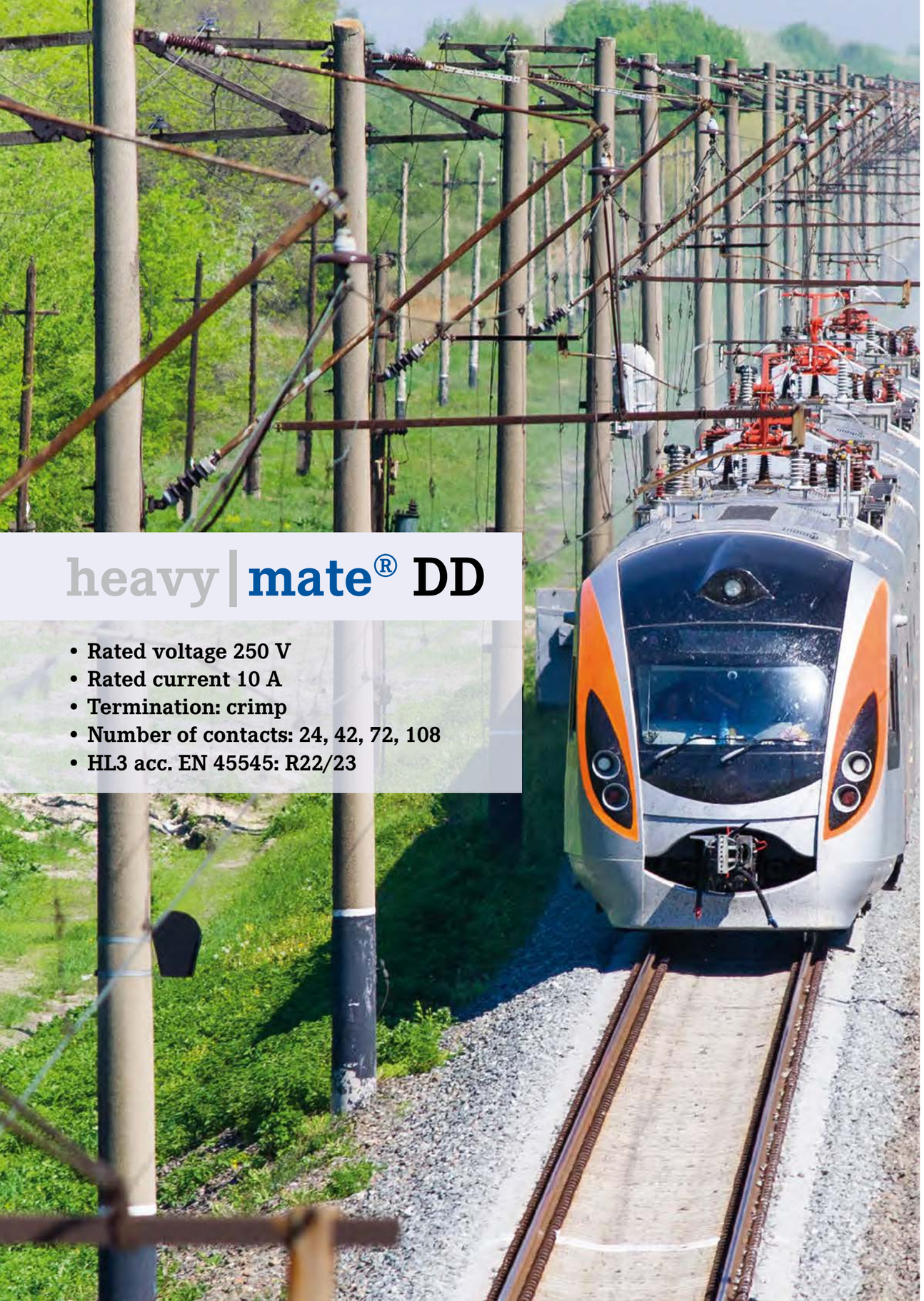
Supplied as	for wire gauge	AWG	Pieces	Part Number		Figure
				Pin contact	Socket contact	
Turned crimp contacts single contact						
silver plating	0.14 - 0.37 mm²	26 - 22	100	VN01 016 0024 1C	VN02 016 0024 1C	
	0.5 mm²	20	100	VN01 016 0025 1C	VN02 016 0025 1C	
	0.75 - 1.0 mm²	20 - 16	100	VN01 016 0026 1C	VN02 016 0026 1C	
	1.5 mm²	16 - 15	100	VN01 016 0027 1C	VN02 016 0027 1C	
	2.5 mm²	14	100	VN01 016 0028 1C	VN02 016 0028 1C	
gold plating	0.14 - 0.37 mm²	26 - 22	100	VN01 016 0024 2C	VN02 016 0024 2C	
	0.5 mm²	20	100	VN01 016 0025 2C	VN02 016 0025 2C	
	0.75 - 1.0 mm²	20 - 16	100	VN01 016 0026 2C	VN02 016 0026 2C	
	1.5 mm²	16 - 15	100	VN01 016 0027 2C	VN02 016 0027 2C	
	2.5 mm²	14	100	VN01 016 0028 2C	VN02 016 0028 2C	

Tools

Description	for wire gauge	Part Number		
		Contact locator	Crimping dies	Tool
Removal tool for contacts	-	-	-	FG 0300 146 1
Standard crimping tool and accessories for 4-Indent crimping	0.14 - 2.5 mm²	TA 0010 146 000 1	TA 0000 184	TA 0000 or TA 0500
4-Indent crimping tool	0.14 - 2.5 mm²	-	-	TB 0400 146

Further tools see catalogue “Tools”

D



heavy | mate® DD

- Rated voltage 250 V
- Rated current 10 A
- Termination: crimp
- Number of contacts: 24, 42, 72, 108
- HL3 acc. EN 45545: R22/23



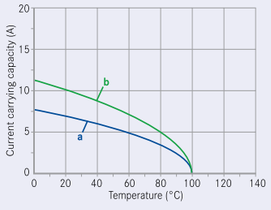



Approvals, Testhouse	Characteristics	Approval-Number
UL	600 V, 8,5 A	E 63093
CSA	600 V	E 63093

General Characteristics	Standard	Value			
Number of contacts		24 + ⏚	42 + ⏚	72 + ⏚	108 + ⏚
Termination technique		crimp, PCB (in combination with PCB-adaptor)			
Wire gauge		0.14 mm² - 2.5 mm² (AWG 26 - 14)			
Max. wire diameter		3.7 mm			
Flammability	UL 94	V-0			
Electrical Characteristics					
Rated voltage	IEC 60664-1	250 V (UL/CSA 600 V)			
Rated impulse withstand voltage	IEC 60664-1	4 kV			
Rated Current T_u = 40 °C		10 A			
Current carrying capacity	IEC 60512-5-2	see derating curves			
Installation (overvoltage) category	IEC 60664-1	III			
Material group	IEC 60664-1	III b			
Contact resistance	IEC 60512-2-1	≤ 5 m Ω			
Insulation resistance	IEC 60512-3-1	≥ 10^{10} Ω			
Pollution degree	IEC 60664-1	3			
Climatical Characteristics					
Climatic category	IEC 60068-1	40 / 125 / 21			
Upper temperature	IEC 60512-11-9	+ 125 °C			
Lower temperature	IEC 60512-11-10	- 40 °C			
Mechanical Characteristics					
IP-degree of protection pin insert[1)]	IEC 60529	unmated IP00, matedIP20			
IP-degree of protection socket insert[1)]	IEC 60529	unmated IP20, mated IP20			
Weight pin insert		44 g	50 g	63 g	86 g
Weight socket insert		41 g	50 g	67 g	88 g
Mechanical operation	IEC 60512-9-1	> 500 mating cycles			
Materials					
Insert		PC			
Colour insert		grey			
Contacts		CuZn (brass)			
Contact plating		Ag (silver) / Au (gold			

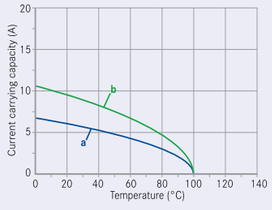
Derating curves

24 + ⏚



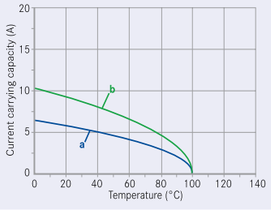
Curve	Wire gauge
a	0.75 mm²
b	1.5 mm²

42 + ⏚



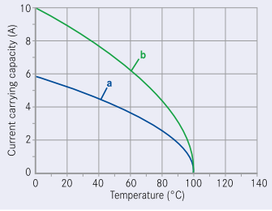
Curve	Wire gauge
a	0.75 mm²
b	1.5 mm²

72 + ⏚

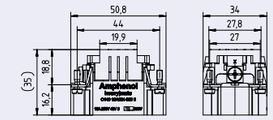
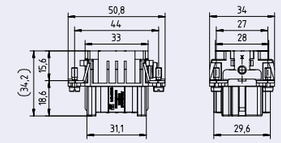
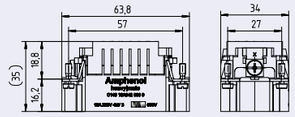
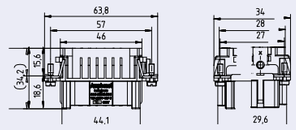
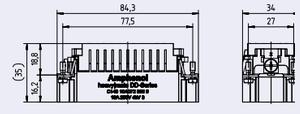
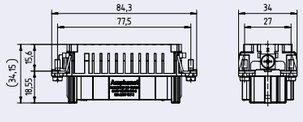


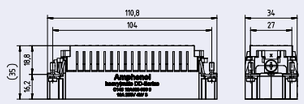
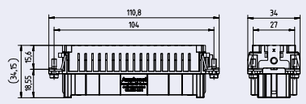
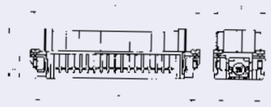
Curve	Wire gauge
a	0.75 mm²
b	1.5 mm²

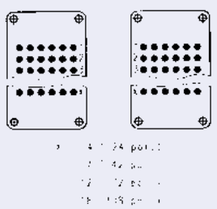
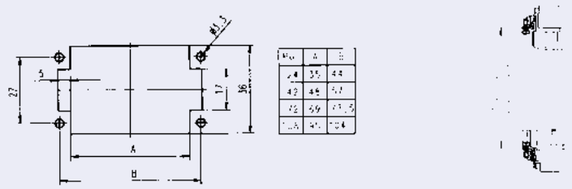
108 + ⏚



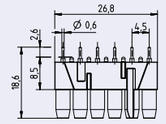
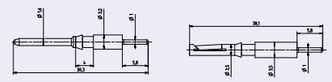
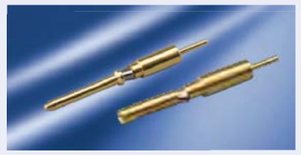
Curve	Wire gauge
a	0.75 mm²
b	1.5 mm²

Description	Part Number	Drawing	Figure
Contact insert 24 + ⏚ I Size E 6 (Please order contacts separately, see page 43) Housings from page 226			
Pin insert 24 + ⏚	C146 10A024 000 9		
Socket insert 24 + ⏚	C146 10B024 000 9		
Contact insert 42 + ⏚ I Size E 10 (Please order contacts separately, see page 43) Housings from page 228			
Pin insert 42 + ⏚	C146 10A042 000 9		
Socket insert 42 + ⏚	C146 10B042 000 9		
Contact insert 72 + ⏚ I E 16 (Please order contacts separately, see page 43) Housings from page 235			
Pin insert 72 + ⏚*	C146 10A072 000 9		
Socket insert 72 + ⏚*	C146 10B072 000 9		

Description	Part Number	Drawing	Figure
Contact insert 108 + ⏚ I Size E 24 (Please order contacts separately, see page 43) Housings from page 241			
Pin insert 108 + ⏚*	C146 10A108 000 9		
Socket insert 108 + ⏚*	C146 10B108 000 9		
Contact insert 216 + ⏚ I Size E 48 (Please order contacts separately, see page 43) Housings from page 249			
Pin insert 216 + ⏚*	C146 10A108 000 9 + C146 10A108 005 9		
Socket insert 216 + ⏚*	C146 10B108 000 9 + C146 10B108 005 9		

Pin layout	Assembly instruction
Pin insert Socket insert	Panel cut out (insert)
	

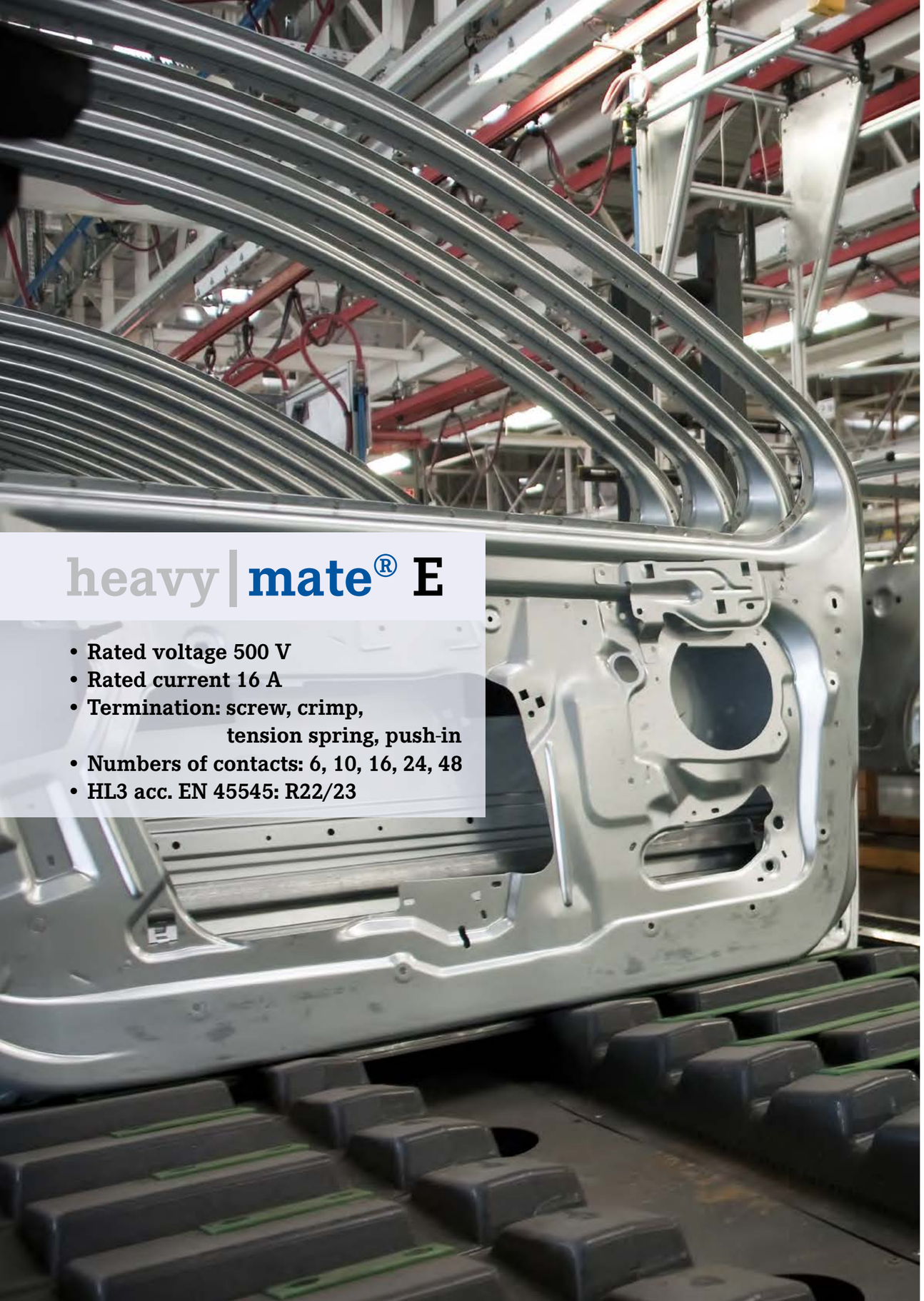
Supplied as	for wire gauge	AWG	Pieces	Part Number		Figure
				Pin contact	Socket contact	
Turned crimp contacts single contact 1.6mm						
silver plating	0.14 - 0,37 mm²	26 - 22	100	VN01 016 0024 1C	VN02 016 0024 1C	
	0.5 mm²	20	100	VN01 016 0025 1C	VN02 016 0025 1C	
	0.75 - 1,0 mm²	20 - 16	100	VN01 016 0026 1C	VN02 016 0026 1C	
	1.5 mm²	16 - 15	100	VN01 016 0027 1C	VN02 016 0027 1C	
	2.5 mm²	14	100	VN01 016 0028 1C	VN02 016 0028 1C	
gold plating	0.14 - 0.37 mm²	26 - 22	100	VN01 016 0024 2C	VN02 016 0024 2C	
	0.5 mm²	20	100	VN01 016 0025 2C	VN02 016 0025 2C	
	0.75 - 1.0 mm²	20 - 16	100	VN01 016 0026 2C	VN02 016 0026 2C	
	1.5 mm²	16 - 15	100	VN01 016 0027 2C	VN02 016 0027 2C	
	2.5 mm²	14	100	VN01 016 0028 2C	VN02 016 0028 2C	

Description	Part number	Dawing	Figure
PCB adaptor 6 pole (for all inserts DD series)	C146 10B006 300 15		
PCB-contact gold plating (100 Pieces)	VN01 016 0057 3C VN02 016 0057 3C		

Tools for turned crimp contacts

Description	for wire gauge	Part Number		
		Contact locator	Crimping dies	Tool
Removal tool for contacts	0.14 - 2.5 mm²	-	-	FG 0300 146 1
Standard crimping tool and accessories for 4-Indent crimping	0.14 - 2.5 mm²	TA 0010 146 0001	TA 0000 184	TA 0000 or TA 0500
4-Indent crimping tool	0.14 - 2.5 mm²	-	-	TB 0400 146
Further tools see catalogue “Tools”				

DD



heavy | mate® E

- Rated voltage 500 V
- Rated current 16 A
- Termination: screw, crimp, tension spring, push-in
- Numbers of contacts: 6, 10, 16, 24, 48
- HL3 acc. EN 45545: R22/23






Approvals, Testhouse	Characteristics	Approval-Number
UL	600 V	E 63093
CSA	600 V	48932

General information

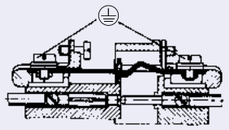
- Contact inserts without crimp contacts (Contact inserts with crimp termination).
- Connectors series heavy | mate® E may be engaged or disengaged when live but without electrical load. If these connectors are mated or unmated under load, the load shall be reduced to 10 % of the rated current.
- Crimping tools and processing instructions see separate catalogue „Tools“.
- Low and high profile housings are usable.
- If wire ferrule are used, screw terminals without wire protection are preferred.

No standard for this series, but:

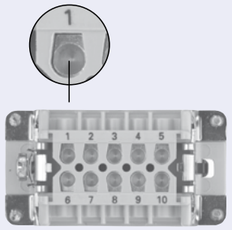
Interchangeable with other products
a) contact insert to contact insert 6-, 10-, 16-, 24- way
b) contact insert to housing 6-, 10- ,16-, 24- way

Housings are designed according to DIN EN 175 301 - 801

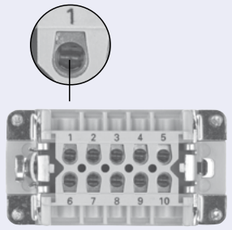
First-to-mate last-to-break protective ground contact



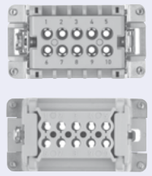
Contact inserts for screw termination, screw termination with wire protection and for crimp termination



Screw termination



Screw termination with wire protection



Crimp termination

Range of housings

Size E6

Size E10

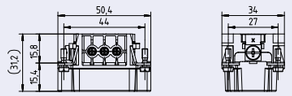
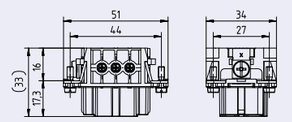
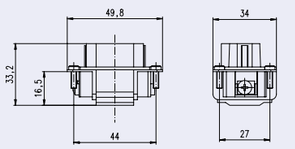
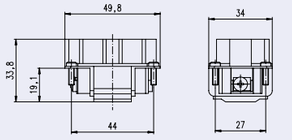
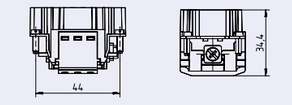
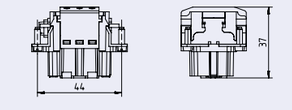
Size E16

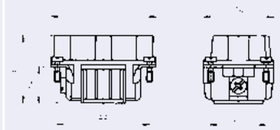
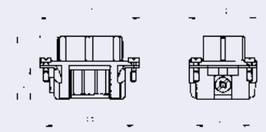
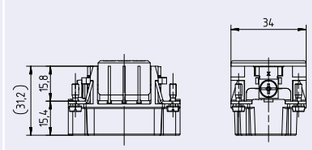
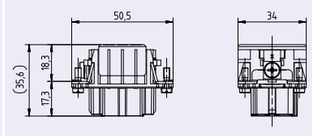
Size E24

Size E48

General Characteristics	Standard	Value				
Number of contacts		6 + ⏚	10 + ⏚	16 + ⏚	24 + ⏚	48 + ⏚
Termination technique		crimp / screw / tension spring / push-in				
Wire gauge		0.14 - 4 mm² / push-in 0.14 - 2.5 mm² (AWG 26 - 12) / (AWG 26 - 14)				
Tightening torque		0.5 Nm				
Max. wire diameter		4.6 mm				
Flammability	UL 94	V-0				
Electrical Characteristics						
Rated voltage	IEC 60664-1	500 V (UL/CSA 600 V)				
Rated impulse withstand voltage	IEC 60664-1	6 kV				
Rated current T_{amp} = 40 °C		16 A				
Current carrying capacity	IEC 60512-5-2	see derating curves				
Installation (overvoltage) category	IEC 60664-1	III				
Material group	IEC 60664-1	III b				
Contact resistance	IEC 60512-2-1	< 5 mΩ				
Insulation resistance	IEC 60512-3-1	≥ 10^{10} Ω				
Pollution degree	IEC 60664-1	3				
Climatical Characteristics						
Climatic category	IEC 60068-1	40 / 125 / 21				
Upper temperature	IEC 60512-11-9	+ 125 °C				
Lower temperature	IEC 60512-11-10	- 40°C				
Mechanical Characteristics						
IP-degree of protection pin insert[1)]	IEC 60529	unmated IP00, mated IP20				
IP-degree of protection socket insert[1)]	IEC 60529	unmatedIP20, mated IP20				
Weight: Pin insert crimp (for stamped contacts) Socket insert crimp (for stamped contacts) Pin insert screw Socket insert screw		 33 g 33 g 43 g 43 g	 39 g 39 g 57 g 57 g	 45 g 49 g 78 g 78 g	 55 g 62 g 105 g 106 g	 110 g 124 g 210 g 212 g
Mechanical operation	IEC 60512-9-1	> 500 mating cycles				
Materials						
Insert		PC				
Colour insert		grey				
Contacts		CuZn (brass)				
Contact plating		Ag (silver) / Au (gold)				

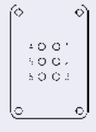
[1)] IP-degree of protection on termination side of screw version IP10

Description	Part Number	Drawing	Figure
Screw termination			
Pin insert for screw termination	C146 10A006 002 1		
Pin insert with wire protection for screw termination	C146 10A006 102 1		
Socket insert for screw termination	C146 10B006 002 1		
Socket insert with wire protection for screw termination	C146 10B006 102 1		
Tension spring			
Pin insert with Tension spring	C146 10A006 400 1		
Pin insert with Tension spring	C146 10B006 400 1		
Push-in			
Pin insert with push-in connection	C146 10A006 600 1		
Socket insert with push-in connection	C146 10B006 600 1		

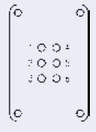
Description	Part Number	Drawing	Figure
Stamped crimp contacts (Please order contacts separately, see page 58)			
Pin insert for stamped crimp contacts	C146 10A006 000 1		
Socket insert for stamped crimp contacts	C146 10B006 000 1		
Turned crimp contacts (Please order contacts separately, see page 58)			
Pin insert for turned crimp contacts	C146 10A006 500 1		
Socket insert for turned crimp contacts	C146 10B006 500 1		

Pin layout

Pin insert

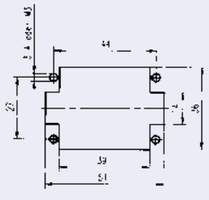


Socket insert



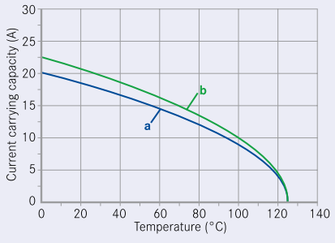
Assembly instruction

Panel cut out (insert)

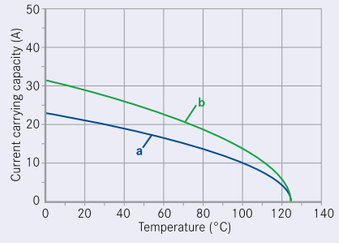


Derating curves

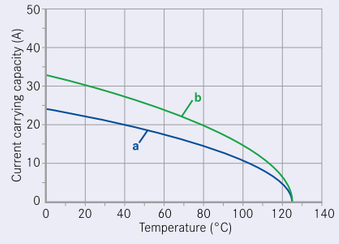
Stamped contacts



Turned contacts



Screw termination



Curve a: 1.5 mm² wire gauge Curve b: 2.5 mm² wire gauge