Control cabinet enclosure for top-hat rail installation with front connection technology – firmly integrated design KV 4603, KV 4604

Translation
of the original instructions

DOLD

0280433

Product Description

The multifunctional enclosure series KV 4600 is a modular empty enclosure system for top-hat rail installation and available in overall widths 17.5 mm and 22.5 mm. The pluggable push-in connection technology is preferably integrated as accessible from the front side. The wiring, reading of signals or the connection of plugs is therefore practice-oriented and convenient in the application. Furthermore, the integrated test point allows for a quick diagnosis on site.

Due to its well thought out design and a modular tool concept the individual design of the enclosure components customized for your application is already economically viable with small and medium-sized quantities. The few enclosure components also allow for a quick and easy installation by means of snapping.

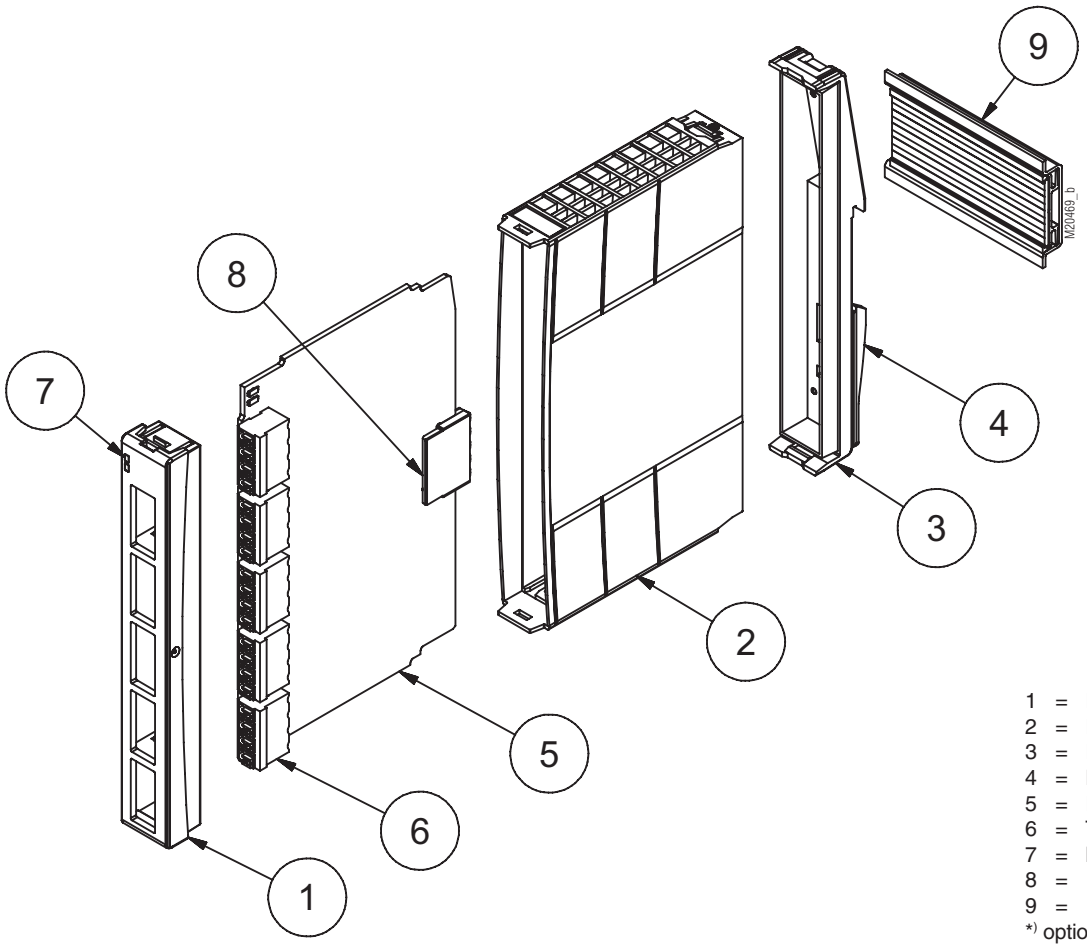
Your Advantages

- Full functionality at the enclosure front
- Quick installation by simplified enclosure design
- More connections within lower overall width – up to 40 poles per 22.5 mm module
- PCB surface of 9500 mm² allows for many applications and a cost-effective design of the PCB
- High mechanical stability and vibration resistance
- Quick, toolless, direct and vibration-resistant connection of the conductors
- The pluggable push-in terminal technology meets the high requirements of the reflow soldering process

Features

- Complete functionality at the front for display or control elements, connection technology, NFC and radio technology
- Module widths available from 17.5 mm
- Usage of up to two PCBs with enclosure width of 22.5 mm
- High connection density by integrated push-in terminals in the grid 3.5 or 5.08 mm, available as 4, 6, 8 and 10-pin versions
- Easy and safe installation by snapping mechanism at rear side
- Easy and cost-effective realization of customer-specific adaptations
- Optionally sealable, tiltable front cover
- Optional mounting rail bus system (In-Rail-Bus)
- Common bus concepts can be integrated into the bottom assembly

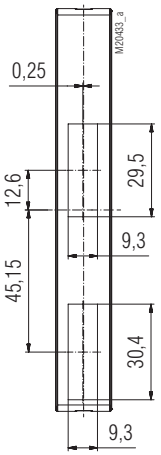
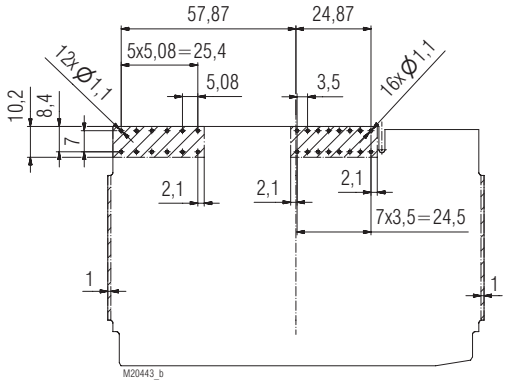
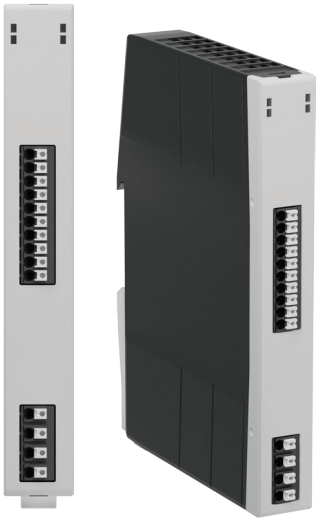
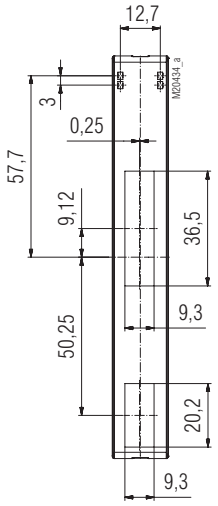
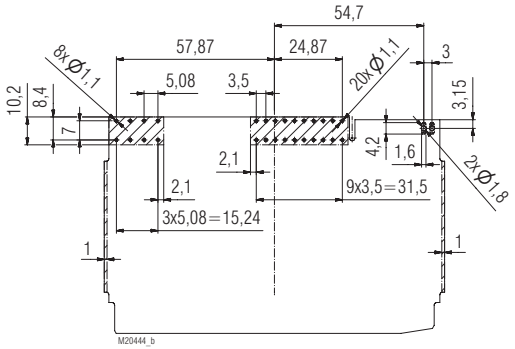
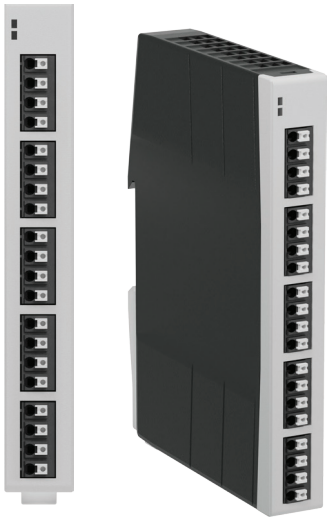
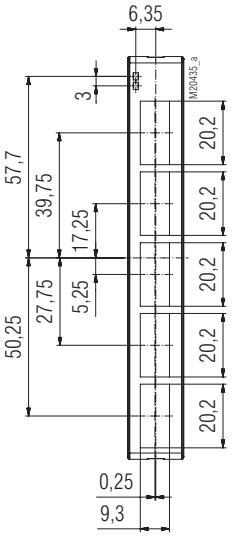
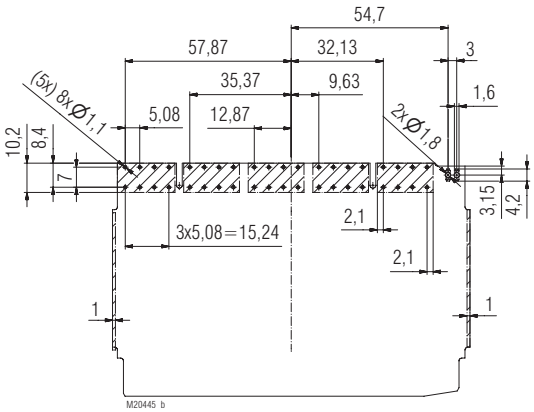
Explosion Drawing Three-Part Enclosure Design



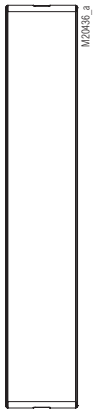
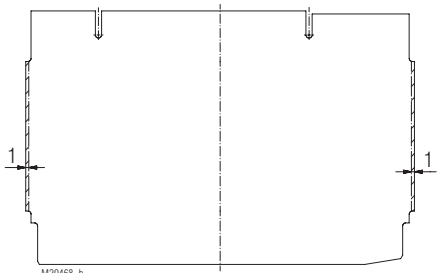
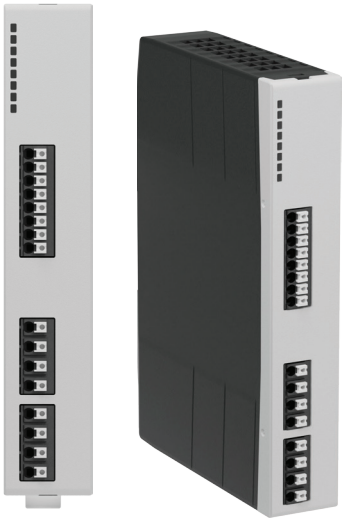
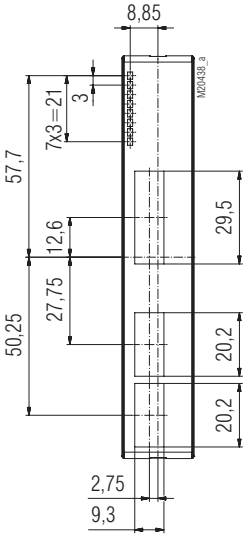
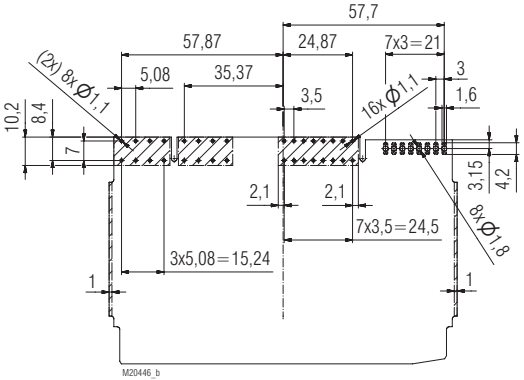
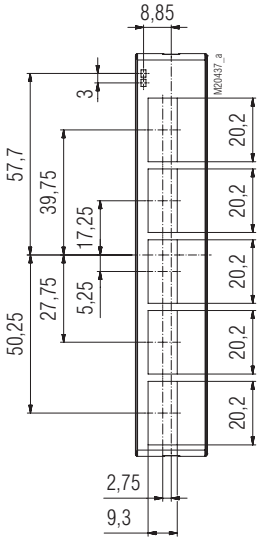
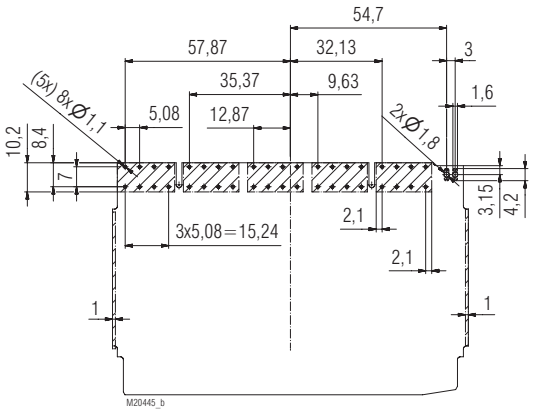
1 = Front plate
2 = Enclosure frame
3 = Enclosure bottom
4 = Mounting clip
5 = PCB (not included in delivery)
6 = Terminal block
7 = Light conductor *)
8 = In-Rail-Bus Spring contact block *)
9 = In-Rail-Bus in DIN-rail *)
*) optional

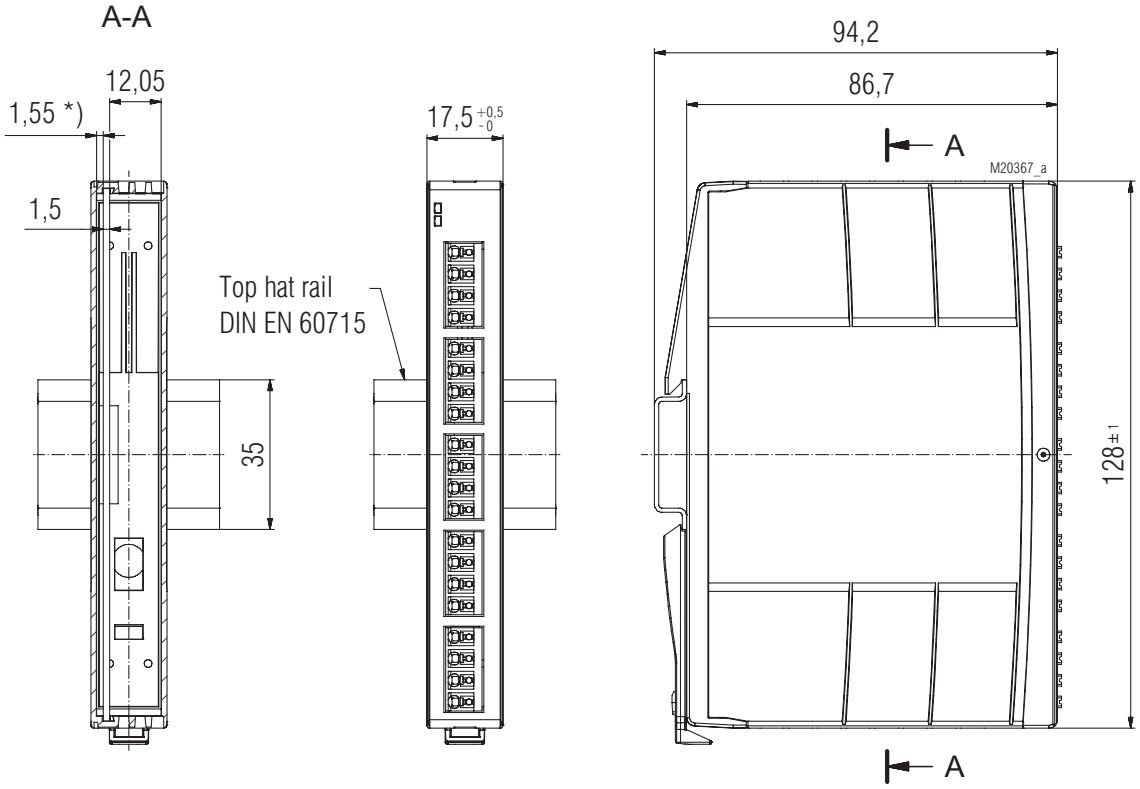
All specifications correspond to the technology used at time of publication.
We reserve the right to make improvements and changes of a technical nature at any time.

Design Examples

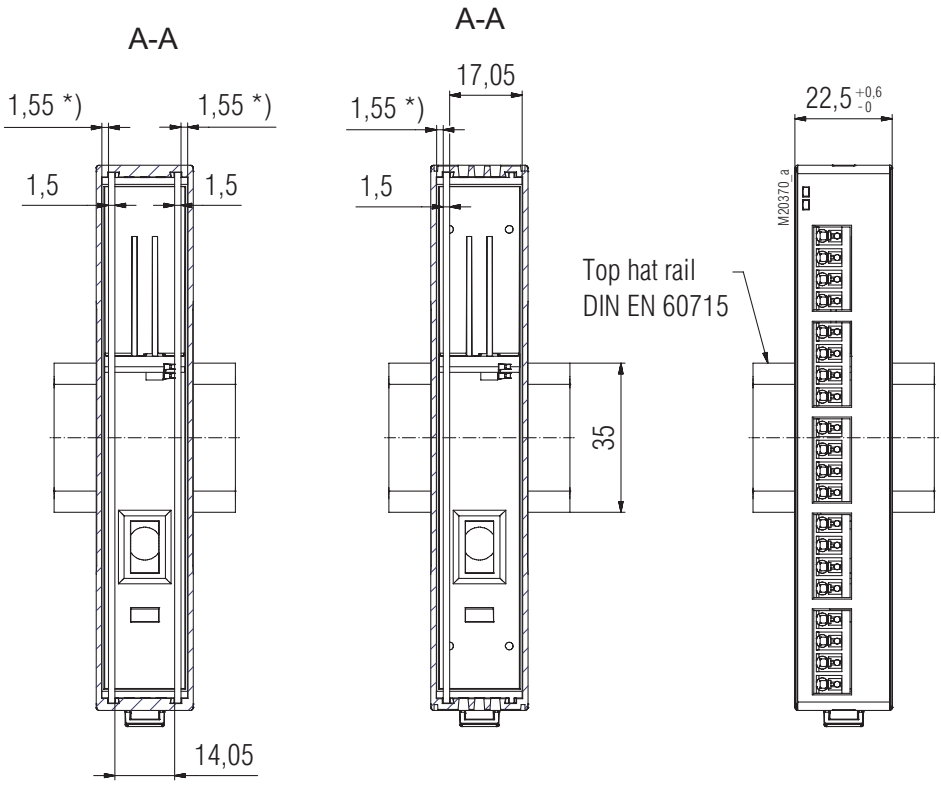
KV 4603 Width 17.5 mm	Front plate	PCB
Terminal 6-poles R = 5.08 mm Terminal 8-poles R = 3.5 mm 		
Terminal 4-poles R = 5.08 mm Terminal 10-poles R = 3.5 mm 		
Terminal 4-poles R = 5.08 mm (5 x arranged) 		

Design Examples

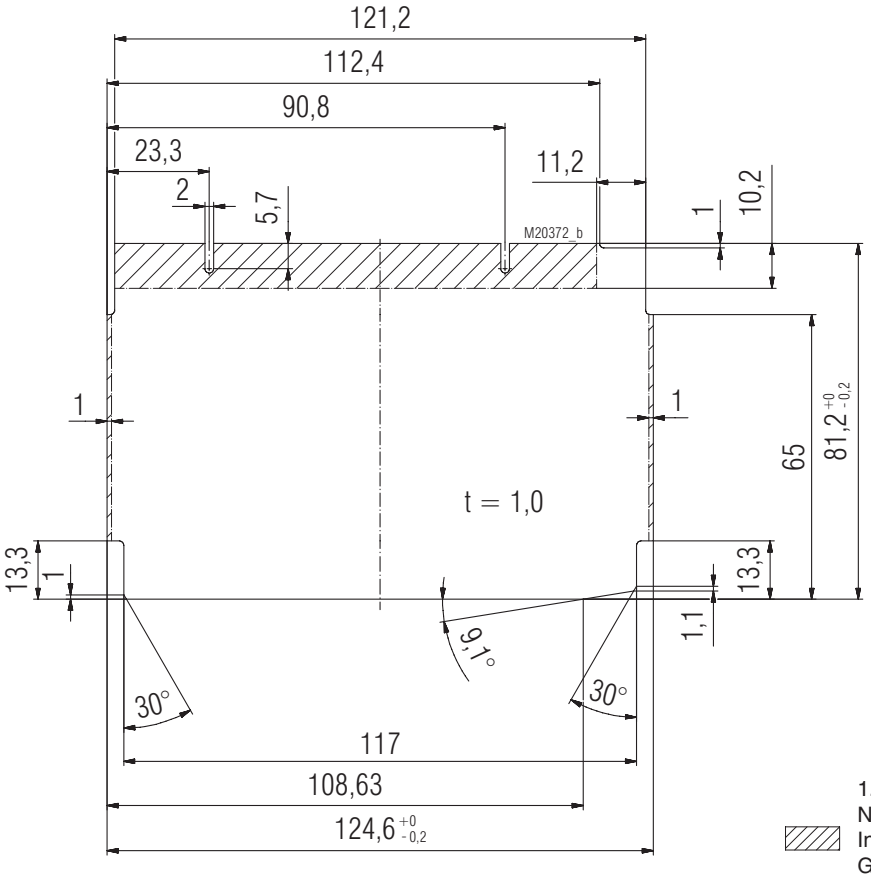
KV 4604 Width 22.5 mm	Front plate	PCB
Without terminals 		
Terminal 4-poles R = 5.08 mm (2 x arranged) Terminal 8-poles R = 3.5 mm 		
Terminal 4-poles R = 5.08 mm (5 x arranged) 		



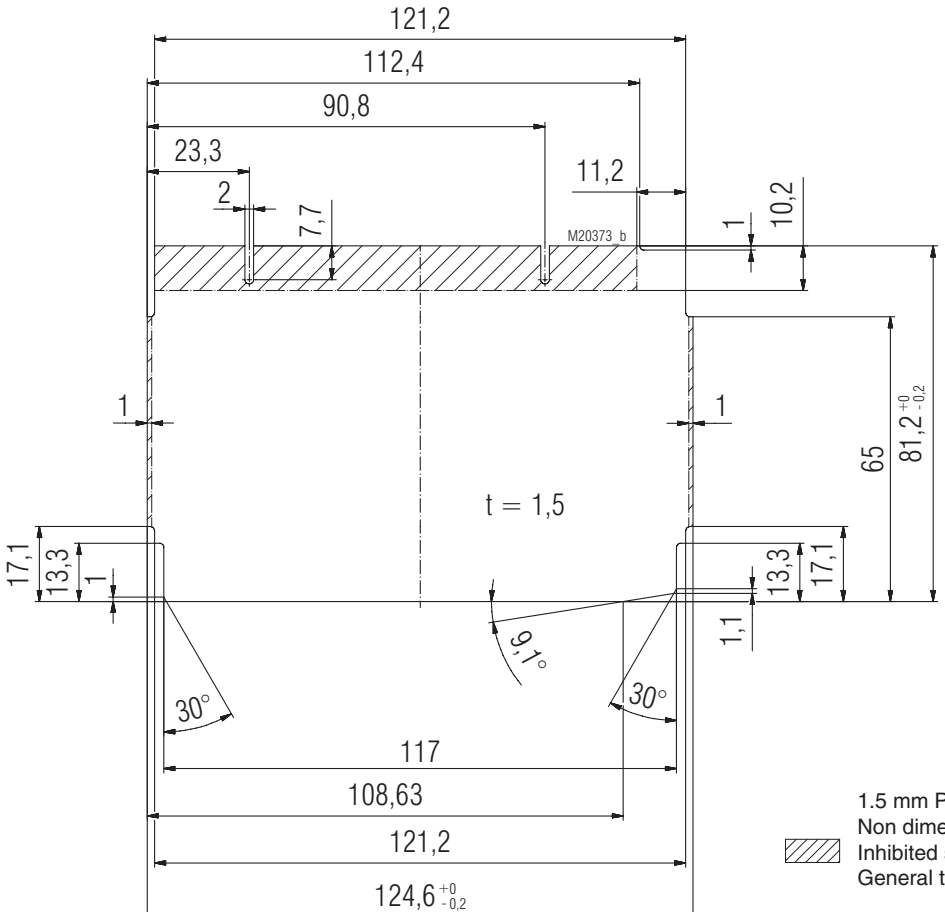
*) 2,05 with printed circuit board thickness t = 1 mm



*) 2,05 with printed circuit board thickness t = 1 mm



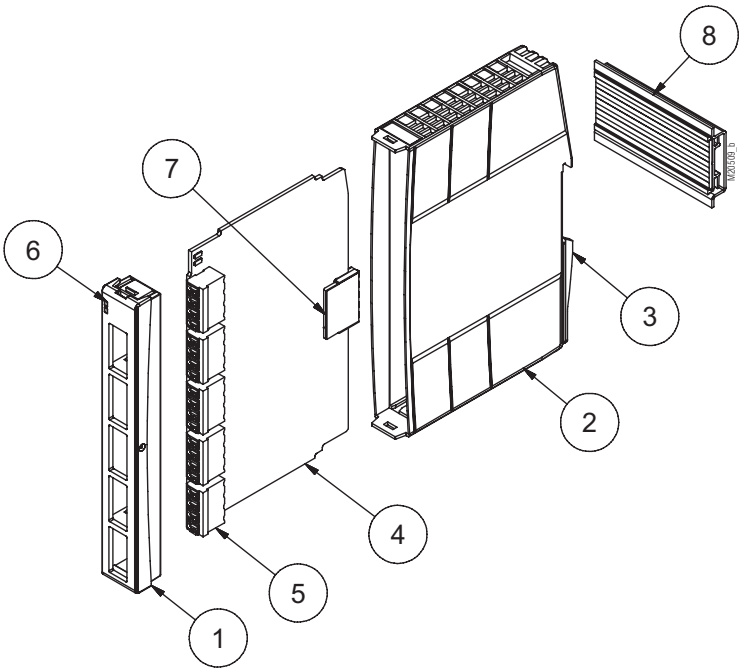
1.0 mm PCB
Non dimensioned radi R1
Inhibited surface
General tolerance: PERFAG 2E



1.5 mm PCB
Non dimensioned radi R1
Inhibited surface
General tolerance: PERFAG 2E

Explosion Drawing Two-Part Enclosure Design

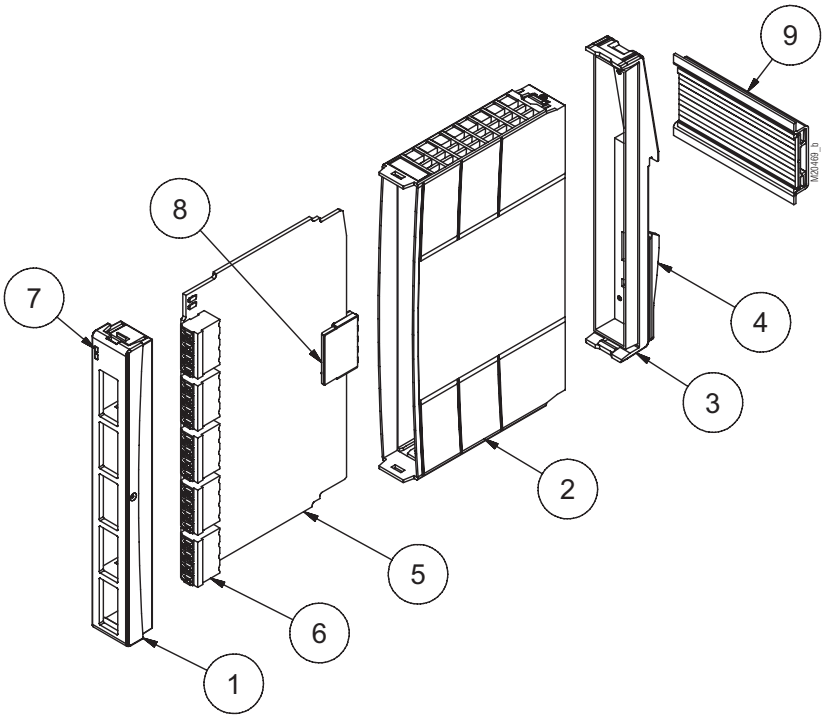
The two-part enclosure design allows the realization of particularly economic applications. The assembly of the two components is toolless by means of snapping. The enclosure bottom with its closed contour allows the optional potting of electronics components.



1 = Front plate
2 = Enclosure bottom
3 = Mounting clip
4 = PCB (not included in delivery)
5 = Terminal block
6 = Light conductor *)
7 = In-Rail-Bus spring contact block *)
8 = In-Rail-Bus in DIN-rail *)
*) optional

Explosion Drawing Three-Part Enclosure Design

The division of the enclosure bottom into two functional units allows the installation of an additional printed circuit board within the bottom assembly. This individually designable additional board allows the manufacturer-independent, flexible and easy integration of interfaces and communication modules for module networking. In case of a device failure the mechanical design allows to easily remove the primary electronics module from the device compound without dropping the voltage for the other modules. The status of sytems can thus be preserved, no information is lost.



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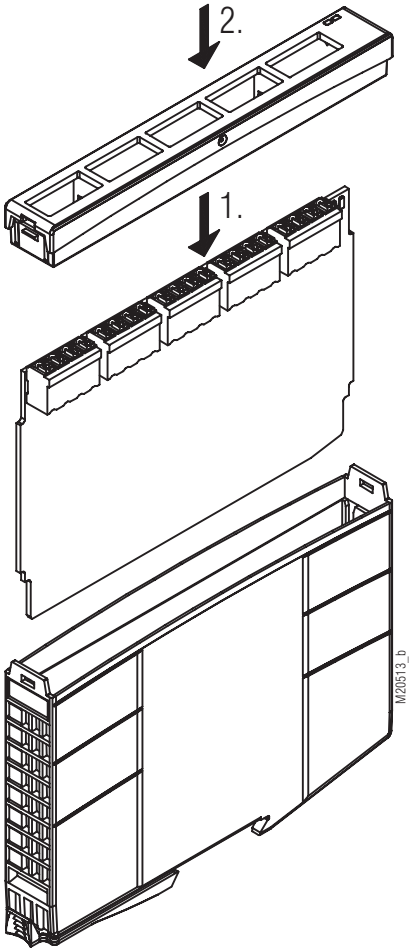
9 = In-Rail-Bus in DIN-rail *)
*) optional

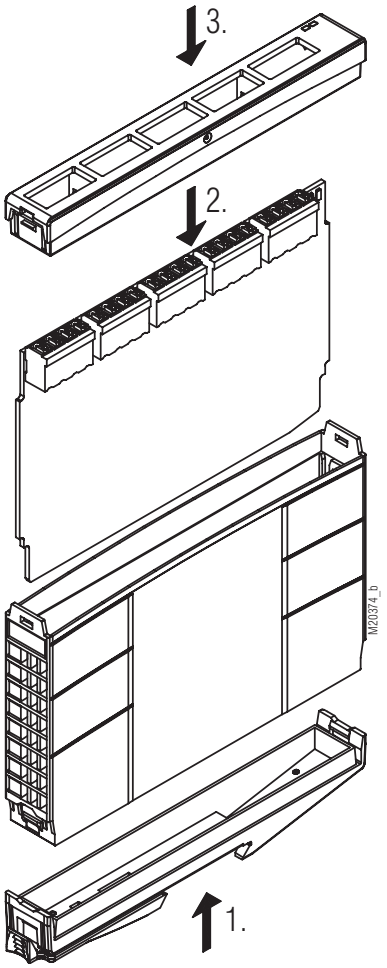
Assembly of Enclosure with Two-Part Enclosure Design



Assembly of two-part enclosure

1. Insert PCB with terminal blocks into enclosure bottom
2. Align and snap in front plate above the terminal blocks

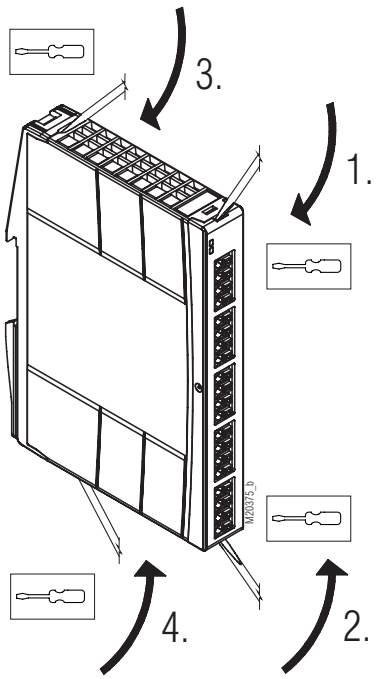
Assembly of Enclosure with Three-Part Enclosure Design



Assembly of three-part enclosure

1. Mount enclosure bottom on enclosure frame
2. Insert PCB with terminal blocks into enclosure frame
3. Align and snap in front plate above the terminals

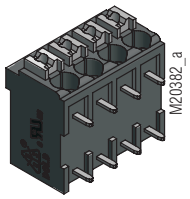
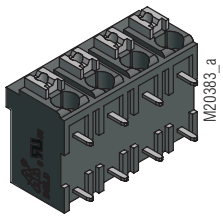
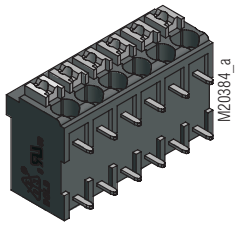
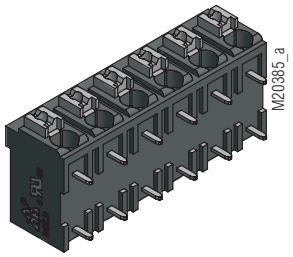
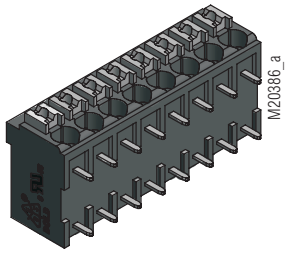
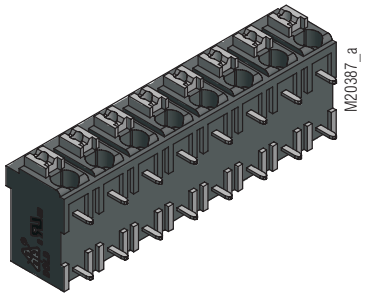
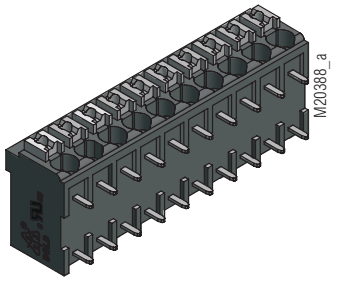
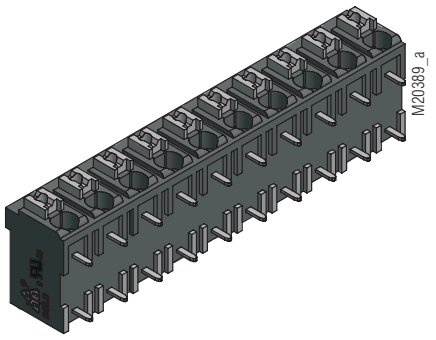
Disassembly of Enclosure

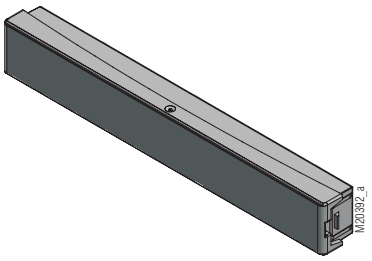
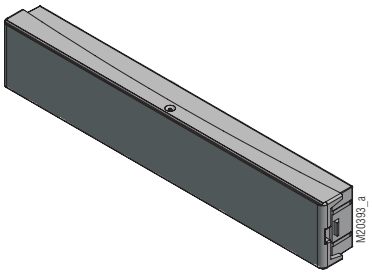
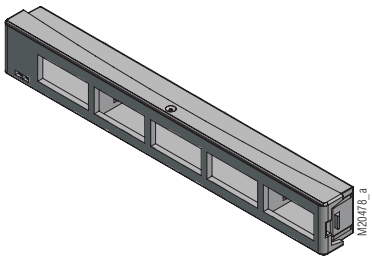
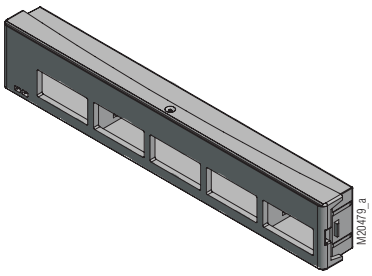
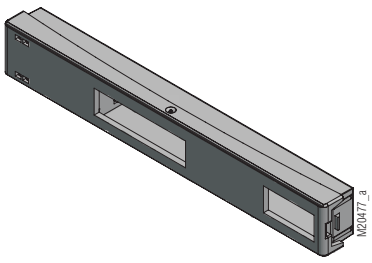
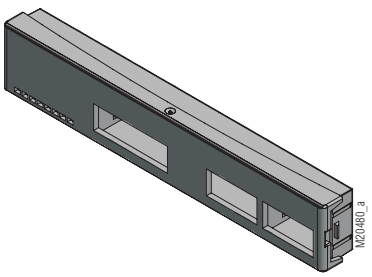
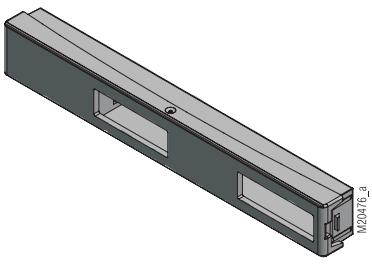
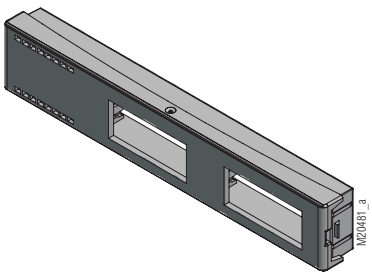


Disassembly of enclosure

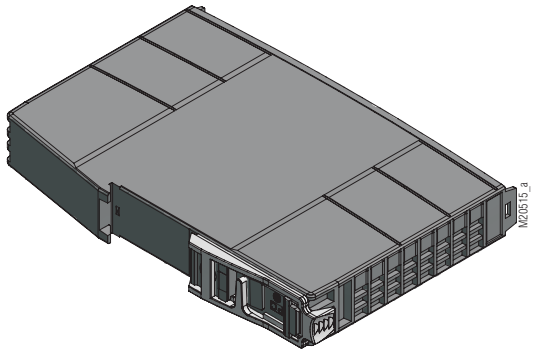
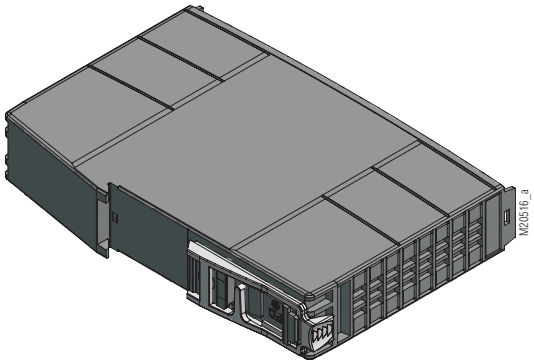
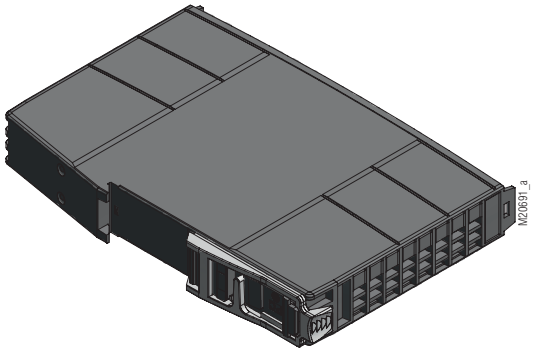
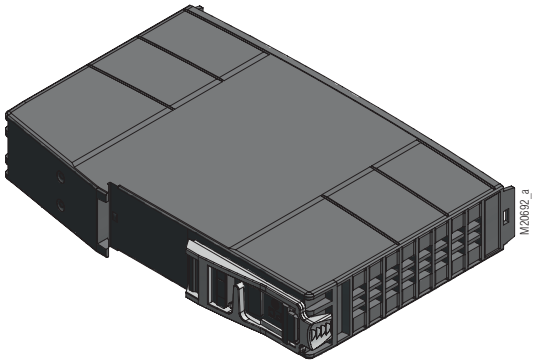
1. + 2. Insert screwdriver into the provided recesses of the front plate and detach the front plate by tilting movements

3. + 4. Insert screwdriver into the provided recesses of the enclosure bottom and detach the enclosure frame by tilting movements

Product overview				
Terminal technology	Grid 3.5 mm	Article number	Grid 5.08 mm	Article number
4-poles	KL4000-000-0400	0068697	KL4000-010-0400	0068700
				
6-poles	KL4000-000-0600	0068698	KL4000-010-0600	0068701
				
8-poles	KL4000-000-0800	0068312	KL4000-010-0800	0068313
				
10-poles	KL4000-000-1000	0068699	KL4000-010-1000	0068702
				

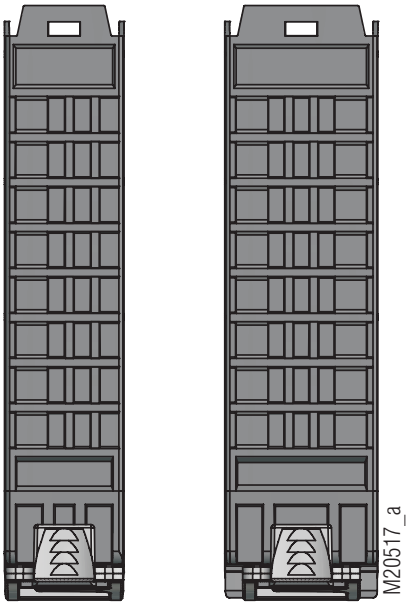
Product overview				
Standard front plates	Width 17.5 mm	Article number	Width 22.5 mm	Article number
Without terminals	KV4603-02-0210003	0068730	KV4604-02-0210003	0068712
				
With identical openings for the integration of connection technology	KV4603-02-0212003	0068731	KV4604-02-0212003	0068713
				
With different openings for the integration of connection technology	KV4603-02-0212103	0068732	KV4604-02-0212103	0068714
				
With different openings for the integration of connection technology	KV4603-02-0212203	0068733	KV4604-02-0212203	0068715
				

Further configurable variants on request

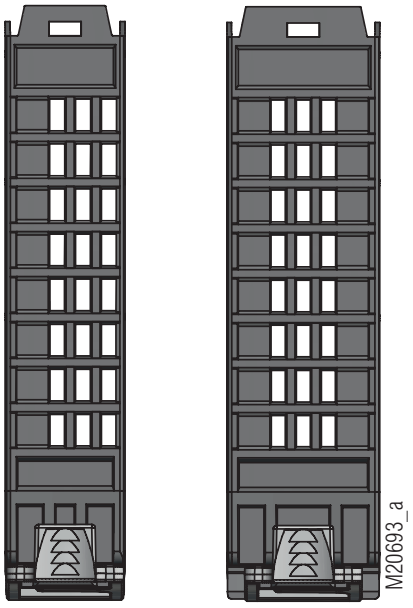
Product overview				
Enclosure bottom	Width 17.5 mm	Article number	Width 22.5 mm	Article number
Without ventilation slots	KV4603-00-0110201001	0068920	KV4604-00-0110201001	0068921
				
With ventilation slots	KV4603-00-0110101001	0069342	KV4604-00-0110101001	0069343
				

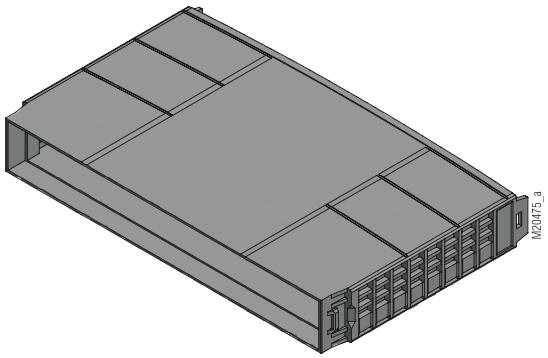
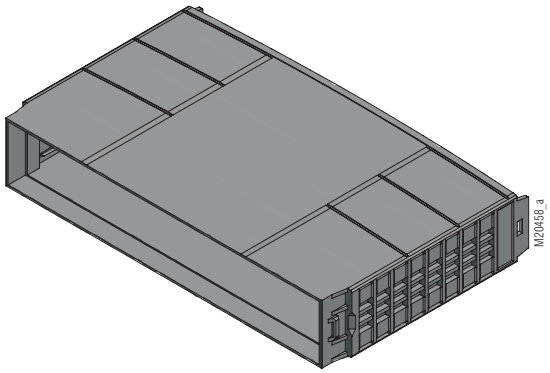
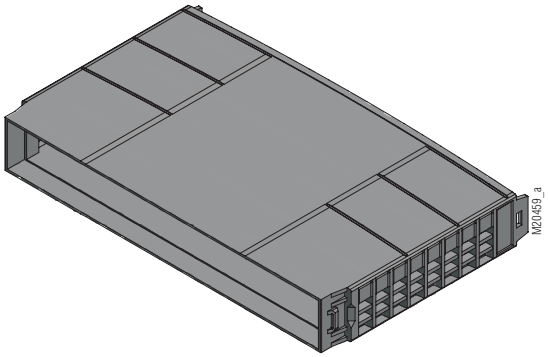
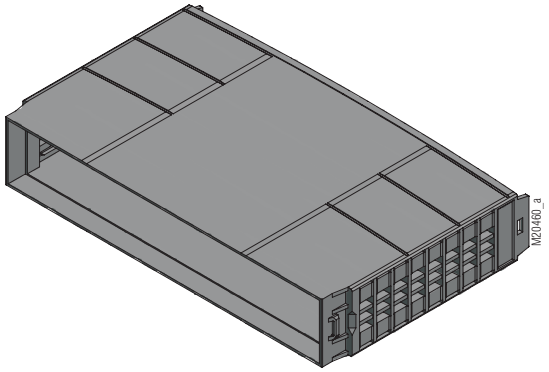
Breakout opening for In-Rail-Bus and / or grounding contacts on request.

Enclosure bottom without ventilation slots

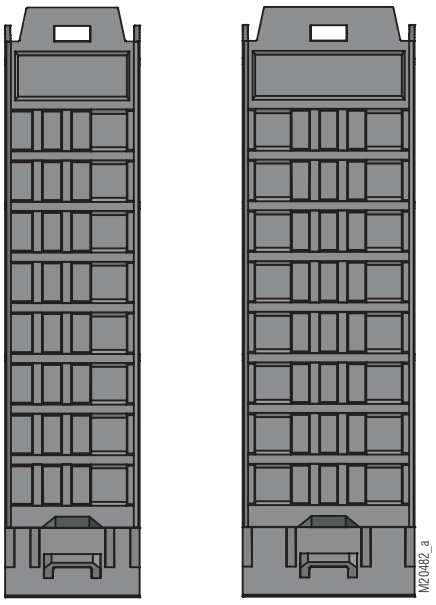


Enclosure bottom with ventilation slots

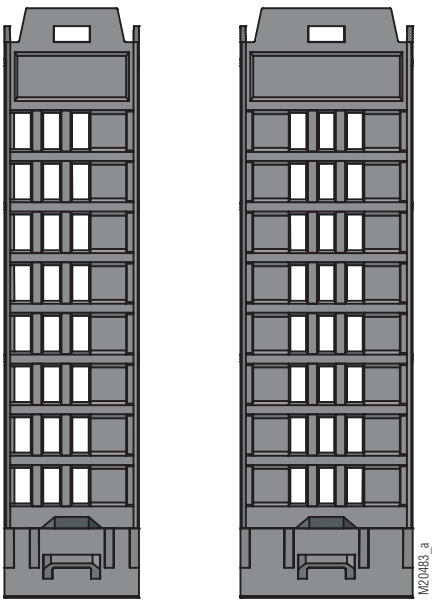


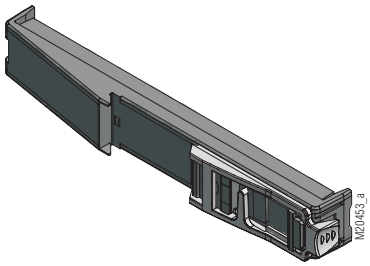
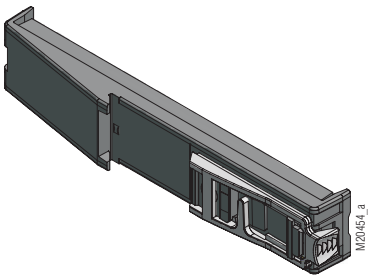
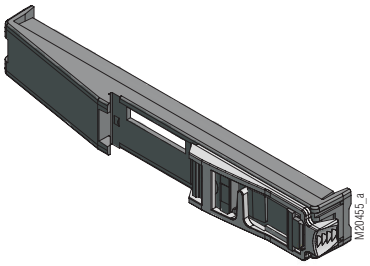
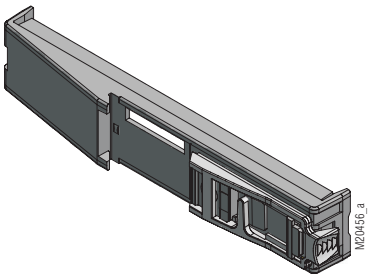
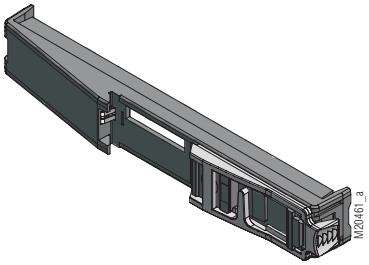
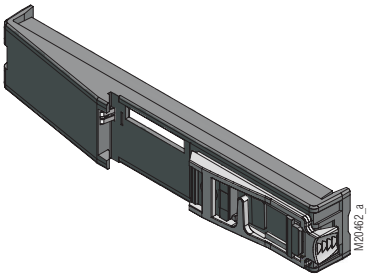
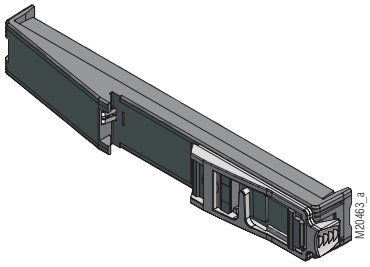
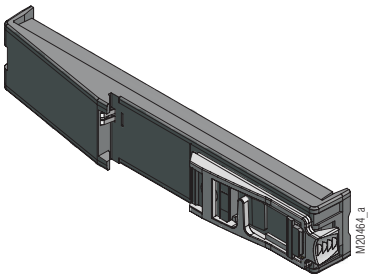
Product overview				
Enclosure frame	Width 17.5 mm	Article number	Width 22.5 mm	Article number
Without ventilation slots	KV4603-01-0110201	0068734	KV4604-01-0110201	0068716
				
With ventilation slots	KV4603-01-0110101	0068735	KV4604-01-0110101	0068717
				

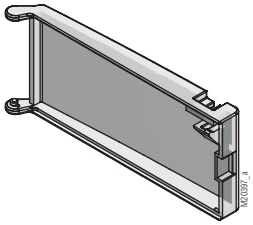
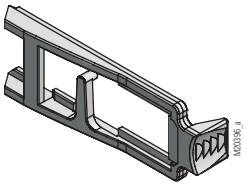
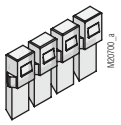
Enclosure frame without ventilation slots



Enclosure frame with ventilation slots



Product overview				
Enclosure bottom with mounting clip	Width 17.5 mm	Article number	Width 22.5 mm	Article number
Standard	KV4603-03-0110101001	0068718	KV4604-03-0110101001	0068722
				
With breakout opening for In-Rail-Bus	KV4603-03-0210101001	0068719	KV4604-03-0210101001	0068723
				
With breakout opening for In-Rail-Bus and grounding contact	KV4603-03-0310101001	0068720	KV4604-03-0310101001	0068724
				
With grounding contact	KV4603-03-0410101001	0068721	KV4604-03-0410101001	0068725
				

Product overview				
Accessories	Width 17.5 mm	Article number	Width 22.5 mm	Article number
Sealable cover	KV4603-04-0220016	-	KV4604-04-0220016	0068728
	On request			
Mounting clip	KV4603-09-0117		Article number 0068729	
				
Light conductor Display area	KS4400-05-0030416		Article number 0069403	
				

Technical Data

Type	Width [mm]	Height [mm]	Depth [mm]
KV 4603	17.5	128	92
KV 4604	22.5	128	92

Outer dimensions: W x H x D

Enclosure material: PC, black RAL 9005, light grey RAL 7035 (other colours on request)

Front plate material: PC, black RAL 9005, light grey RAL 7035 (other colours on request)

Terminals: **See product overview terminal technology / PCB connection technology GE02 / www.dold.com**

Temperature stability		PC
Complying with UL 746 B:		130 °C
Complying with Vicat	Method A	-
ISO 306	Method B	146 °C
Compl. with ISO 75-2	Method A	123 °C
	Method B	142 °C

Specific thermal resistance: R_{th} = **K / W** for enclosure

Enclosure type	**Without ventilation slots**			**With ventilation slots**		
	Individual module	20 mm distance	100 mm distance	Individual module	20 mm distance	100 mm distance
	R_{th}	**R_{th}**	**R_{th}**	**R_{th}**	**R_{th}**	**R_{th}**
KV 4603	13.9	6.4	5.4	7	4	3.5
KV 4604	12.9	6.4	5.2	5.8	3.9	3.4

Flame retardancy
Complying with UL 94: PC V-0

Inner connection: Terminal block can be machine soldered, suitable for reflow soldering processes

Enclosure mounting: Snap-on clip on top hat rail IEC/EN 60715

Creepage resistance:

Insulation type	CTI	Insulation group	PLC classification
PC	225	IIIa	3

Air gap and creepage distance: ≥ 4 mm IEC 60664-1

Discharge of static electricity: Up to 8 kV air discharge with full usage of the available PCB surface EN 61000-4-2

Degree of protection
Enclosure (without ventilation slots): IP 40 IEC 60529
Enclosure (with ventilation slots): IP 30 IEC 60529
Terminals (front area): IP 20 IEC 60529

Print area:
(Depending on terminal allocation in front area)

Front plate	Dimensions [mm]
KV 4603	124 x 16.5
KV 4604	124 x 21.5

Possible PCB surface:

Enclosure	Number of integrable PCBs	Surface / PCB [mm²]	Usable total PCB surface [mm²]
KV 4603	1	9675	9675
KV 4604	2	9675	19350

PCB holder: PCB guides with fixing geometries for PCB positioning

Net weight
(Enclosure frame with front plate, enclosure bottom and mounting clip):

Type	[g]
KV 4603	51
KV 4604	54