

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

Translation
of the original instructions



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 manifold 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

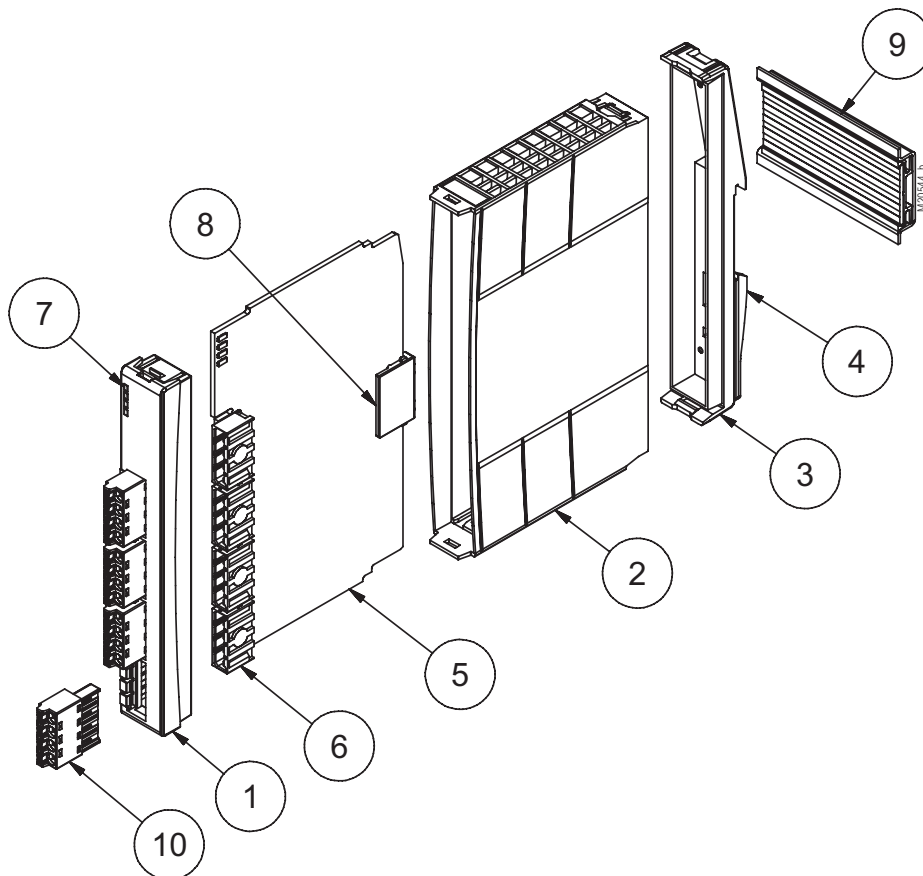
- Complete functionality at the front for display or control elements, connection technology, NFC and radio technology
- Module widths available from 17.5 mm
- Usage of up to two PCBs with enclosure width of 22.5 mm
- Pluggable push-in terminals 4-poles in the grid of 5.0 mm
- The integrated plug removal aid allows for the convenient unlocking of individual terminal blocks. An ideal solution for decentral assemblies with high connection density and limited spatial conditions
- Easy and safe installation by snapping mechanism at rear side
- Easy and cost-effective realization of customer-specific adaptations
- Optionally, each terminal connection can be assigned to a light conductor
- Common bus concepts can be integrated into the bottom assembly
- Optionally sealable, tiltable front cover
- Optional mounting rail bus system (In-Rail-Bus)

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.

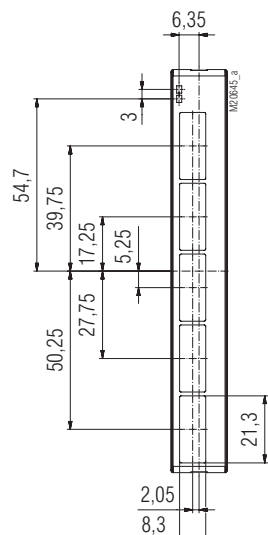
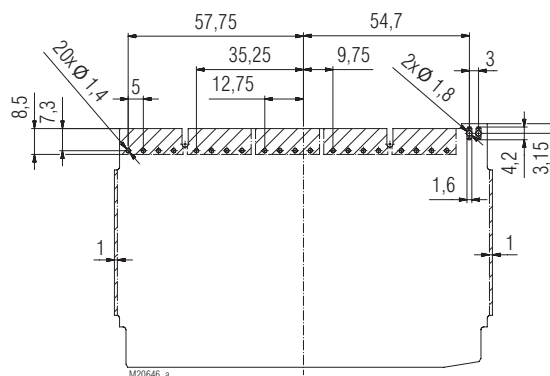
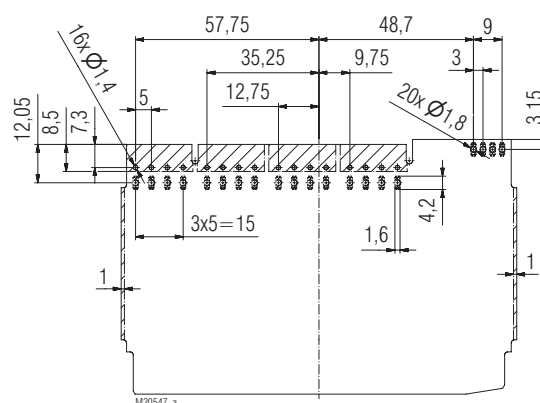
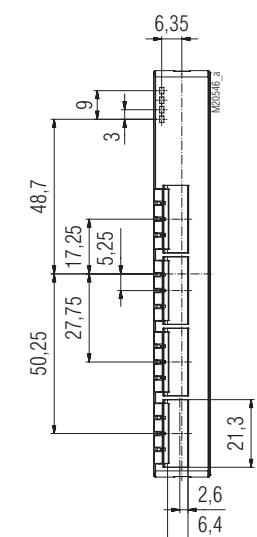
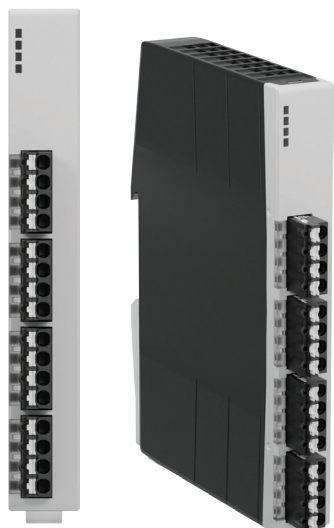
Explosion Drawing Three-Part Enclosure Design



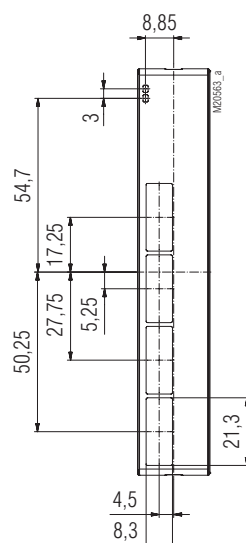
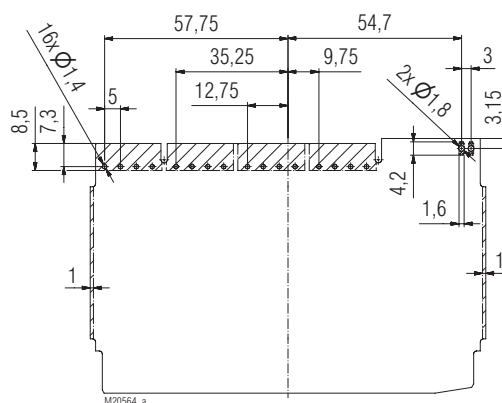
- 1 = Front plate
- 2 = Enclosure frame
- 3 = Enclosure bottom
- 4 = Mounting clip
- 5 = PCB (not included in delivery)
- 6 = Terminal block
- 7 = Light conductor *)
- 8 = In-Rail-Bus contact spring block *)
- 9 = In-Rail-Bus in top-rail *)
- 10 = Pluggable Terminal
- *) optional

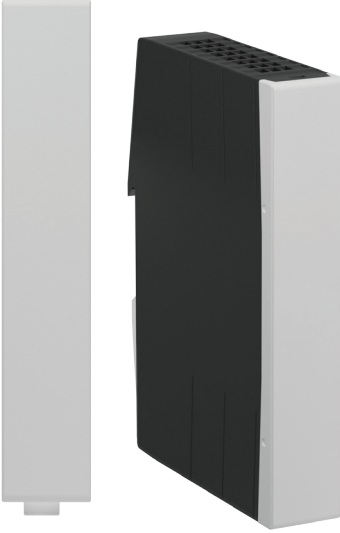
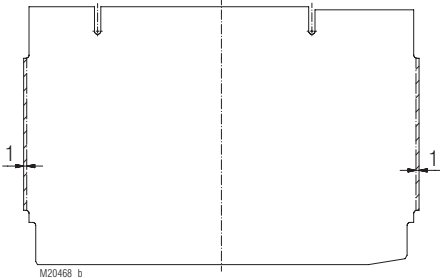
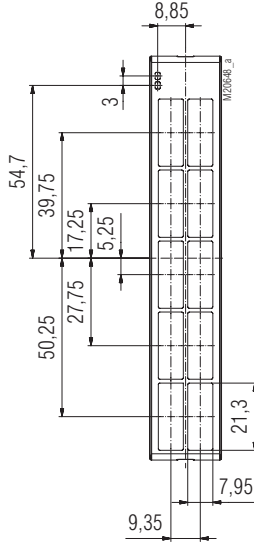
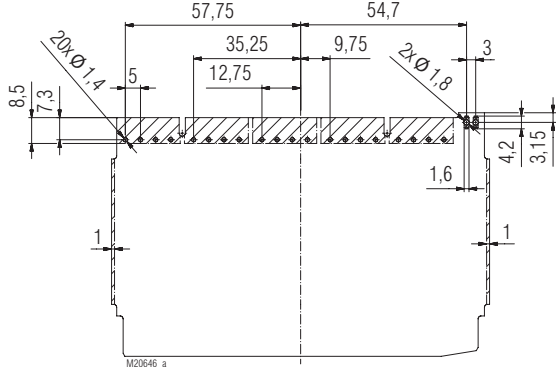
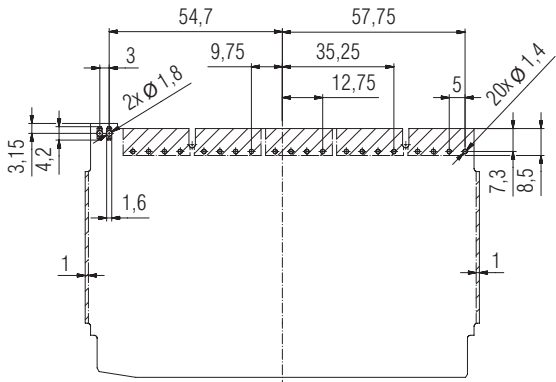
KV 4603
Width 17.5 mm

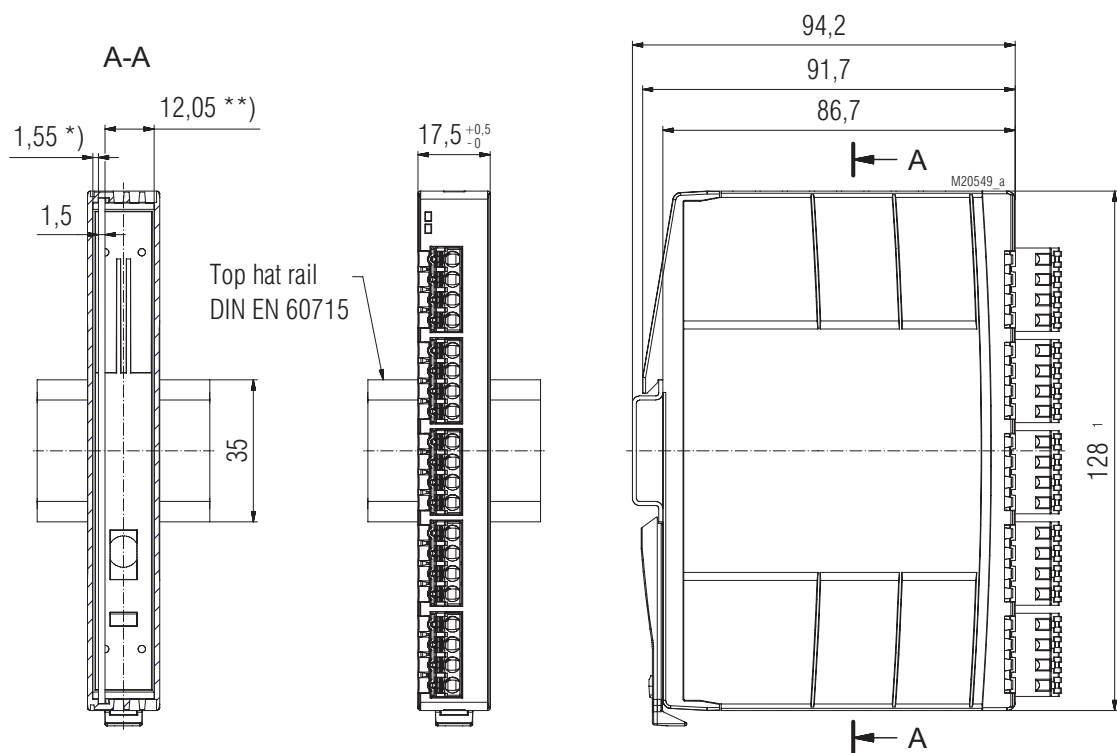
 Terminal 4-poles R = 5.0 mm
 (5 x arranged)

Front plate

PCB

 Terminal 4-poles R = 5.0 mm
 (4 x arranged) with release lever

KV 4604
Width 22.5 mm

 Terminal 4-poles R = 5.0 mm
 (4 x arranged)

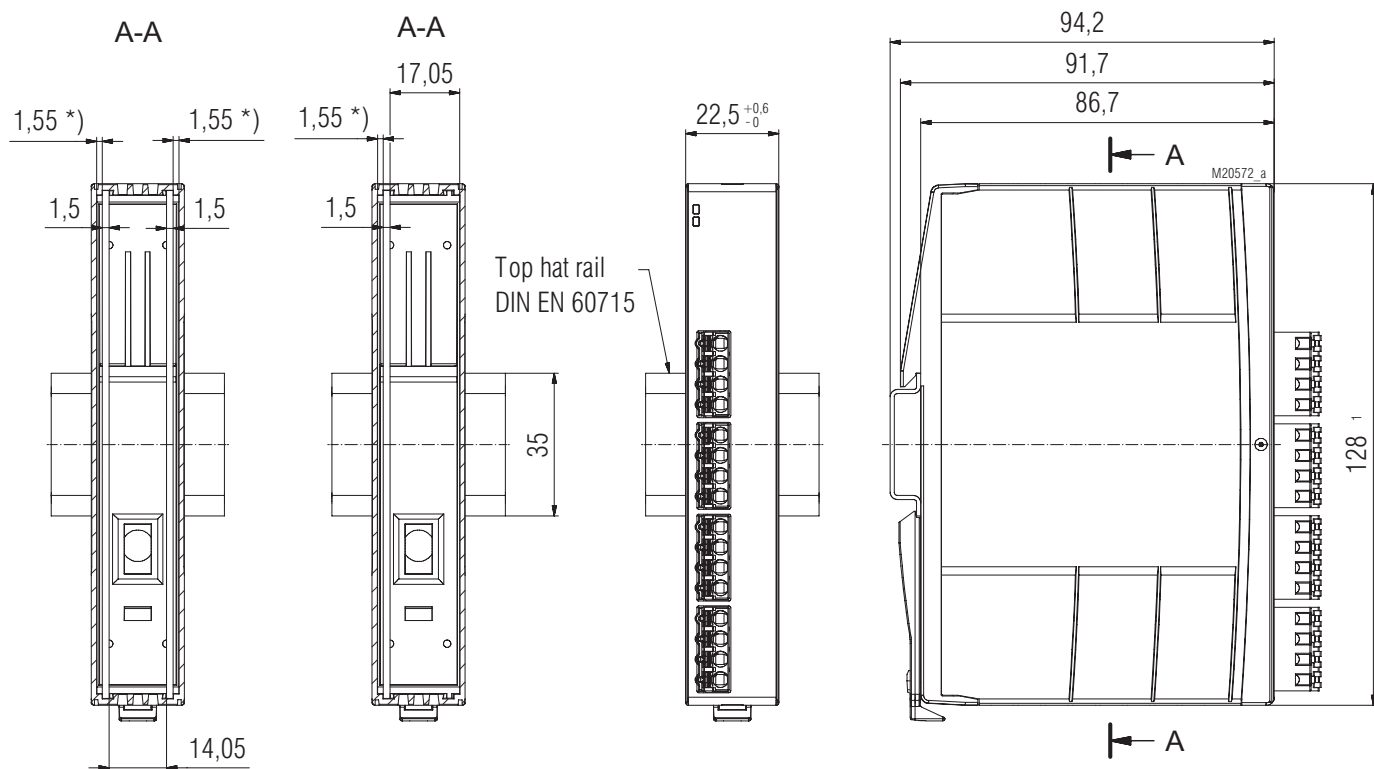
Front plate

PCB


KV 4604 Width 22.5 mm Without terminals 	Front plate 	PCB 
KV 4604 Width 22.5 mm Terminal 4-poles R = 5.0 mm (10 x arranged) 	Front plate 	PCB left / right  

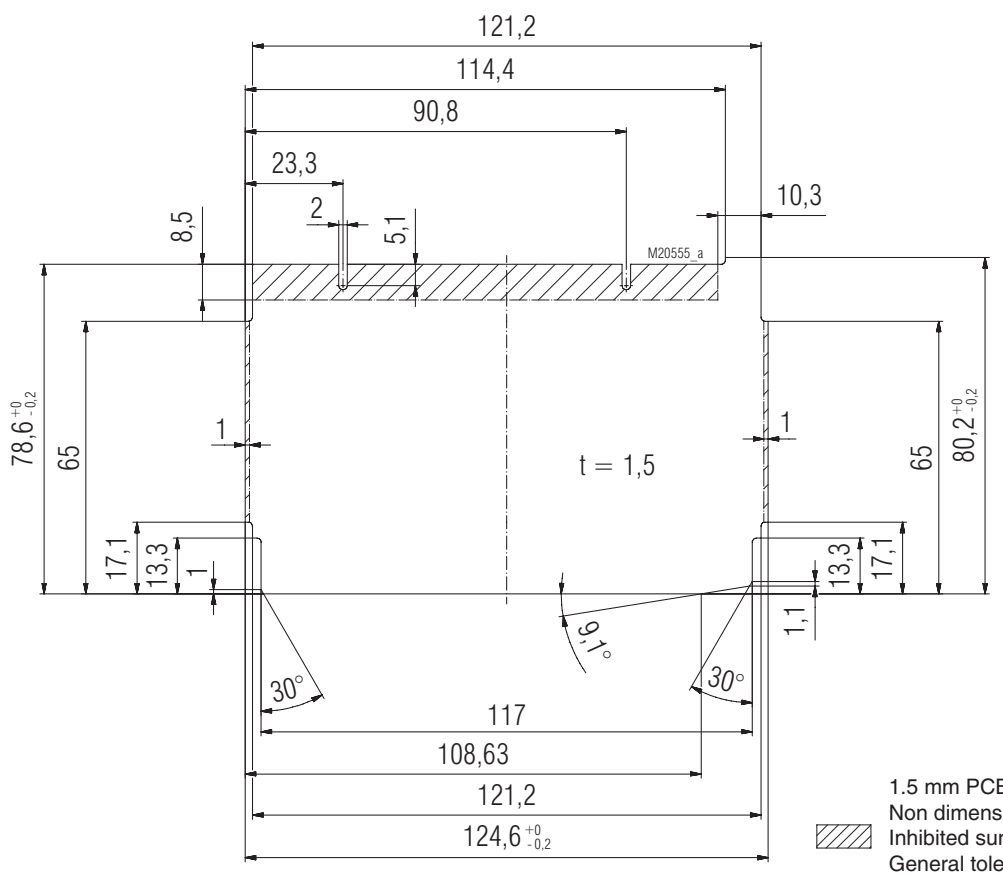


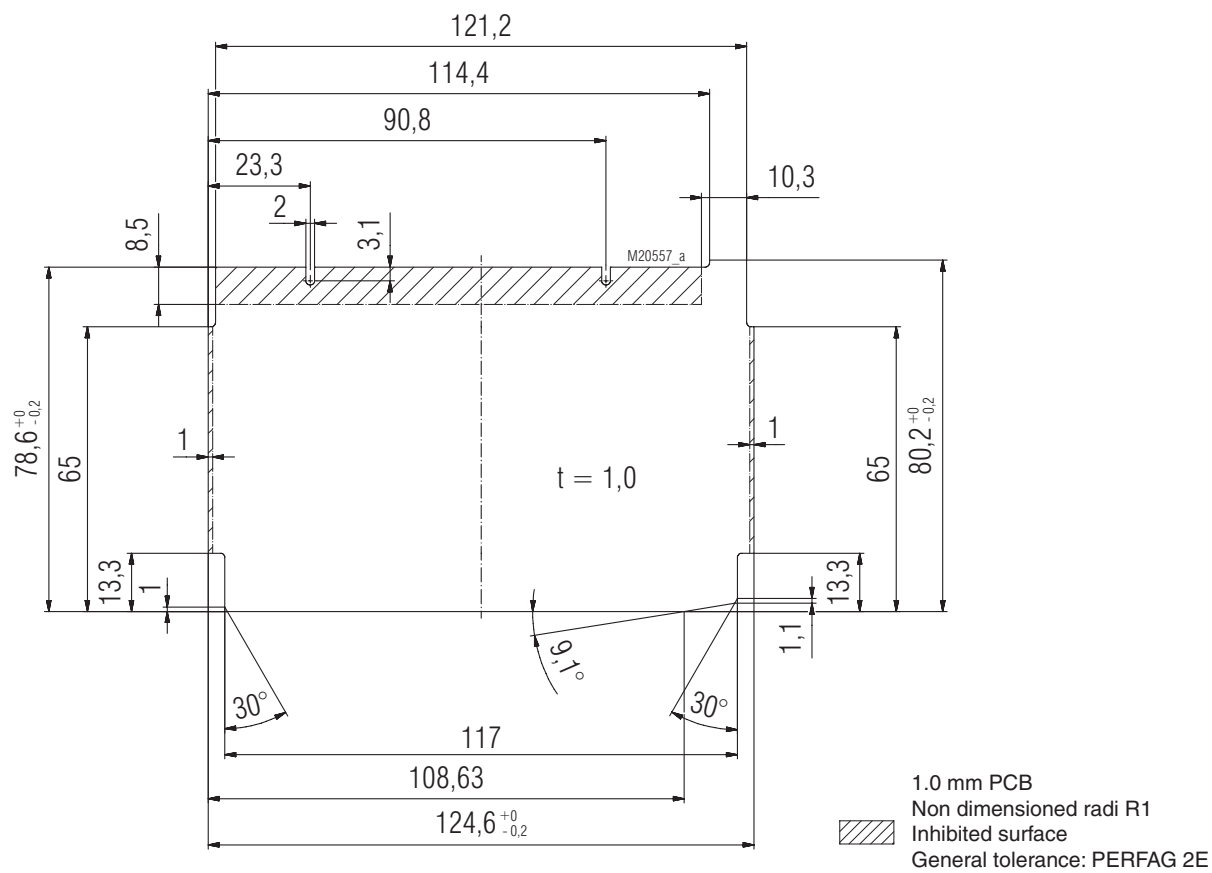
*) 2,05 with printed circuit board thickness $t = 1$ mm

**) 13,05 for special version



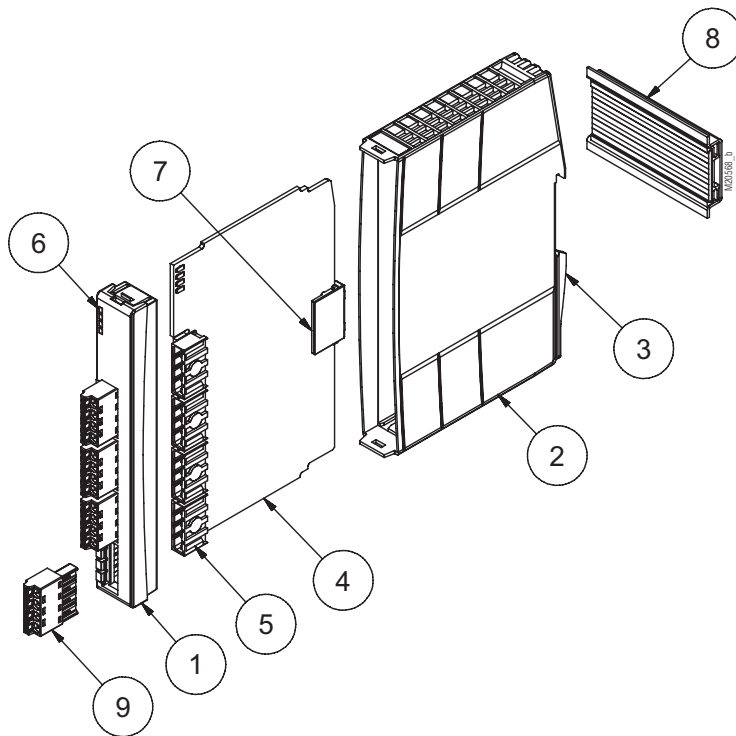
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Explosion Drawing Two-Part Enclosure Design

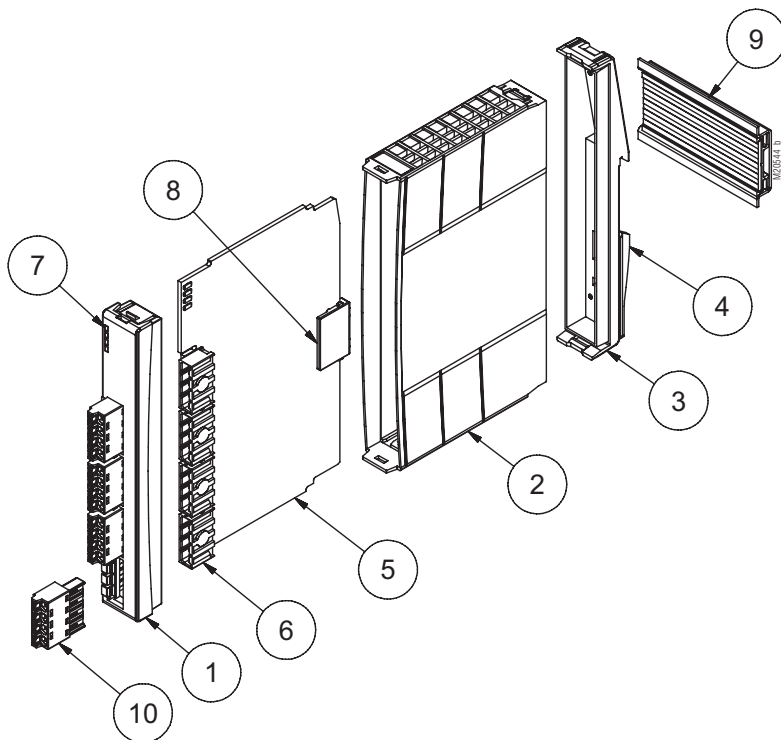
The two-part enclosure design allows the realization of particularly economic applications. The assembly of the two components is toolless by means of snapping. The enclosure bottom with its closed contour allows the optional potting of electronics components.



- 1 = Front plate
- 2 = Enclosure bottom
- 3 = Mounting clip
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- 5 = Terminal block
- 6 = Light conductor *)
- 7 = In-Rail-Bus contact spring block *)
- 8 = In-Rail-Bus in top-rail *)
- 9 = Pluggable terminal block
- *) optional

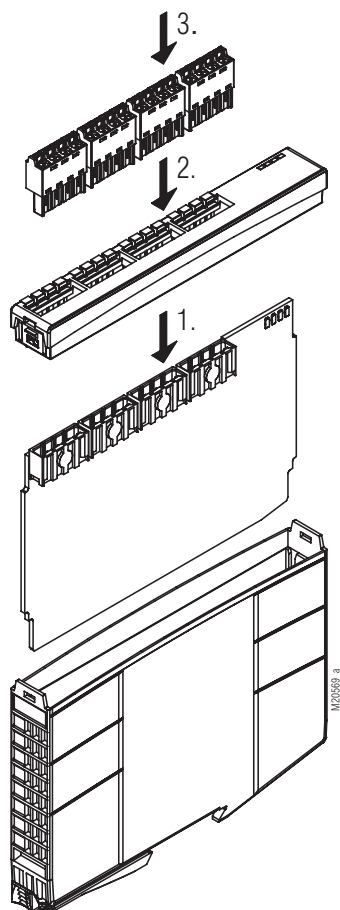
Explosion Drawing Three-Part Enclosure Design

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 without dropping the voltage for the other modules. The status of systems can thus be preserved, no information is lost.



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- 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 contact spring block *)
- 9 = In-Rail-Bus in top-rail *)
- 10 = Pluggable terminal block
- *) optional

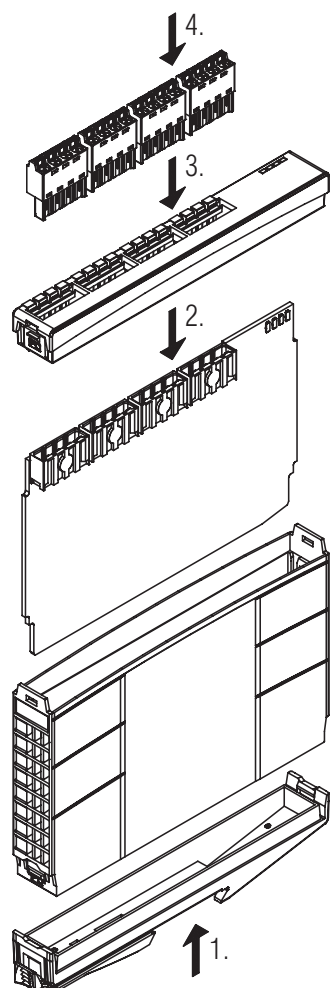
Assembly of Enclosure with Two-Part Enclosure Design



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
3. Plug in terminals, assembly of three-part enclosure

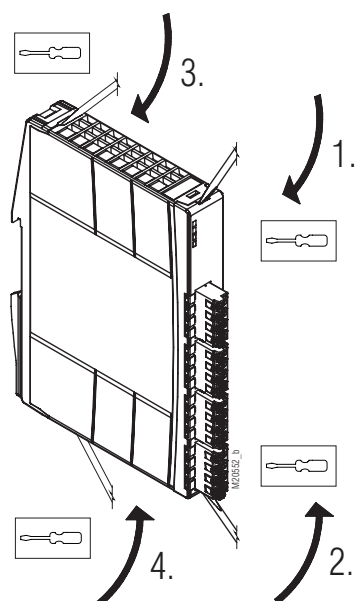
Assembly of Enclosure with Three-Part Enclosure Design



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
4. Plug in terminals

Disassembly of Enclosure

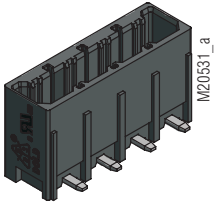


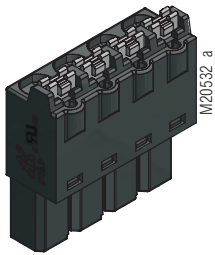
Disassembly of the enclosure

1. Remove terminals
2. Insert screwdriver at two spots, pry open one after the other, remove front plate
3. PCB accessible
4. Insert screwdriver into the provided recesses of the enclosure bottom and detach the enclosure frame by tilting movements

Order Data / Component Designs

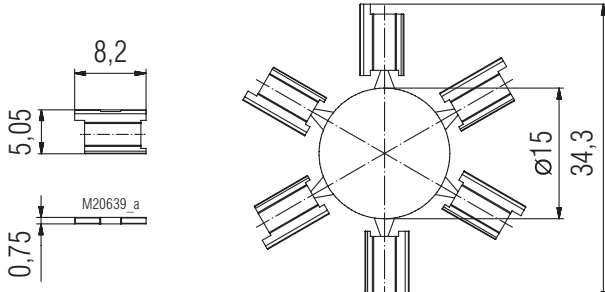
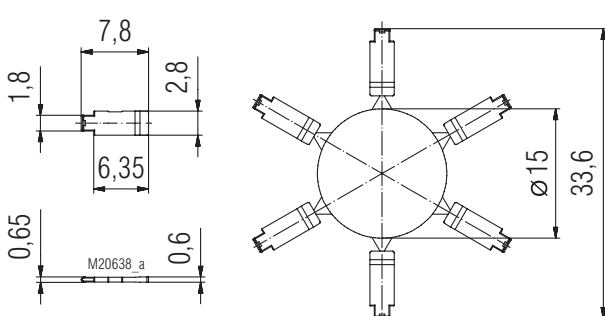
Product overview

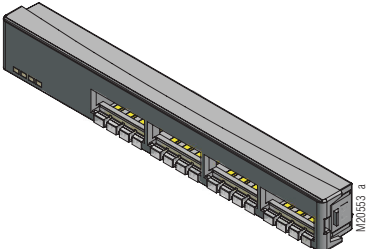
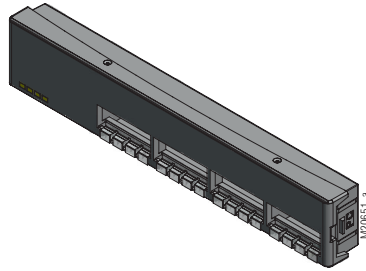
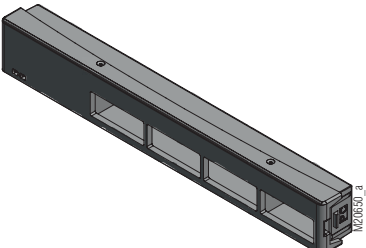
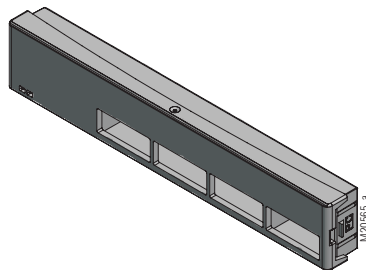
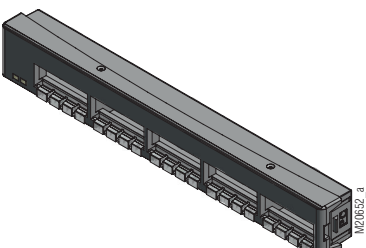
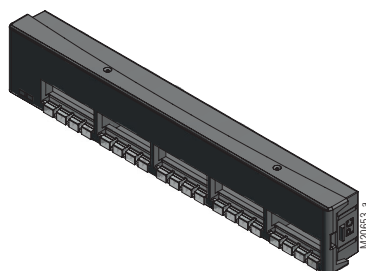
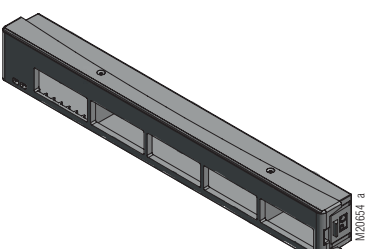
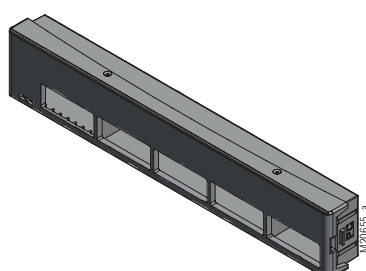
Terminal technology	Grid 5.0 mm	Article number	Position coding profile
Terminal block Soldering procedure: Reflow soldering, 4-poles 	KL4000-230-0400	0068817	-
	KL4000-233-0400-xxxTR	0068982	-
	KL4000-233-0400-1xxTR	0069212	1
	KL4000-233-0400-x2xTR	0069213	2
	KL4000-233-0400-xx3TR	0069214	3
	KL4000-233-0400-12xTR	0069215	1 + 2
	KL4000-233-0400-x23TR	0069216	2 + 3
	KL4000-233-0400-1x3TR	0069217	1 + 3
	KL4000-233-0400-123TR	0069238	1 + 2 + 3

Terminal technology	Grid 5.0 mm	Article number	Position coding profile
Cage clamp terminals, 4-poles 	KL4000-132-0400-XXX	0068816	-
	KL4000-132-0400-1XX	0069206	1
	KL4000-132-0400-X2X	0069207	2
	KL4000-132-0400-XX3	0069208	3
	KL4000-132-0400-12X	0069209	1 + 2
	KL4000-132-0400-X23	0069210	2 + 3
	KL4000-132-0400-1X3	0069211	1 + 3
	KL4000-132-0400-123	0069237	1 + 2 + 3

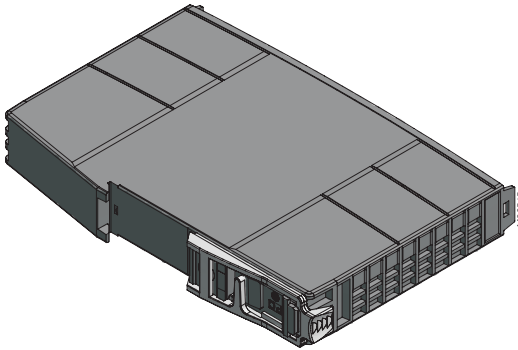
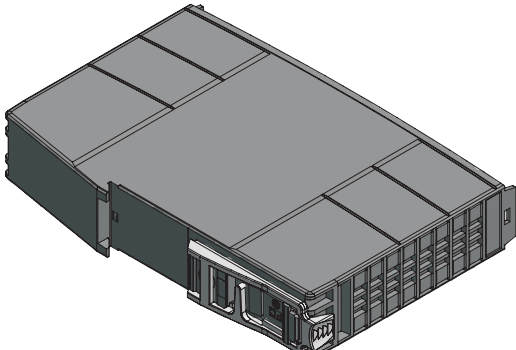
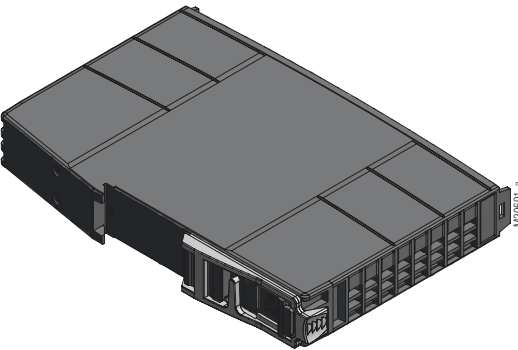
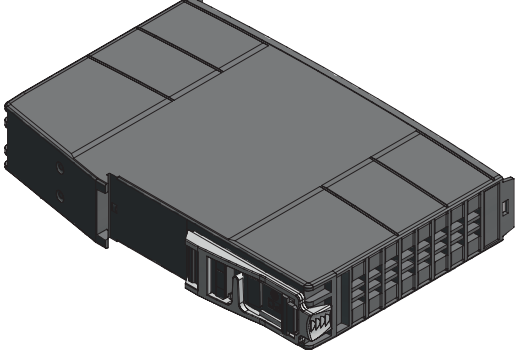
Order Data / Component Designs

Product overview

Coding star	Article number	Dimension [mm]
KL4000-09-01	0069196	
KL4000-10-01	0069197	
KL4000-10-01	0069197	

Product overview	KV 4603		KV 4604	
Standard front plate	Width 17,5 mm	Article number	Width 22,5 mm	Article number
With plug extraction function and one light conductor per port	KV4603-02-0410203001	0068980	KV4604-02-0410603001	0069337
				
With openings to plug through the plugs	KV4603-02-0212803	0069333	KV4604-02-0212803	0068981
				
With plug extraction function and one light conductor per port	KV4603-02-0410103001	0069335	KV4604-02-0410103001	0069336
				
With openings to plug through the plugs	KV4603-02-0212903	0069334	KV4604-02-0212903	0068714
				

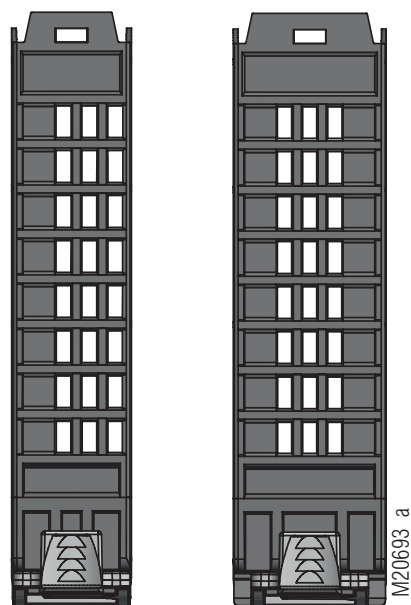
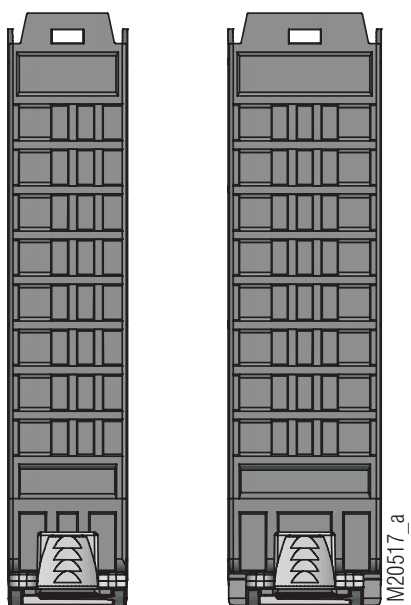
Further configurable variants on request

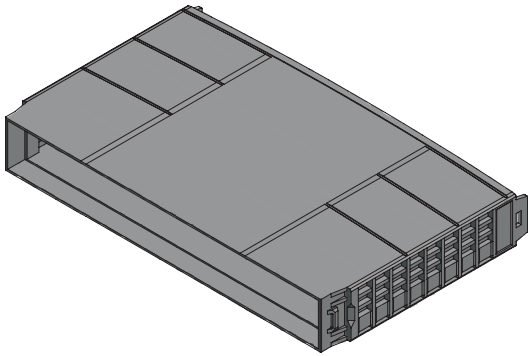
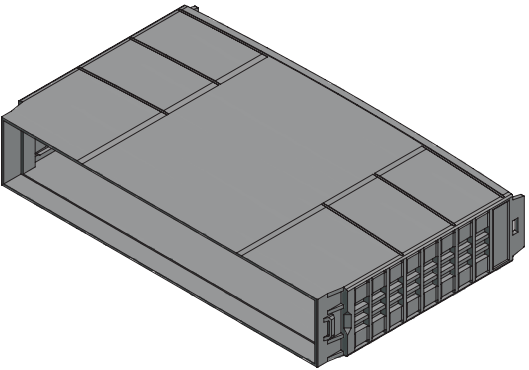
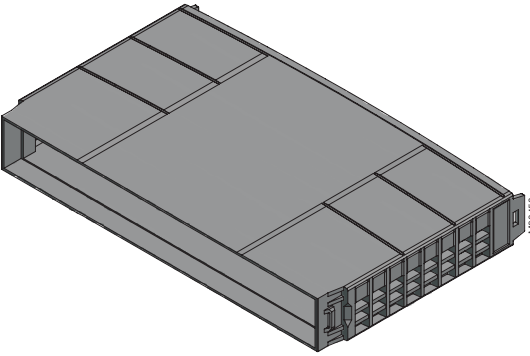
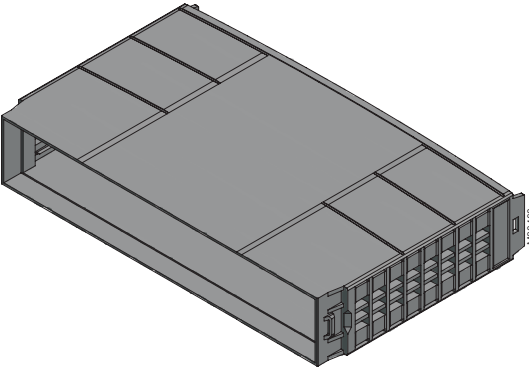
Product overview				
Enclosure bottom	Width 17.5 mm	Article number	Width 22.5 mm	Article number
Without ventilation slots	KV4603-00-0110201001	0068920	KV4604-00-0110201001	0068921
				
With ventilation slots	KV4603-00-0110101001	0069342	KV4604-00-0110101001	0069343
				

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

Enclosure bottom without ventilation slots

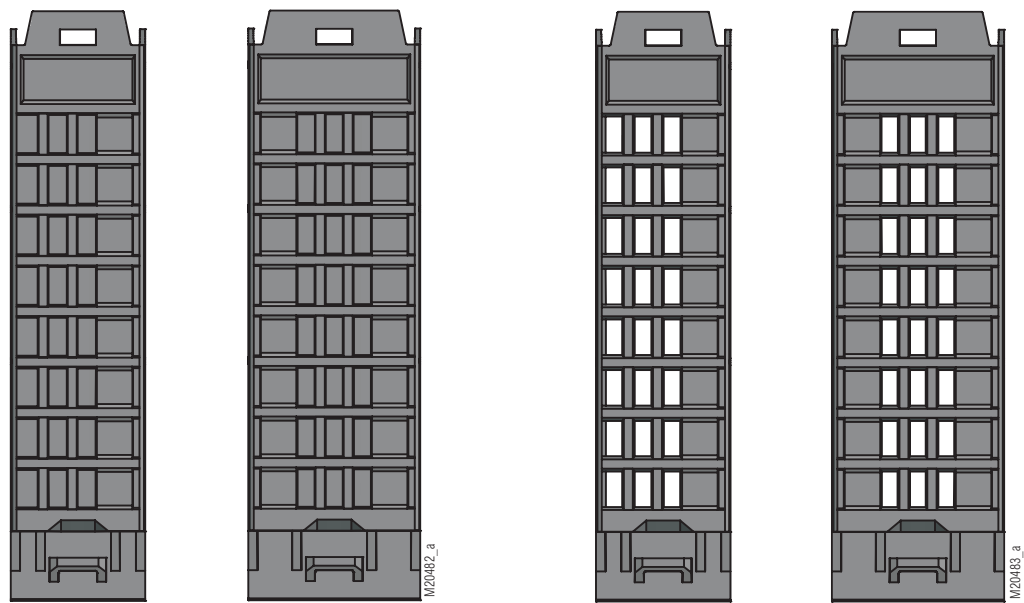
Enclosure bottom with ventilation slots

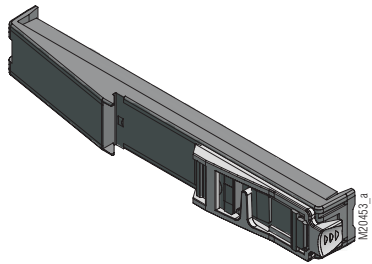
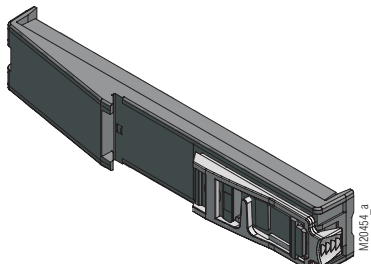
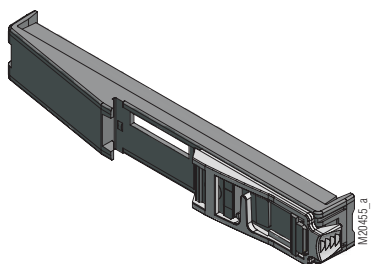
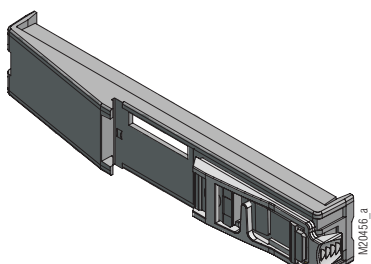
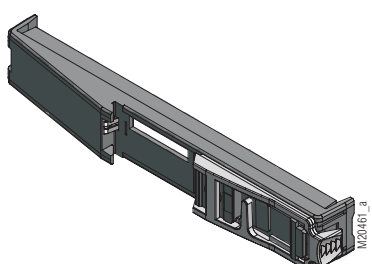
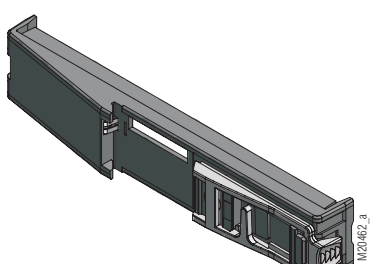
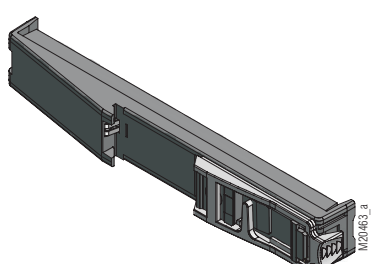
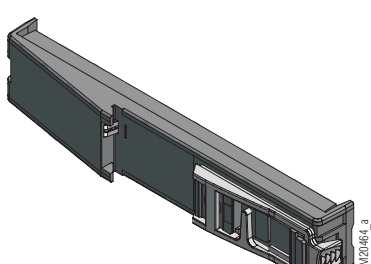


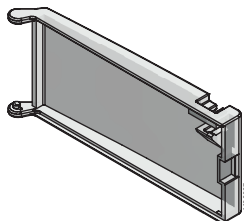
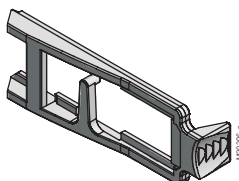
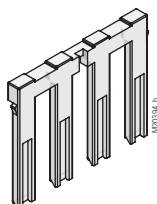
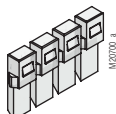
Product overview				
Enclosure frame	Width 17.5 mm	Article number	Width 22.5 mm	Article number
Without ventilation slots	KV4603-01-0110201	0068734	KV4604-01-0110201	0068716
				
With ventilation slots	KV4603-01-0110101	0068735	KV4604-01-0110101	0068717
				

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	KV4604-03-03-0110101001	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	KV4603-04-02200016	-	KV4604-04-02200016	0068728
	On request			
Mounting clip	KV4603-09-0117		Article number 0068729	
				
4-fold light conductor per port	KV4600-16-0216		Article number 0068986	
				
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 ISO 306	Method A	-				
	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 guidings 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			

