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Front Panels

Description

Front panels are available for 19" rack mounting of 3 U cassette type power supplies in *Schroff* system version (*Intermas* on request) and may be attached to the converter by means of countersunk screws.

An assembly kit, consisting of a front panel and a support bracket, enables arrangement of two standard cassettes with up to six output voltages in 6 U configuration.

All front panels are of colourless anodised aluminium and delivered with one or two grey plastic handles of 3 TE for easy pull-out and two or four hand-press insertable plastic retainers with captive screws for fixing to the rack.

Note: Front panel mounting or custom specific front panels are available on request.

Dimensions in accordance to DIN 41494-1 (IEC 60297):
Width: 1 TE = 5.08 mm (0.20")
Height: 1 U = 44.45 mm (1.750")
(In Europa often *HE* instead of *U* is used.)
Tolerances ±0.2 mm, unless otherwise specified

Schroff System for 3 U Rack

Q-, PC-, P-, R Series Front Panels in 4, 5 or 6 TE

This front panel available in three versions fits to all DC-DC converters of the Q-, P- and R-Families and to the AC-DC converters of the PC Series with case size Q.

Table 1: Q01 case front panel selection

X		Case size	Converter series	Type Part no.
TE	mm			
4	20.0	Q01	Q	G04-Q01 HZZ 00835
		Q03	PC	
		Q04	P	G04-Q04 HZZ 00840
			R	
5	25.1	Q01	Q	G05-Q01 HZZ 00836
		Q03	PC	
		Q04	P	G05-Q04 HZZ 00841
			R	
6	30.2	Q01	Q	G06-Q01 HZZ 00839
		Q03	PC	
		Q04	P	G06-Q04 HZZ 00842
			R	

Note: For use of several units next to each other, we advise to pack them not too densely in order to assure good thermal management (see also relevant data sheet).

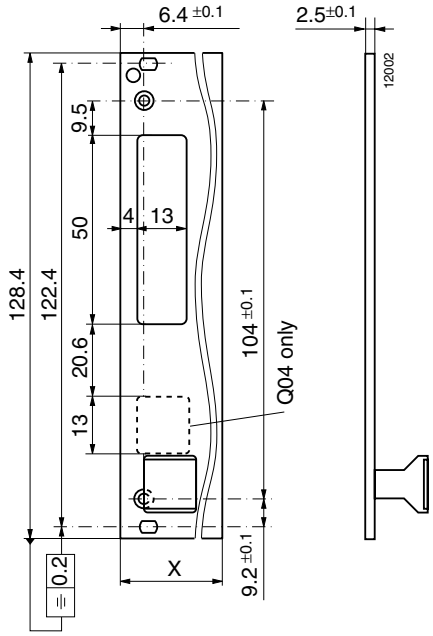

Fig. 1
Front panel for Q case size

Delivery contents:
Front panel, grey plastic handle, three countersunk screws, set of two plastic retainers with captive screws and assembly instructions.

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H- and M Series Front Panel in 8 TE

This front panel fits to all 50 Watt DC-DC and AC-DC converters of the 12...LH Series with case size H02 as well as to all AM...LM- and CMZ...LMZ Series versions with case size M02.

Table 2: H02 and M02 case front panel selection

TE	mm	Case size	Converter series	Type Part no.
8	40.3	M02	M	G08-M02 HZZ 00802
		H02	H	

Delivery contents:
Front panel with grey plastic handle, two countersunk screws, set of two plastic retainers with captive screws and assembly instructions

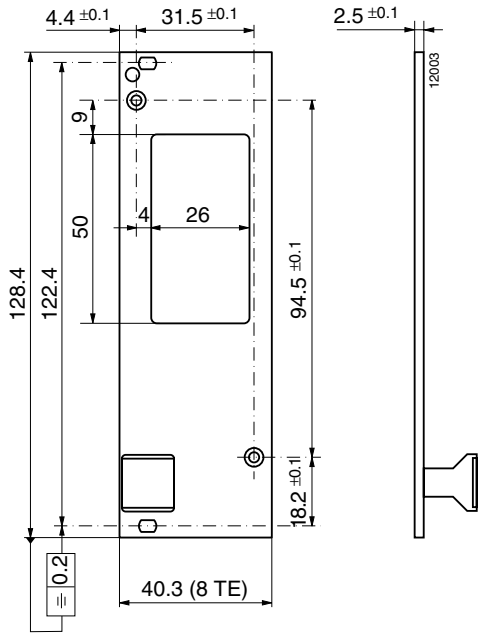


Fig. 2
Front panel for H02 and M02 case size

PSL- and SR 20E Series Front Panel in 8 TE

This front panel fits to all Switching Regulators of the PSL Series with case size L04 and to all 20 Watt DC-DC and AC-DC converters of the B...LSR Series with case size L01.

Table 3: L case front panel selection

TE	mm	Case size	Converter family	Type Part no.
8	40.3	L04	PSL [1]	G08-L HZZ 00805
		L01	SR20E	

[1] Exception: PSL with option D is part no. G08-L04-D, HZZ 00816

Note: This front panel is a compatible replacement for all earlier versions of the same size, published in any previous front panel data sheet.

Delivery contents:
Front panel with grey plastic handle, two countersunk screws, set of two plastic retainers with captive screws and assembly instructions.

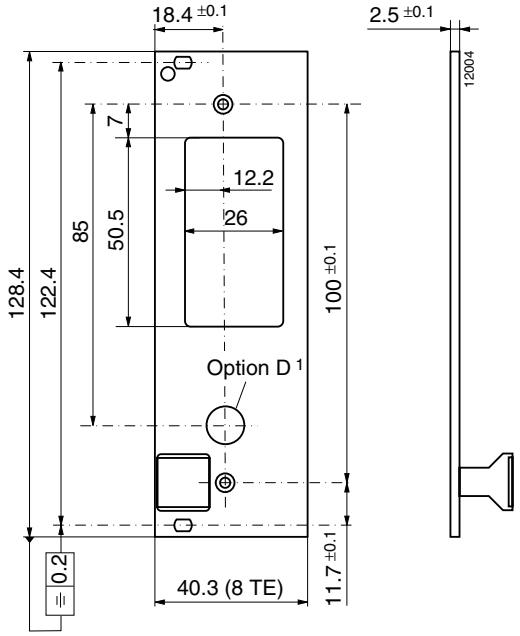


Fig. 3
Front panel for L01 and L04 case size

PSS and S Series Front Panels in 12 TE
PSK and K Series Front Panels in 16 TE

This front panel fits to all Switching Regulators of the PSS and PSK Series with case size S01 or K01 as well as to all 100...150 Watt DC-DC and AC-DC converters of the A...LS- and A...LK Series with case size S02 or K02 according to the selection table below:

Table 4: S and K case front panel selection

X		Case size	Converter series	Type Part no.
TE	mm			
12	60.6	S01	PSS	G12-S HZZ 00845
		S02	S	
16	81.0	K01	PSK	G16-K HZZ 00831
		K02	K	

Delivery contents:
Front panel with grey plastic handle, two countersunk screws, set of four plastic retainers with captive screws and assembly instructions.

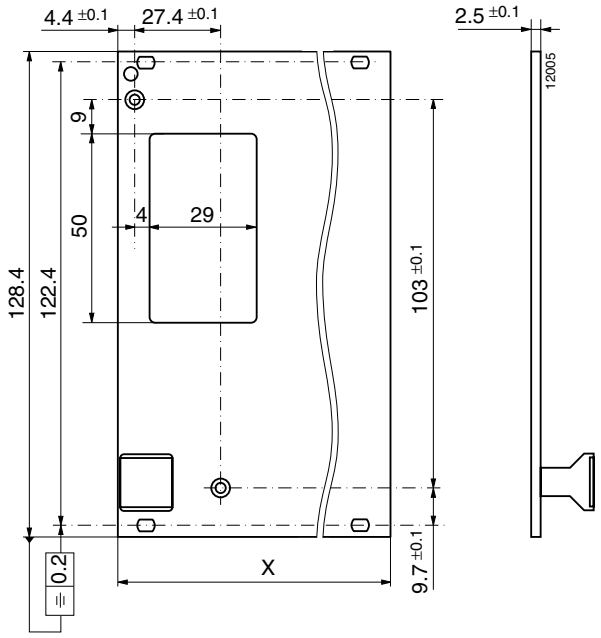


Fig. 4
Front panel for S01, S02, K01 and K02 case size

T Series Front Panel in 28 and 26 TE

This front panel fits to all 500 Watt AC-DC converters of the T Series with case size T01.

Table 5: T case front panel selection

X		Case size	Converter series	Type Part no.
TE	mm			
28	141.9	T01	T	G28-T01 HZZ 00837

Delivery contents:
Front panel with two grey plastic handles, three countersunk screws, set of four plastic retainers with captive screws and assembly instructions.

Blind plates: to close a non fully equipped 19" rack (only one or two LTs mounted). Power-One offers 28 TE wide blind plates without hole.

G28-T01-blank met HZZ 00847 with metal screw retainers
G28-T01-blank plas HZZ 00848 with plastic screw retainers

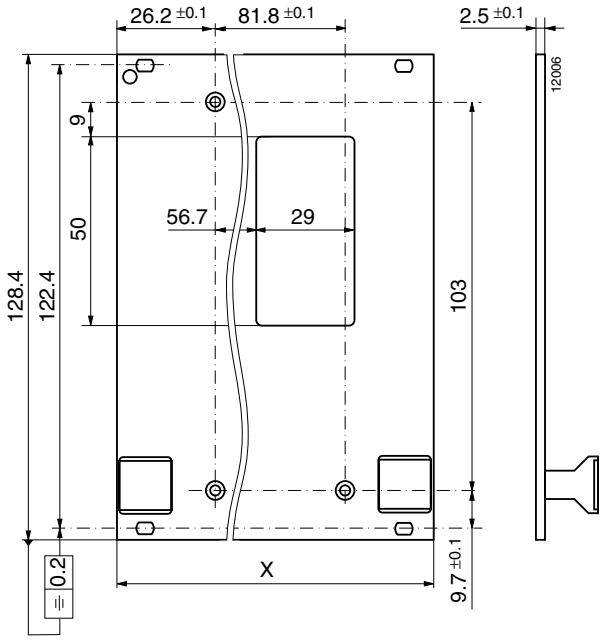


Fig. 5
Front panel for T01 case size

Intermas System for 3 U Rack

The major differences between the Intermas and the Schroff system front panels are the thickness (2 mm instead of 2.5 mm), the hole size for the plastic retainers and a small cut-out on each side (see figure: *Intermas system front panel*). All other dimensions are given in the relevant Schroff front panel drawings.

The following Intermas front panels are available on request:

Table 6: Intermas front panel selection

X TE	X mm	Case size	Converter series	Type Part no.
8	40.3	H02	H	F08-M02 HZZ 00702
		M02	M	
8	40.3	L01	PSL [1]	F08-L HZZ 00705
		L04	SR 20E	
12	60.6	S01	PSS	F12-S HZZ 00732
		S02	S	
16	81.0	K01	PSK	F16-K HZZ 00731
		K02	K	

[1] Exception: PSL with option D is type/part no. F08-L04-D, HZZ 00716

Delivery contents:
Front panel with grey plastic handle, two countersunk screws and assembly instructions.

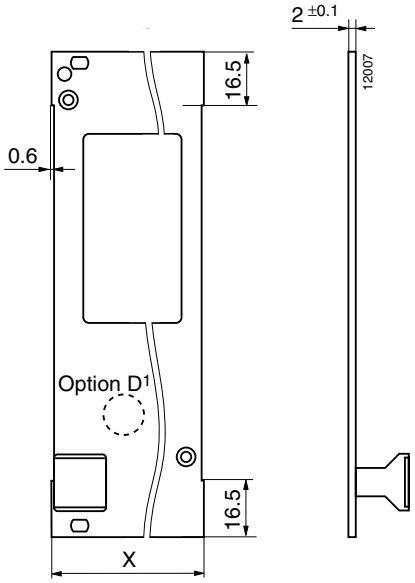


Fig. 6
Intermas system front panel (various case sizes)

Schroff System Kit for 6 U Rack

To configure Power-One Power Supplies for use in 6 U racks a special assembly kit has been created consisting of a double height front panel together with a support bracket for two converters as shown in figure 7.

All other dimensions are given in the relevant 3 U front panel drawings according to their case size. The assembly kit is available with the type designation according to the following table:

Table 7: 6 U assembly kit selection

X TE	X mm	Case size	Converter series	Type Part no.
5	25.1	Q01	Q	Kit-G05-6HE-Q01 HZZ 00838
		Q03	PC	
8	40.3	H02	H	Kit-G08-6HE-M02 HZZ 00804
		M02	M	
12	60.6	S01	PSS	Kit-G12-6HE-S HZZ 00833
		S02	S	
16	81.0	K01	PSK	Kit-G16-6HE-K HZZ 00832
		K02	K	

Delivery contents:
Double height front panel with two grey plastic handles, four countersunk screws, set of two plastic retainers with captive screws, a support bracket and assembly instructions.

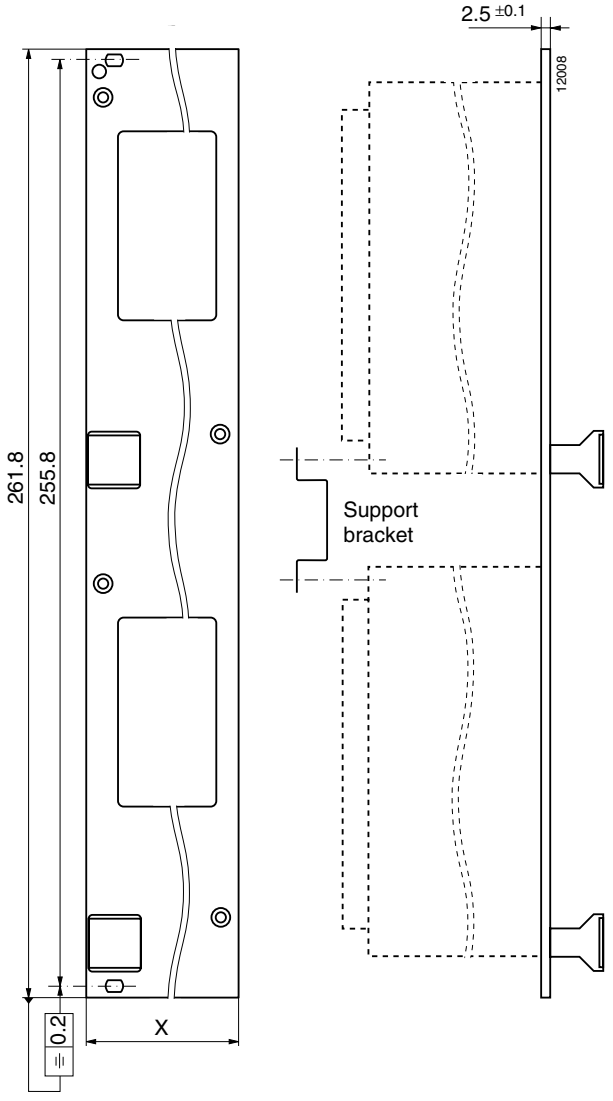
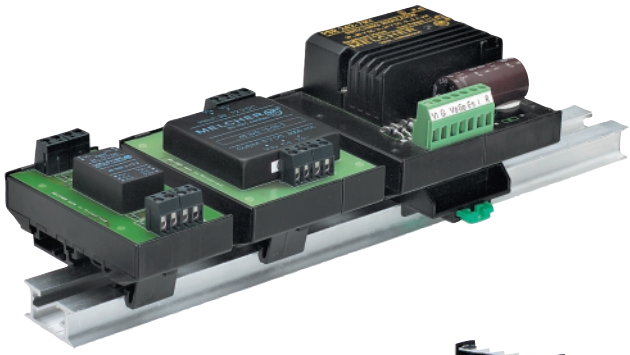


Fig. 7
Front panel for 6 U configuration (various case sizes)

Mounting Supports for Chassis-, DIN-Rail- and PCB Mounting



Description

Special mounting supports have been designed for the integration of power supplies into switch boards, control panels, printed circuit boards, etc. using adapters for Chassis-, DIN-Rail or PCB mounting.

The 19 inch cassette type DC-DC and AC-DC converters can also be chassis mounted with frontal access by means of a special *Chassis Mounting Plate*, attached to the converters.

The *Universal Mounting Bracket* also fits to most of these cassette type converters, allowing for either vertical chassis- or DIN-Rail mounting.

A *Bracket Kit*, consisting of a PCB with screw terminal connectors and a bracket suitable for either Chassis- or DIN-Rail mounting, is available either for PCB mountable PSR and PSA Switching Regulators with option "Y" pins or for small DC-DC converters 1...15 Watt.

For isolation of the PCB-mountable converters from a double sided PCB, the use of *Isolation Pads* is recommended, as described below.

A *Flexible H11 PCB* allows for connection of casette type converters with H11 connector mounted on a printed circuit board to this board.

Note: All dimensions are in mm, with tolerances of ±0.2 mm unless otherwise specified.

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Chassis Mounting Plates

For chassis mounting of 19" cassette type converters where only frontal access to the mounting screws is given, special chassis mounting plate adapters are available according to the following table and figures 1 to 3.

Table 1: Mounting Plate survey

Case size	Converter series	Type Part. no.	Delivery content
K02	K [1]	Mounting plate K02 HZZ 01213	Mounting plate and 4 countersunk screws
S02	S [1]		
Q01	Q	Mounting plate Q HZZ 01215	
Q03	PC		
Q04	P		
Q01	Q	Mounting plate M HZZ 01210	Mounting plate, 4 countersunk screws and 4 washers
Q03	PC		
Q04	P		
M02	M		
H02	H		

[1] Option B1 necessary

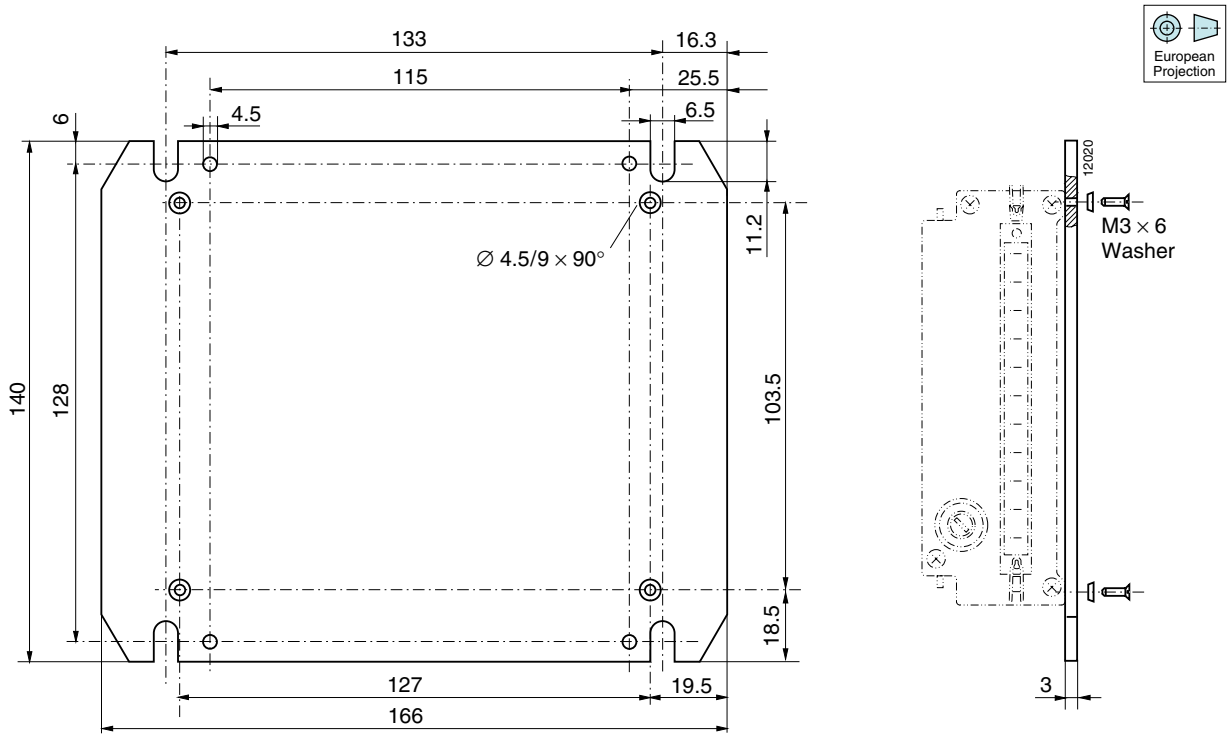


Fig. 1
Mounting plate M
Aluminium, black finish

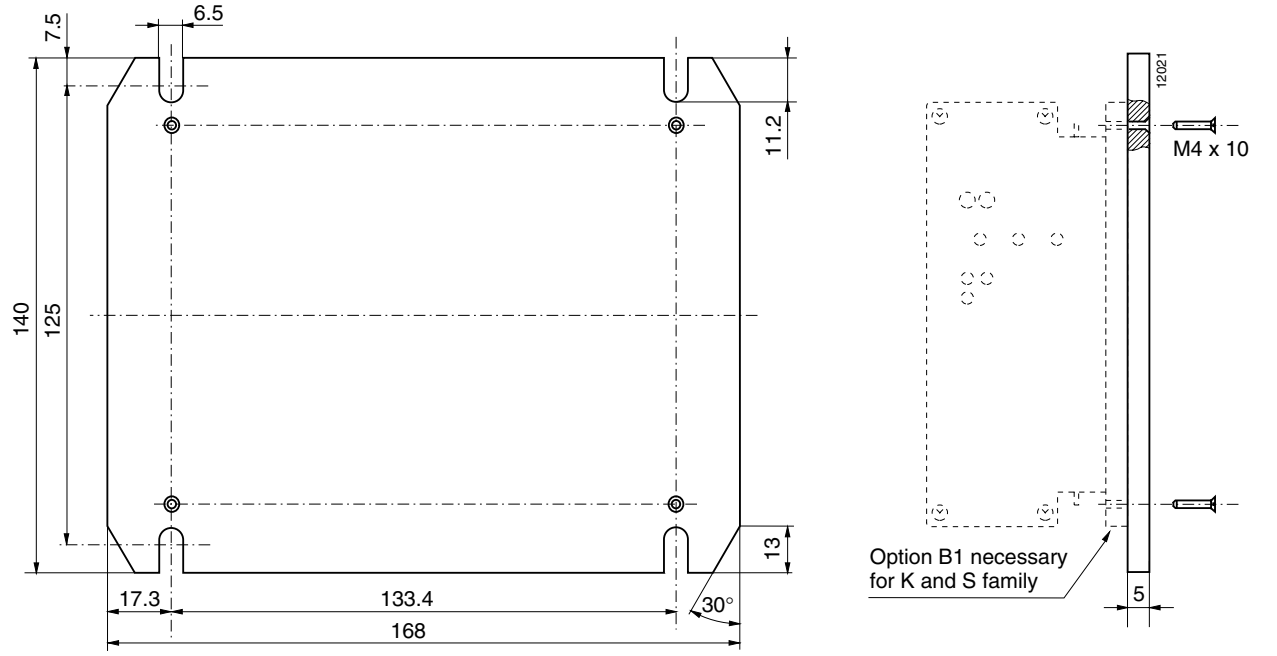


Fig. 2
Mounting plate K02
Aluminium, black finish

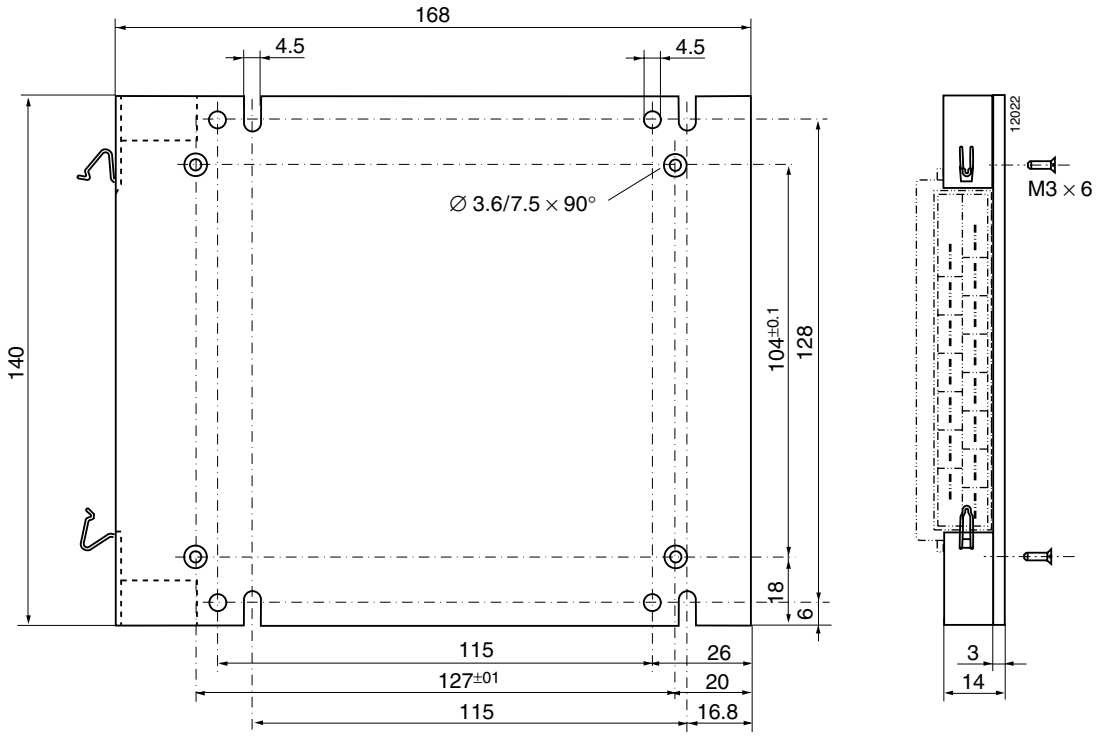


Fig. 3
Mounting plate Q with integrated connector retention facility
Aluminium, black finish

Note: Details on Connector Retention Clip V are given in section: *Mating Connectors*.

DIN- and Chassis Mounting Brackets

PCB mounting as well as cassette type converters can be chassis- and/or DIN-Rail mounted by means of Mounting Bracket adapters. For selection and part numbers refer to table below.

Note: Customized adapters for other case sizes are available upon request.

Each part number gives a direct indication of the kind of mounting, the type of converter, i.e. the case size or the output power as well as the possible pinnings and options according to the relevant converter data. The adaptors are divided into two mechanical types: *CMB* and *DMB*.

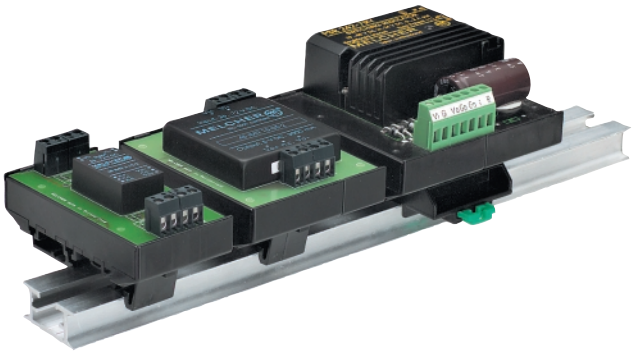


Table 2: Mounting Bracket survey

A1 [mm]	A2 [mm]	Converter case size	Converter series	Chassis-mounting Part no.	DIN-mounting Part no.	Delivery content
95.0	90.0	A01	PSR, PSA ($U_{i\,max}$ 40, 60, 80 V)	CMBA01-iRY/80 HZZ 00607	DMB A01-iRY/80 HZZ 00606	PCB, screw teminal blocks, 4 diodes, capacitor C1 and C- or D-bracket with screws
			PSA ($U_{i\,max}$ 144 V)	CMBA01-iRY/144 HZZ 00609	DMB A01-iRY/144 HZZ 00608	
72.5	67.5	2"×2"	IMR 6, IMR 15 IMP 6, IMP 12	CMB2×2-BCFG HZZ 00605	DMB 2×2-BCFG HZZ 00603	PCB, screw teminal blocks, and C- or D-bracket
50.0	45.0	DIL 24	IMP 3 IMX 4 Option K	CMB3W-123 HZZ 00604	DMB 3W-123 HZZ 00602	
72.5	67.5	1"×2"	IMX 7 IMS 7	CMB IMS/X 7 HZZ 00617	DMB IMS/X 7 HZZ 00613	See Basic Kit C/DMB IMX/S 7

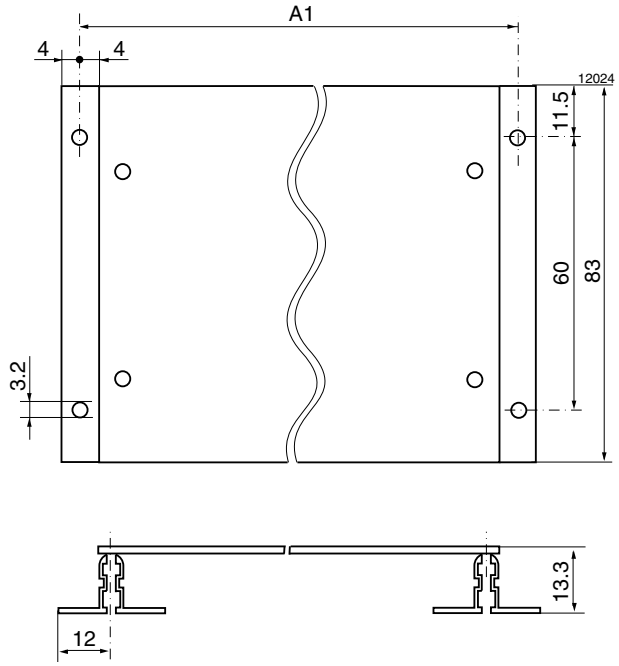


Fig. 4
"CMB" chassis mounting bracket dimensions
Bracket: Aluminium, black finish

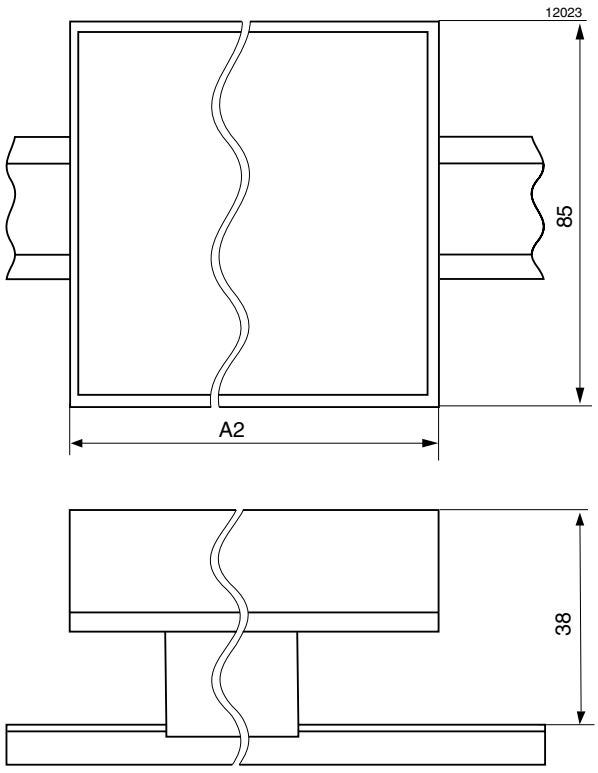


Fig. 5
"DMB" DIN-rail mounting bracket dimensions
Bracket: Polycarbonate, black

CMB: Chassis Mounting Bracket

The kit consists of a PCB for the converter, a set of screw terminals allowing for easy electrical connection and two aluminium profiles, attached to the PCB by means of four screws, which serve as the chassis mounting bracket. Four different versions according to table 2 are available.

Details on the layout of the PCB's and diagrams are given in the description below.

DMB: DIN-Rail Mounting Bracket

The DMB kit differs from the "CMB" version by a bracket suited for DIN-rail mounting (according to EN 50022, including Hat- and C-rail). The black plastic body of the bracket holds the PCB by means of a snap-in device. Four different versions according to table 2 are available.

Details on the layout of the PCB's and diagrams are given in the description below.

C/DMBA01-.. Electrical Description

This bracket is designed for non-isolated Switching Regulators of the PSR and PSA series in the A01 case size, equipped with "Option Y" pins and giving output voltages between 5 V and 48 V. Technical details, i.e. max. input voltage etc. are described in the relevant PSR and PSA data and further information is given in the application notes. The use of the optional inhibit- and R-functions (external output voltage adjustment with R1) is possible and the device can be driven either from a DC-source or from a transformer secondary voltage.

– DC-input: Consider the forward voltage drop across the rectifier diodes (also providing reverse polarity protection). Capacitor C1 compensates the negative converter input impedance in case of long connection wires to the module.

– AC-input: The recommended transformer secondary voltage is 48 V_{rms} for PSR and 72 V_{rms} for PSA ($U_{i\,max}$ 144 V)

Exception: Input voltage for PSR 54 (PSA 55) is 20 V_{rms}. PSR 54 (PSA 55) and PSR 362 require an additional capacitor (C2) of at least 470 µF.

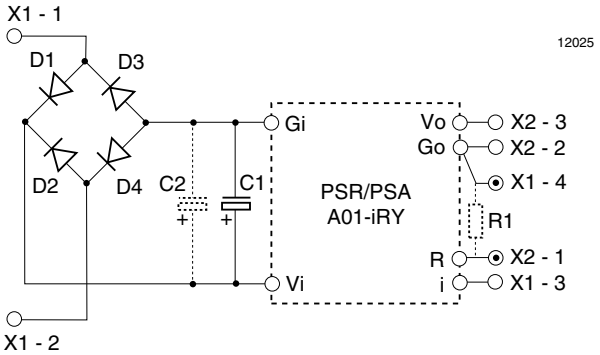
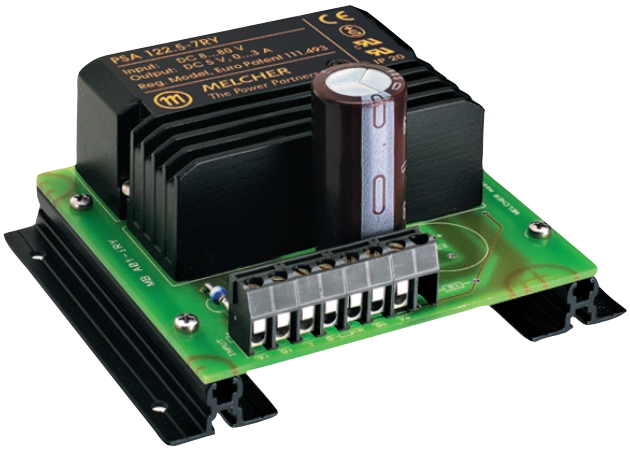


Fig. 6a
C/DMBA01- .. circuit diagram



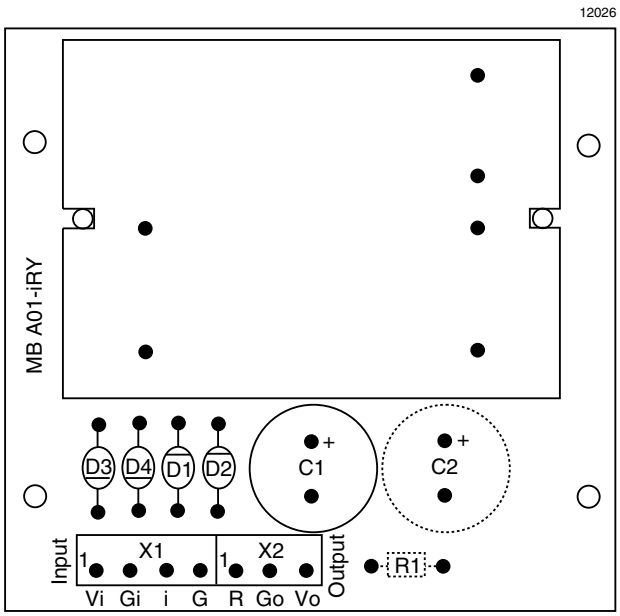


Fig. 6b
C/DMBA01- .. print layout

C/DMB2×2-BCFG Electrical Description

This bracket allows the mounting of isolated DC-DC converters of series IMR 6, IMR 15, IMP 6 and IMP 12 in 2" by 2" cases with either one or two output voltages of 5, 12 or 15 V. The technical details are given in the relevant IMR 6, IMR 15, IMP 6, IMP 12.

Depending on the application input transient protection may be incorporated (e.g. an appropriately dimensioned Transzorb diode D1).

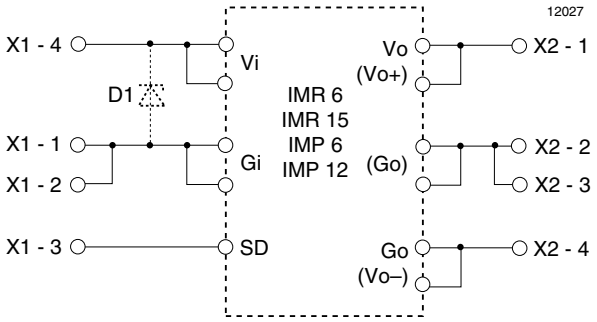


Fig. 7a
C/DMB2×2-BCFG circuit diagram

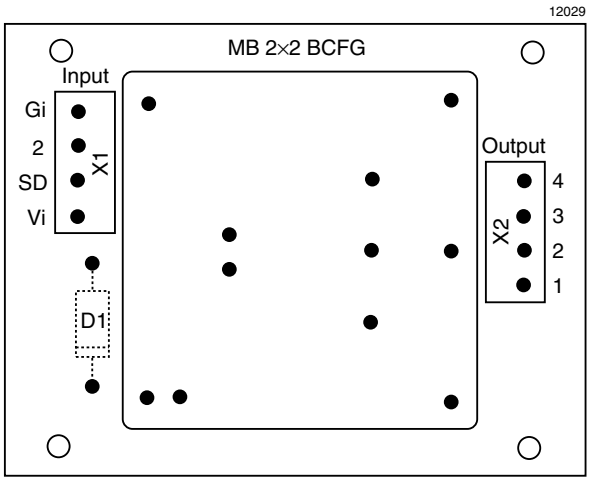


Fig. 7b
C/DMB2×2-BCFG print layout

C/DMB3W-123 Electrical Description

This bracket is designed for galvanically isolated DC-DC converters of the IMP 1, IMP 3 and IXP 3 series in DIL 24 cases with one or two output voltages of 5, 12 or 15 V. The pin configuration of the converter groups single, double, and dual and all technical converter details are described in the relevant data.

Depending on the application input transient protection may be incorporated (e.g. an appropriately dimensioned Transzorb diode D1) .

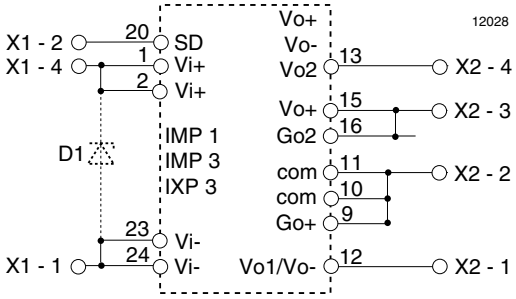


Fig. 8a
C/DMB3W-123 circuit diagram for all pin configurations

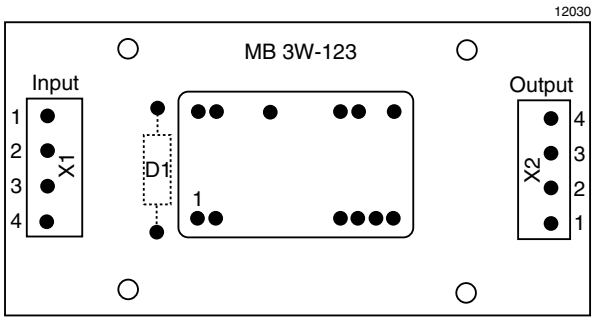


Fig. 8b
C/DMB3W-123 print layout

Basic Kit CMB IMX/S 7

For use with 1"× 2" DC-DC converter types:
IML 10, IMS 7 and IMX 7
Part No.: HZZ 00617

The basic kit contains the following:
- Two mounting rails, 83 mm
- Four screws M 2.5 x 6
- Four nuts M 2.5
- PCB ZGN 09601 A
- Three 2-pole terminal blocks (2× for X1 terminal, 1× for X3 terminal)
- One 3-pole terminal block for X2 terminal
- Three wire jumpers 5.08 mm (positions B1, B4, B5)
- One wire jumper 10.16 mm (position D1)
- Six wire jumpers 6.8 mm (positions L2, L4, L6)
- Circuit diagram no. YSK 25300 S3 01

Basic Kit DMB IMX/S 7

For use with 1"× 2" DC-DC converter types:
IML 10, IMS 7 and IMX 7
Part No.: HZZ 00613

The basic kit contains the following:
- DIN-mounting support for 35 mm DIN-rail systems
- PCB ZGN 09601 A
- Three 2-pole terminal blocks (2× for X1 terminal, 1× for X3 terminal)
- One 3-pole terminal block for X2 terminal
- Three wire jumpers 5.08 mm (positions B1, B4, B5)
- One wire jumper 10.16 mm (position D1)
- Six wire jumpers 6.8 mm (positions L2, L4, L6)
- Circuit diagram no. YSK 25300 S3 01

Mounting Instructions for Basic Kit

Single output units IML 10, IMS 7 and IMX 7

– Solder the wire jumpers into positions as below:
  1. D1 (10.16mm)
  2. B1 (5.08 mm) , inhibit.
     Note: This jumper should be fitted if the inhibit is not actively used. An open inhibit disables the converter.
  3. L2-A and L2-B, L6-A and L6-B (6.8mm)
  4. L4-A and L4-B (6.8mm), only necessary if remote R-input is used.
– Solder terminal blocks
  5. X1: Position Vi+/ Vi–, 2-pole terminal block
  6. X1: Position i/n.c., 2-pole terminal block (only necessary in the case of remote inhibit)
  7. X3: Position Vo+/ Vo–, 2-pole terminal block
  8. X2: Position n.c, R, Vo–, 3-pole terminal block (only necessary in the case of remote *U*o adjustment by e.g. an external voltage source)
– Solder the selected DC-DC converter
– Mount PCB onto rails by using the 4 screws and nuts or snap PCB onto the DIN mounting support.
– Perform function test

Double output units IML 10, IMS 7 and IMX 7

– Solder the wire jumpers into positions as below:
  1. D1 (10.16mm)
  2. B1 (5.08 mm), inhibit
     Note: This jumper should be fitted if the inhibit is not actively used. An open inhibit disables the converter.
  3. L2-A and L2-B, L6-A and L6-B, L4-A and L4-B (all 6.8mm)
– For applications with the 2 outputs in parallel:
  4. Place/solder jumpers B4 and B5, (5.08mm)
– Solder terminal blocks
  5. X1: Position Vi+/ Vi–, 2-pole terminal block
  6. X1: Position i/R (Trim), 2-pole terminal block (only necessary in the case of remote inhibit or output voltage trimming by an external voltage source)
  7. X3: Position Vo1+/ Vo1–, 2-pole terminal block
  8. X2: Position n.c/Vo2+/Vo2–, 3-pole terminal block
– Solder the selected DC-DC converter
– Mount PCB onto rails by using the 4 screws and nuts or snap PCB onto the DIN mounting support.
– Perform function test

Application specific circuitry

The assembly C/DMB IMX/S 7 offers a variety of additional external circuitries which may be implemented onto the PCB ZGN 09601 A. See circuit diagram YSK 25300 S3 /01. Please also consult the IMS/X 7 data sheet.

Depending upon the application the following pheripheral additions can be made:

– Reverse polarity protection by a series diode D1.
– Improved input transient protection according to IEC/EN 61000-4-5, level 2, by chokes L1 or L2-A, L2-B (EMC version) and capacitor C1.
– Remote inhibit.
  Note: If the inhibit is not actively used the inhibit has to be connected to Vi– by jumper B1.
– External output voltage trimming/adjustment

  Single output units:

  a) U_o – adjustment in the range of 70/75...100% of $U_{o\,nom}$ by resistors RX3 or RX4 or combinations of RX3/RX4.

  b) U_o – adjustment in the range of 100...105% of $U_{o\,nom}$ by resistors RX1 or RX2 or combinations of RX1/RX2.

  Double output units:

  a) U_o – trimming by resistor R2 in the range of 100...105% of $U_{o\,nom}$

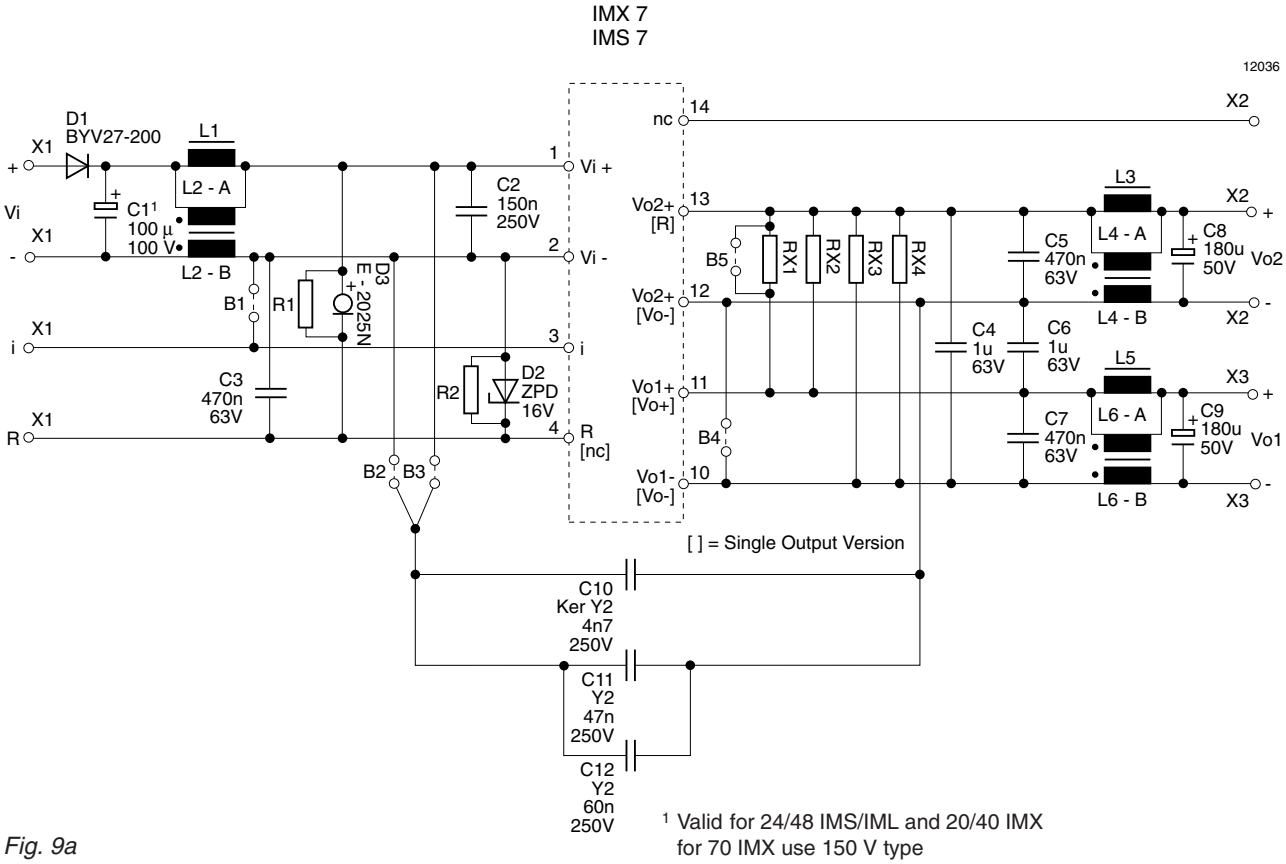
  b) U_o – trimming in the range of 70/75...100% of $U_{o\,nom}$ by a current diode together with a Zener diode D2 applicable for 24/48 IMS 7 and 20/40 IMX 7 types.
– Reduced output ripple (by approx. factor 5) by using chokes L3/L5 together with electrolytic capacitors C8/C9.
– Improved electromagnetic emission EN 55022, level B, lead length to load 1 m. (Level A for 110 IMX 7 types)

  This requires all capacitors and output chokes as per circuit diagram YSK 25300 S3 /01 whereby the coupling capacitor C10 connected to Vi– via jumper B2 is foreseen for 24/48 IMS/L types and 20/40/70 IMX 7 types.

  For 110 IMX 7 types the coupling capacitor C11 or C12 should be used connected to Vo+ via jumper B3.

  Note:
  – For single output units or double output units with the 2 outputs in parallel one filter set (L5 or L6-A/L6-B) together with C7 and C9 is sufficient.
  – Wire jumpers B2 and B3 should not be mounted together onto the PCB as this would cause a short circuit.
  – The coupling capacitors C10 or C11/12 should be Y2 ceramic types to maintain the outputs SELV

Application specific assemblies are available on request.



[1] Valid for 24/48 IMS/IML and 20/40 IMX
for 70 IMX use 150 V type
for 110 IMX use 200 V type

Fig. 9a
C/DMB IMX/S 7 circuit diagram

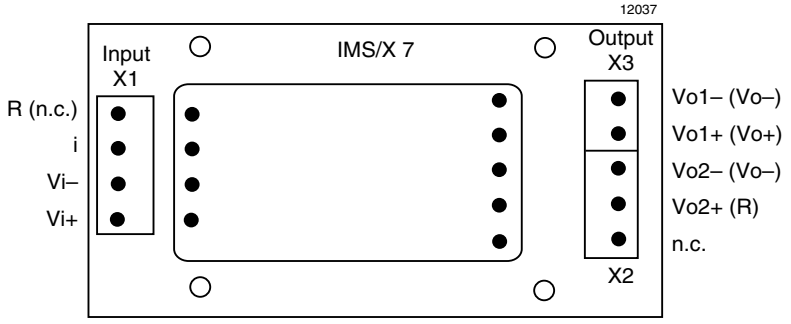


Fig. 9b
C/DMB IMX/S 7 arrangement of the terminals on the PCB

Note: Where the pin/terminal designations for single output units deviate from double output units they are shown in brakets.

Universal Mounting Bracket (DIN- and Chassis Mounting)

UMB-LHMQ

A special Universal Mounting Bracket has been designed for vertical or upright chassis- and DIN-Rail mounting of the 19" cassette type converters shown in table below.

Table 3: Mounting Bracket survey

Converter case size	Converter series	Chassis-mounting	DIN-mounting	Delivery content	Part number
L01, L04 H02, M02 Q01, Q03, Q04	SR, PSL H, M Q, PC, P	UMB-LHMQ	UMB-LHMQ	Alu-profile, two screws and a DIN-rail clamp with screw	HZZ00610

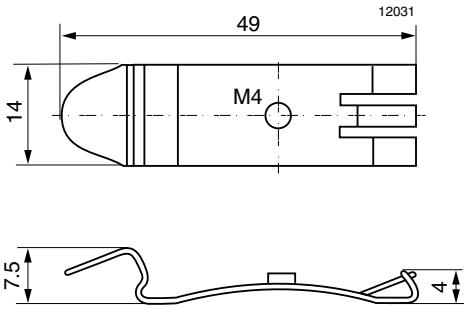


Fig. 10
DIN-rail clamp
Steel, galvanized

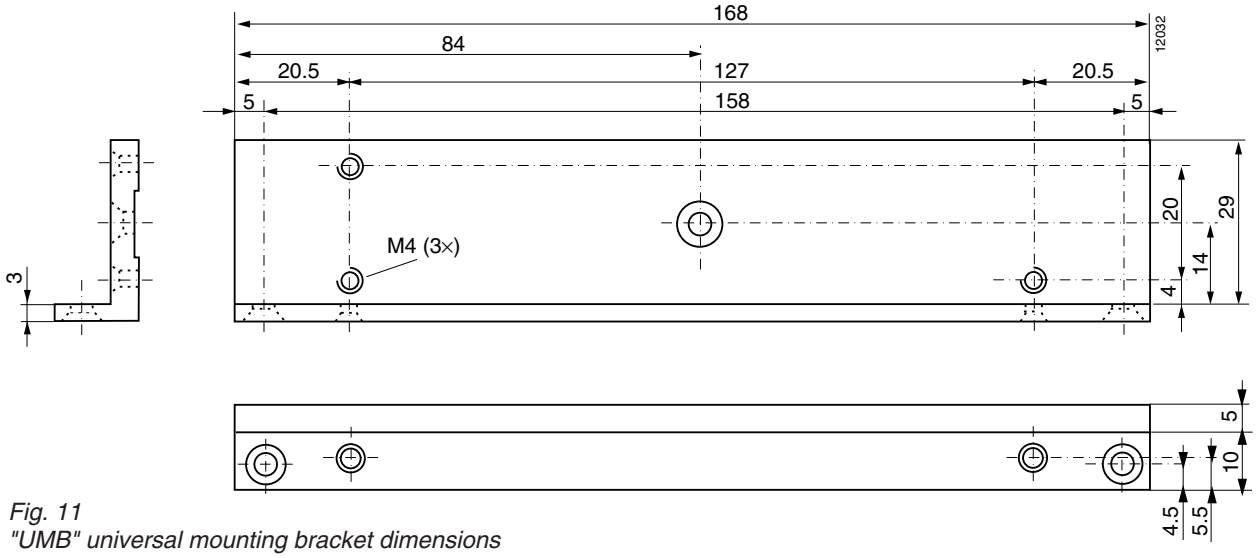


Fig. 11
"UMB" universal mounting bracket dimensions
Aluminium, untreated

UMB-W... (Shock resistant, DIN- and Wall Mounting)

For the DIN-rail snap-fit "Convert" Front End Line, two different mounting bracket sets are available on request. One set for wall mounting, the other for an additional shock resistant fixing to the DIN-rail in applications with higher vibration levels.

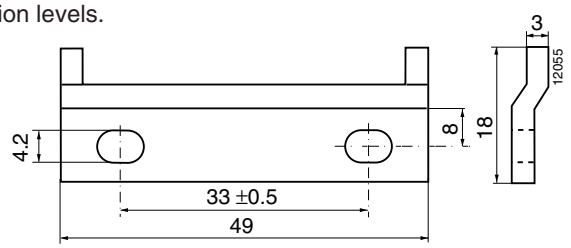


Fig. 12

Table 4: Mounting Bracket survey

Converter case	Converter series	Wall-mounting	DIN-mounting Shock resistant	Delivery content	Part number
W01	W	UMB-W		Two clamps, four countersunk screws M4, washers and spring washers	HZZ 00618
			UMB-WDIN	in preparation	

DMB-K/S, DMB-MHQ

By means of these DMB mounting kits, the S, K, PSS, PSK (DMB-K/S) and the M, H, Q (DMB-MHQ) converters can be adapted to the DIN rail. The kit consists of two aluminium brakets to be mounted on each side of the converter, including a clamp. The DMB-K/S kit contains two different sets of screws for the adaption of the brakets either to S/PSS or K/PSK converter types. The design of the kit is made such that the fixture is very tight and as a result the assembly can also be used for mobile applications.

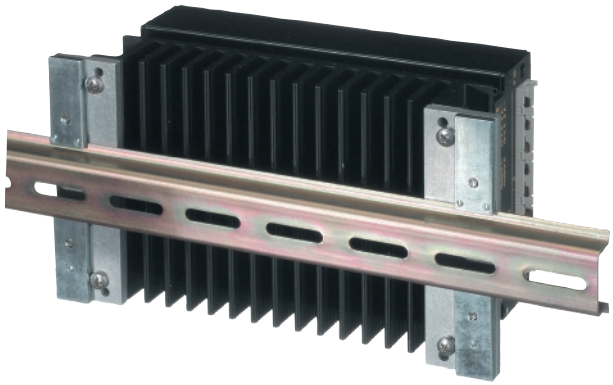


Table 5: Mounting bracket survey

Case size	Converter series	Type	Part number
S01 S02 K01 K02	PSS S PSK K	DMB-K/S	HZZ 00615
M02 H02 Q01	M H Q	DBM-MHQ	HZZ 00619

CMB-S

This mounting kit allows for chassis mounting of the S and PSS converters, if access is only possible from the front of the chassis. (If space conditions are very tight, option B1 or B can be used in place of the heat sink. Please refer to the description of the respective converter.)

This kit uses parts of the DMB-K/S kit since it consists of the same two brakets but without the clamps and fitted the other way round on the heat sink.

Table 6: Mounting bracket survey

Case size	Converter series	Type	Part number
S01 S02	PSS S	CMB-S	HZZ 00616

Isolation Pads for PCB Mounting

In applications where PCB mounting converters are placed on top of double sided boards, the use of Isolation Pads is recommended. These fibre pads avoid short circuits and provide excellent protection against possible damage to tracks. For selection and part numbers refer to table below.

Table 7 : Isolation Pad survey

Case size	Converter series	Isolation pad	Dimensions [mm]	Part number
A01	PSR, PSA	Isolation A	70 × 50 × 0.3	HZZ 01203
B02	PSB	Isolation B	107 × 71 × 0.3	HZZ 01205
C01 C03	xSR 20 PSC	Isolation C	152 × 86 × 0.3	HZZ 01206
2"×2"	IMR 6/15	Isolation 2"×2"	53 × 53 × 0.3	HZZ 01207

PCB-Tags for PCB Mounting

DC-DC and AC-DC converters in C01 case and Switching Regulators either in B02 or C03 cases may also be mounted directly onto PCB's. The connection between the converters' fast-on pins and the PCB can be easily made by means of PCB-Tags.

Type: PCB Tag
Delivery content: 10 pieces
Part number: HZZ01204

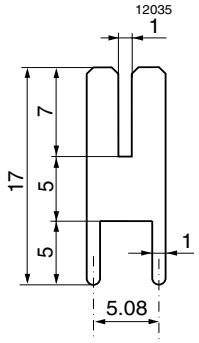
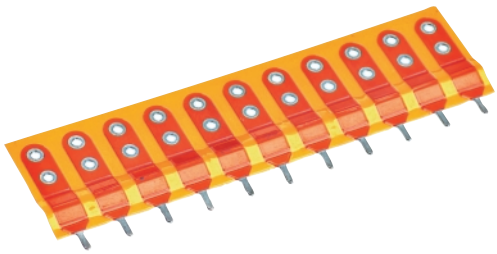


Fig. 13
PCB-Tag

Flexible H11 PCB

If cassette type converters with male H11 connectors (used for example in H or M series) are mounted on wiring boards, the connection between the wiring board and the male converter connector may be made using the special H11 Flexi-PCB together with the female STV-H11-FB/CO connector (see also: *Female connector* data).

Type: H11 Flexi-PCB
Part number: HZZ01208



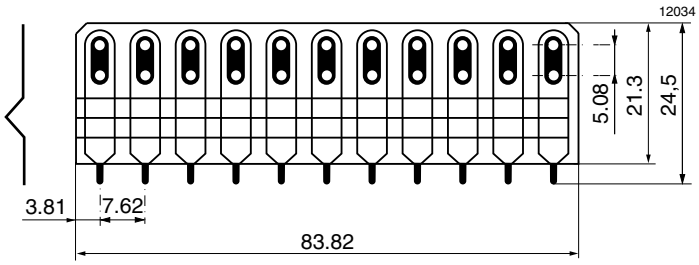


Fig. 14
H11 Flexi-PCB

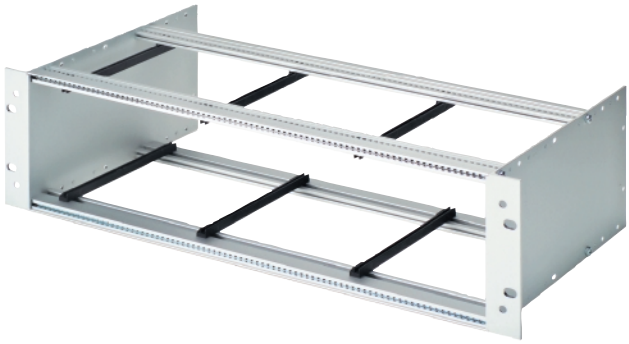
Rack Systems

Complete 19" rack with side walls, transversal rails and mounting flanges. Six guiding rails are included for set up of a system with up to three T units together with a back plane, BPF or BPD type (T units and back plane not included).

The guiding rails shall be fixed to the rack by the delivered screws (12 screws M2.5 x 12 and 12 nuts).

The rack can also be used for different 19" cassette type converters like Q, M, K ect. (additional guiding rails may be necessary).

Part no.: MQB 02002
Size: 19"/3 U/84 TE



19" and 23" (IEC 60297-1, -2 and -3)

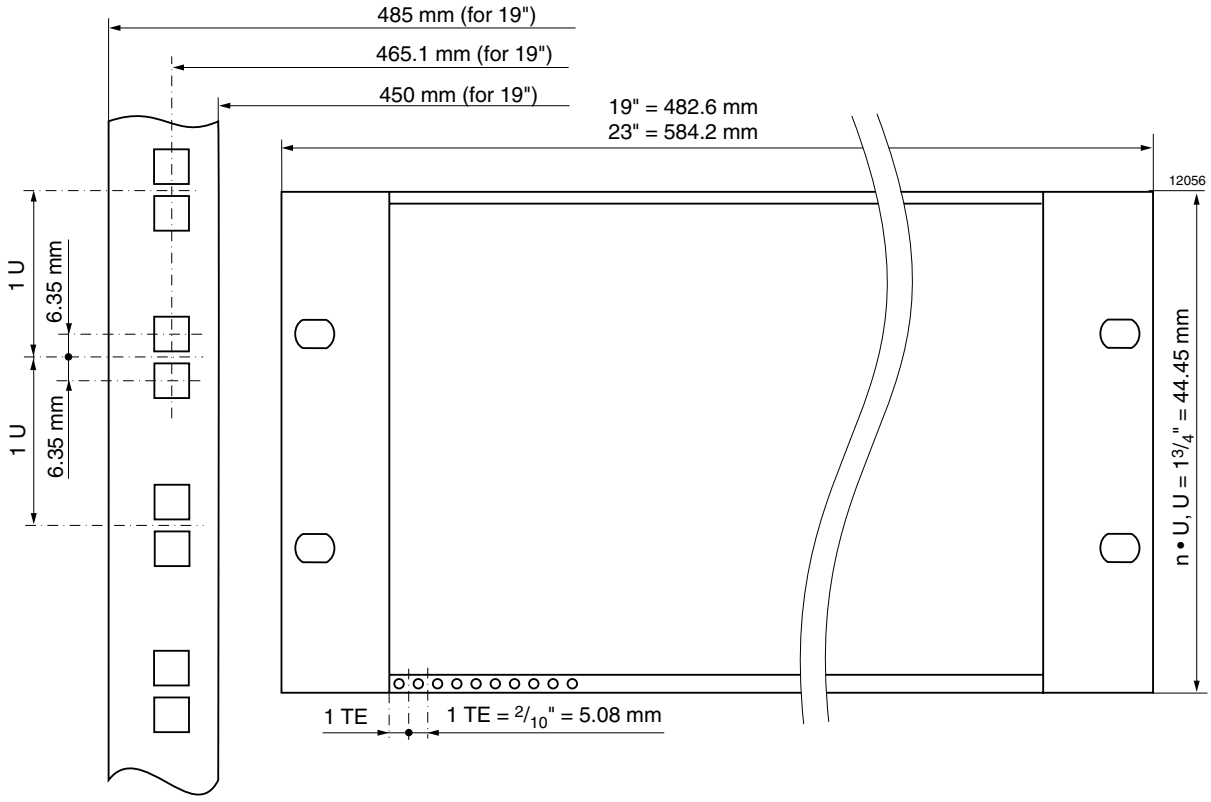


Fig. 1
19" and 23" rack systems

Dimensions in accordance to DIN 41494-1 (IEC 60297):
Width: 1 TE = 5.08 mm (0.20")
Height: 1 U = 44.45 mm (1.750")
(In Europa often *HE* instead of *U* is used.)
Tolerances ±0.2 mm, unless otherwise specified

Metric (IEC 60917)

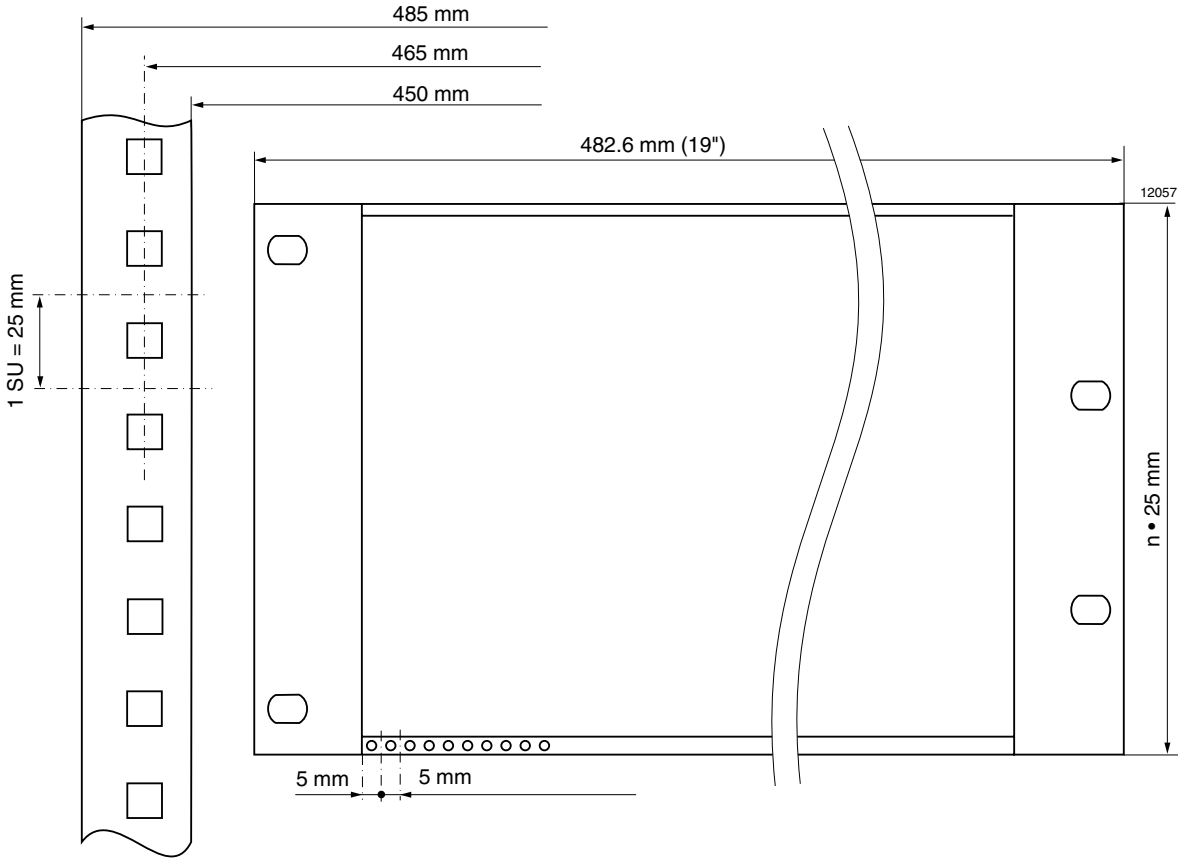
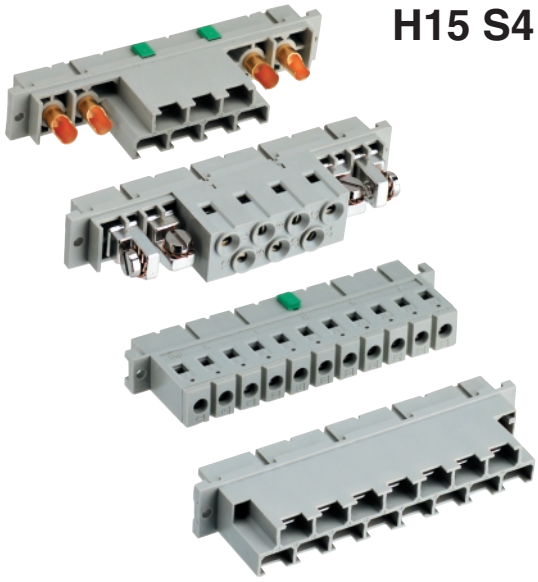


Fig. 2
Metric rack systems

Mating Connectors

H11
H15
H15 S4



Description

All 19" cassette type converters are equipped with either H11-, H15-, H15 S2 or H15 S4 male connectors. Mating female connectors are available as accessories according to the following tables. The four H-type connector versions are specially designed for power supply applications, capable of handling high operating currents. The connectors have an integrated code key system allowing many coding possibilities. Modules with high output current normally use two contacts in parallel to keep the voltage drop across the connector as low as possible.

H11 Connector

This connector has eleven contacts in one vertical column marked 2 to 32. Mating and mounting conditions are according to DIN 41612. The connector contacts are hard-silver-plated and correspond to quality class 1, with respect to electrical and mechanical life time.

Table 1: H11 Connector Survey

Female connector type	Part no.	Description of terminals	Integrated coding
STV-H11-F/CO	HZZ 00101	Faston straight 6.3 × 0.8 mm	yes
STV-H11-FS/CO	HZZ 00104	Faston straight 6.3 × 0.8 mm, solderable (short moulding)	yes
STV-H11-FSR/CO	HZZ 00102	Screw terminals, 90°, 2.5 mm² (AWG 13) max,	yes
STV-H11-FB/CO [1]	HZZ 00103	Solder pin 5.2 mm, ∅ 1.6 mm	yes
STV-H11-FBER/CO [2]	HZZ 00113	Solder pin 4.3 mm, ∅ 1.0 mm	yes
STV-H11-FP/CO [2]	HZZ 00111	Press fit 6.5 mm, ∅ 1.0 mm	yes
STV-H11-FBG/CO [2]	HZZ 00199	Solder pin 5.2 mm, ∅ 1.6 mm, gold-plated contacts	yes

[1] See also matching Flexi-PCB for PCB mounting of converters (see *Mounting Supports*)
[2] Available on request

This connector type (male version) is used in the following converter series (case size):

H (H02), M (M02), SR (L01) and PSL (L04).

Table of Contents

Mechanical Dimensions

All dimensions in mm, tolerances ±0.2 mm unless otherwise specified

European Projection

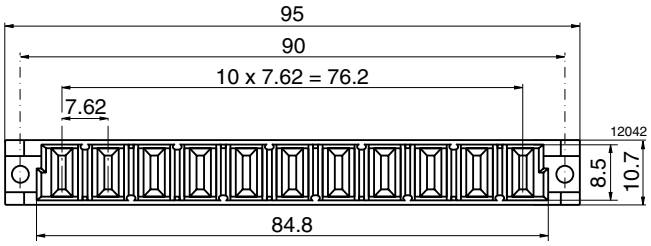


Fig. 1
H11 frontal view, relating to figures below

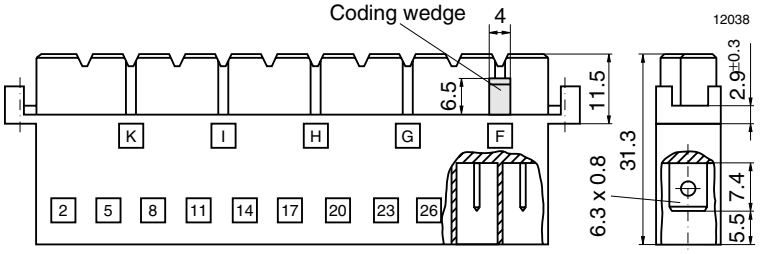


Fig. 2
STV-H11-F/CO,
Faston cable terminals 6.3 × 0.8 mm

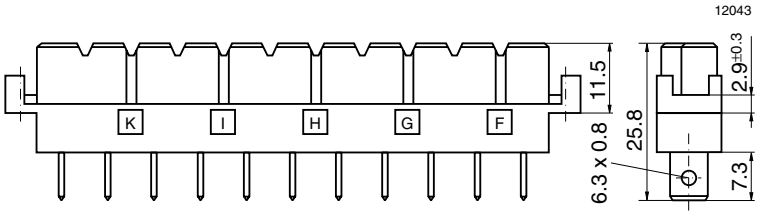


Fig. 3
STV-H11-FS/CO,
Faston cable terminals 6.3 × 0.8 mm,
solderable (short moulding)

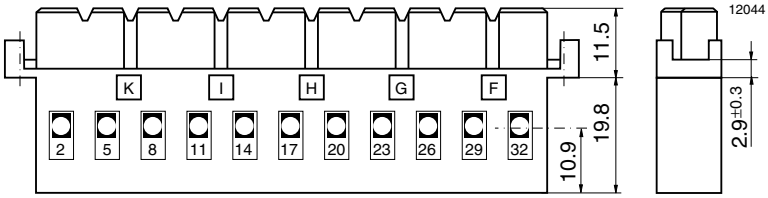


Fig. 4
STV-H11-FSR/CO,
screw terminals (max. 2.6 mm²/AWG 13)

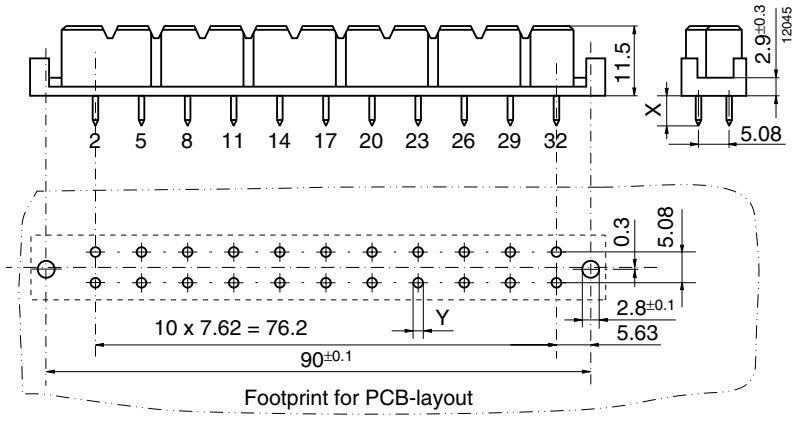


Fig. 5
STV-H11-FB/CO,
soldering pins *X = 5.2 Y = Ø 1.6*
STV-H11-FBG/CO,
soldering pins *X = 5.2 Y = Ø 1.6*
STV-H11-FBER/CO,
soldering pins *X = 4.3 Y = Ø 1.0*
STV-H11-FP/CO,
press insert pins *X = 6.5 Y = Ø 1.0*

H15 Connector

This connector has fifteen contacts in two vertical columns marked 4 to 32 and is designed to meet DIN 41612. The connector contacts are hardsilver-plated and correspond to quality class 1, with respect to electrical and mechanical life time.

This connector type (male version) is used in the following converter series (case size):

PSS (S01), S (S02), Q (Q01) and for PSK (K01) and K (K02) only for output current ≤18 A.

Table 2: H15 Connector Survey

Female connector type	Part no.	Description of terminals	Integrated coding
STV-H15-F/CO	HZZ 00106	Faston straight 6.3 × 0.8 mm	yes
STV-H15-FSR	HZZ 00107	Screw terminals, 90°, 2.5 mm² (AWG 13) max.	no
STV-H15-FB/CO	HZZ 00112	Solder pin 4.0 mm, ∅ 1.6 mm	yes
STV-H15-FP/CO [1]	HZZ 00117	Press fit 4.5 mm, ∅ 1.0 mm (double pin version)	yes
STV-H15-FBG/CO [1]	HZZ 00197	Solder pin 4.0 mm, ∅ 1.6 mm, gold-plated contacts	yes
STV-H15-FWS/CO	HZZ 00114	Solder pin 10.1 mm, ∅ 1.6 mm, 90° bent contacts	yes

[1] Available on request

Mechanical Dimensions

All dimensions in mm, tolerances ±0.2 mm unless otherwise specified

European Projection

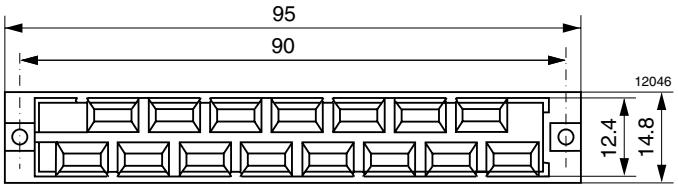


Fig. 6
H15 frontal view,
relating to figures below

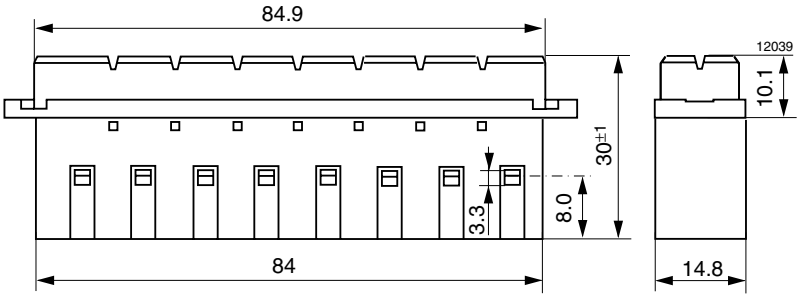


Fig. 7
STV-H15-FSR,
Screw terminals, no coding
STV-H15-F/CO,
Faston cable terminals 6.3 × 0.8 mm
(identical dimensions, but not shown)

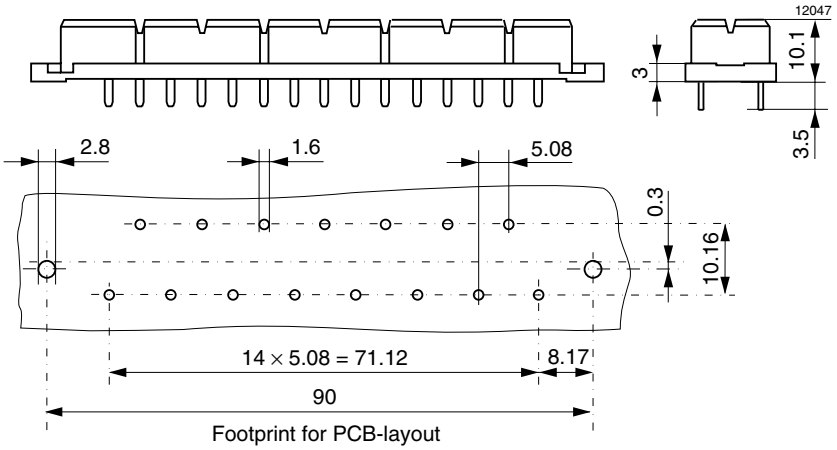


Fig. 8
STV-H15-FB/CO,
soldering pins

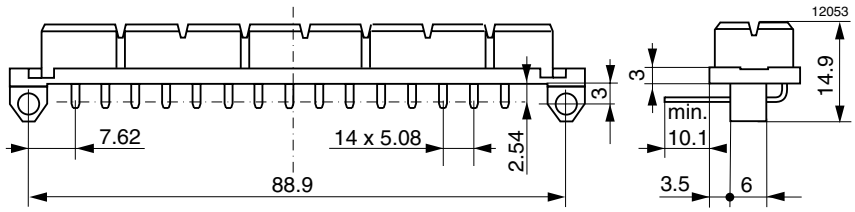


Fig. 9
STV-H15-FWS/CO
Solder pins for pcb mounting

H15 S2, H15 S4 Connector

This special connector is a derivative of the H15 having seven standard contacts as above, combined with two (H15 S2) or four (H15 S4) high current contacts according to DIN 41626. The high current contacts are specially designed to handle currents from 20 A up to 40 A. They correspond to quality class 1, with respect to electrical and mechanical life time. The contact material is high quality Beryllium-Copper (CuBe treated) with a gold-plated surface.

To install the high current contacts carefully follow the assembly instructions. It is extremely important to solder cables, screw cable terminals or heat shrink sleeves to high current jacks first, before inserting them into the moulding. Paralleled converters should preferably be interconnected on current bars or at a star point.

Using screw versions, the two outer high current jacks may be inserted at a 90° angle in order to prevent possible short circuits between the cable terminals, especially in applications with high vibration environment. Heat shrink sleeves might be necessary for further isolation purposes or to keep clearance and creepage distances at specified levels.

An Extraction Tool allows removal of the high current contacts for replacement (see: *Extraction Tool*).

Caution: The use of an adequate cable strain relief device (e.g. Cable Hood etc.) is essential in order to protect the high current contact jacks from damage. Never screw, solder or manipulate these contacts when the connector is plugged into the male connector! The use of highly flexible cables is strongly recommended.

This connector type (male version) is used in the following converter series (case size):

PSK (K01), K (K02) and P with output current ≥20 A.

Table 3: H15 S2/S4 Connector Survey

Female connector type	Part no.	Description of terminals coding	Integrated
STV-H15 S2-F/CO	HZZ 00115	11 Faston straight 6.3 × 0.8 mm, set of 2 solder jacks [1]	yes
STV-H15 S2-FSF/CO	HZZ 00116	11 Faston straight 6.3 × 0.8 mm, set of 2 screw jacks [1]	yes
STV-H15 S4-F/CO	HZZ 00105	7 Faston straight 6.3 × 0.8 mm, set of 4 solder jacks [1]	yes
STV-H15 S4-FSF/CO	HZZ 00110	7 Faston straight 6.3 × 0.8 mm, set of 4 screw jacks [1]	yes
STV-H15 S4-FLS/CO	HZZ 00109	7 screw terminals, 90°, 2.5 mm², set of 4 solder jacks [1]	yes
STV-H15 S4-FSR/CO	HZZ 00108	7 screw terminals, 90°, 2.5 mm², set of 4 screw jacks [1]	yes

[1] Spare set of high current jacks are available on request

Delivery content: H15 S2 (S4) moulding, two (four) high current jacks and assembly instructions. Screw versions also include four M4 screws with washers and heat shrink sleeves.

Mechanical Dimensions

All dimensions in mm, tolerances ±0.2 mm unless otherwise specified

European Projection

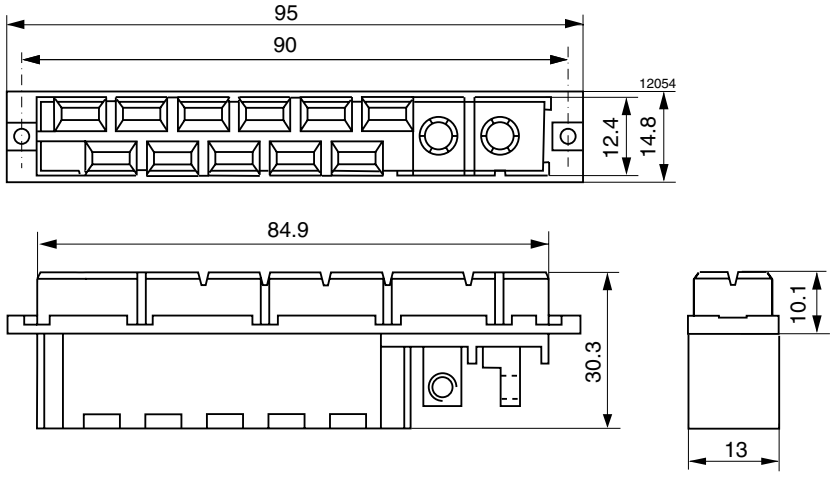


Fig. 10
STV-H15 S2-FSF/CO
Faston cable terminals and two high current screw terminals (solder terminals see H15 S4)

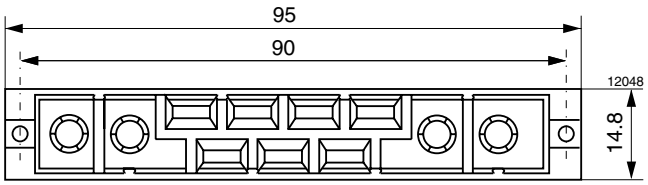


Fig. 11
H15 S4 frontal view,
relating to figures below

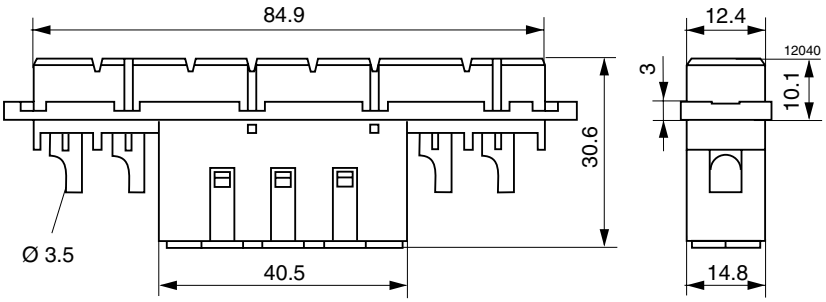


Fig. 12
STV-H15 S4-FLS/CO,
screw terminals and four high current soldering terminals

STV-H15 S4-FSR/CO,
screw terminals and four high current screw terminals (not shown)

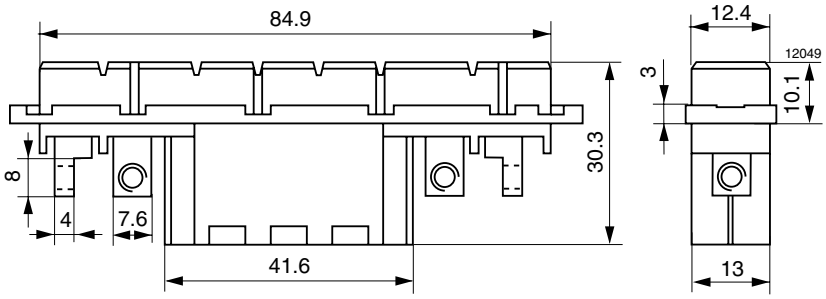


Fig. 13
STV-H15 S4-FSF/CO,
Faston cable terminals and four high current screw terminals

STV-H15 S4-F/CO
Faston cable terminals and four high current soldering terminals (not shown)

Technical Data

Table 4: Connector data

Type	H11	H15	H15 S2/H15 S4 Standard	H15 S2/H15 S4 High current
Mechanical data				
Number of poles	11	15	11/7	2/4
Mating cycles	500	500	500	500
Insertion/withdrawal forces max.	80 N	90 N	90 N	10/1.6 N
Electrical data				
Clearance distance contact/ground	≥4.5 mm	≥4.5 mm	≥4.5 mm	
Creepage distance contact/contact	≥8.0 mm	≥8.0 mm	≥8.0 mm	
Test voltage V_{rms}	3100	3100	3100	
Operation voltage V AC	500	500	500	
Operation current per contact T_A 20°C T_A 70°C T_A 95°C	20 A 17 A 14 A	15 A 12 A 9 A	15 A 12 A 9 A	40 A 35 A 25 A
Contact resistance	≤8 mΩ	≤8 mΩ	≤8 mΩ	≤1 mΩ
Isolation resistance at 100 V DC	≥10^{12} Ω	≥10^{12} Ω	≥10^{12} Ω	
Miscellaneous data				
Operating temperature	–55...125°C	–55...125°C	–55...125°C	
Contact surface	6 µm Ag	6 µm Ag	6 µm Ag	1.3 µm Au
Moulding material	PBTP/PC	PBTP/PC	PBTP	
Flammability	UL 94V-0/UL 94 V-1	UL 94 V-0/UL 94 V-1	UL 94 V-0	
Approvals				

Code Key System

An efficient coding system is of great importance and cannot be valued highly enough in complex electronic systems. Since power supplies handle high currents and voltages any false connection could not only be extremely dangerous but also quite costly.

This integrated polarizing system allows effortless coding by the simple insertion of Coding Wedges into the female connector mouldings. The corresponding counter-parts, i.e. the coding tabs of the male moulding just have to be broken off to match the right female part. Major advantages are high mechanical stability and ease of handling. The H11 connectors have 10 and the H15 connectors have 8 coding positions. Using 4 coding wedges results in 210 (H11) respectively 70 (H15) different coding possibilities. Coding wedges are available as accessories to female connectors with the following part number:

Description: Coding wedge (Codierkeil)
Delivery content: 5 pcs.
Part Number: HZZ 00202

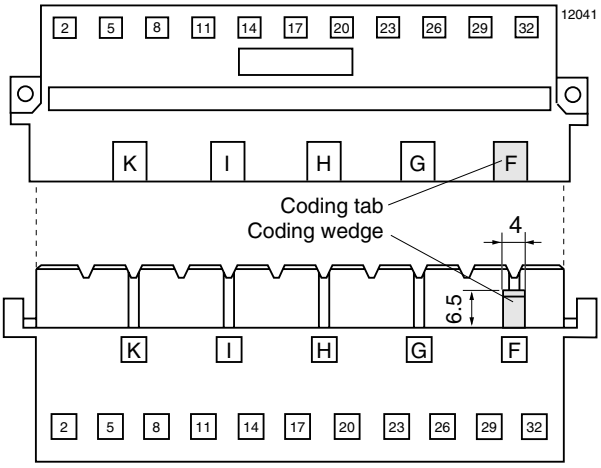


Fig. 14
Integrated code key system

Extraction Tool for High Current Contacts

High current plugs and jacks can be disassembled from the moulding by means of a special Extraction Tool (H15 S2, H15 S4). Holding the extraction tool over the centre of the connector's female contact the outer part of the extraction tool should be fed between the moulding and the outside of the female contact itself. This releases the spring clip fixing the contacts, in order to pull the contacts out of their moulding for replacement. If the operation is performed correctly very little force is required. Extreme care should be taken since incorrect procedure and excessive force could damage the tool and/or connector.

This tool is available as an accessory for both screw or solder high current contacts.

Note: In order to avoid damage never manipulate high current contacts when plugged-in!

Description: Extraction Tool
Part Number: HZZ 00150

Fig. 15
Extraction tool

Connector Retention Clip V

The retention clip V is an accessory which guarantees secure connection even under severe vibration, as for example in mobile applications. One connector retention system fits to almost all units and all of the aforementioned connector types.

The following converter series are delivered with prepunched holes in the back plate for fast field-mounting of retention clips:

H, M, K, PSK, S, PSS and T (Q series only in combination with Mounting Plate Q, see Mounting Supports)

Description: Retention Clips V
Delivery content: 2 pcs.
Part Number: HZZ 01209

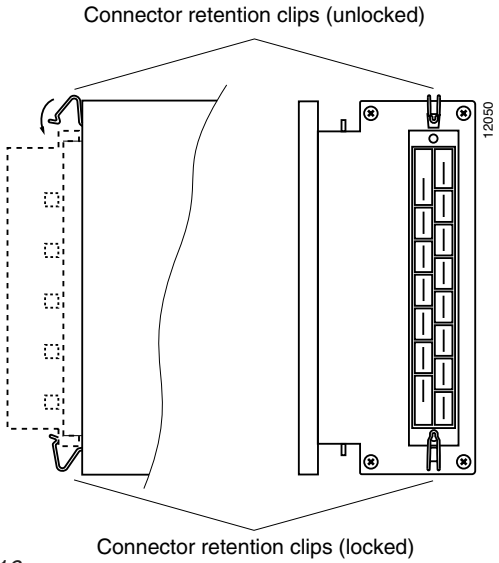


Fig. 16
Connector retention clip

Connector Retention Bracket CRB

An alternative to the above mentioned retention clip V is the connector retention bracket. They are attached to the back plate by one screw each with a torque of 20 to 30 Ncm.

Table 5: Connector Retention Bracket Survey

Connector series	Type Part number	Delivery content
H, M K, PSK S, PSS T	CRB-HKMS HZZ 01216	2 brackets 2 screws 2 washers
Q, P PC	CRB-Q HZZ 01217	

Cable Hood

A cable connector housing or Cable Hood is available for all female H15, H15 S2 and H15 S4 type connectors with faston connectors (Not suited for screw terminals). It serves as a strain relief, isolates connections and protects cables.

Description: KSG-H15/H15 S4
Delivery content: Housing shell, cable duct with covers, cable clip, cable boot and screws
Part number: HZZ 00141

If using the cable hood together with retention clips a special version is available, where both sides of the hood are slightly modified in order to allow for insertion of the clips. The cable hood with retention clips has been tested to withstand vibrations according to IEC 86-2-6: 5 g, 6 directions, 2.5 hours per axis.

Description: KSG-H15/H15 S4-V
Delivery content: Housing shell, cable duct with covers, cable clip, cable boot and screws
Part Number: HZZ 00142

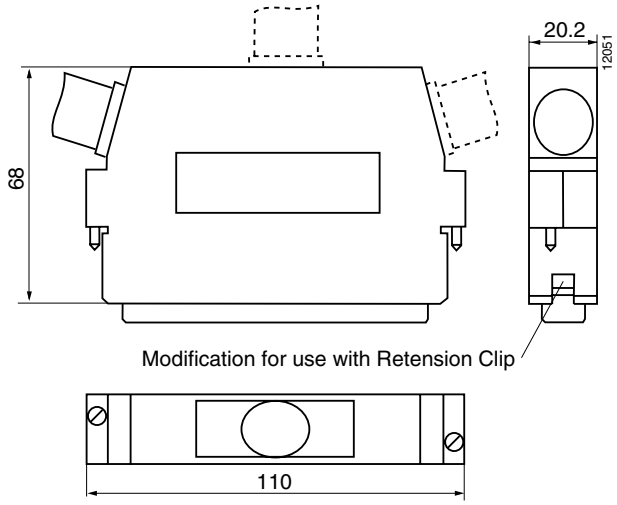


Fig. 17
Cable hood for H15 and H15 S4 connectors

Cable Hood Retention Bracket CHRB

The cable hood can also be fixed to the converter case with two U-shaped cable hood retention brackets.

Description: CHRB-KSG
Delivery content: Two brackets with two screws
Part number: HZZ 01218

Temperature Sensors

Description

Power-One offers a wide range of battery charger systems for power requirements of 50 Watt up to 8000 Watt.

For this purpose Power-One supplies temperature sensors and adapted power supplies. The batteries (lead acid batteries) are charged according to the battery temperature and the ambient temerature. If the battery is fully charged it is maintained at the float charge voltage which represents the optimum point for maximum available energy in case of need and optimum life expectancy of the battery. The type of sensor needed is defined mainly by three parameters: The nominal battery voltage (e.g. 24 V or 48 V), the temperature coefficient of the battery (e.g. –3.0 mV/K/cell) and the nominal floating charge voltage per cell of the battery at 20°C (e.g. 2.27 V/cell). The latter two are defined in the specifications of the battery given by the respective battery manufacturer.

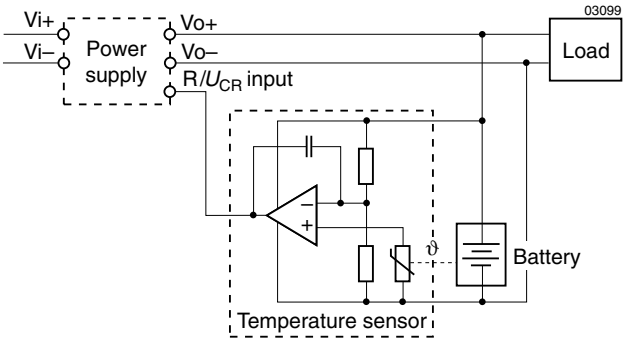


Fig. 1
Functional description

Temperature Sensors for T and U units

T and U units feature a cell voltage selector switch (feature Z) to set the required floating charge voltage at 20°C directly at the unit. If this Z switch is used the 2.23 V/cell sensor types should be selected in any case as a basis and the selection criteria are only the temperature coefficient of the battery and the nominal battery voltage. If for example a 24 V battery is used which has a cell voltage of 2.27 V/cell and a temperature coefficient of –3.5 mV/K/cell, the sensor type is S24-2.23-35-02. The setting on the Z switch of the T or U unit should be 2.27.

For units without the Z selector switch a sensor according to both criteria should be selected. In our example it would be S24-2.27-35-02.

For further details please consult the T or U datasheet.

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