



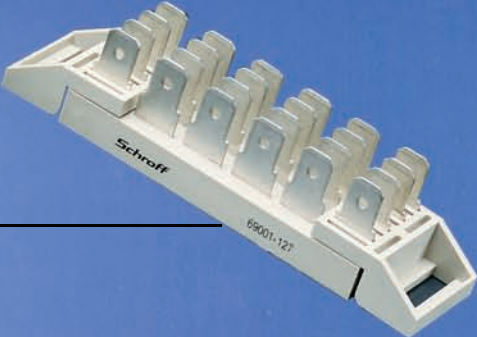
Schroff®
MAIN CATALOG

- Overview 0
- Cabinets 1
- Wall mounted cases 2
- Accessories for cabinets and wall mounted cases 3
- Climate control 4
- Desk-top cases 5
- Subracks/ 19" chassis ... 6
- Front panels, plug-in units .. 7
- Systems 8
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- Connectors, front panel component system 11
- Appendix 12

FPCS front element system

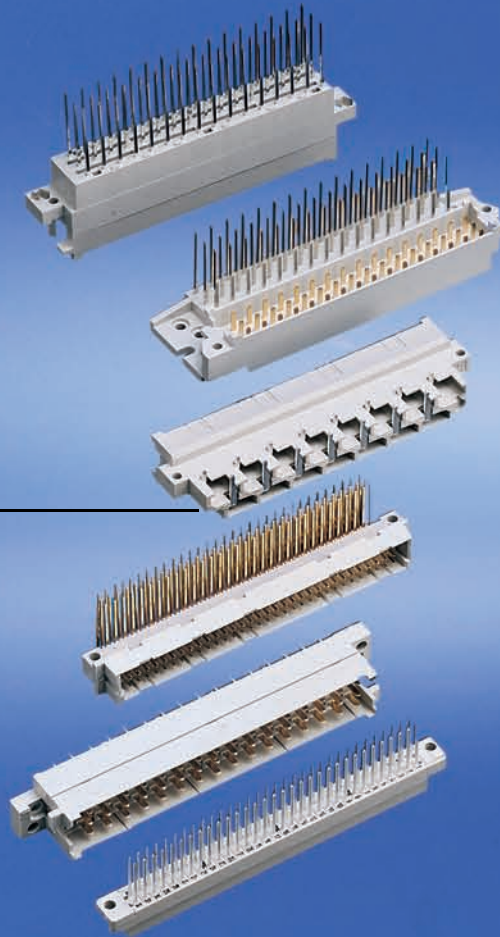


Front element systems

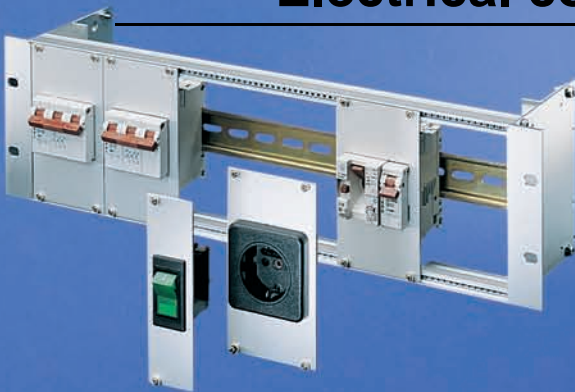


Busbars

Connectors



Electrical components



Overview 0

Cabinets 1

Wall mounted cases 2

Accessories for cabinets and wall mounted cases 3

Climate control 4

Desk-top cases 5

Subracks/ 19" chassis . . . 6

Front panels, plug-in units . . 7

Systems 8

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Backplanes . . 10

Connectors, front panel component system 11

Appendix 12

Connectors, busbars



05592002

Standards

- Connectors in accordance with: IEC 60603-2 / DIN 41612

Requirements classes DIN 41612, Part 5

Requirements class 1

- 500 connector cycles
- 250 connector cycles, 21 day gas test with 10 ppm SO₂, measurement of contact resistance
- 250 connector cycles, then visual inspection, no abrasion of contact surface down to the base metal, no impairment of function

Requirements class 2

- 400 connector cycles
- 200 connector cycles, 4 day gas test with 10 ppm SO₂, measurement of contact resistance
- 200 connector cycles, then visual inspection, no abrasion of contact surface down to the base metal, no impairment of function

Requirements class 3

- 50 connector cycles, no gas test, then visual inspection, no impairment to function

Requirements class VG 95 324, part 1

- 500 connector cycles, then 1 day gas test with 10 000 ppm SO₂ and 1 day gas test with 10 000 ppm H₂S, then visual inspection, no abrasion of contact surface down to base metal, no impairment of function

Modifications

Extended delivery program

- Connectors to IEC 60603-2 with requirements classes 1, 3 and defence equipment standard
Minimum quantity: 300 pieces
- Connectors with selective contacts
Minimum quantity: 500 pieces
- Complementary types to standard IEC 60603-2 („half“ type)
Minimum quantity: 300 pieces
- Not catalogued connectors to IEC 60603-2
Minimum quantity: 300 pieces

Note:

Prices and delivery times available on request



Downloads and further important information can be found on the Internet under www.schrack.biz

General technical data

Contamination level 1

None or dry, non-conductive contamination.
Contamination has no effect.

Contamination level 2

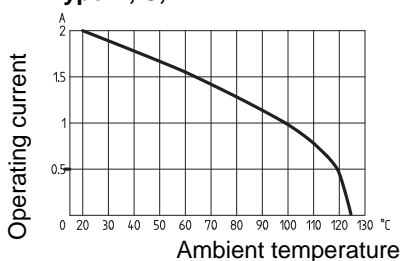
Non-conductive contamination only.
Occasional transient conductivity due to condensation may occur.
Contamination levels 3 and 4 are not taken into account as they do not apply to the connectors listed in this catalogue.
The minimum creepage distances represented in the table relate to the CTI values of insulation group III a/b.

Reference voltage, minimum creepage distance and contamination level

Reference voltage V U _{ACeff} or U	12.5	25	32	50	63	80	100	125	160	200	250	320	400	500	630	800	1000
Minimum creepage distance in mm																	
- Contamination level 1	0.09	0.125	0.14	0.18	0.2	0.22	0.25	0.28	0.32	0.42	0.56	0.75	1.0	0.3	1.8	2.4	3.2
- Contamination level 2	0.42	0.50	0.53	1.2	1.25	1.30	1.40	1.50	1.60	2.00	2.50	3.20	4.0	5.0	6.3	8.0	10

Derating diagrams

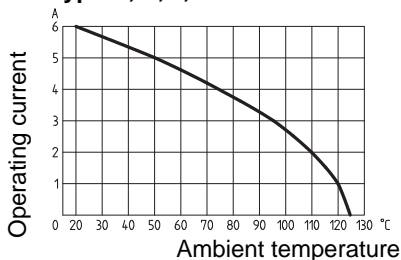
Type B, C, R



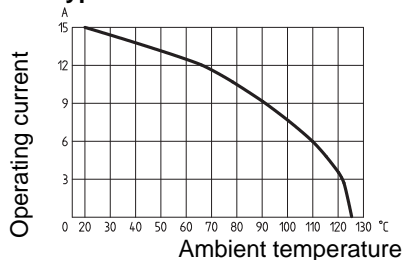
The current-carrying capacity of connectors is restricted by the thermal loading capacity of the materials, the contact elements - including connections - and insulation elements.

The derating curve applies therefore for currents that may flow continuously (not intermittently) and simultaneously through each contact element of the connector without exceeding the maximum acceptable temperature.
Measurement and control procedures in accordance with DIN 41 640, part 3.

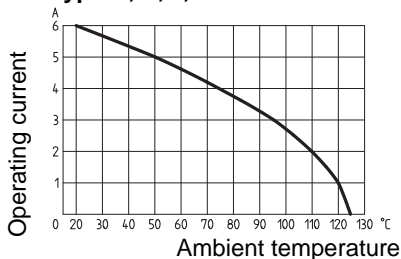
Type D, E, F, G



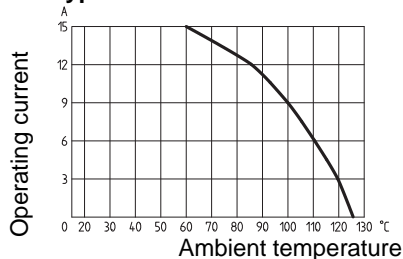
Type H



Type D, E, F, G



Type H



sva42501 sva42502 sva42503 sva42504 sva42505

Connectors

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- Blank connector housings/locking levers... 11.6
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Busbars

- 4-pin for Faston connector 6.3 x 0.8 mm... 11.10
- PCB busbars... 11.11
- Busbars... 11.11

Accessories – Connectors

Overview of types, connectors EN 60603 (DIN 41612)

Order Information

Description	Number of contacts	Row assignment	Type B	Type C	Type C for ribbon cables	Type R	Type D
Drawing: View of rear of plug							
			05508052 1 piece	05508053 1 piece	05508054 1 piece	05509052 1 piece	05508055 1 piece

Male connector

Solder pins, length 3 mm, 0.6 mm x 0.6 mm; angled	32	a, c	–	69001-826	–	–	69001-831
	64	a, b	69001-801	–	–	–	–
	64	a, c	–	69001-821	–	–	–
	96	a, b, c	–	69001-816	–	–	–

Female connector

Wire-wrap pins, length 13 mm, 0.6 mm x 0.6 mm, straight;	32	a, c	–	69001-691	–	–	–
	64	a, c	–	69001-685	–	–	–
	96	a, b, c	–	69001-679	–	–	–
Wire-wrap pins, length 20 mm, 1 mm x 1 mm, straight;	32	a, c	–	–	–	–	69001-697
	64	a, b	69001-664	–	–	–	–
Solder pins, length 2.5 mm, Ø 0.6 mm, straight	64	a, c	–	69001-693	–	–	–
	96	a, b, c	–	69001-696	–	–	–
	64	a, c	–	–	–	69001-976	–
Solder pins, length 3 mm, 0.6 mm x 0.6 mm, angled	96	a, b, c	–	–	–	69001-728	–
	64	a, c	–	69001-678	–	–	–
Solder pins, length 4 mm, Ø 0.6 mm, straight	96	a, b, c	–	69001-677	–	–	–
	32	a, c	–	–	–	–	69001-698
Solder eye, length 5.5 mm	64	a, c	–	–	69005-596	–	–
Snap-on/screw-on for 64-pin cable	64	a, c	–	–	–	–	–
Spring contacts for crimping, 0.14 - 0.5 mm ² , 50 pieces			–	–	–	–	21100-293
Spring contacts for crimping, 0.75 - 1.5 mm ² , 50 pieces			–	–	–	–	21100-294
Torx panhead screw M2.5 x 7, PU 100 pieces, for direct mounting on z-rail			24560-147	24560-147	24560-147	24560-147	24560-147

Technical Data

	Type B	Type C	Type C for ribbon cables	Type R	Type D
Connector pitch	2.54 mm	2.54 mm	2.54 mm	2.54 mm	5.08 mm
Current load max. at 20 °C	2 A	2 A	1 A	2 A	6 A
Test voltage U _{eff} contact-contact	1 kV	1 kV	1 kV	1 kV	1.55 kV
Test voltage U _{eff} contact-earth	1.55 kV	1.55 kV	–	1.55 kV	1.55 kV
Contact resistance	≤ 20 mΩ	≤ 20 mΩ	–	≤ 20 mΩ	≤ 20 mΩ
Coding on the connector	–	–	–	–	–
Separate coding	yes	yes	yes	yes	yes
Contact surface	solidly gold-plated	solidly gold-plated	solidly gold-plated	solidly gold-plated	solidly gold-plated
Air gap contact-contact	>1.2 mm	>1.2 mm	–	>1.2 mm	>1.6 mm
Creepage distances contact-contact	>1.2 mm	>1.2 mm	–	>1.2 mm	>3.0 mm
Insertion and withdrawal forces	32-pin < 30 N; 64-pin < 60 N; 96-pin < 90 N		64-pin < 60 N	64-pin < 60 N; 96-pin < 90 N	32-pin < 40 N

Note

- Connectors are compliant with requirements class 2



For further information www.schroff.biz/oneclick
oneClick search code = Part no.

Accessories - Connectors

Overview of types, connectors EN 60603 (DIN 41612)

Order Information

Description	Number of contacts	Row assignment	Type E	Type F	Type G	Type H	Mixed type (M), type F and type H
Drawing: View of rear of plug							
			05509050 1 piece	05509051 1 piece	05508056 1 piece	05508057 1 piece	05508057 1 piece

Male connector

Solder pins, length 2.9 mm, 0.6 mm x 0.6 mm; angled	32	z, b	–	69001-851	–	–	–
	32	z, d	–	69001-853	–	–	–
	48	a, c, e	69001-879	–	–	–	–
	48	z, b, d	–	69001-846	–	–	–
Solder pins, length 3 mm, 1.2 mm x 0.8 mm; angled; connector pins not protruding	64	z, b, d, f	–	–	69001-856	–	–
	15	z, d	–	–	–	69001-865	–
Solder pins, recessed, length 2.9 mm, 1.2 mm x 0.8 mm; angled	15	z, d	–	–	–	69001-860	–
FASTON connector 6.3 mm x 0.8 mm; straight	15	z, d	–	–	–	69001-866	–
Solder pins, length 2.9 mm, FØ 0.6 mm, H Ø 1.6 mm; angled	24+7-pin	z, b, d	–	–	–	–	69001-905

Female connector

Wire-wrap pins, length 22 mm, 1 mm x 1 mm; straight	32	z, b	–	69001-717	–	–	–
	48	a, c, e	69001-877	–	–	–	–
	48	z, b, d	–	69001-711	–	–	–
F: Wire-wrap pins, length 22 mm, 1 mm x 1 mm; H: FASTON connector 6.3 mm x 0.8 mm; straight	64	z, b, d, f	–	–	69001-723	–	–
	24+7-pin	z, b, d	–	–	–	–	69001-755
Solder pins, length 4 mm, 0.8 mm x 0.8 mm; straight	15	z, d	–	–	–	69001-981	–
Solder pins, length 4.5 mm, 0.4 mm x 0.6 mm; straight	48	z, b, d	–	69001-884	–	–	–
Solder pins, length 10 mm, 0.8 mm x 0.8 mm; straight	15	z, d	–	–	–	69001-980	–
Wiring with FASTON connector 6.3 mm x 0.8 mm; straight	15	z, d	–	–	–	69001-733	–
Solder eyes, length 9.5 mm	32	z, b	–	69001-718	–	–	–
	32	z, d	–	69001-722	–	–	–
	48	z, b, d	–	69001-712	–	–	–
F: Solder eyes; H: FASTON connector 6.3 mm x 0.8 mm; straight	24+7-pin	z, b, d	–	–	–	–	69001-944
Torx panhead screw M2.5 x 7, PU 100 pieces, for direct mounting on z-rail			24560-147	24560-147	24560-147	24560-147	24560-147

Technical Data

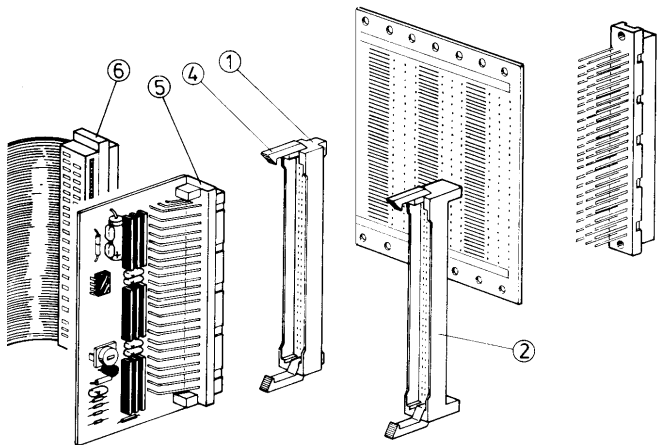
Technical Data	Type E	Type F	Type G	Type H	Mixed type (M), type F and type H	
	5.08 mm	5.08 mm	5.08 mm	10.16 mm	5.08 mm	10.16 mm
Connector pitch	6 A	6 A	6 A	15 A	6 A	15 A
Current load max. at 20 °C	1.55 kV	1.55 kV	1.55 kV	3.10 kV	1.55 kV	3.10 kV
Test voltage U _{eff} contact-contact	1.55 kV	2.50 kV	2.50 kV	3.10 kV	2.50 kV	3.10 kV
Test voltage U _{eff} contact-earth	≤ 20 mΩ	≤ 20 mΩ	≤ 20 mΩ	≤ 8 mΩ	≤ 20 mΩ	≤ 8 mΩ
Contact resistance	–	–	–	yes	–	–
Coding on the connector	yes	yes	yes	yes	yes	yes
Separate coding	solidly gold-plated	solidly gold-plated	solidly gold-plated	hard silver-plated	solidly gold-plated	hard silver-plated
Contact surface	>1.6 mm	>1.6 mm	>1.6 mm	>4.5 mm	>1.6 mm	>4.5 mm
Air gap contact-contact	>3.0 mm	>3.0 mm	>3.0 mm	>8.0 mm	>3.0 mm	>8.0 mm
Creepage distances contact-contact	48-pin < 75 N	32-pin < 50 N 48-pin < 75 N	64-pin < 100 N	15-pin < 90 N	24+7-pin < 85 N	
Insertion and withdrawal forces						

Note

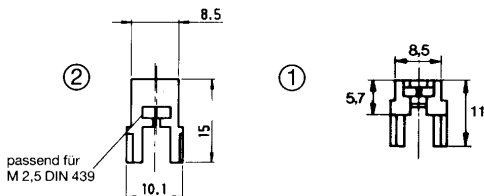
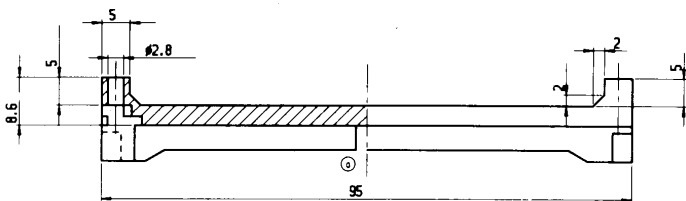
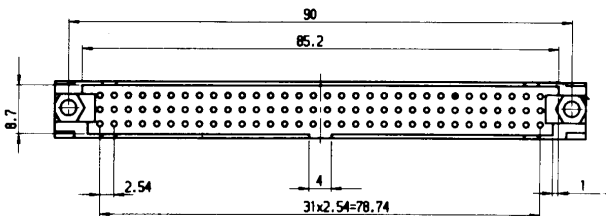
- Connectors are compliant with requirements class 2

Accessories - Connectors

Blank connector housings/locking levers



A4_2449



A3_401

- For types C and R
- The connector housing is fixed to the board with screws; it is pushed over wire wrap posts (e.g. on the rear of backplanes) and thereby forms a male connector
- Locking levers can be used e.g. to lock terminator boards or I/O connectors in place



Order Information

Item	Description	Qty/PU	Part no.
1	Housing with M 2.5 nuts, for posts 0.6 × 0.6 × 17 mm, backplane thickness 3.2 mm	1	29090-001
2	Housing with M 2.5 nuts, for posts 0.6 × 0.6 × 13 mm, backplane thickness 3.2 mm	1	29090-002
2	Housing with M 2.5 nuts, for posts 0.6 × 0.6 × 13 mm, backplane thickness 1.6 mm	1	29001-019
4	Locking lever for type R, grey	1	69001-995
4	Locking lever for type C, black	1	69001-106

Note

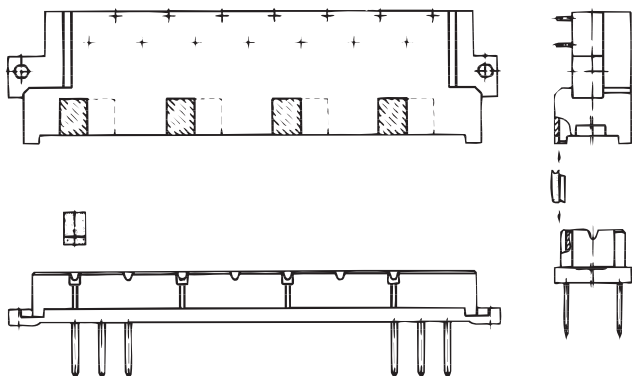
- 29090-001 is the replacement product for 69001-210 and 29001-015
- 29090-002 is the replacement product for 69001-814 and 29001-016
- 29001-019 is the replacement product for 69001-311



For further information www.schroff.biz/oneclick
oneClick search code = Part no.

Accessories - Connectors

Keying/coding pegs for codable female connectors



A4-2481

- For female connector type H
- Without loss of space
- Max. 70 keying/coding possibilities
- The keying/coding pegs are plugged into the female connector; the corresponding keying/coding fields (situated opposite) of the male connectors are broken out

Order Information

Description	Qty/PU	Part no.
Keying/coding pegs, PBTP, UL 94 V-0	40	21101-252



For further information www.schroff.biz/oneclick
oneClick search code = Part no.

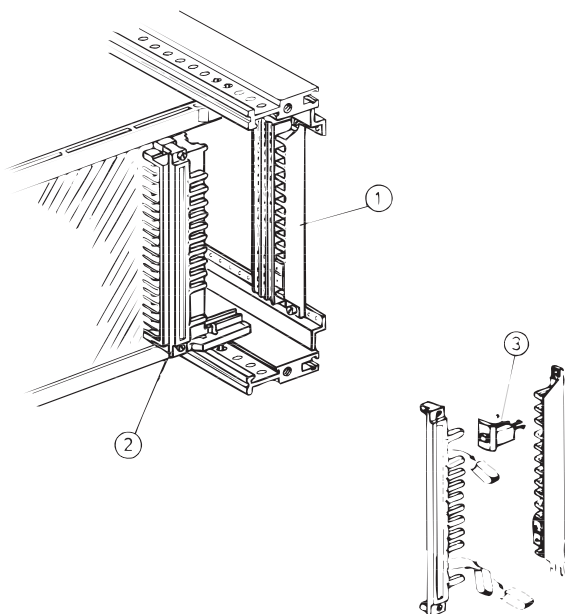
Keying/coding

- Keying/coding prevents plug-in units becoming mixed up
- Keying/coding for type H
 - Fixing direct onto plug by means of keying/coding peg in the female connector
- Keying/coding for all types in accordance with EN 60603 (DIN 41612)
 - Fixing via additional mounting of keying/coding strips

Keying/coding pegs Part no.	For female connector Part no.
	69001-733
21101-252	69001-980
	69001-981

Accessories – Connectors

Keying/coding strips



A4-2424

- For all types in accordance with EN 60603 (DIN 41612)
- Used with plug-in units to prevent mix-up
- Space for plugs with keying/coding strip:
 - 4 HP for types B, C, D, F, H
 - 5 HP for types E, G
- 66 keying/coding possibilities when two coding pins are used
- 924 keying/coding possibilities when six coding pins are used

Order Information

Item	Description	Qty/PU	Part no.
1, 2, 3	Contact strip PBTP, UL 94 V-0, 10 pieces, female strip, PBTP, UL 94 V-0, 10 pieces, keying/coding pins, PBTP, UL 94 V-0, 20 pieces	1	20800-042
1, 2, 3	Spacer element for types E, G	20	20800-036
3	Keying/coding pin	100	20800-078
Assembly kit Screw M2.5 x 18, PU 100 pieces			21100-404

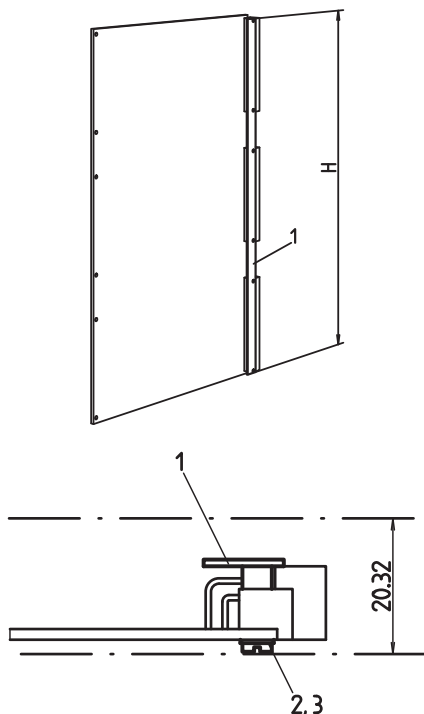
Note

- For connectors types E and G spacers are always required



For further information www.schroff.biz/oneclick
oneClick search code = Part no.

PCB strengthening (9 U)



LKA42609

LKA42593

- Protects large PCBs from bending
- Creates an additional crossbar (in accordance with IEEE recommendations, P 896, Nubus, Multibus® II etc.) that links all connectors
- Fixing points match connectors in accordance with EN 60603 (DIN 41612), types B, R, C and D

Delivery comprises (kit)

Item	Qty	Description
1	1	PCB strengthening, Al extrusion, anodised, cut edges plain; separator, stainless steel, riveted on
2	6	Cheesehead screw M 2,5 x 12, St, nickel-plated
3	6	Washer 2.6, St, nickel-plated

Order Information

Description	Height H mm	Part no.
For 9 U PCBs	361.6	20809-441



For further information www.schroff.biz/oneclick
oneClick search code = Part no.

Accessories - Connectors

Connectors, 3-pin



05592043

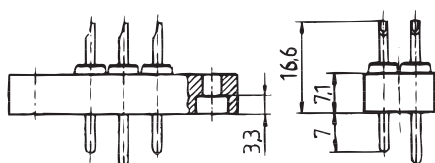
- Used for mains/line voltage supplies
- Male connector with advanced earth protection contact (B)

Order Information

Item	Description	Qty/PU	Part no.
1	Male connector	1	69001-651
2	Female connector strip	1	69001-652
3	Mounting plate for fixing in subrack, socket terminal strip mounts on z-rail (with threaded holes to EN 60603, DIN 41612)	1	30812-002

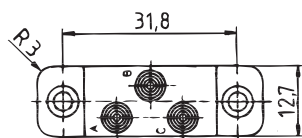
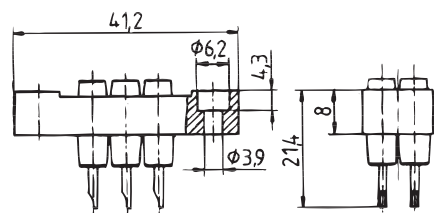
Technical data

Nominal current per contact	10 A
Air gap	≥ 4.4 mm
Creepage distance	≥ 7.6 mm
Test voltage	3 kV (eff)
Contact resistance	approx. 10 mΩ
Connection	solder eye connection up to 1 mm
Ambient temperature	23 °C ... 130 °C
Contact pins, sockets	galvanically silver-plated
Housing material	Keripol red (type 802 in accordance with DIN 16911)
Flammability	UL 94-HB



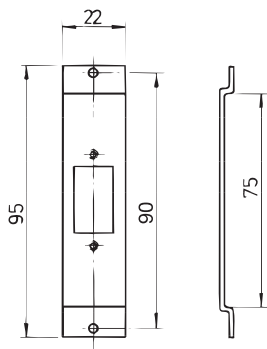
A4-5316

Dimensional drawing of multi-pin connector



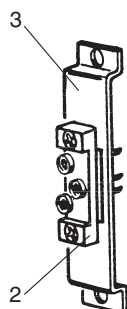
05009052

Dimensional drawing of socket terminal strip



A4-2486a

Dimension drawing of mounting plate



A4-5317

3: Mounting plate

2: Socket terminal strip



For further information www.schroff.biz/oneclick
oneClick search code = Part no.

Accessories – Horizontal busbars

Busbar, 4-pole, for Faston connectors, 6.3 x 0.8 mm



00811001

- 24 connection points (4-poles, 6 connectors each)
- To supply mains voltage to 19" subracks
- Fixing in HP grid increments (spacing 15 HP), external dimension < 17 HP

NEW

Delivery comprises

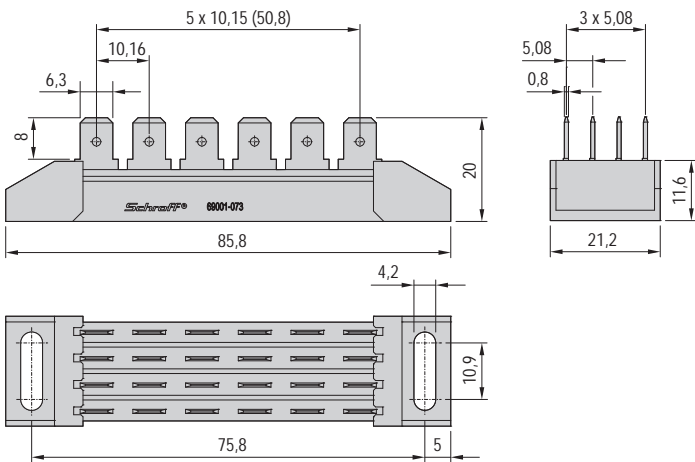
Item	Qty	Description
1	1	Busbar, 4-pole (for 6 Faston connectors 6.3 x 0.8 mm)

Order Information

Description	Part no.
Busbar, 4-pole, for Faston connectors, 6.3 x 0.8 mm	69001-073

Technical data

Operating voltage	250 V _{AC}
Test voltage: Bar – Bar	3.5 kV _{eff}
Test voltage: Pin – Earth	5.0 kV _{eff}
Operating current at 20 °C per pin (= 6 connections)	$\sum I \leq 35$ A
Temperature range	-40 °C ... +100 °C
Material: Faston, busbars	CuZn, surface tin-plated
Material: insulating body	PC/ABS, UL 94-V0
Connector type	for Fastons 6.3 x 0.8 mm, 4-pin, 6 Fastons per pin
Connection pitch	5.08 x 10.16 mm



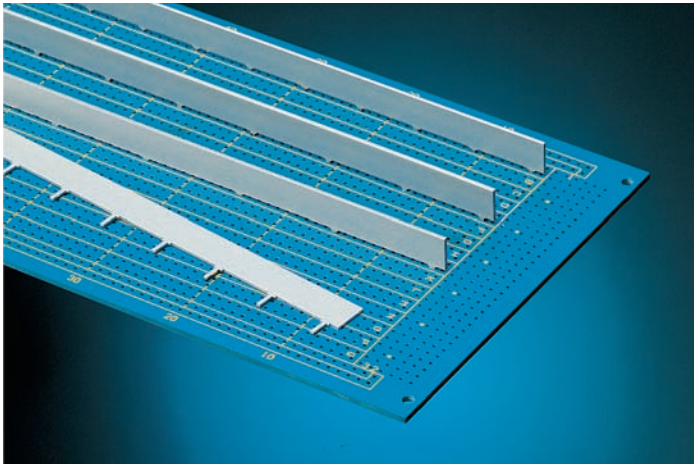
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Note

- Other lengths, 2-pole and 3-pole versions, brass contacts available on request

Accessories - Horizontal busbars

PCB busbars



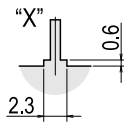
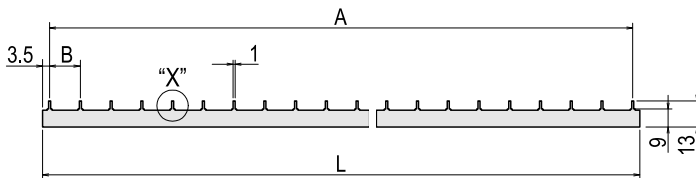
00892008

- Power distribution on printed circuit boards and backplanes
- Fault elimination
- Increases the stiffness of PCBs

Order Information

Width B HP	Length L mm	Dimension A mm	Part no.
3	220.3	14 × 15.24 = 213.36	30925-001
3	342.3	22 × 15.24 = 335.28	30925-002
4	210.2	10 × 20.32 = 203.2	30925-003
4	332.1	16 × 20.32 = 325.12	30925-004
5	210.2	8 × 25.4 = 203.2	30925-005
5	337.2	13 × 25.4 = 330.2	30925-006

Delivery is exclusively in Standard Pack Quantity (SPQ): Please order at least 10 pieces or a multiple. Pricing is per individual item.



A41743

Technical data

Conductor material	E-Cu, tin-plated
Pin dimensions	0.8 × 1.0 mm
Max. operating current	30 A
DC resistance	2.5 mΩ/m

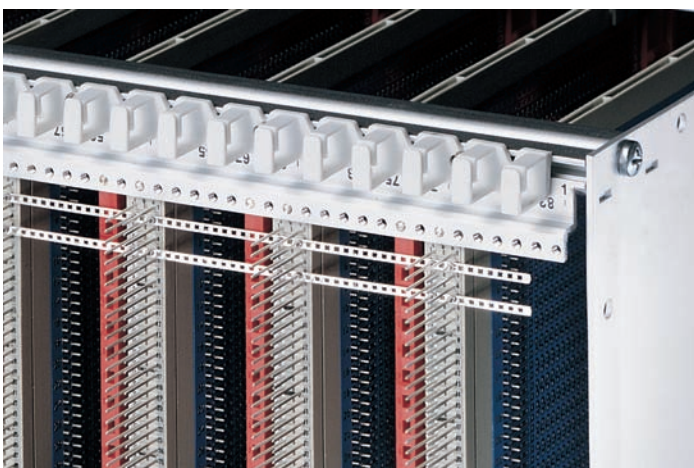
Note

- Special designs available on request



For further information www.schroff.biz/oneclick
oneClick search code = Part no.

Solder strip conductor



00892016

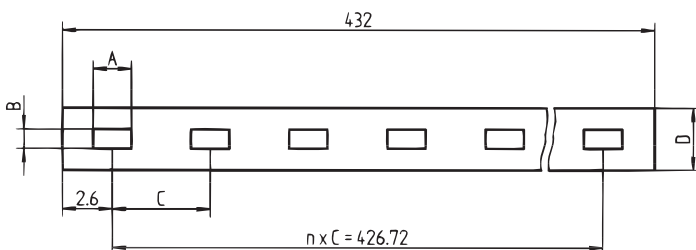
- Efficient linking of connections in the same grid and with the same potential
- Also suitable for EN 60603 (DIN 41612) connectors with wire-wrap pin

Order Information

Connection type	A mm	B mm	C mm	D mm	n	Qty/PU	Part no.
Wire-wrap pins 0.6 × 0.6 mm	1.14	0.9	2.54	2.3	168	1	60800-064
Wire-wrap pins 1.0 × 1.0 mm	1.65	1.4	5.08	3.2	84	1	60800-080

Technical data

Conductor material	E-Cu F30, tin-plated
Max. operating current wire-wrap pins 0.6 × 0.6 mm	≤ 4 A
Max. operating current wire-wrap pins 1.0 × 1.0 mm	≤ 4 A



AZA42390



For further information www.schroff.biz/oneclick
oneClick search code = Part no.

Front panel component system

Overview 0

Cabinets 1

Wall mounted cases 2

Accessories for cabinets and wall mounted cases 3

Climate control 4

Desk-top cases 5

Subracks/ 19" chassis ... 6

Front panels, plug-in units .. 7

Systems 8

Power supply units 9

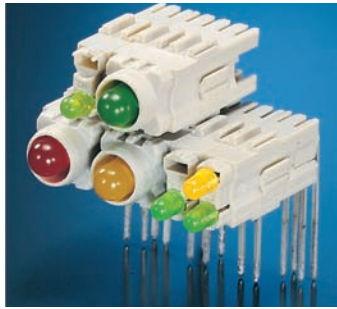
Backplanes .. 10

Connectors, front panel component system 11

Appendix 12

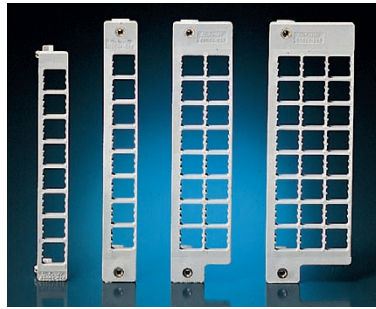


05092001



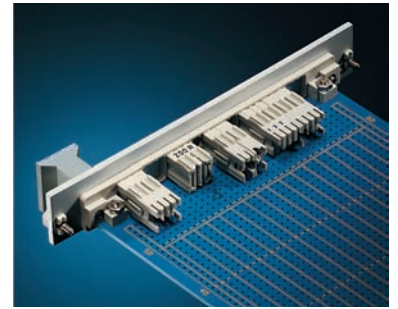
05092004

Components are pre-mounted in plastic bodies that can be arranged in rows; horizontal grid (3 planes) and vertical grid (8 or 16 planes)



05092008

A mounting frame with integrated PCB bracket fixes the front elements and forms the mechanical link between PCB, front elements and front panel



05092002

Front element system in use

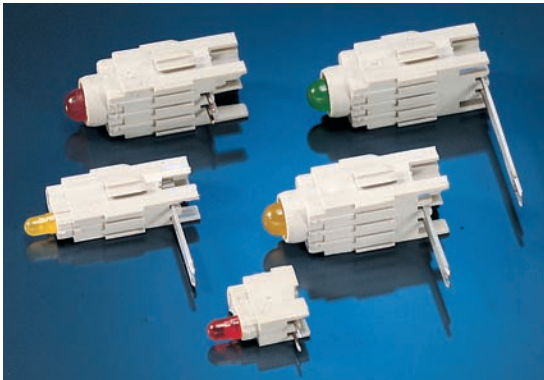
Standards

- IEC 60297-3-101
- IEC 60603 (DIN 41494 part 8)



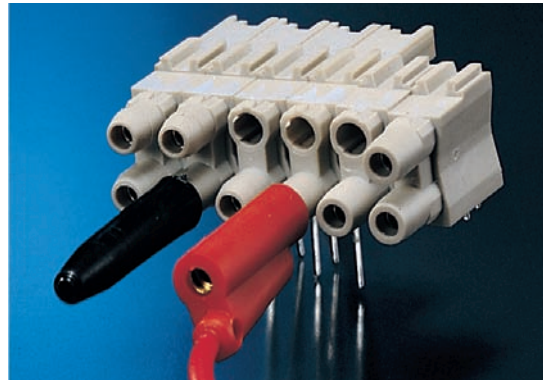
Operating and display elements for front panels

- Pre-assembled front element components
- Mounting frames with integrated PCB brackets
- Assembled front elements can be soldered in one step
- Subsequent front panel mounting



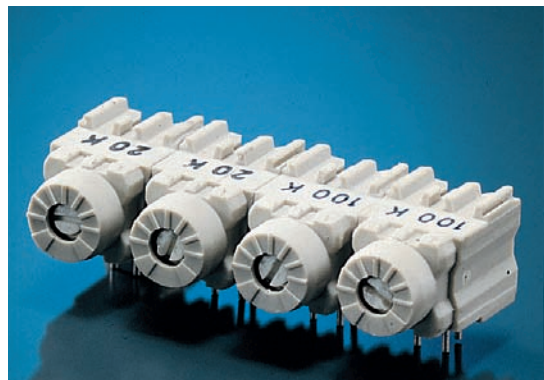
LEDs (light-emitting diodes)

05092009



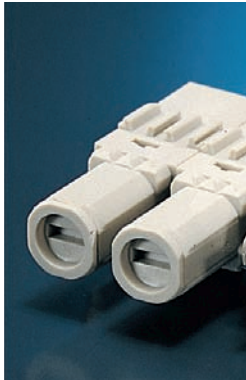
Test and make-break sockets

05092005



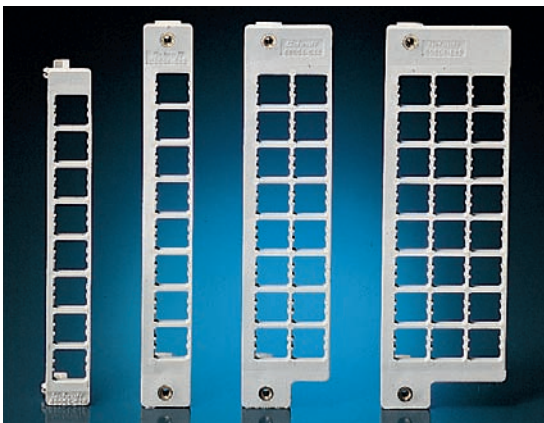
Potentiometers

05092007



Fuse holders

05092006



Mounting frames with integrated PCB brackets

05092008

Front panel component system

- Single LEDs ... 11.14
- Double LEDs ... 11.16
- Technical data LEDs ... 11.17
- Test sockets ... 11.18
- Make-break socket ... 11.19
- Technical data for test and make-break sockets and fuse holders ... 11.20
- Potentiometers . 11.21
- Mounting frames 11.22
- Drilling template 11.23
- Design aids ... 11.24

Front panel component system

Single LED, long type, Ø 3.2 mm

- Long type for mounting planes 1, 2 and 3

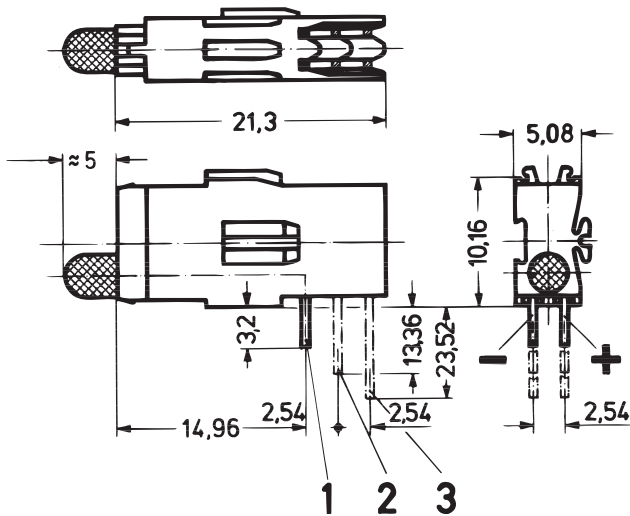
Order Information

Description	Colour	1	2	3
		Part no.	Part no.	Part no.
Low current LED	red	69004-240	69004-258	69004-259
Low current LED	yellow	69004-242	69004-262	69004-263
Low current LED	green	69004-241	69004-260	69004-261
Standard LED	red	69004-059	69004-060	69004-061
Standard LED	yellow	69004-065	69004-066	69004-067
Standard LED	green	69004-062	69004-063	69004-064

Delivery is exclusively in Standard Pack Quantity (SPQ): Please order at least 10 pieces or a multiple. Pricing is per individual item.

Note

- Dimensions of connecting pins:
0.5 × 0.5 mm (mounting plane 1)
0.63 × 0.63 mm (mounting planes 2 and 3)
- Required front panel drill hole: Ø 4 mm
- Technical data see page 11.17



1, 2, 3 = mounting planes

A3-195



For further information www.schroff.biz/oneclick
oneClick search code = Part no.

Single LED, short type, Ø 3.2 mm

- Short type for mounting plane 1

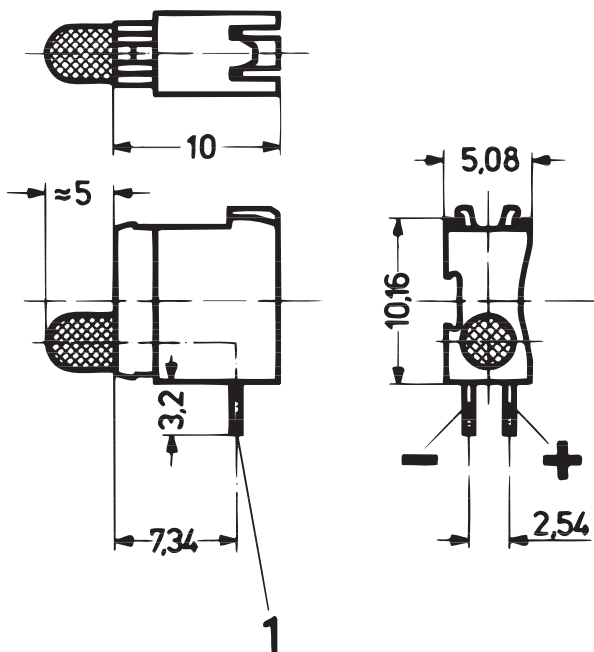
Order Information

Colour	Low current LED	Standard LED
	Part no.	Part no.
red	69004-264	69004-121
yellow	69004-266	69004-123
green	69004-265	69004-122

Delivery is exclusively in Standard Pack Quantity (SPQ): Please order at least 10 pieces or a multiple. Pricing is per individual item.

Note

- Dimensions of connecting pins: 0.5 × 0.5 mm
- Required front panel drill hole: Ø 4 mm
- Technical data see page 11.17



1 = mounting plane

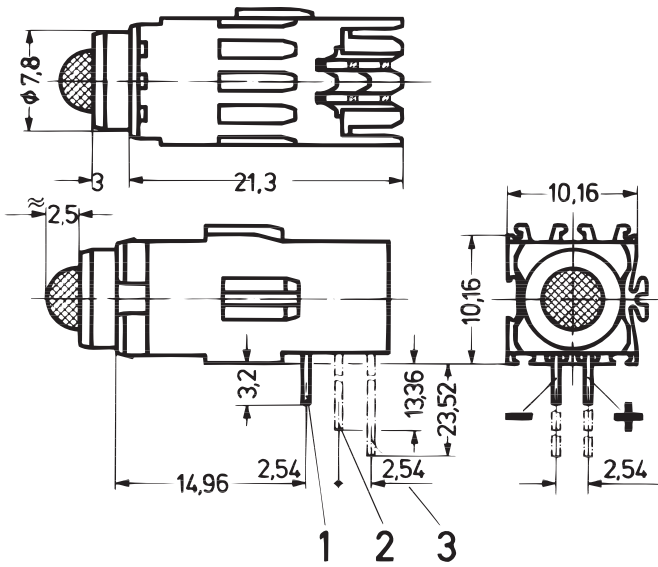
A3-214



For further information www.schroff.biz/oneclick
oneClick search code = Part no.

Front panel component system

Single LED, long type, \varnothing 5 mm



1, 2, 3 = mounting plane

A1-194

- Long type for mounting plane 1, 2 and 3

Order Information

Description	Colour	1	2	3
		Part no.	Part no.	Part no.
Low current LED	red	69004-250	69004-251	69004-252
Low current LED	yellow	69004-249	69004-256	69004-257
Low current LED	green	69004-253	69004-254	69004-255
Standard LED	red	69004-050	69004-051	69004-052
Standard LED	yellow	69004-056	69004-057	69004-058
Standard LED	green	69004-053	69004-054	69004-055

Delivery is exclusively in Standard Pack Quantity (SPQ): Please order at least 10 pieces or a multiple. Pricing is per individual item.

Note

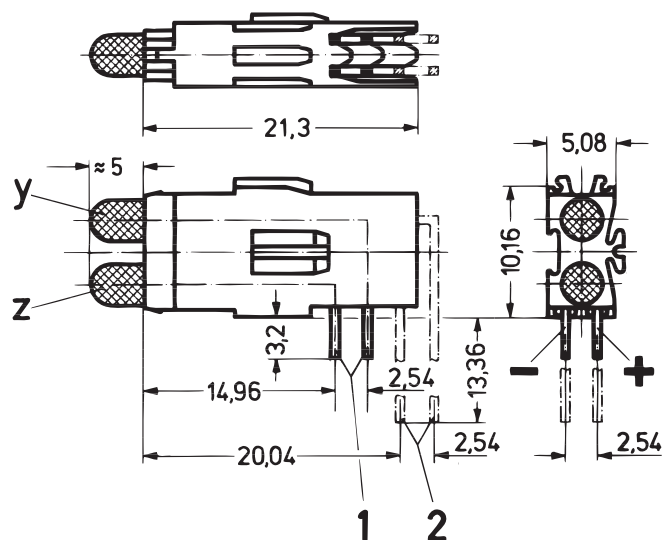
- Dimensions of connecting pins:
0.5 x 0.5 mm (mounting plane 1)
0.63 x 0.63 mm (mounting planes 2 and 3)
- Required front panel drill hole: \varnothing 8 mm
- Technical data see page 11.17



For further information www.schroff.biz/oneclick
oneClick search code = Part no.

Front panel component system

Double LED, long type, Ø 3.2 mm



1, 2 = mounting plane

A3-196

- Long type for mounting plane 1 and 2

Order Information

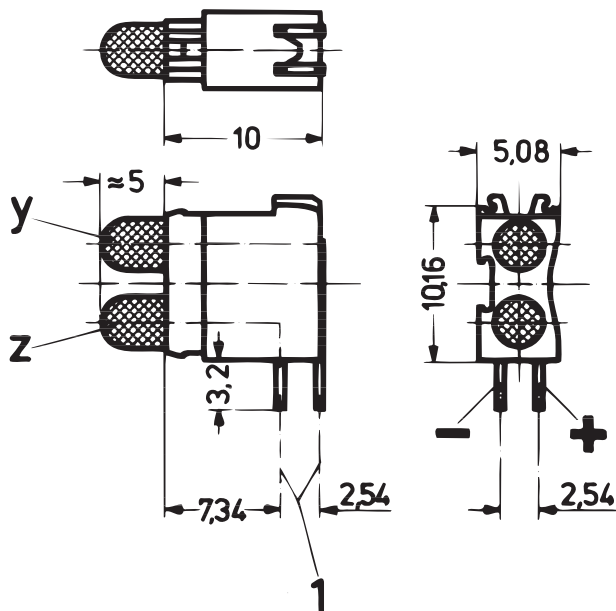
Description	Colour	1	2
		Part no.	Part no.
Low current LED	red/red (Y/Z)	69004-274	69004-275
Low current LED	green/green (Y/Z)	69004-276	69004-277
Low current LED	yellow/yellow (Y/Z)	69004-278	69004-279
Low current LED	red/green (Y/Z)	69004-280	69004-281
Low current LED	red/yellow (Y/Z)	69004-282	-
Low current LED	yellow/green (Y/Z)	69004-284	-
Standard LED	red/red (Y/Z)	69004-068	69004-069
Standard LED	green/green (Y/Z)	69004-071	69004-072
Standard LED	yellow/yellow (Y/Z)	69004-074	69004-075
Standard LED	red/green (Y/Z)	69004-077	69004-078
Standard LED	red/yellow (Y/Z)	69004-080	-
Standard LED	yellow/green (Y/Z)	69004-083	-

Delivery is exclusively in Standard Pack Quantity (SPQ): Please order at least 10 pieces or a multiple. Pricing is per individual item.

Note

- Dimensions of connecting pins: 0.63 × 0.63 mm
- Required front panel drill hole: Ø 4 mm
- Technical data see page 11.17

Double LED, short type, Ø 3.2 mm



1 = mounting plane

A3-217

- Short type for mounting plane 1

Order Information

Colour	Low current LED	Standard LED
	Part no.	Part no.
red/red (Y/Z)	69004-286	69004-124
yellow/yellow (Y/Z)	69004-288	69004-126
green/green (Y/Z)	69004-287	69004-125
red/green (Y/Z)	69004-289	69004-127
red/yellow (Y/Z)	69004-290	69004-128
yellow/green (Y/Z)	69004-291	69004-129

Delivery is exclusively in Standard Pack Quantity (SPQ): Please order at least 10 pieces or a multiple. Pricing is per individual item.

Note

- Dimensions of connecting pins: 0.5 × 0.5 mm
- Required front panel drill hole: Ø 4 mm
- Technical data see page 11.17



For further information www.schroff.biz/oneclick
oneClick search code = Part no.

Front panel component system

Dimensions LEDs

A = standard LED
B = low current LED

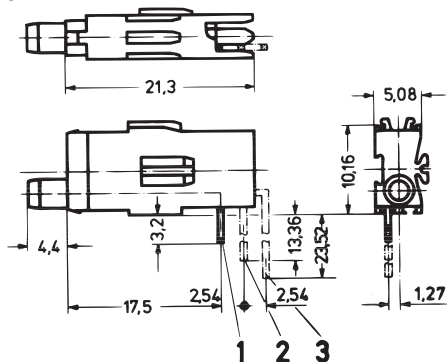
Absolute maximum data T _a = 25 °C	A red, Ø 3.2 mm		B red, Ø 5 mm		A yellow, Ø 3.2 mm		B yellow, Ø 5 mm		A green, Ø 3.2 mm		B green, Ø 5 mm	
Reverse voltage V	5	3	5	3	5	3	5	3	5	3	5	3
On-state current mA	25	30	25	30	25	30	25	30	25	30	25	30
Power dissipation mW	100	75	100	75	100	75	100	75	100	75	100	75
Forward current mA (t < 10 µs)	100	75	100	75	100	75	100	75	100	75	100	75
Forward voltage V – type (10 mA/2 mA)	2.1	2.1	2.1	2.1	2.1	2.2	2.1	2.2	2.1	2.2	2.1	2.2
– max. (10 mA/2 mA)	3	3	3	3	3	3	3	3	3	3	3	3
Luminous intensity mcd – at 2 mA	–	1.5	–	3.1	–	1.4	–	3.2	–	2	–	3.3
– at 10 mA ¹⁾	1.8	13.4	2.2	25.1	2.7	13.4	3.4	28.6	3.2	24.6	3.9	25.7
– at 20 mA ¹⁾	3.6	26.8	4.4	48.2	5.4	28.7	6.8	60.8	6.4	54.9	7.8	54.6
Wavelength nm (10 mA/2 mA)	635	650	635	650	585	585	585	585	565	563	565	563
Thermal resistance °C/W	400	470	350	390	400	470	350	390	400	470	350	390
Angle of reflected beam	± 50°											
Storage temperature	–55 ... +100 °C											
Operating temperature	–55 ... +100 °C (low-current LED)/–40 ... +85 °C (Standard-LED)											
Solder temperature	260 °C/max. 5 sec (processing advice for wave soldering: protect plastic body against solder wave)											
Insulating body	PBT (Crastin)											
Flammability of insulation body	UL 94 V-0											

1) The low current LEDs can be used from 2 to 20 mA (without reduction of lifespan), which means that a significantly higher luminosity can be achieved.

Front panel component system

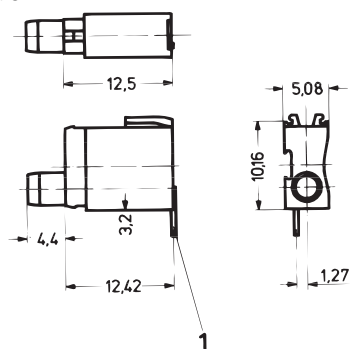
Test socket, Ø 2 mm

Long type



1, 2, 3 = mounting plane

Short type



1 = mounting plane

A3-199b

KA943

- Long type for mounting plane 1, 2 and 3
- Short type for mounting plane 1

Order Information

For application in	1	2	3
	Part no.	Part no.	Part no.
Long type	69004-086	69004-087	69004-088
Short type	69004-130	-	-

Delivery is exclusively in Standard Pack Quantity (SPQ): Please order at least 10 pieces or a multiple. Pricing is per individual item.

Note

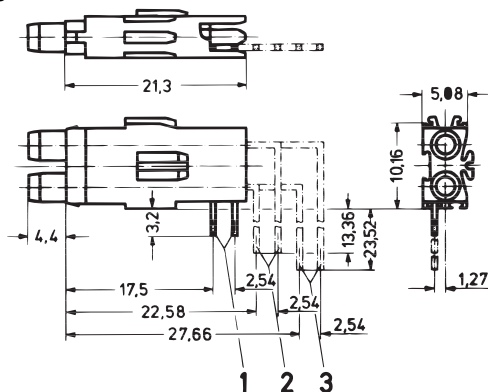
- Dimensions of connecting pins: 0.3 × 0.6 mm
- Required front panel drill hole: Ø 4 mm
- Technical data see page 11.20



For further information www.schroff.biz/oneclick
oneClick search code = Part no.

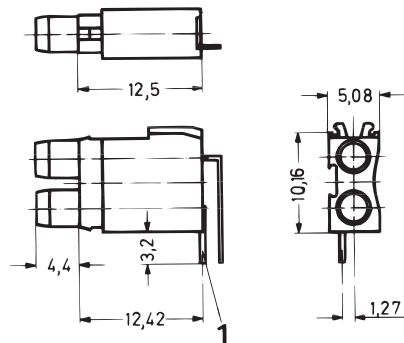
Double test socket, Ø 2 mm

Long type



1, 2, 3 = mounting plane

Short type



1 = mounting plane

05009050

05009051

- Long type for mounting plane 1, 2 and 3
- Short type for mounting plane 1

Order Information

For application in	1	2	3
	Part no.	Part no.	Part no.
Long type	69004-089	69004-090	69004-091
Short type	69004-131	-	-

Delivery is exclusively in Standard Pack Quantity (SPQ): Please order at least 10 pieces or a multiple. Pricing is per individual item.

Note

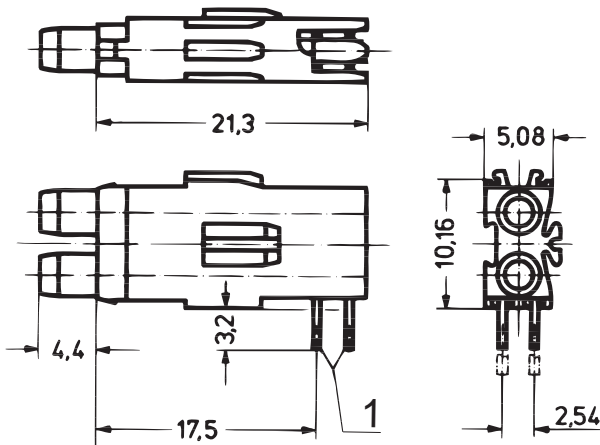
- Dimensions of connecting pins: 0.3 × 0.6 mm
- Required front panel drill hole: Ø 4 mm
- Technical data see page 11.20



For further information www.schroff.biz/oneclick
oneClick search code = Part no.

Front panel component system

Double make-break socket, \varnothing 2 mm



1 = mounting plane

A3-200

- Long type for mounting plane 1
- Gold-plated contacts
- Can also be used as test socket

Order Information

For application in	Part no.
Long type	69004-095

Delivery is exclusively in Standard Pack Quantity (SPQ): Please order at least 10 pieces or a multiple. Pricing is per individual item.

Note

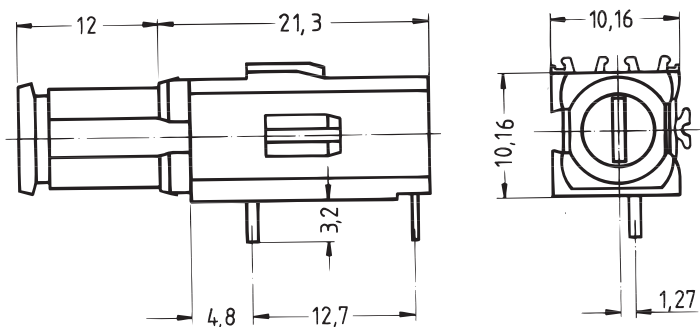
- Dimensions of connecting pins: 0.3×0.6 mm
- Required front panel drill hole: \varnothing 4 mm
- Technical data see page 11.20



For further information www.schroff.biz/oneclick
oneClick search code = Part no.

Front panel component system

Fuse holder



- Long type for mounting plane 1
- For glass fuse inserts 5 x 20 mm to DIN 41 571, 250 V_{AC}, 6.3 A
- Contacts silver-plated

Order Information

Description	Part no.
Long type	69004-098

Delivery is exclusively in Standard Pack Quantity (SPQ): Please order at least 10 pieces or a multiple. Pricing is per individual item.

Note

- Dimensions of connecting pins: 0.7 x 0.6 mm
- Required front panel drill hole: Ø 9 mm



For further information www.schroff.biz/oneclick
oneClick search code = Part no.

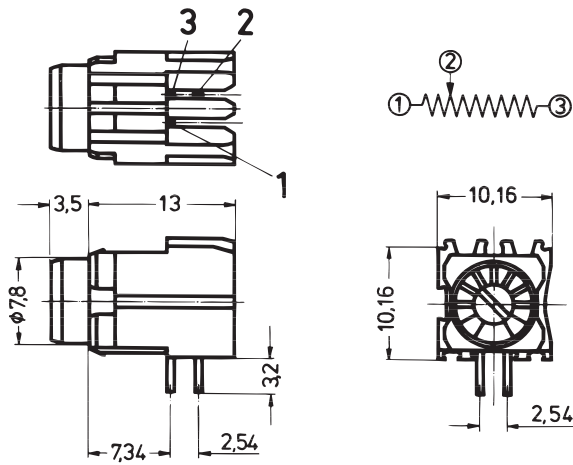
Technical data for test sockets, fuse holders

	Test socket/make-break socket	Double test socket/ double make-break socket	Fuse holder
Operating voltage	≤ 60 V _{DC/AC}	≤ 30 V _{AC}	≤ 250 V _{AC}
Operating current	≤ 1 A	≤ 1 A	≤ 6.3 A
Test voltage	1 kV/50 Hz	1 kV/50 Hz	–
Temperature range	–25 ... +70 °C	–25 ... +70 °C	–25 ... +70 °C
Solder temperature	260 °C/max. 5 sec (processing advice for wave soldering: protect plastic body against solder wave)		
Contact material	Copper alloy	Copper alloy	Copper alloy
Contact surface	Selectively gold-plated	Selectively gold-plated	Silver-plated
Insulating body	PBT (Crastin)	PBT (Crastin)	PBT (Crastin)
Climatic use category	HSF ¹⁾ to DIN 40 040	HSF ¹⁾ to DIN 40 040	HSF ¹⁾ to DIN 40 040
Flammability	UL 94 V-0	UL 94 V-0	UL 94 V-0

¹⁾ H = –25 °C; S = +70 °C; F = 75 % air humidity, no condensation

Front panel component system

Cermet potentiometers



Pins 1 and 2 low-ohmic when left-hinged;
pins 2 and 3 low-ohmic when right-hinged

- Short type for mounting plane 1

Order Information

Resistance kΩ	Part no.
1	69004-169
5	69004-165
20	69004-161
100	69004-155

Delivery is exclusively in Standard Pack Quantity (SPQ): Please order at least 10 pieces or a multiple. Pricing is per individual item.

Technical data

Operating voltage	≤ 200 V _{DC/AC}
Operating current	≤ 100 mA
Load capacity	0.5 Watt at T _a = 70 °C
Test voltage	500 V/50 Hz
Resistance tolerance	± 10 %
Electrical rotation angle	230° ± 5°
Insulation resistance change	100 MΩ
Contact resistance change	3 Ω or 3 %, use largest value
Torque at initial turning	0.021 Nm
Storage temperature	-55 ... +125 °C
Operating temperature	-25 ... +70 °C
Service life (full rotation)	200 cycles
Service life at 0.5 Watt load	1000 h at T _a = 70 °C
Solder temperature	260 °C/max. 5 sec (processing advice for wave soldering: protect plastic body against solder wave)
Insulating body	PBT (Crastin)
Flammability	UL 94 V-0
Resistance of gasket to cleaning	85 °C max. 1 min.
Temperature coefficient	± 100 ppm/K

Note

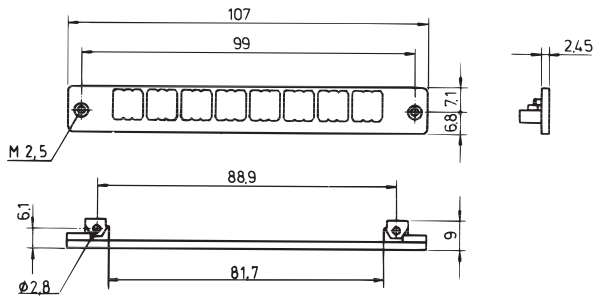
- Dimensions of connecting pins: 0.45 × 0.45 mm
- Required front panel drill hole: Ø 8 mm
- When left-hinged: pins 1 and 2 low-ohmic
- When right-hinged: pins 2 and 3 low-ohmic



For further information www.schroff.biz/oneclick
oneClick search code = Part no.

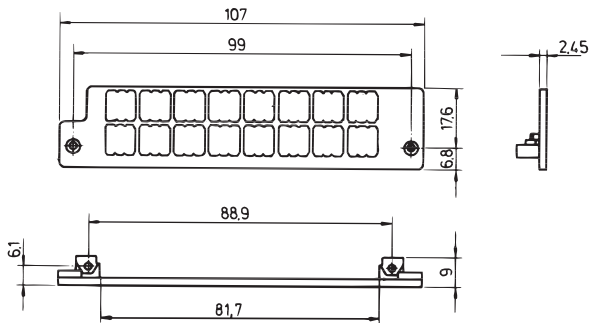
Accessories Front panel component system

Mounting frames with PCB bracket for mounting planes



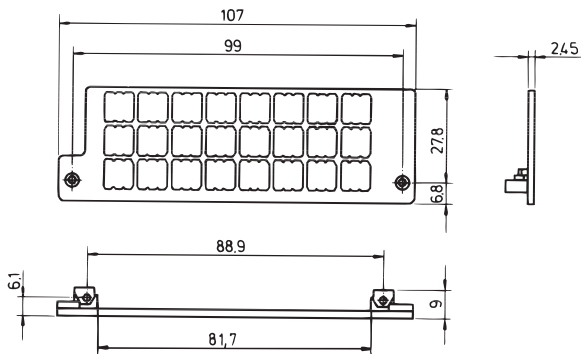
Mounting frame for mounting plane 1

KA942a



Mounting frame for mounting planes 1 and 2

KA942b



Mounting frame for mounting planes 1, 2 and 3

KA942c

- With 2 threaded female connectors M 2.5
- Material PBT
- Flammability UL 94 V-0

Order Information

Description	Part no.
Mounting frame for mounting plane 1	69004-043
Mounting frame for mounting planes 1 and 2	69004-044
Mounting frame for mounting planes 1, 2 and 3	69004-045

Delivery is exclusively in Standard Pack Quantity (SPQ): Please order at least 10 pieces or a multiple. Pricing is per individual item.

Note

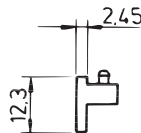
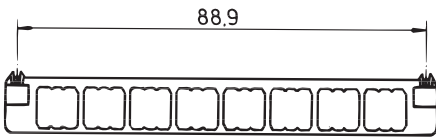
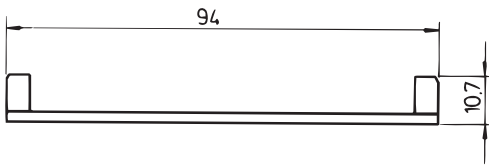
- Mounting frames nos. 69004-043, 69004-044 and 69004-045 cannot be used in conjunction with the aluminium profile handle for front panels



For further information www.schroff.biz/oneclick
oneClick search code = Part no.

Accessories Front panel component system

Mounting frame with PCB bracket for frame type plug-in units



Mounting frame for mounting plane 1

KA942d

- With 2 grub screws for fixing on PCBs
- Board thickness max. 1.6 mm
- Drilled hole for fixing board max. 2.8 mm

Order Information

Description	Part no.
Support frame with board support for frame type plug-in units	69004-046

Delivery is exclusively in Standard Pack Quantity (SPQ): Please order at least 10 pieces or a multiple. Pricing is per individual item.



For further information www.schroff.biz/oneclick
oneClick search code = Part no.

Drilling template

- Design aid for processing of front panels

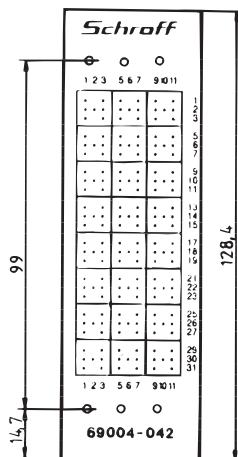
Order Information

Description	Material	Part no.
Drilling template	EPGC 02 (fibreglass reinforced Epoxy)	69004-042

Delivery is exclusively in Standard Pack Quantity (SPQ): Please order at least 10 pieces or a multiple. Pricing is per individual item.



For further information www.schroff.biz/oneclick
oneClick search code = Part no.

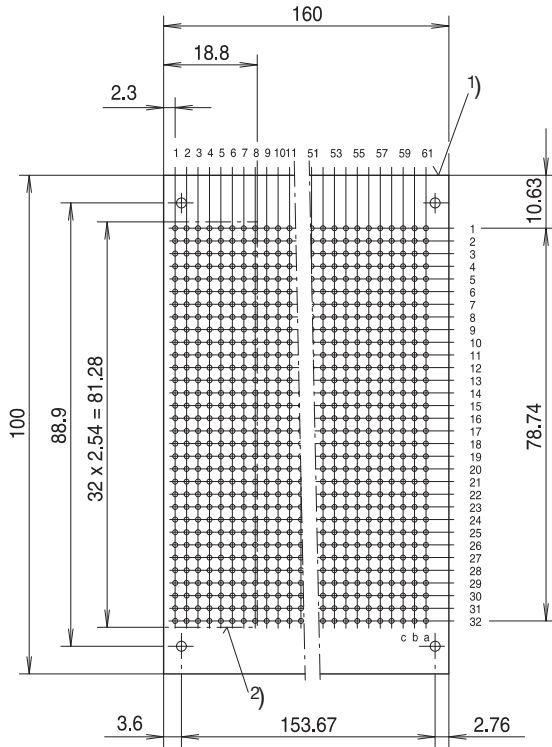


A4_276

Accessories Front panel component system

Design aids

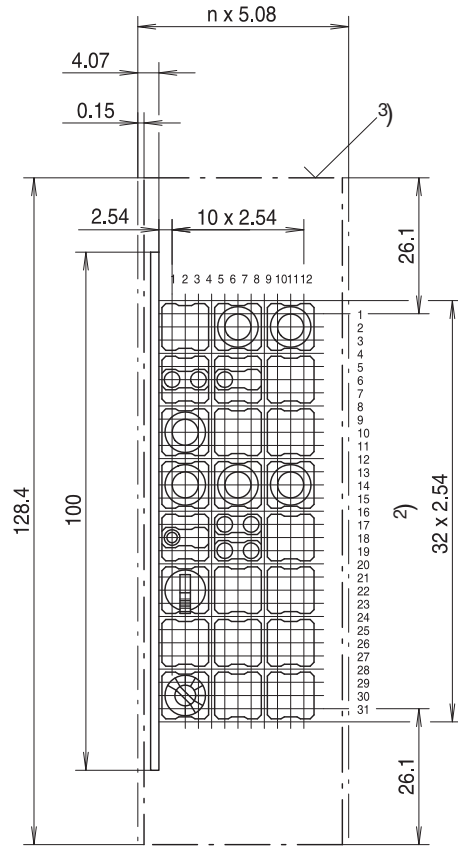
Component side of PCB



- 1) PCB
- 2) Component mounting limit

FEA45510

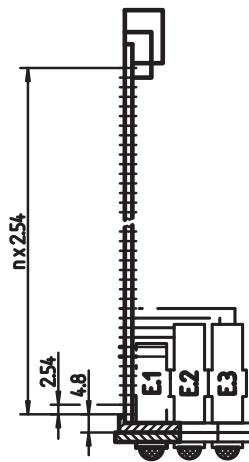
Front of front panel



- 3) Front panel

FEA45511

Placement example



- E1 = first mounting plane
- E2 = second mounting plane
- E3 = third mounting plane

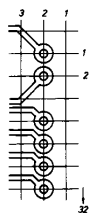
ELA40278

Accessories Front panel component system

Design aids

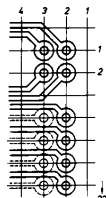
PCB tracks
View solder side

Short type
LED,
Ø 3.2 mm



A4_277a

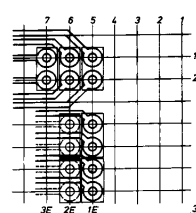
Double LED,
Ø 3.2 mm



A4_277b

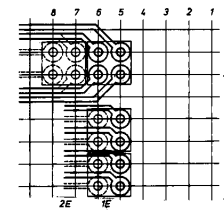
View solder side

Long type
LED,
Ø 3.2 mm



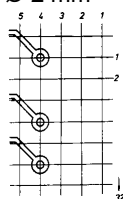
A3_205a

Double LED,
Ø 3.2 mm



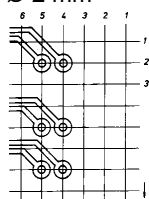
A3_205b

Test socket,
Ø 2 mm



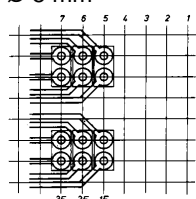
A3_215a

Double test socket,
Ø 2 mm



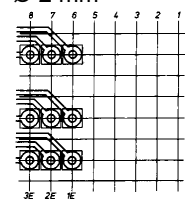
A3_215b

LED,
Ø 5 mm



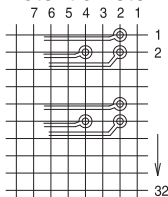
A4_272

Test socket,
Ø 2 mm



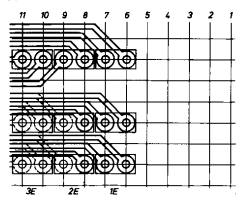
A3_205c

Potentiometer



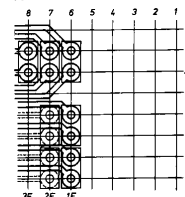
FEA45990

Double test socket,
Ø 2 mm



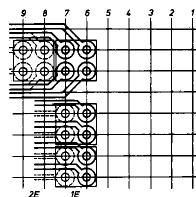
A4_273

Make/break socket,
Ø 2 mm



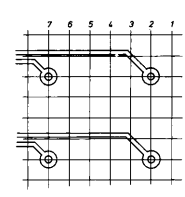
A2_114a

Double make-break socket,
Ø 2 mm



A2_114b

Fuse holder



A2_114d

Dimensions of connecting pins	Recommended hole Ø	Solder eyes Ø
0.5 × 0.5 mm	1.0 mm ± 0.05	2.1 mm ± 0.1
0.63 × 0.63 mm	1.1 mm ± 0.05	2.2 mm ± 0.2
0.3 × 0.6 mm	0.9 mm ± 0.05	2.0 mm ± 0.2
0.7 × 0.6 mm	1.1 mm ± 0.05	2.1 mm ± 0.2
0.4 × 0.6 mm	0.9 mm ± 0.05	2.0 mm ± 0.2
0.45 × 0.45 mm	0.7 mm ± 0.05	1.8 mm ± 0.2

PCB tracks width min. 0.6 mm
Grid 2.54 mm

