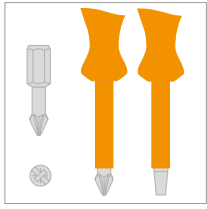


Technical information

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Installation instructions

Tool size for processing Berker products



The products have combination screws that can be processed with cross-head as well as flat-blade screwdrivers.

Tool sizes for contact screws:

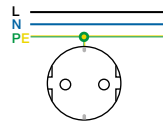
- Cross-head bits: Pozi-Drive, size 2
- Cross-head screwdrivers: Pozi-Drive, size 2
- Slot screwdrivers: blade thickness 1 mm

Tool sizes for fixing screws:

- Cross-head bits: Pozi-Drive, size 1
- Cross-head screwdrivers: Pozi-Drive size 1.
- Slot screwdrivers: Blade thickness 0.8 mm.

i When using cordless screwdrivers a maximum torque of 0.5 Nm should be used.

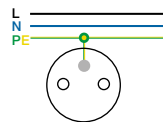
International socket outlets



Use in:

AF/AM/AT/AZ/BA/BE/BF/BG/BI/BJ/BY/CF/CS/CZ/DE/EE/EG/ER/ES/FI/GE/GL/GR/HR/HU/ID/IR/IS/IT/KR/KZ/LB/LT/LU/LV/LV/MD/MK/MR/MZ/NL/NO/PE/PT/PY/RO/RU/RW/SA/SE/SI/SM/SO/SR/SY/TJ/TR/UA/UY/UZ

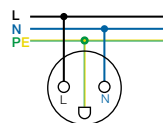
Figure 1: SCHUKO socket outlet* – 2-pin + earth, 250 V~, 16 A



Use in:

AD/BE/CG/CI/CM/DJ/DZ/FR/GF/GN/GP/KH/KM/MA/MG/ML/PL/SK/SN/SY/TD/TG/TN/VN

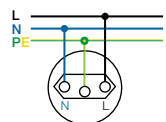
Fig. 2: Socket outlet with earthing pin FRANCE/BELGIUM* – 2-pin + earth, 250 V~, 16 A



Use in:

DK/GL

Fig. 3: Socket outlet with earthing contact DENMARK – 2-pin + earth, 250 V~, 13 A

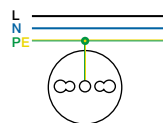


Use in:

CH Type 13 (left Fig.)

CH Type 23 (right Fig.)

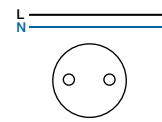
Fig. 4: Socket outlet with earthing contact SWITZERLAND – 2-pin + earth, type 13: 250 V~, 10 A; type 23: 250 V~, 16 A



Use in:

AL/CL/ET/IT/LY/SY

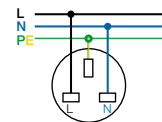
Fig. 5: Socket outlet with earthing contact ITALY* – 2-pin + earth, 250 V~, 16 A



Use in:

AO/NL

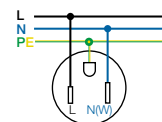
Fig. 6: Socket outlet without earthing contact NETHERLANDS* – 2-pin, 250 V~, 16 A



Use in:

AE/AG/BN/BW/CY/GB/GD/GH/GM/HK/IE/IQ/KE/KW/LR/MT/MW/MY/OM/SL/TZ/YE/ZA/ZW

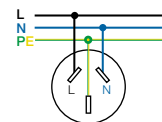
Fig 7: Socket outlet with earthing contact BRITISH STANDARD, standard: BS 1363 Part 2 – 2-pin + earth, 250 V~, 13 A



Use in:

CA/GT/GY/HH/HT/KP/LA/MX/PA/PH/PR/SV/TH/TW/US/VE

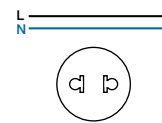
Figure 8: Socket outlet with earthing contact USA/CANADA NEMA 5–15 R – 2-pin + earth, 125 V~, 15 A



Use in:

AR/AU/FJ/NZ/AR/AU/FJ/NZ

Fig. 9: Socket outlet with earthing contact AUSTRALIA – 2-pin + earth, 250 V~, 10 A (left Fig.); 250 V~, 15 A (right Fig.)



Use in:

CA/GT/GY/HH/HT/KP/LA/MX/PA/PH/PR/SV/TH/TW/US/VE

Figure 10: Socket outlet without earthing contact EURO-AMERICAN STANDARD* – 2-pin, 250 V~, 10 A

* Non-polarised system - without specification for the connection of the external wire and neutral wire

Country abbreviations in accordance with ISO 3166

AD	Andorra	BN	Brunei	EE	Estonia	GR	Greece	KP	North Korea	MT	Malta	RU	Russia	TM	Turkmenistan
AE	United Arab Emirates	BW	Botswana	EG	Egypt	GT	Guatemala	KR	South Korea	MW	Malawi	RW	Ruanda	TN	Tunisia
AF	Afghanistan	BY	Belarus	ER	Eritrea	GY	Guyana	KW	Kuwait	MX	Mexico	SA	Saudi Arabia	TR	Turkey
AG	Antigua	CA	Canada	ES	Spain	HK	Hong Kong	KZ	Kazakhstan	MY	Malaysia	SE	Sweden	TW	Taiwan
AL	Albania	CF	Central Africa Republic	ET	Ethiopia	HN	Honduras	LA	Laos	MZ	Mozambique	SI	Slovenia	TZ	Tanzania
AM	Armenia	CG	Congo	FI	Finland	HR	Croatia	LB	Lebanon	NL	Netherlands	SK	Slovakia	UA	Ukraine
AO	Angola	CH	Switzerland	FJ	Fiji	HT	Haiti	LR	Liberia	NO	Norway	SL	Sierra Leone	US	USA
AR	Argentina	CI	Côte d'Ivoire	FR	France	HU	Hungary	LT	Lithuania	NZ	New Zealand	SM	San Marino	UY	Uruguay
AT	Austria	CL	Chile	GB	Great Britain	ID	Indonesia	LU	Luxembourg	OM	Oman	SN	Senegal	UZ	Uzbekistan
AU	Australia	CM	Cameroon	GD	Grenada	IE	Ireland	LV	Latvia	PA	Panama	SO	Somalia	PU	Venezuela
AZ	Azerbaijan	CS	Serbia and Montenegro	GE	Georgia	IQ	Iraq	LY	Libya	PE	Peru	SR	Surinam	VN	Vietnam
BA	Bosnia and Herzegovina	CY	Cyprus	GF	French Guiana	IR	Iran	MA	Morocco	PH	Philippines	SV	El Salvador	YE	Yemen
BE	Belgium	CZ	Czech Republic	GH	Ghana	IS	Iceland	MD	Moldavia	PL	Poland	SY	Syria	ZA	Zambia
BF	Burkina Faso	DE	Germany	GL	Greenland	IT	Italy	MG	Madagascar	PR	Puerto Rico	TD	Chad	ZW	Zimbabwe
BG	Bulgaria	DJ	Djibouti	GM	Gambia	KE	Kenya	MK	Macedonia	PT	Portugal	TG	Togo		
BI	Burundi	DK	Denmark	GN	Guinea	KH	Cambodia	ML	Mali	PY	Paraguay	TH	Thailand		
BJ	Benin	DZ	Algeria	GP	Guadeloupe	KM	Comoros	MR	Mauritania	RO	Rumania	TJ	Tajikistan		

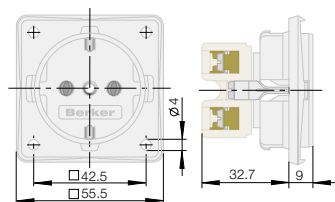
Berker Integro Module inserts

i Flat-head screws, size M3 or M3.5 must be used to fasten the inserts.

Socket outlets

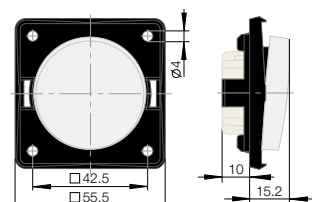
Dimensional drawing

Socket outlets of international plug-and-socket systems have insertion depths that are different from those of SCHUKO socket outlets (Table 1).



Rocker switch/rocker push-button

Dimensional drawing



Socket outlet system	Installation depth
SCHUKO socket outlet with plug-in terminals	32.7 mm
SCHUKO socket outlet with screw terminals	32.5 mm
SCHUKO socket outlet with installation-piercing terminals	46.5 mm
Socket outlet with earthing contact, USA/CANADA, NEMA 5-15 R	19.5 mm
Socket outlet with earthing contact, USA/CANADA, NEMA 6-20 R	19.5 mm
Socket outlet with earth contact AUSTRALIA	16.5 mm
Socket outlet with earthing contact DENMARK	27.5 mm
Socket outlet with earthing contact ITALY	34.0 mm
Socket outlet with earthing contact, SWITZERLAND, type 13	28.0 mm
Einbauöffnung Socket outlet with earthing contact, SWITZERLAND, type 23	28.0 mm
Socket outlet with earth contact BRITISH STANDARD	20.5 mm
Socket outlet with earthing pin FRANCE/BELGIUM with screw terminals	29.5 mm
Socket outlet with earthing pin FRANCE/BELGIUM with installation-piercing terminals	43.5 mm
Socket outlet without earth contact NETHERLANDS	29.6 mm
Socket outlet without earthing contact EURO-AMERICAN STANDARD	21.3 mm

Table 1: Installation depth of different plug and socket systems

Multimedia modules

Cinch modules

Cinch (RCA) is the designation of standardised connectors for transmitting electrical signals, primarily via coaxial cables. Use of other cable types is not widespread, however it is possible.

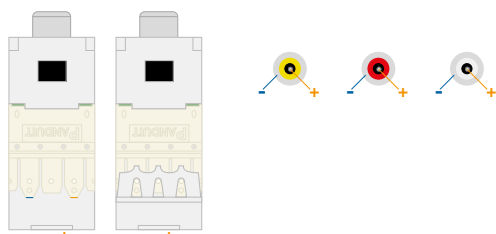


Figure 1: Polarity for cinch modules

S-Video module

The S-Video (also known as Separate Video, Y/C) module is used for separate transmission of brightness (luminance) and colour (chrominance or chroma) information.

i Cable length should not exceed 10 m.

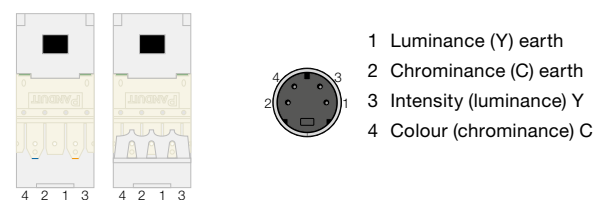


Figure 2: Contact assignment of the S-Video module

VGA module

The VGA module is used to connect display devices on a graphic card. Depending on the quality, VGA cables can be susceptible to interference at lengths of under 5m, or they can still transmit a good signal at lengths in excess of 30 m. Cables suited for high frequency with a coaxial structure for the colour channels are advantageous.

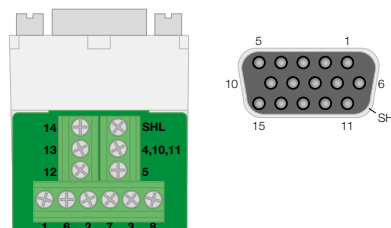


Fig. 3: Pinout of the VGA modules

PIN	Transmission signal	wire
1	red	Coaxial wire
2	green	Coaxial wire
3	blue	Coaxial wire
4*	Monitor ID Bit 2	Twisted pair wire (optional connection)
5	Ground	Twisted pair wire
6	Red ground	Coaxial shielding
7	Green ground	Coaxial shielding
8	Blue ground	Coaxial shielding
9	–	–
10*	Synchronous ground	Twisted pair wire
11*	Monitor ID bit 0 or digital ground	Twisted pair wire (optional connection)
12	Monitor ID bit 1	Twisted pair wire (optional connection)
13	Horizontal synchronisation	Wire 1
14	Vertical synchronisation	wire 2
15	Monitor ID bit 3	–
SHL	Housing shielding	External shielding

*are connected together on one terminal

Table 2: Contact pinouts of the VGA modules

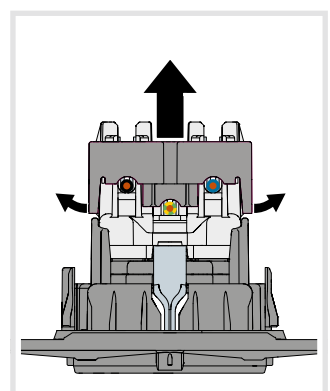
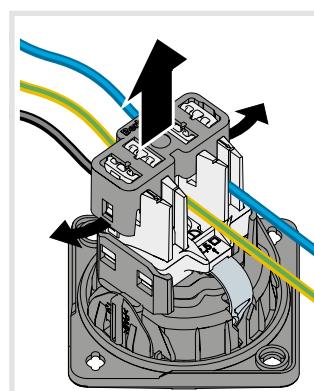
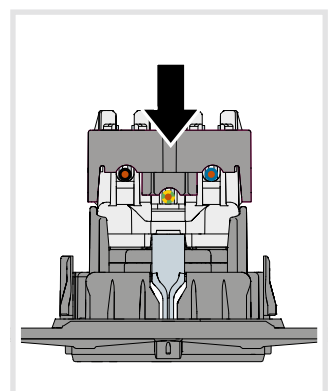
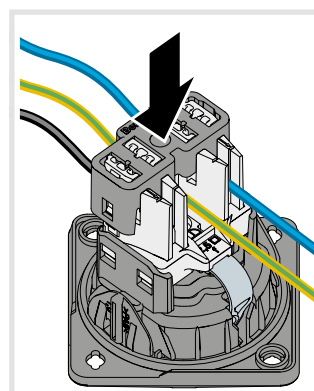
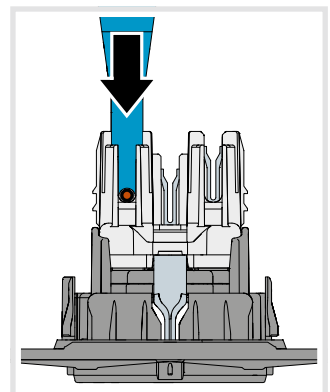
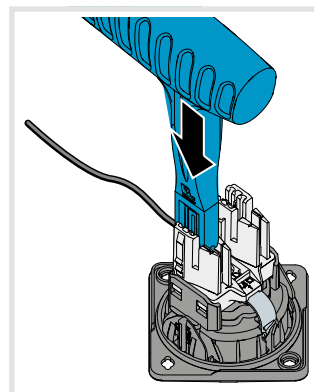
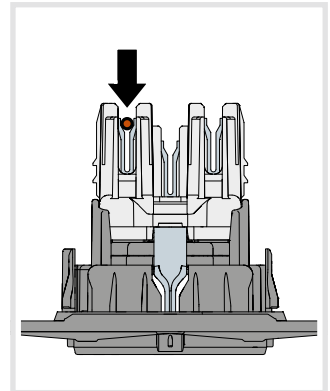
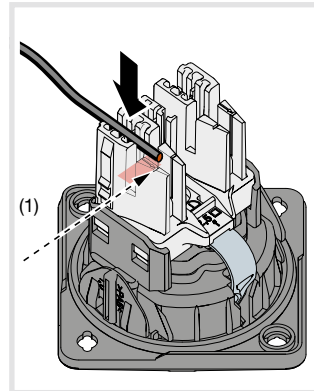
Connection of insulation-piercing terminals

Correct use

- Only suitable for connection with finely stranded (flexible) cables (2.5 mm²).
- Connection of a maximum of 2 cables per terminal connection.
- Connection of continuous cables.
- Connection of end of cables
- Only for use in self-contained systems (e.g. trunkings)

Connect insulation-piercing terminals

- Insert cable from above in the insulation-piercing terminal until resistance is felt.
- i** Insert the cable ends in such way that they lie in the red marked area, but extend at most to the marking notch (1).
- Position the joining tool and push the cable firmly into the terminal as far as it will go.
- After connecting all cables, attach the safety cap. Depending on the assignment of 1 or 2 cables per terminal connection, use the first or second notch.
- i** In addition to the connection of cable ends (sw), the diagram shows the principle of looping through of wires (gnge, bl) as an example.



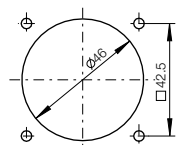
Remove the safety cap

- Slightly lift the notching tongues and remove the safety cap.

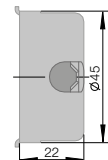
Contact protection boxes (cavity walls)

Dimensional drawings

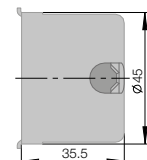
Installation cutout Ø 46 mm



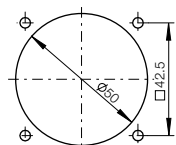
9 1820 01 9 1820 03



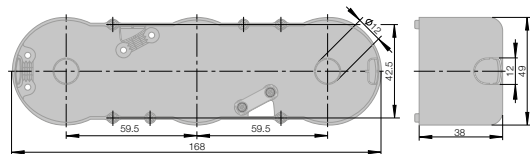
9 1820 9 1820 02



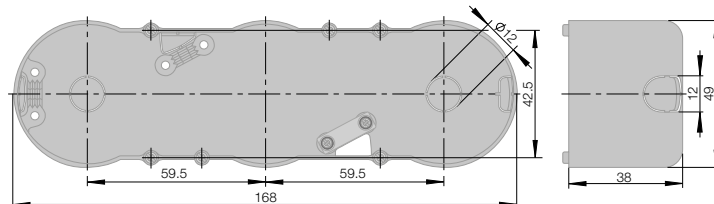
Installation cutout Ø 50 mm



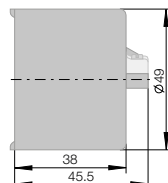
9 1915 01 9 1915 02



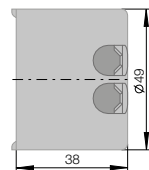
9 1933



9 1883

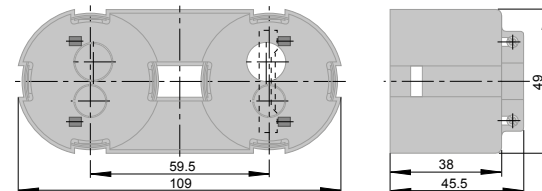


9 1887 01



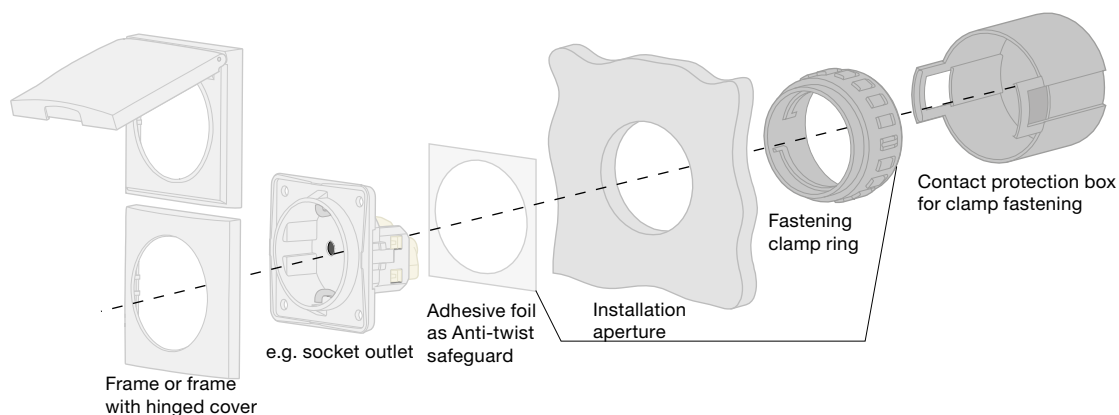
i The strain reliefs are not suitable for flat hose lines of 0.75 mm².

9 1911 .. 9 1912 ..



Mounting with clamp fastening

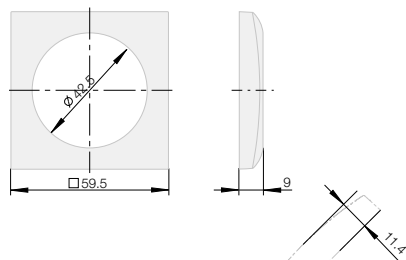
e.g. in a mirror



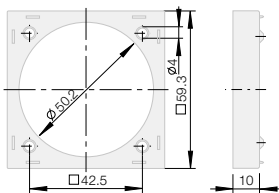
Berker Integro, Design Flow

Dimensional drawings

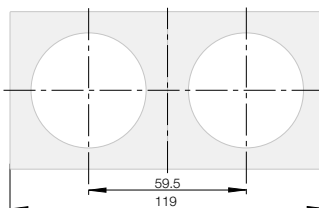
Frame 1gang



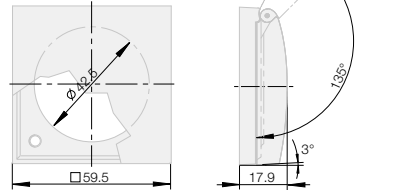
Surface-mounted spacer ring



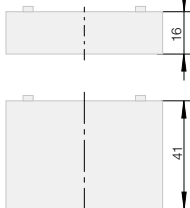
Frame 2gang



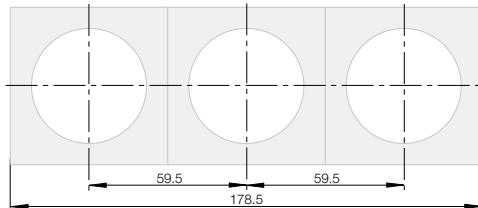
Frame with hinged cover



Surface-mounted housing



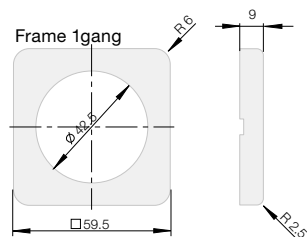
Frame 3gang



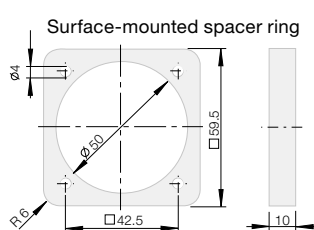
Berker Integro, Design Classic

Dimensional drawings

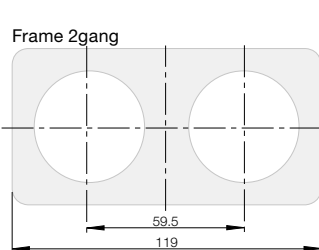
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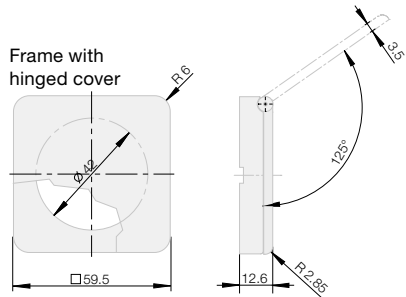
Surface-mounted spacer ring



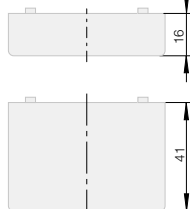
Frame 2gang



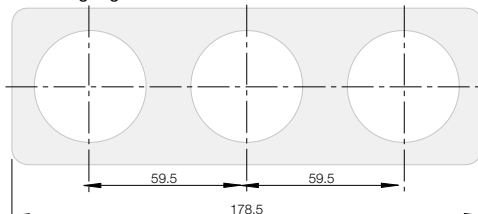
Frame with hinged cover



Surface-mounted housing



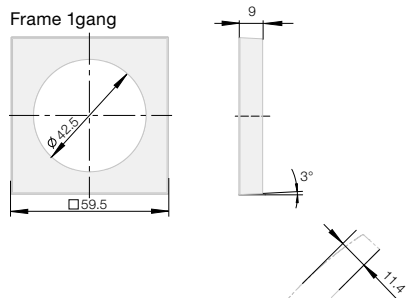
Frame 3gang



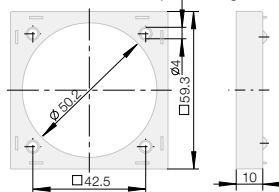
Berker Integro, Design Pure

Dimensional drawings

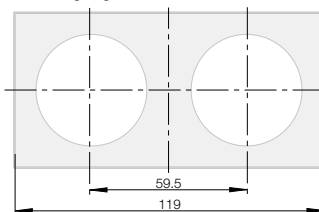
Frame 1gang



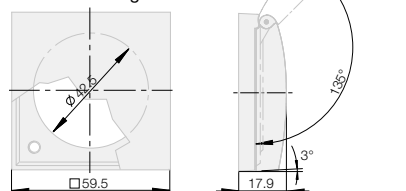
Surface-mounted spacer ring



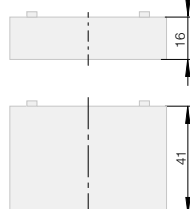
Frame 2gang



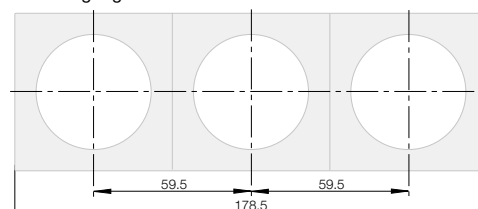
Frame with hinged cover



Surface-mounted housing

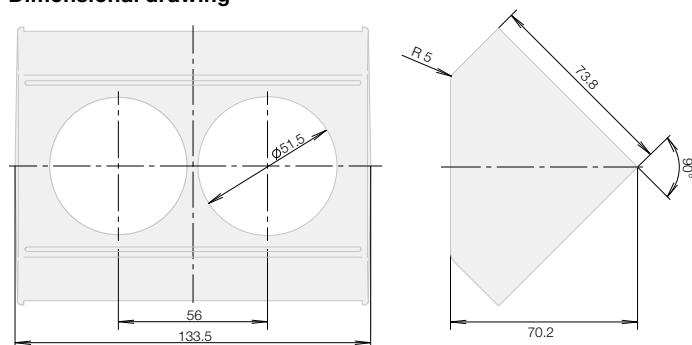


Frame 3gang



Berker Twin-Box

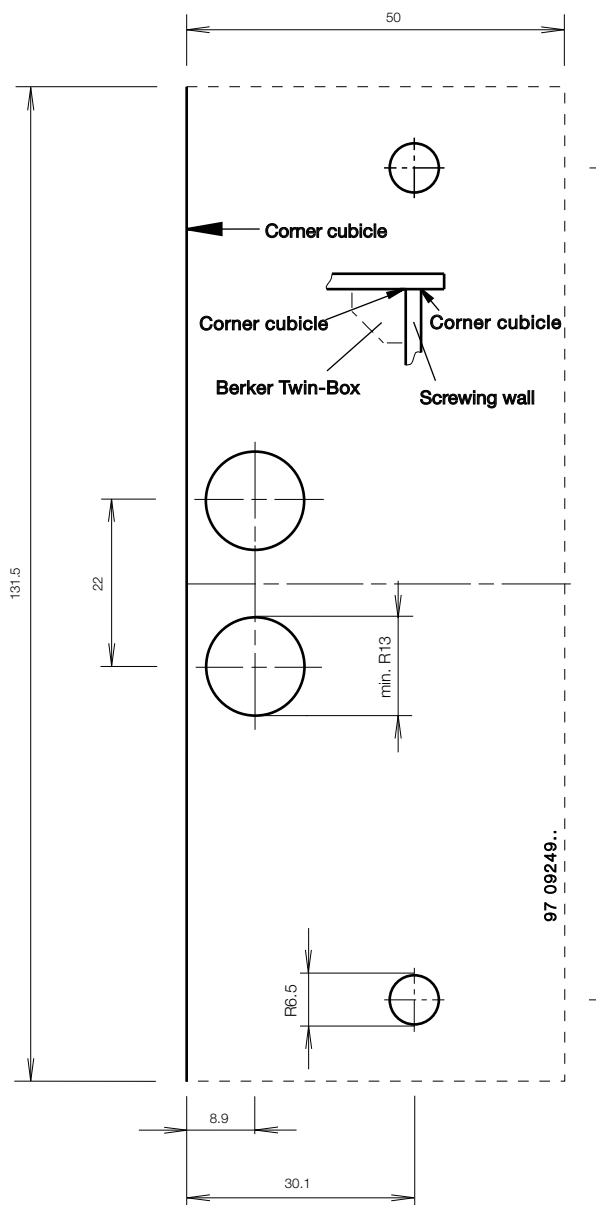
Dimensional drawing



Twin-Box combination	Lead (Type H05VV-F)			Light fitting cable (Type H05VV-F)		
	Number of wires	Cross section	Length	Number of wires	Cross section	Length
1948 02	3	1.5 mm ²	1.5 m	-	-	-
1948 08	3	1.5 mm ²	1.5 m	2	0.75 mm ²	1.5 m
1948 12	4	1.5 mm ²	1 m	2	0.75 mm ²	1.5 m
1948 13	3	1.5 mm ²	1.5 m	2	0.75 mm ²	1.5 m
1948 14	3	1.5 mm ²	1.5 m	2	1.5 mm ²	1.5 m
1948 16	3	2.5 mm ²	1.5 m	3	2.5 mm ²	1.5 m
1948 17	3	1.5 mm ²	1.5 m	3	0.75 mm ²	1.5 m
1948 18	3	1.5 mm ²	1.5 m	-	-	-
1948 19	3	2.5 mm ²	1.5 m	-	-	-
1948 20	3	1.5 mm ²	1.5 m	2	0.75 mm ²	1.5 m
1948 21	3	1.5 mm ²	1 m	-	-	-
1948 22	3	1.5 mm ²	1 m	-	-	-
1948 23	3	1.5 mm ²	1 m	-	-	-
1948 24	3	1.5 mm ²	1 m	-	-	-
1948 25	3	2.5 mm ²	1.5 m	-	-	-
1948 26	3	2.5 mm ²	1.5 m	3	1.5 mm ²	1.5 m
1948 27	3	1.5 mm ²	1.5 m	3	1.5 mm ²	1.5 m
1948 28	3	2.5 mm ²	1.5 m	-	-	-
1948 29	3	1.5 mm ²	1.5 m	-	-	-
1948 30	3	1.5 mm ²	1.5 m	-	-	-

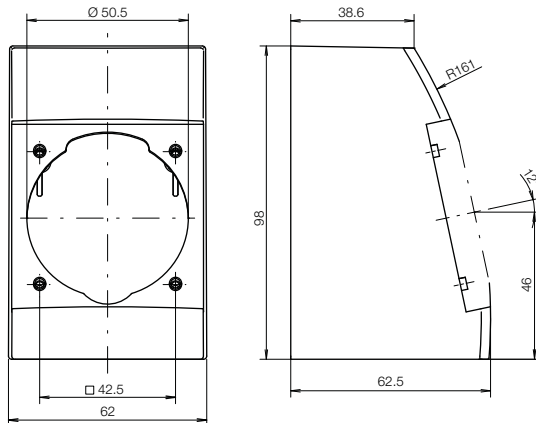
Table 3: Twin-Box pre-assemblies

Berker Twin-Box assembly aid

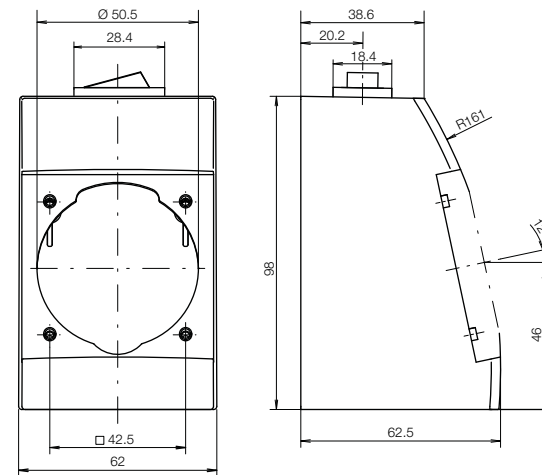


Berker Integro Box

Assembly set



Assembly set with on/off switch



Installation instructions

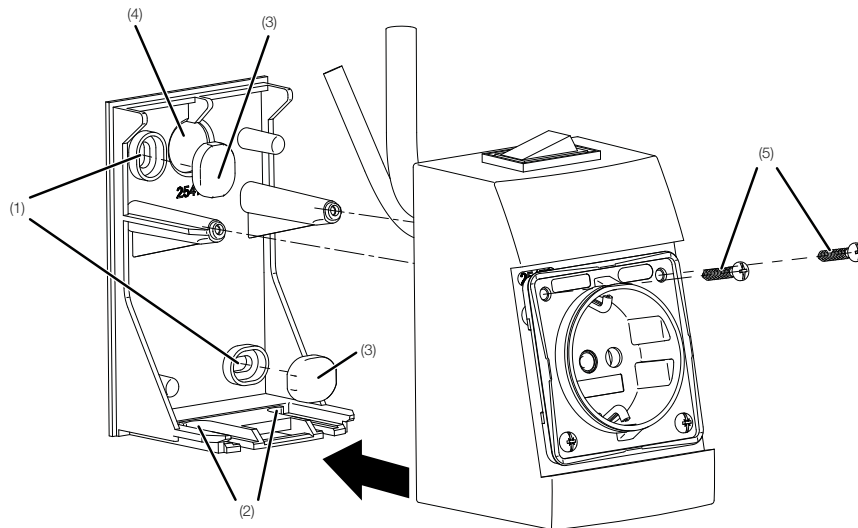


Figure 1: Lower part and cover

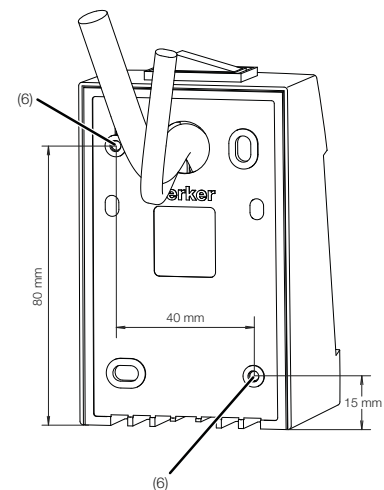


Figure 2: Dimensions for rear mounting of the complete device

- (1) Screw holes for mounting on mirror cabinet rear panel (front view)
- (2) Screw holes for mounting on mirror cabinet floor
- (3) Protection covers
- (4) Cable entry
- (5) Screws (supplied)

- (6) Fastening points for mounting the complete device (rear view)

Mounting the Integro Box

- Fasten lower part of the Integro Box to the mirror cabinet rear panel using suitable screws (1).
- Cover screw holes using the protective covers supplied (3).
- or
- Fasten lower part of the Integro Box to the mirror cabinet floor using suitable screws (2).
- Insert cables through the opening provided (4).
- Push cover onto the lower part until it engages.
- Fasten cover to the lower part using the screws supplied (5).

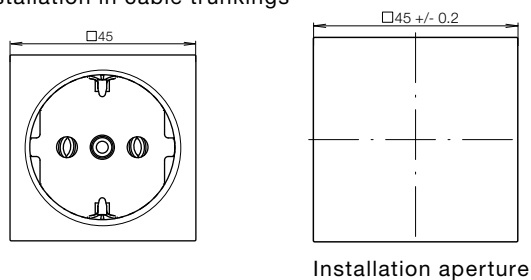
The Integro Box can also be screwed to the rear panel of the mirror cabinet in assembled state using the fastening points (6) provided (**Figure 2**). Suitable screws are available upon request.

Built-in modules 45 x 45

i The built-in modules 45 x 45 are snapped into place in the installation opening using the "SNAP-IN method" and can thus be installed without the need for tools.
Width 1 module unit = 22.5 mm.

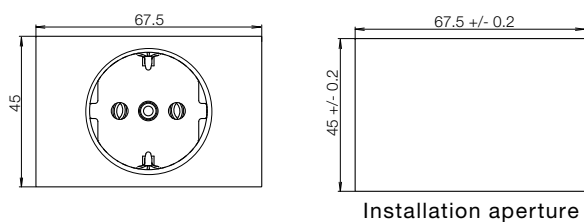
Built-in SCHUKO socket-outlet SNAP IN 4.6 mm, 2 module units

- for installation in cable trunkings



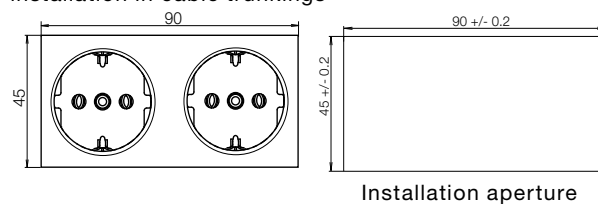
Built-in SCHUKO socket outlet SNAP IN 4.6 mm, 3 module units

- for installation in cable trunkings



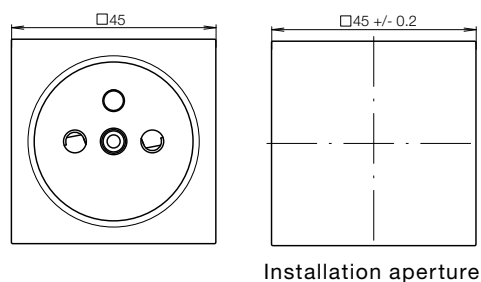
Built-in SCHUKO double socket outlet SNAP IN 4.6 mm, 4 module units

- for installation in cable trunkings



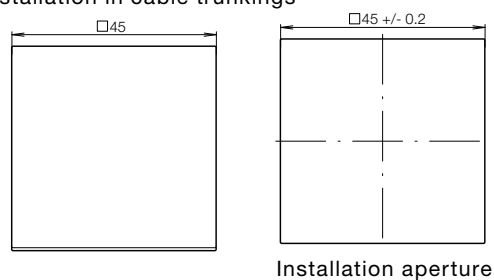
Built-in socket outlet with earthing contact SNAP IN 4.6 mm, 2 module units

- for installation in cable trunkings



Built-in change-over switch SNAP IN 4.6 mm

- for installation in cable trunkings

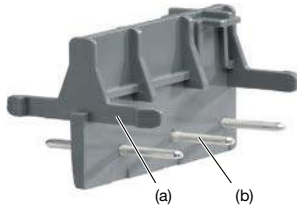


Installation of several socket outlets via connection adapter

Several socket outlets have to be connected via a connection adapter (order no. WS120).

The connection adapter is used for quick installation for the following types:

- WS172, WS172E, WS172N, WS172V, WS185
- WS173, WS173E, WS173N, WS173V, WS186
- WS121, WS121E, WS121N, WS121V
- WS122, WS122E, WS122N, WS122V
- WS123, WS123E, WS123N, WS123R, WS123V



The connection adapter is inserted into the plug-in terminals of the socket outlet with its contact pins.

The connection bridges must snap into place.

- (a) Connection bridge
- (b) Contact pin

Installation

Only in the first socket outlet module is the connection cable inserted into the plug-in terminals.



- Insert the connection adapter into the plug-in terminals of the socket outlet module in the correct position.
- i** Pay attention to correct polarity (labelling of the terminals).
- Insert connection adapter with socket outlet module into the plug-in terminals of the next socket outlet module in the correct position.



Dismantling

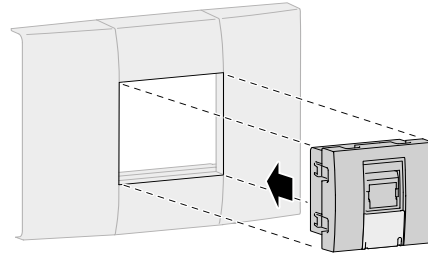
! Before dismantling, make sure that no voltage is present. Cover all live parts.

- To dismantle or separate the socket outlet modules, push in the connection bridges on both sides using a slot screwdriver.
- Pull socket outlet modules apart.



Installation in installation aperture

- Prepare the installation opening for the corresponding module.
- Connect module.
- Snap module into place in the installation opening (Example: FCC socket outlet).



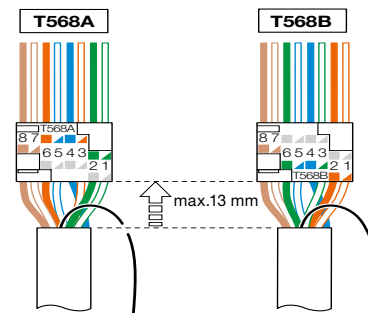
Data communication

Connection technology

There are two types of connection variants in the data communication:

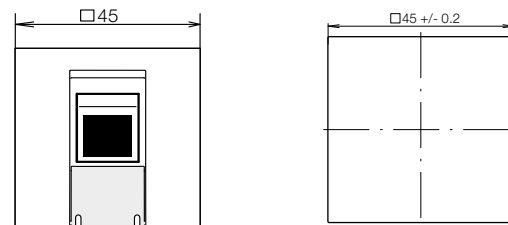
- T568 A
- T568 B

The difference between both variants lies in the assignment of the green/green-white and orange/orange white wire pair.



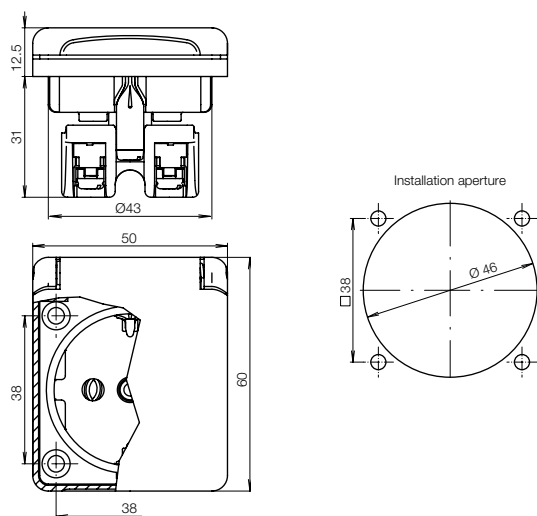
- i** The twisted pair wires (twisted pair) must not be drilled more than 13 mm, as otherwise the transmission properties will change.
- i** In the case of shielded cables, apply the shield.

FCC socket outlet 8pole shielded, Cat.6 SNAP IN 4.6 mm

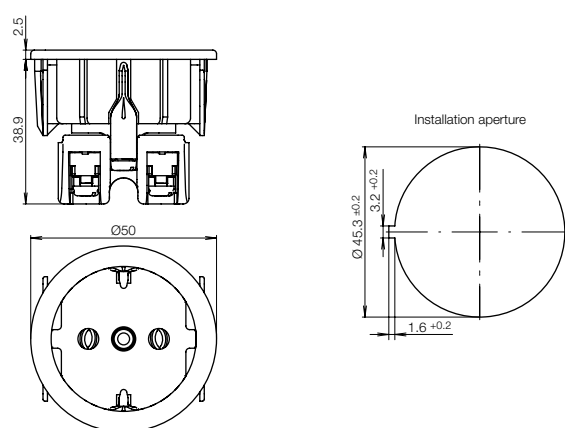


Built-in SCHUKO socket outlets

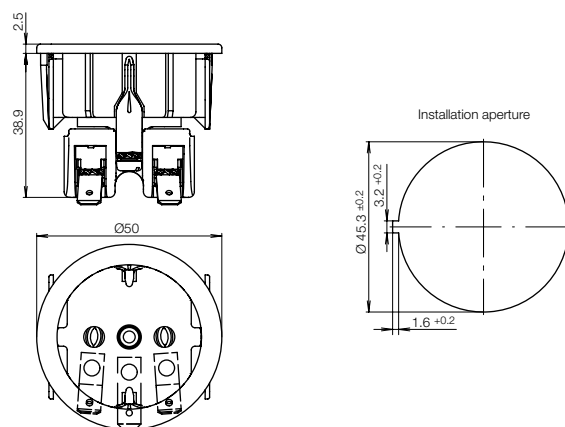
Built-in SCHUKO socket outlet with hinged cover 50 x 60 mm



Built-in SCHUKO socket outlet with centre plate Ø 50 mm, SNAP IN - for different installation wall thicknesses

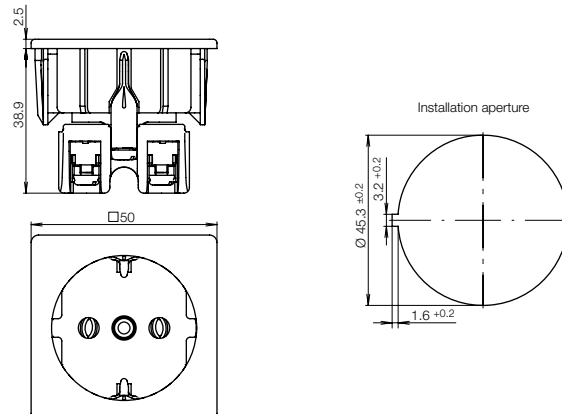


Built-in SCHUKO socket outlet with centre plate Ø 50 mm, SNAP IN 0.6 - 1.5 mm - with flat connection



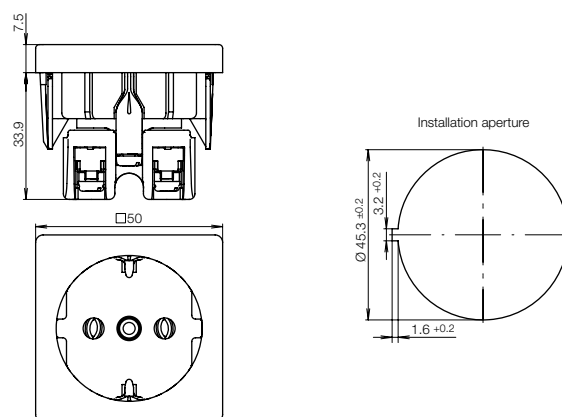
Built-in SCHUKO socket outlet with centre plate 50 x 50 mm, SNAP IN

- for different installation wall thicknesses

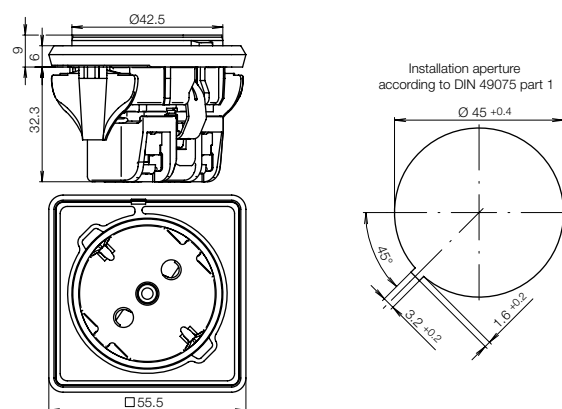


Built-in SCHUKO socket outlet with centre plate 50 x 50 mm, SNAP IN 0.6 - 1.5 mm

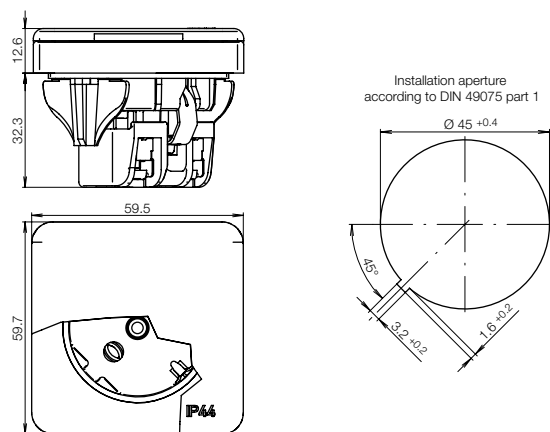
- installation depth 33.9 mm



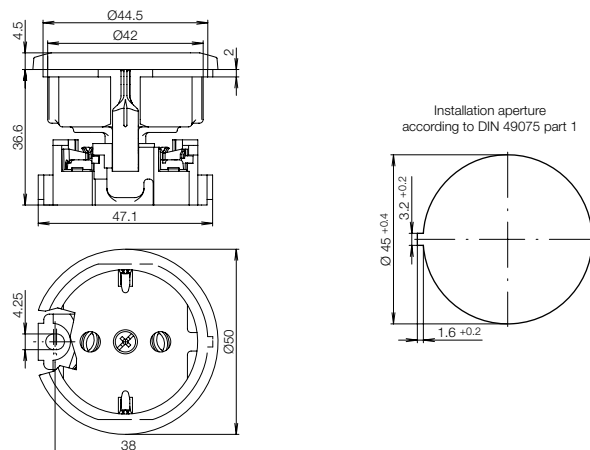
Built-in 45° SCHUKO socket outlet SNAP IN 1.3 - 2.2 mm



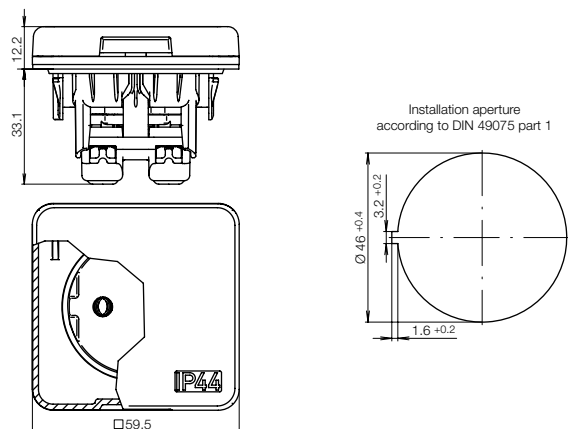
**Built-in SCHUKO socket outlet 45°
with hinged cover, SNAP IN 1.3 - 2.2 mm**



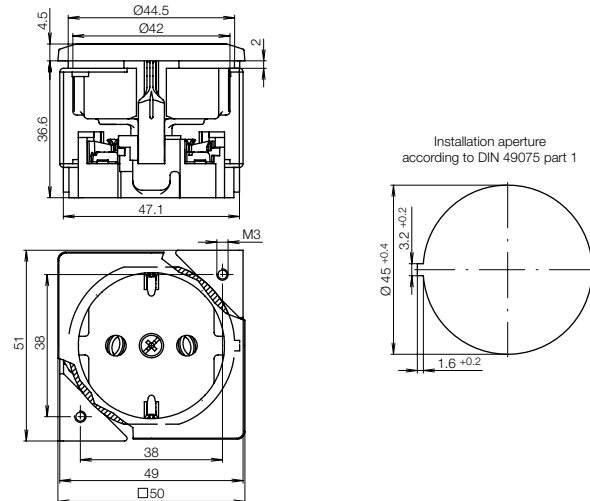
**Built-in SCHUKO socket outlet
with centre plate Ø 50 mm**



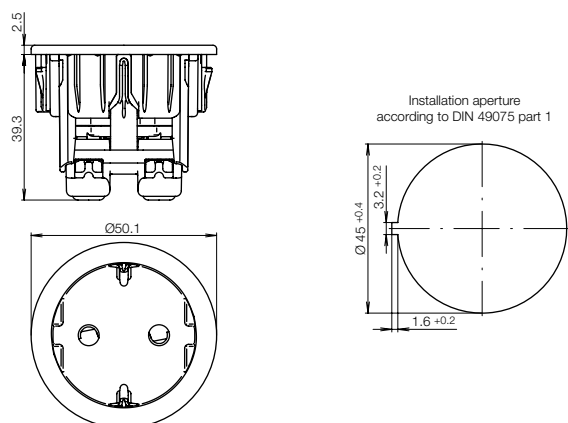
**Built-in SCHUKO socket outlet
with hinged cover 59.5 x 59.5 mm, SNAP IN, IP44
- for different built-in wall thicknesses**



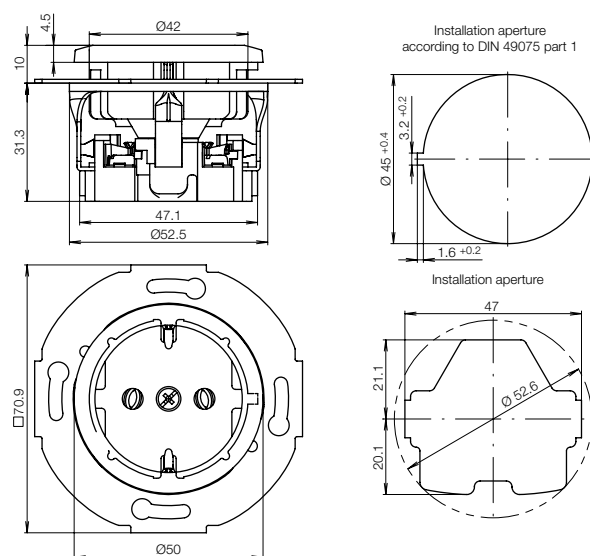
**Built-in SCHUKO socket outlet
with centre plate 50 x 50 mm and supporting angle**



**Built-in SCHUKO socket outlet
with centre plate Ø 50 mm, SNAP IN
- for different built-in wall thicknesses**

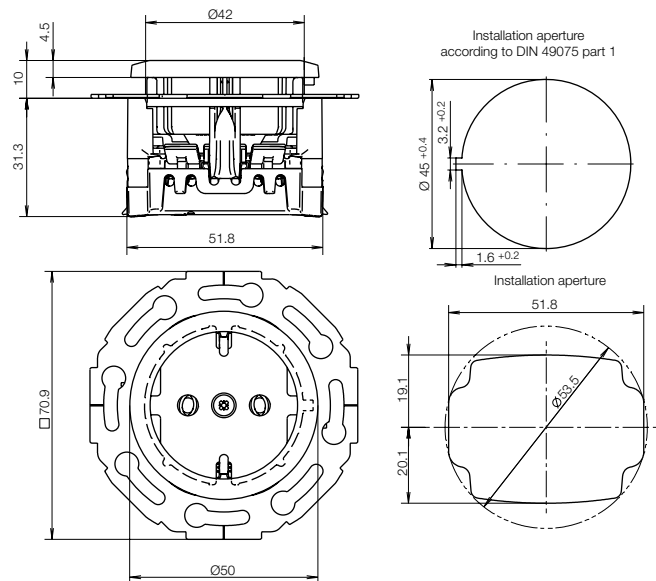


**Built-in SCHUKO socket outlet
with supporting ring, centre plate Ø 50 mm
- with screw terminals**

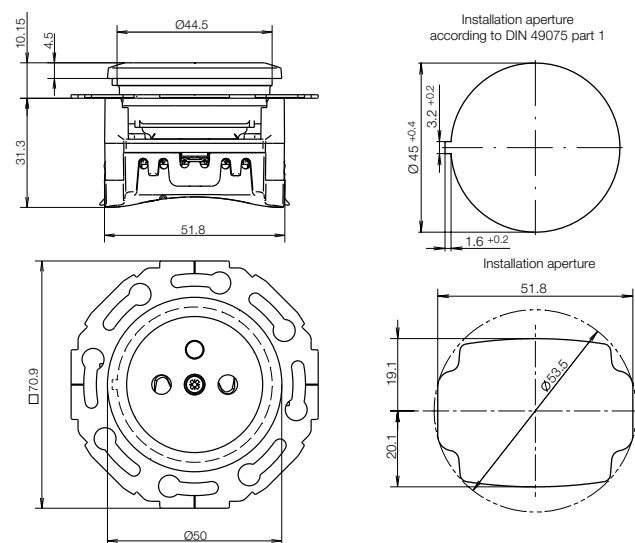


Built-in SCHUKO socket outlet with supporting ring, centre plate Ø 50 mm

- with plug-on terminals



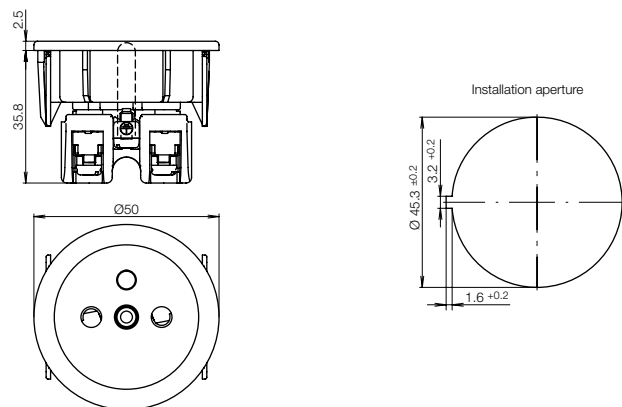
Built-in socket outlet with earthing pint and supporting ring, centre plate Ø 50 mm



Built-in socket outlets with earthing pin

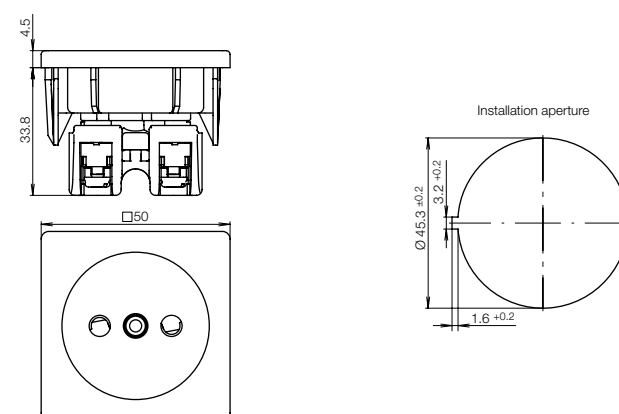
Built-in socket outlet with earthing pin and centre plate Ø 50 mm, SNAP IN

- for different built-in wall thicknesses



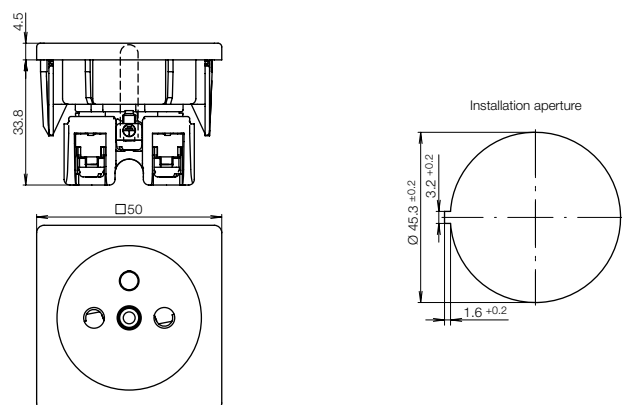
Built-in socket outlet without earthing contact

Built-in socket outlet without earthing contact, with centre plate 50 x 50 mm, SNAP IN 3 mm



Built-in socket outlet with earthing pin and centre plate 50 x 50 mm, SNAP IN

- for different built-in wall thicknesses



Test marks and administrative marks



VDE test mark, all articles of the Berker range for which it is possible to issue the test mark, bear this mark.



Netherlands



Austria



Norway



France



Denmark



Italy



Sweden



Canada



Belgium



USA



Poland



Finland



Switzerland



ENEC stands for European Norms Electrical Certification. The number following the mark indicates the certifying body. Example: 10 stands for VDE



Flame retardant according to VDE 0606 T1:1984-11, meets the requirements of the Association of Property Insurers for mounting on wood.



All items in this catalogue which are subject to CE regulations bear the CE mark on their packaging.



Determination of colour gradations of Deutsches Institut für Gütesicherung und Kennzeichnung e.V.

Trademark



Registered trademark of the SCHUKO-Warenzeichenverband e.V. (SCHUKO trademark association e. V.); identifies socket outlets according to DIN VDE 0620-1 and DIN 49440. The terminals are also suitable as connection terminals.

Degree of protection



(international protection) According to DIN 40050, IEC 60529, designates the degree of protection of a device against ingress of foreign bodies and moisture.



Protection against contact of live parts with wires or similar, larger than 1 mm diameter and splash water from all directions. (contact-protected from 1 mm, splash-protected)



Suitable for IP44, degree of protection IP44 is only available with the appropriate sealing accessories.

Application symbols



Hollow-wall box



X = - Fluorescent lamp rated current

Switching symbols

To simplify the planning by means of circuit symbols, we have additionally developed our own circuit symbols based on the standard or we have used symbols already existing on the market.

Some of the new underlying details:



Scanning arm NO contact



Scanning arm NC contact



Scanning arms directed to each other corresponds to common input terminal



Scanning arms directed away from each other corresponds to isolated input terminal



Hinged covers

Socket outlets



Socket outlet with earthing contact



2gang socket outlet with earthing contact



Socket outlet with earthing contact and enhanced contact protection



2gang socket outlet with earthing contact and enhanced contact protection



3gang socket outlet with earthing contact and enhanced contact protection



Socket outlet with earthing contact with hinged cover



Socket outlet with earthing contact and hinged cover and enhanced contact protection



Socket outlet without earthing contact



Socket outlet without earthing contact with enhanced contact protection



USB charging socket

Switches / Push-buttons / Dimmers



On/off switch



On/off switch, 2pole



On/off switch 2pole illuminated/control switching



Double on/off switch



Series switch



Change-over switch



Change-over switch illuminated/control switching



Intermediate switch



Push-button, NO contact



Push-button, NO contact illuminated/control switching



Push-button 2 NO contacts with 1 input and 2 rockers



Push-button 2 NO contacts with 2 separate inputs and 2 rockers



Blind push-button



1 - 10 V rotary potentiometer with on/off switch



Data communications/telecommunications



TV aerial socket



FCC socket outlet



HDMI socket outlet



VGA socket outlet



DVI socket outlet



S-Video socket outlet



Cinch socket outlet



XLR socket outlet



Jack socket



USB and jack socket outlet



USB socket outlet



Material characteristics

Nearly all products we supply comply with the REACH and RoHS requirements.

General notes

The technical specifications given here are not binding. The operating manual supplied with the products must be observed in all cases.

Illustrations are not binding, especially with regard to colour, size, equipment, performance of products and switch and connection diagrams.

We reserve the right to make technical and formal changes to our products in the interest of technical progress.

General terms and conditions

(similar to the condition recommendation of ZVEI e.V.)

1. General conditions The written declarations made by both parties are the basis for the scope of the deliveries or solutions (hereinafter referred to as deliveries). In addition, these general terms and conditions (hereinafter referred to as T&C) shall apply. The general terms and conditions of the Buyer shall only apply if the supplier or service provider (hereinafter referred to as the Supplier) has agreed to them in writing. In addition, the specifications of the Association for Electrical, Electronic and Information Technologies (VDE), shall apply, if they apply to the safety of the deliveries or services. The T&C below shall also apply to all future business with the ordering party. The Supplier shall retain the right of retention and copyright to all cost estimates, drawing and other offer-related documents (hereinafter referred to as documents) without limitation. They may not be made available to third parties without the written approval of the supplier and shall be returned immediately and on demand, if the order is not placed. This shall apply in equal measure to documents of the Buyer. However, these may be made available to third parties, to whom the Supplier wishes to transfer deliveries in the normal manner. For standard and custom software, the Buyer has the non-exclusive right to use with the agreed performance features in an unmodified form on the agreed devices. The Buyer may not permit third parties to use or access this software. Partial deliveries shall be permitted. In the case of order-dependent production, an over or underdelivery of 10% shall be permitted.

2. Securities The precondition for the obligation to deliver is the creditworthiness of the Buyer. The Supplier shall always be authorised, should they consider it necessary, to demand advance payment or security or cash payments. If the Buyer remains in arrears in respect of fulfilling their payment obligations, or if they do not answer questions regarding their credit-worthiness, the Supplier reserves the right to withdraw from the order and, if applicable, demand compensation for damages as a result of non-performance. Previously delivered goods shall then be returned to the Supplier in the original state. Furthermore, all of the Supplier's accounts receivable shall fall due immediately in the event of enforcement by writ in respect of the Buyer's assets, bankruptcy proceedings, discontinuation of business operations or transfer of a business, as well as seizure or pledging as collateral. Any considerable deterioration in financial status (e.g. enforcement by writ, discontinuation of payment, bankruptcy, discontinuation of business operations, transfer of a business, seizure or pledging as collateral or transfer of goods, inventories or outstanding accounts items as a guarantee, etc.) must be reported to the Supplier immediately.

3. Delivery periods The details in the order confirmation shall form the basis for the delivery period. Compliance with this period shall require: timely arrival of all documents, approvals, releases, self-deliveries, compliance with the Suppliers payment conditions and other obligations on the part of the Buyer. Should these preconditions not be fulfilled in time then the time shall be extended accordingly. The period shall be considered as having been met when the good has been sent for shipping or has been collected within the agreed delivery time. Should shipment be delayed for reasons which are the responsibility of the Buyer, then the period shall be considered as having been met when the readiness for shipment is signalled. Should non-compliance with the delivery period be clearly traceable back to acts of good, workplace disputes or other unforeseen obstacles, then the period shall be extended accordingly. In the event of non-compliance with the agreed or extended delivery period, the Buyer may, insofar that they provide proof that they have suffered damage as a result of the delay, demand compensation for damages resulting from the delay amounting to 1/2% for each full week of delay of the value of that part of the delivery that is delivered late, up to a total of 5%. Further claims for damages on

the part of the Buyer are excluded. This shall not apply in cases of intent or cases of gross negligence. The right of the Buyer to termination after a failed extension set by the Supplier shall be unaffected.

4. Passing of risk Even in the case of carriage paid deliveries, risk shall pass to the Buyer when the good is passed for shipment or is collected. Shipment shall take place on instruction of the Buyer or according to the reasonable discretion of the Supplier, without any responsibility for the cheapest means of shipment. The Supplier shall insure the shipment against normal transport risks, should the Buyer desire it and be willing to pay. If shipment is delayed at the desire of the Buyer or on account of reasons for which they are responsible, then risk shall be passed to the Buyer from the day of shipment readiness. In this case, the Supplier shall be obliged to obtain the insurances demanded by the Buyer at the Buyer's request and expense. If goods are returned, then the Buyer shall carry the risk until the good arrives at the Supplier's premises.

5. Right of retention The components of the delivery (reserved goods) shall remain the property of the Supplier until the fulfilment of all claims against the Buyer made during the course of the business transaction. Pledging or transfer of security prior to this is forbidden. The Buyer may only sell the reserved goods, in whatever state they may be in, to resellers as part of normal business, subject to the condition that they have not defaulted on payments to the Supplier and already transferred claims with all supplementary rights resulting from this sale to the Supplier. The assignment of these claims shall be limited to the level of all the claims available to the Supplier as a result of the business transaction. The Buyer shall also be authorised to collect these debts, even after this transfer. The ability of the Supplier to collect debts themselves shall remain unaffected. The Buyer shall inform the Supplier on request of the level and debtor of these transferred claims, provide the Supplier immediately with all the documents required for collection and to inform the debtor of the transfer in writing.

The Supplier shall process the reserved goods without obligation. If the goods are mixed or connected with other objects, then the Buyer shall immediately transfer their property rights to the new objects to the Supplier. They shall store these for the Supplier with professional diligence. Should the new objects be sold, then the Buyer shall transfer their claims and all supplementary rights from this onward sale to the Supplier. Should the Buyer process the good with other goods, which do not belong to the Supplier, then the Supplier shall be assigned co-property rights to the new object to the level of the reserved goods. Should the Buyer behave in a way which infringes the contract, particularly in the case of late payment, then the Supplier shall be authorised to retract the reserved goods. The Buyer shall be obliged to provide such goods immediately on demand by the Supplier. Retraction as well as pledging of the reserved goods by the Supplier shall not be considered as a declaration of revocation.

The Buyer shall, at their own expense, carry out all the necessary measures to prevent any limitation or loss of the rights available to the Supplier for the delivered goods. The Buyer shall prevent pledges or other interventions by third parties or shall inform the Supplier of the same immediately. Any disadvantages caused to the Buyer as a result of non-observance this obligation, shall be to their own cost.

6. Prices All prices shall be in Euros. They shall apply ex works excluding packaging plus the appropriate applicable level of statutory VAT. In the case of the completed acceptance of goods worth more than €1000, we deliver free to the goods' reception point, minus packaging, or, for a value of more than €2500, free to the goods' reception point, including packaging. Orders below €100 will incur a handling charge of €25.

7. Conditions of payment Payments shall be made within 30 days of the invoice date without any discount to the Supplier account stated. Payments within 10 days of the invoice date will be granted a discount of

2 %. Payment defaults or foreign currency payments shall prevent any discounts. Cheques shall only be accepted subject to normal provisions, foreign currencies only after special agreement and when they correspond to the purchase conditions of the German Central Bank. Discount fees, fees and note taxes shall be paid by the Buyer. They shall be paid to the Supplier at negotiation of the draft. With all payments, the date of fulfilment shall be considered as the day that the Supplier possesses the full amount.

If the payment deadline is exceeded or if there is a delay in delivery at the Buyer's request by more than 30 days after the order is ready for dispatch, the Supplier shall have the right, without the need for any separate reminder, to charge interest at an annual rate of 3% over the relevant Lombard rate of the German Central Bank, starting from the due date, but at least at the relevant interest rates charged by large banks in North Rhine-Westphalia for unsecured loans. The assertion of further damages shall remain unimpaired. In addition, in the case of late payment, the Supplier shall be authorised to demand the return of the good and damages for non-fulfilment. The Buyer may only set-off claims against the Suppliers claims if their claims are self-evident and legally viable.

8. Liability for faults The Supplier guarantees that the sold goods are free of defects at the time of the passing of risk. However, should there have been faults in parts clearly obtained from the Supplier before the risk transfer, then the Supplier shall be liable to the Buyer as follows:

1. The guarantee rights below are only available to the Buyer, if they have pursued the obligation to investigate and make complaints according to § 377 of the German Commercial Code properly through written notification of the determined faults and return the faulty good to the Supplier.

2. All those parts or services shall, at the Supplier's option, be repaired or performed anew, whose usefulness is considerably impaired within 12 months, regardless of the operating time, calculated from the day of the passing of risk, provided that their use was compromised as the result of an incident prior to the passing of risk.

3. Should the Buyer complain about faults in the supplied good or service, then this shall only permit a right to withhold payment if the existence of the faults is determined in a legally-binding manner or is not denied by the Supplier. The withheld payment must be at a reasonable ratio to the faults which occurred.

4. The Buyer shall give the Supplier a reasonable period of time and opportunity according to reasonable discretion. Should they refuse to do this, then the Supplier shall be freed from liability for the faults.

5. In the event of justified, timely notice of defects the Supplier shall rectify the defect by means of supplementary performance by, at their discretion, eliminating the defect, delivering a def-ect free item, or granting a credit in the amount of the calculated reduced value. The Supplier shall have the right to refuse supplementary performance as provided for by law.

If supplementary performance is refused, fails, or if it is unreasonable for the Buyer, then they shall have the right to withdraw.

6. The right of the Buyer to make claims against faults shall, in every case, be limited to a period of 6 months from the time of the complaint but not before the expiry of the warranty period. Should it be impossible to reach agreement within this period, then the Supplier and Buyer may agree to extend this period of limitation.

7. The liability for defects shall not apply to natural wear and tear, nor to damage occurring after the passing of risk as a result of incorrect or negligent handling, excessive or improper use, unsuitable equipment, faulty construction work and any external influences that are not provided for in the contract, as well as non-reproducible software errors.

If, for one of these reasons, the Supplier is made liable by a third party as a joint and several debtor, then the Buyer shall imme-

diately assume irrevocable liability in the internal relationship. If the Buyer or a third party carry out improper or changes or repair work, then there shall be no warranty for this or any resulting consequences.

8. The warranty period shall last 3 months for defect rectification or deliveries of replacements. It shall last at least until the expiry of the warranty of the good to which the complaint applied.

9. Further claims by the Buyer against the Supplier and their assistants shall be excluded, in particular claims for the replacement of damages not incurred upon the supplied object. This shall not apply, except for statutory liability in accordance with the Product Liability Act, with the restrictions in Point 7, or in cases of intent, cases of gross negligence or the lack of promised properties.

10. Any and all liability for defects in software products is excluded. We explicitly provide no guarantee for functions, suitability, usability, non-infringement or other expected characteristics. Thus any and all liability towards the user or third parties for any damage or consequential damage caused by the software is also excluded. If in certain cases mandatory legal norms do not allow this comprehensive exclusion of liability for software, then it shall nevertheless remain in effect for all other cases.

9. Protection rights, copyright

1. Should a third party make justified claims against the Buyer regarding protection rights/copyright (hereinafter referred to as a protection rights) for the products delivered by the Supplier and used in the contractually-agreed manner, then the Supplier shall be liable to the Buyer as follows:

a) The Supplier shall choose, at their discretion, to obtain a right of use for the product, to change or replace the product, or, if that is not possible under reasonable conditions, to take back the product against a refund of the purchase price. Further claims against the Supplier shall be excluded.

b) The above obligation of the Supplier shall only apply if the Buyer informs the Supplier immediately and in writing of the claims made by the third party, does not recognise an infringement of the protection rights and permits the Supplier to carry out all defensive measures and comparative negotiations.

2. Claims by the Buyer are excluded if they are responsible for the infringement of protection rights, or are caused by the special requirements of the Buyer or unforeseen application or combinations with other products.

10. Impossibility, contractual adjustment

1. If it is impossible for the Supplier to provide the due delivery for a reason for which they are responsible, then the Buyer shall be authorised to demand damages of up to 10% of the value of the undelivered product.

2. Insofar as events beyond the Supplier's control considerably change the economic significance or the contents of the delivery or affect the Supplier's business, the Supplier shall have the right to withdraw from the contract or to adjust the contract in agreement with the Buyer.

11. Other claims for damages Claims for damages by the Buyer on the grounds of violation of pre-contractual or contractual obligations and from unlawful acts are excluded. This shall not apply if statutory liability applies, in particular in the case of intent, gross negligence or the lack of promised properties.

12. Place of jurisdiction The sole place of jurisdiction for any disputes arising directly or indirectly from the contractual relationship shall be Hagen i.W. The law of the Federal Republic of Germany shall apply to contractual relationships. The Hague Convention of 1.7.1964 and the UN Agreement of 11.4.1980 shall not apply.

13. Validity of the contract The contract shall remain binding even if individual points are invalid.