HENSEL

PASSION FOR POWER.

Industrial enclosures for individual customisation

in accordance with IEC 62208

More information at www.hensel-ks.co.uk

made in GERMANY
since 1931

Industrial enclosures for individual customisation

offering highly individualized design options

The robust enclosures developed, manufactured and distributed by HENSEL are suitable as universal encapsulation to fulfill many demanding tasks in industrial and commercial sites. They protect individual installations of electrical devices and electronic components in manufacturing processes, in the automation of machines and plants or in the industrial control sector. They are used as industrial, display and operating enclosures in a wide variety of industries, applications and environments.Configure your best product and find the best solution for your application!

Customized solutions

tailored to meet individual needs in industrial processes

Enclosures made from thermoplastics can be easily and quickly machined for customized applications. Whether drilling, milling or sawing, the enclosures can be easily machined with conventional tools.

Wherever sensitive electronic or electrical components and other sensitive components need to be protected against external influences, Hensel‘s robust enclosures are used. The high quality enclosures offer the highest level of protection against dust and water, corrosion, impact and UV radiation. They can easily be used in extreme industrial environments and under tough conditions.

SL PMA 16313

Empty enclosures in accordance with IEC 62208

- **for customized solutions and individual applications**
- **for example for low-voltage switchgear and controlgear assemblies in accordance with the IEC 61439-series**
- **degree of protecton IP 55-IP 65**
- **made from thermoplastics**
- **protection class II, ⧈**

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Further technical information can be found on the Internet
www.hensel-electric.de -> Products

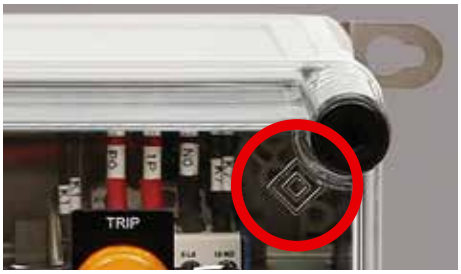
Empty enclosures in accordance with IEC 62208
for customized solutions and individual applications

IEC 62208
Enclosures for low-voltage switchgear and controlgear assemblies.
General requirements

General information

The IEC 62208 standard applies to empty enclosures, prior to the incorporation of switchgear and controlgear components by the user, as supplied by the enclosure manufacturer.

It specifies general definitions, classifications, characteristics and test requirements of enclosures to be used as part of switchgear and controlgear assemblies (e.g. in accordance with the IEC 61439-series).



Compliance with the safety requirements of the applicable product standard (e.g. IEC 61439-series) is the responsibility of the assembly manufacturer and not of the enclosure manufacturer.

Protection against electric shock

In order to protect individuals in the event of faults against electric shock and the accompanying risks, enclosures are classified with protection class I (electrical earth) and protection class II (protection by total or reinforced insulation). HENSEL empty enclosures are manufactured from insulating material and provide protection against electric shock according to protection class II.

IP-Codes for protecting electrical equipment against dust and water

Electrical equipment must be protected from external influences and conditions for safety reasons. The two-digit IP-Codes indicate to what extent the enclosure provides protection against hazardous parts and ingress of dust (1st digit) or water (2nd digit). For example IP 65: Electrical equipment inside the enclosure is protected against dust and harmful water and humidity.

Therefore the IP-Codes indicate the suitability of enclosures for different environmental conditions.

Effects on the degree of protection (IP-Code) when devices are built in the lid

If any switches, displays, push buttons or other equipment are built into the lid of an enclosure, the manufacturer must consider the effects on the degree of protection at that specific point.

The installation of electrical equipment into the lid, door or wall of an enclosure can reduce the degree of protection of the enclosure in that specific installation area depending on the degree of protection of the equipment and depending on additional measures for sealing the point of entry.

Example: The installation of an IP 44 socket into the lid of an IP 65 enclosure reduces the degree of protection in that specific area to IP 44. The enclosure itself still provides IP 65, but the manufacturer has to draw attention to the fact, that the socket only provides IP 44 for the area where it is installed.

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for customized solutions and individual applications

Operating and ambient conditions

Empty enclosures according to IEC 62208 are applicable in ambient temperatures from -25 °C to +40 °C (outdoor installation) or from -5 °C to +40 °C (indoor installation).

The IEC 62208 requires the specification of the power dissipation capability P_{de} of the enclosures

Temperature rise in enclosures and power dissipation

In relationship with the outside temperatures the temperature rise inside of enclosures, caused by the flowing current and the power loss P_D of the installed electrical equipment, has to be considered.

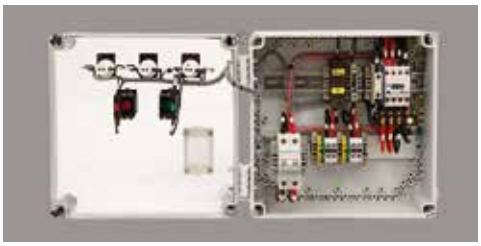
Most devices are designed for maximum ambient temperatures of +40 °C to +55 °C. Accordingly there may only be a narrow range for the temperature rise inside of the enclosure if the ambient temperature is close to the maximum operating temperature of the installed equipment.

The enclosure with its power dissipation capability P_{de} has to be able to dissipate the power loss P_D of the installed electrical equipment inside of the enclosure without exceeding the limits of operating and ambient temperatures.

This ensures that the inside of an enclosure is not heated inadmissibly at a defined installed power loss and guarantees the operative readiness and reliable performance of the built-in electrical equipment.

The power dissipation P_D of the electrical equipment is given in the technical data of the respective manufacturers. The power dissipation capability P_{de} of Hensel empty enclosures are given in the technical data of this catalogue.

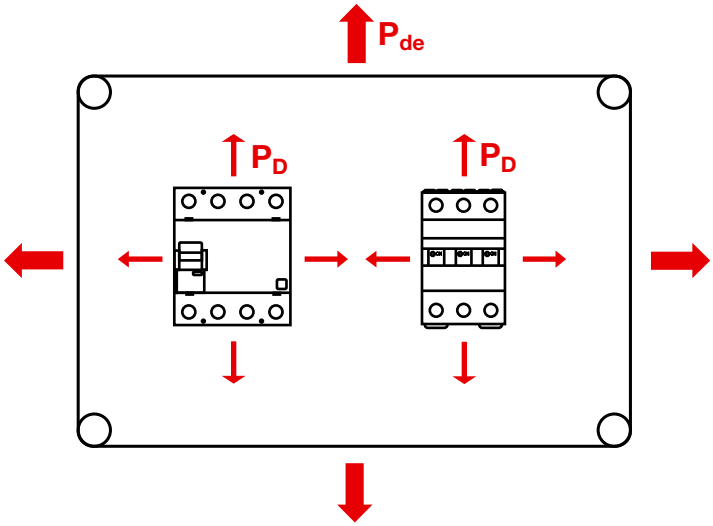
The temperature inside of enclosures rises by the flowing current and the power loss of the installed electrical equipment.

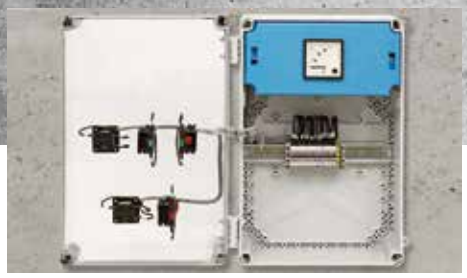


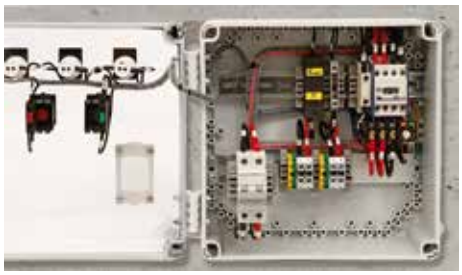
The enclosure with its power dissipation capability P_{de} has to be able to dissipate the power loss P_D of the installed electrical equipment inside of the enclosure without exceeding the limits of operating and ambient temperatures.

P_{de} = power dissipation capability

P_D = power dissipation







ENYFLEX

Empty enclosures in accordance with IEC 62208

For customized solutions and individual applications

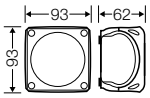
- For low-voltage switchgear and controlgear assemblies, for example in accordance with IEC 61439-series
- For the installation of devices that must be operated externally, such as plug devices, push buttons and switches
- Installation of electrical equipment via DIN rails or mounting plates
- Cable entry via metric knockouts respectively by drilling individually using ESM grommets or AKM/ASS cable glands
- Fasteners for tool operation as standard
- Screws made of stainless steel V2A
- Hinges for K-series lids available for operating installation devices within a large area
- Material: PS polystyrene or PC polycarbonate, UV-resistant
- Burning behaviour:
  Glow wire test in accordance with IEC 60695-2-11: 750 °C / 960 °C, flame-retardant, self-extinguishing
- Empty enclosures are equipment with protection class II, ⧈ in accordance with IEC 61439-1, section 8.4.4
- Degree of protection: up to IP 66
- Colour: grey, RAL 7035 or black, RAL 9011

Empty enclosures in accordance with IEC 62208

for customized solutions and individual applications
Box walls without knockouts, can be drilled individually

EB 02 G

Built-in dimensions W 74 x H 74 x D 47 mm

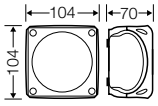


- for installation equipment on DIN rails or mounting plates (order separately)
- with opaque lid
- fastener for tool operation
- sealable
- box walls without knockouts
- external brackets for wall fixing included
- colour: grey, RAL 7035
- material: PC (polycarbonate)

rated insulation voltage	U_i = 1000 V a.c./d.c.
impact strength	IK 09 (10 Joule)
static load	mounting plate or DIN rail = 0.7 kg lid = 0.2 kg
power dissipation capability at $\Delta\vartheta$ = 40 K	P_{de} = 3.5 watts
wall thickness	enclosure = 2 mm lid = 2 mm

EB 04 G

Built-in dimensions W 83 x H 83 x D 55 mm



- for installation equipment on DIN rails or mounting plates (order separately)
- with opaque lid
- fastener for tool operation
- sealable
- box walls without knockouts
- external brackets for wall fixing included
- colour: grey, RAL 7035
- material: PC (polycarbonate)

rated insulation voltage	U_i = 1000 V a.c./d.c.
impact strength	IK 09 (10 Joule)
static load	mounting plate or DIN rail = 1.1 kg lid = 0.25 kg
power dissipation capability at $\Delta\vartheta$ = 40 K	P_{de} = 4.5 watts
wall thickness	enclosure = 2 mm lid = 2 mm

Applicaton:

EB empty enclosure with emergency stop and START/STOP button

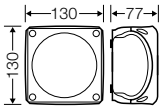
EB empty enclosure with an emergency stop

Empty enclosures in accordance with IEC 62208

for customized solutions and individual applications
Box walls without knockouts, can be drilled individually

EB 06 G

Built-in dimensions W 102 x H 102 x D 62 mm

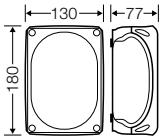


- for installation equipment on DIN rails or mounting plates (order separately)
- with opaque lid
- fastener for tool operation
- sealable
- box walls without knockouts
- external brackets for wall fixing included
- colour: grey, RAL 7035
- material: PC (polycarbonate)

rated insulation voltage	U_i = 1000 V a.c./d.c.
impact strength	IK 09 (10 Joule)
static load	mounting plate or DIN rail = 2.0 kg lid = 0.5 kg
power dissipation capability at $\Delta\vartheta$ = 40 K	P_{de} = 6 watts
wall thickness	enclosure = 2 mm lid = 2 mm

EB 10 G

Built-in dimensions W 97 x H 150 x D 62 mm

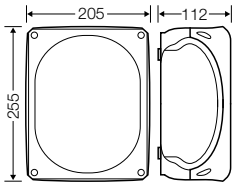


- for installation equipment on DIN rails or mounting plates (order separately)
- with opaque lid
- fastener for tool operation
- sealable
- box walls without knockouts
- external brackets for wall fixing included
- colour: grey, RAL 7035
- material: PC (polycarbonate)

rated insulation voltage	U_i = 1000 V a.c./d.c.
impact strength	IK 09 (10 Joule)
static load	mounting plate or DIN rail = 2.8 kg lid = 0.75 kg
power dissipation capability at $\Delta\vartheta$ = 40 K	P_{de} = 8 watts
wall thickness	enclosure = 2 mm lid = 2 mm

EB 25 G

Built-in dimensions W 170 x H 220 x D 96 mm



- for installation equipment on DIN rails or mounting plates (order separately)
- with opaque lid
- fastener for tool operation
- sealable
- box walls without knockouts
- external brackets for wall fixing included
- colour: grey, RAL 7035
- material: PC (polycarbonate)

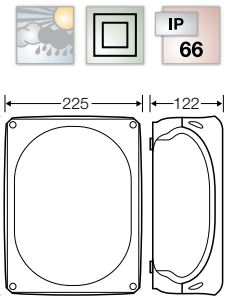
rated insulation voltage	U_i = 1000 V a.c./d.c.
impact strength	IK 09 (10 Joule)
static load	mounting plate or DIN rail = 5.4 kg lid = 1.5 kg
power dissipation capability at $\Delta\vartheta$ = 40 K	P_{de} = 20 watts
wall thickness	enclosure = 2.5 mm lid = 2 mm

Empty enclosures in accordance with IEC 62208

for customized solutions and individual applications
Box walls without knockouts, can be drilled individually

EB 35 G

Built-in dimensions W 190 x H 260 x D 106 mm

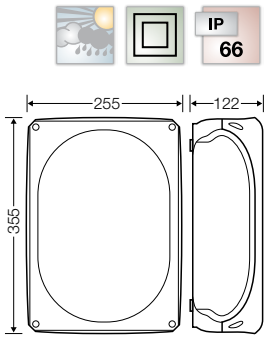


- for installation equipment on DIN rails or mounting plates (order separately)
- with opaque lid
- fastener for tool operation
- sealable
- box walls without knockouts
- external brackets for wall fixing included
- colour: grey, RAL 7035
- material: PC (polycarbonate)

rated insulation voltage	U_i = 1000 V a.c./d.c.
impact strength	IK 09 (10 Joule)
static load	mounting plate or DIN rail = 6.4 kg lid = 2.1 kg
power dissipation capability at $\Delta\vartheta$ = 40 K	P_{de} = 24 watts
wall thickness	enclosure = 2,8 mm lid = 2 mm

EB 50 G

Built-in dimensions W 215 x H 320 x D 106 mm



- for installation equipment on DIN rails or mounting plates (order separately)
- with opaque lid
- fastener for tool operation
- sealable
- box walls without knockouts
- external brackets for wall fixing included
- colour: grey, RAL 7035
- material: PC (polycarbonate)

rated insulation voltage	U_i = 1000 V a.c./d.c.
impact strength	IK 09 (10 Joule)
static load	mounting plate or DIN rail = 8.3 kg lid = 2.6 kg
power dissipation capability at $\Delta\vartheta$ = 40 K	P_{de} = 27 watts
wall thickness	enclosure = 3 mm lid = 2 mm

Applicaton:

EB empty enclosure with emergency stop and START/STOP button

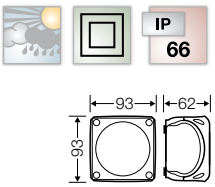
EB empty enclosure with an emergency stop

Empty enclosures in accordance with IEC 62208

for customized solutions and individual applications
Box walls without knockouts, can be drilled individually

EB 02 B

Built-in dimensions W 74 x H 74 x D 47 mm

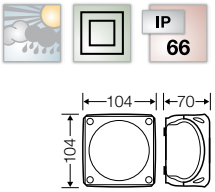


- for installation equipment on DIN rails or mounting plates (order separately)
- with opaque lid
- fastener for tool operation
- sealable
- box walls without knockouts
- external brackets for wall fixing included
- colour: black, RAL 9011
- material: PC (polycarbonate)

rated insulation voltage	U_i = 1000 V a.c./d.c.
impact strength	IK 09 (10 Joule)
static load	mounting plate or DIN rail = 0.7 kg lid = 0.2 kg
power dissipation capability at $\Delta\vartheta$ = 40 K	P_{de} = 3.5 watts
wall thickness	enclosure = 2 mm lid = 2 mm

EB 04 B

Built-in dimensions W 83 x H 83 x D 55 mm

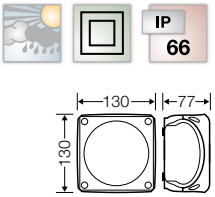


- for installation equipment on DIN rails or mounting plates (order separately)
- with opaque lid
- fastener for tool operation
- sealable
- box walls without knockouts
- external brackets for wall fixing included
- colour: black, RAL 9011
- material: PC (polycarbonate)

rated insulation voltage	U_i = 1000 V a.c./d.c.
impact strength	IK 09 (10 Joule)
static load	mounting plate or DIN rail = 1.1 kg lid = 0.25 kg
power dissipation capability at $\Delta\vartheta$ = 40 K	P_{de} = 4.5 watts
wall thickness	enclosure = 2 mm lid = 2 mm

EB 06 B

Built-in dimensions W 102 x H 102 x D 62 mm



- for installation equipment on DIN rails or mounting plates (order separately)
- with opaque lid
- fastener for tool operation
- sealable
- box walls without knockouts
- external brackets for wall fixing included
- colour: black, RAL 9011
- material: PC (polycarbonate)

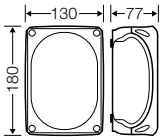
rated insulation voltage	U_i = 1000 V a.c./d.c.
impact strength	IK 09 (10 Joule)
static load	mounting plate or DIN rail = 2.0 kg lid = 0.5 kg
power dissipation capability at $\Delta\vartheta$ = 40 K	P_{de} = 6 watts
wall thickness	enclosure = 2 mm lid = 2 mm

Empty enclosures in accordance with IEC 62208

for customized solutions and individual applications
Box walls without knockouts, can be drilled individually

EB 10 B

Built-in dimensions W 97 x H 150 x D 62 mm

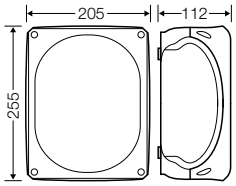


- for installation equipment on DIN rails or mounting plates (order separately)
- with opaque lid
- fastener for tool operation
- sealable
- box walls without knockouts
- external brackets for wall fixing included
- colour: black, RAL 9011
- material: PC (polycarbonate)

rated insulation voltage	U_i = 1000 V a.c./d.c.
impact strength	IK 09 (10 Joule)
static load	mounting plate or DIN rail = 2.8 kg lid = 0.75 kg
power dissipation capability at $\Delta\vartheta$ = 40 K	P_{de} = 8 watts
wall thickness	enclosure = 2 mm lid = 2 mm

EB 25 B

Built-in dimensions W 170 x H 220 x D 96 mm



- for installation equipment on DIN rails or mounting plates (order separately)
- with opaque lid
- fastener for tool operation
- sealable
- box walls without knockouts
- external brackets for wall fixing included
- colour: black, RAL 9011
- material: PC (polycarbonate)

rated insulation voltage	U_i = 1000 V a.c./d.c.
impact strength	IK 09 (10 Joule)
static load	mounting plate or DIN rail = 5.4 kg lid = 1.5 kg
power dissipation capability at $\Delta\vartheta$ = 40 K	P_{de} = 20 watts
wall thickness	enclosure = 2,5 mm lid = 2 mm

Applicaton:

EB empty enclosure with emergency stop and START/STOP button

EB empty enclosure with an emergency stop

Empty enclosures in accordance with IEC 62208

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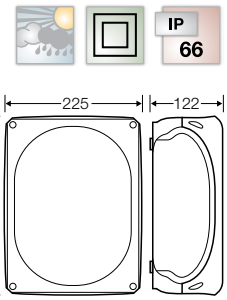
Box walls without knockouts, can be drilled individually

EB 35 B

Built-in dimensions W 190 x H 260 x D 106 mm

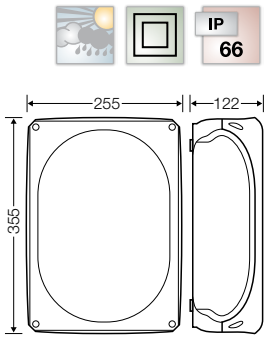


- for installation equipment on DIN rails or mounting plates (order separately)
- with opaque lid
- fastener for tool operation
- sealable
- box walls without knockouts
- external brackets for wall fixing included
- colour: black, RAL 9011
- material: PC (polycarbonate)

rated insulation voltage	U_i = 1000 V a.c./d.c.
impact strength	IK 09 (10 Joule)
static load	mounting plate or DIN rail = 6.4 kg lid = 2.1 kg
power dissipation capability at $\Delta\vartheta$ = 40 K	P_{de} = 24 watts
wall thickness	enclosure = 2,8 mm lid = 2 mm

EB 50 B

Built-in dimensions W 215 x H 320 x D 106 mm



- for installation equipment on DIN rails or mounting plates (order separately)
- with opaque lid
- fastener for tool operation
- sealable
- box walls without knockouts
- external brackets for wall fixing included
- colour: black, RAL 9011
- material: PC (polycarbonate)

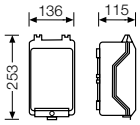
rated insulation voltage	U_i = 1000 V a.c./d.c.
impact strength	IK 09 (10 Joule)
static load	mounting plate or DIN rail = 8.3 kg lid = 2.6 kg
power dissipation capability at $\Delta\vartheta$ = 40 K	P_{de} = 27 watts
wall thickness	enclosure = 3 mm lid = 2 mm

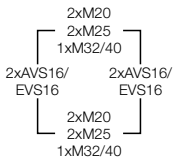
Empty enclosures in accordance with IEC 62208

for customized solutions and individual applications
Cable entry via metric knockouts

KG 9001

Built-in dimensions W 101 x H 205 x D 95 mm



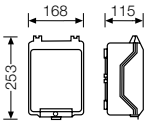


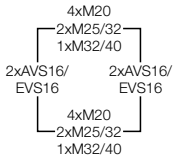
- for installation equipment on DIN rails or mounting plates (order separately)
- max. installation depth with built-in mounting plate 95 mm, with built-in DIN rail 89 mm
- with transparent hinged lid
- fastener for tool operation
- sealable
- cable entry via metric knockouts
- included cable entry:
  2 ESM 25, sealing range Ø 9-17 mm and
  1 ESM 32, sealing range Ø 9-23 mm
- colour: grey, RAL 7035
- material: PS (polystyrene)

rated insulation voltage	U_i = 1000 V a.c./d.c.
impact strength	IK 08 (5 Joule)
static load	mounting plate or DIN rail = 1.3 kg lid = 1.2 kg
power dissipation capability at $\Delta\vartheta$ = 40 K	P_{de} = 16.5 watts
wall thickness	enclosure = 3 mm lid = 3 mm

KG 9002

Built-in dimensions W 133 x H 205 x D 95 mm





- for installation equipment on DIN rails or mounting plates (order separately)
- max. installation depth with built-in mounting plate 95 mm, with built-in DIN rail 89 mm
- please order DIN rails or mounting plates additionally
- with transparent hinged lid
- fastener for tool operation
- sealable
- cable entry via metric knockouts
- included cable entry:
  2 ESM 25, sealing range Ø 9-17 mm and
  1 ESM 32, sealing range Ø 9-23 mm
- colour: grey, RAL 7035
- material: PS (polystyrene)

rated insulation voltage	U_i = 1000 V a.c./d.c.
impact strength	IK 08 (5 Joule)
static load	mounting plate or DIN rail = 1.6 kg lid = 1.2 kg
power dissipation capability at $\Delta\vartheta$ = 40 K	P_{de} = 16.8 watts
wall thickness	enclosure = 3 mm lid = 3 mm

Applicaton:

KG empty enclosures with transparent lid

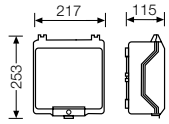
KG empty enclosures with opaque lid

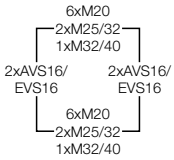
Empty enclosures in accordance with IEC 62208

for customized solutions and individual applications
Cable entry via metric knockouts

KG 9003

Built-in dimensions W 182 x H 205 x D 95 mm





- for installation equipment on DIN rails or mounting plates (order separately)
- max. installation depth with built-in mounting plate 95 mm, with built-in DIN rail 89 mm
- please order DIN rails or mounting plates additionally
- with transparent hinged lid
- fastener for tool operation
- sealable
- cable entry via metric knockouts
- included cable entry:
  2 ESM 25, sealing range Ø 9-17 mm and
  1 ESM 32, sealing range Ø 9-23 mm
- colour: grey, RAL 7035
- material: PS (polystyrene)

rated insulation voltage	U_i = 1000 V a.c./d.c.
impact strength	IK 08 (5 Joule)
static load	mounting plate or DIN rail = 1.6 kg lid = 1.6 kg
power dissipation capability at $\Delta\vartheta$ = 40 K	P_{de} = 17.6 watts
wall thickness	enclosure = 3 mm lid = 3 mm

Installation example:

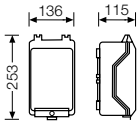
Installation example::

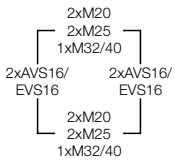
Empty enclosures in accordance with IEC 62208

for customized solutions and individual applications
Cable entry via metric knockouts

KG 9001 IN

Built-in dimensions W 101 x H 205 x D 95 mm



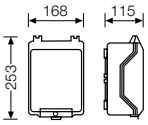


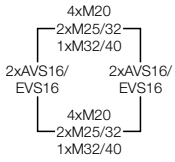
- for installation equipment on DIN rails or mounting plates (order separately)
- max. installation depth with built-in mounting plate 95 mm, with built-in DIN rail 89 mm
- with opaque hinged lid
- fastener for tool operation
- sealable
- cable entry via metric knockouts
- included cable entry:
  2 ESM 25, sealing range Ø 9-17 mm and
  1 ESM 32, sealing range Ø 9-23 mm
- colour: grey, RAL 7035
- material: PS (polystyrene)

rated insulation voltage	U_i = 1000 V a.c./d.c.
impact strength	IK 08 (5 Joule)
static load	mounting plate or DIN rail = 1.3 kg lid = 1.2 kg
power dissipation capability at $\Delta\vartheta$ = 40 K	P_{de} = 16.5 watts
wall thickness	enclosure = 3 mm lid = 3 mm

KG 9002 IN

Built-in dimensions W 133 x H 205 x D 95 mm





- for installation equipment on DIN rails or mounting plates (order separately)
- max. installation depth with built-in mounting plate 95 mm, with built-in DIN rail 89 mm
- with opaque hinged lid
- fastener for tool operation
- sealable
- cable entry via metric knockouts
- included cable entry:
  2 ESM 25, sealing range Ø 9-17 mm and
  1 ESM 32, sealing range Ø 9-23 mm
- colour: grey, RAL 7035
- material: PS (polystyrene)

rated insulation voltage	U_i = 1000 V a.c./d.c.
impact strength	IK 08 (5 Joule)
static load	mounting plate or DIN rail = 1.6 kg lid = 1.2 kg
power dissipation capability at $\Delta\vartheta$ = 40 K	P_{de} = 16.8 watts
wall thickness	enclosure = 3 mm lid = 3 mm

Applicaton:

KG empty enclosures with transparent lid

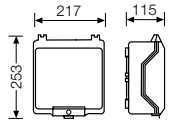
KG empty enclosures with opaque lid

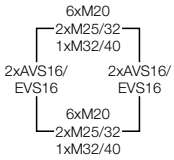
Empty enclosures in accordance with IEC 62208

for customized solutions and individual applications
Cable entry via metric knockouts

KG 9003 IN

Built-in dimensions W 182 x H 205 x D 95 mm





- for installation equipment on DIN rails or mounting plates (order separately)
- max. installation depth with built-in mounting plate 95 mm, with built-in DIN rail 89 mm
- with opaque hinged lid
- fastener for tool operation
- sealable
- cable entry via metric knockouts
- included cable entry:
  2 ESM 25, sealing range Ø 9-17 mm and
  1 ESM 32, sealing range Ø 9-23 mm
- colour: grey, RAL 7035
- material: PS (polystyrene)

rated insulation voltage	U_i = 1000 V a.c./d.c.
impact strength	IK 08 (5 Joule)
static load	mounting plate or DIN rail = 1.6 kg lid = 1.6 kg
power dissipation capability at $\Delta\vartheta$ = 40 K	P_{de} = 17.6 watts
wall thickness	enclosure = 3 mm lid = 3 mm

Installation example:

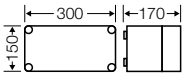
Installation example:

Empty enclosures in accordance with IEC 62208

for customized solutions and individual applications
Box walls without knockouts, can be drilled individually

K 0100

Built-in dimensions W 275 x H 125 x D 150 mm

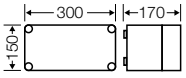


- enclosure size 1, type Mi
- for installation equipment on DIN rails or mounting plates (order separately)
- max. installation depth with built-in mounting plate 146 mm, with built-in DIN rail 135 mm
- with transparent lid
- lid fasteners for tool operation
- sealable
- box walls without knockouts
- optional hinges for device installation in the lid
- external brackets for wall fixing as accessories
- colour: grey, RAL 7035
- material: PC (polycarbonate)

rated insulation voltage	U_i = 690 V a.c. / 1000 V d.c.
impact strength	IK 08 (5 Joule)
static load	mounting plate or DIN rail = 3.2 kg lid = 1.3 kg
power dissipation capability at $\Delta\vartheta$ = 40 K	P_{de} = 33 watts
wall thickness	enclosure = 3 mm lid = 3 mm

K 0101

Built-in dimensions W 275 x H 125 x D 150 mm



- enclosure size 1, type Mi
- for installation equipment on DIN rails or mounting plates (order separately)
- max. installation depth with built-in mounting plate 146 mm, with built-in DIN rail 135 mm
- with opaque lid
- lid fasteners for tool operation
- sealable
- box walls without knockouts
- optional hinges for device installation in the lid
- external brackets for wall fixing as accessories
- colour: grey, RAL 7035
- material: PC (polycarbonate)

rated insulation voltage	U_i = 690 V a.c. / 1000 V d.c.
impact strength	IK 08 (5 Joule)
static load	mounting plate or DIN rail = 3.2 kg lid = 1.3 kg
power dissipation capability at $\Delta\vartheta$ = 40 K	P_{de} = 33 watts
wall thickness	enclosure = 3 mm lid = 3 mm

Applicaton:

Empty enclosures with installed equipment on DIN rail and mounting plate

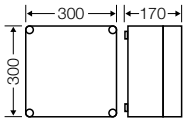
DIN rails for equipment or terminals with clip-on mounting

Device installation on mounting plates

Empty enclosures in accordance with IEC 62208

for customized solutions and individual applications
Box walls without knockouts, can be drilled individually

K 0200

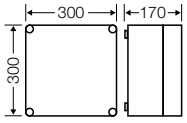


Built-in dimensions W 275 x H 275 x D 150 mm

- enclosure size 2, type Mi
- for installation equipment on DIN rails or mounting plates (order separately)
- max. installation depth with built-in mounting plate 146 mm, with built-in DIN rail 135 mm
- with transparent lid
- lid fasteners for tool operation
- sealable
- box walls without knockouts
- optional hinges for device installation in the lid
- external brackets for wall fixing as accessories
- colour: grey, RAL 7035
- material: PC (polycarbonate)

rated insulation voltage	U_i = 690 V a.c. / 1000 V d.c.
impact strength	IK 08 (5 Joule)
static load	mounting plate or DIN rail = 6.5 kg lid = 1.6 kg
power dissipation capability at $\Delta\vartheta$ = 40 K	P_{de} = 53 watts
wall thickness	enclosure = 3 mm lid = 3 mm

K 0201



Built-in dimensions W 275 x H 275 x D 150 mm

- enclosure size 2, type Mi
- for installation equipment on DIN rails or mounting plates (order separately)
- max. installation depth with built-in mounting plate 146 mm, with built-in DIN rail 135 mm
- with opaque lid
- lid fasteners for tool operation
- sealable
- box walls without knockouts
- optional hinges for device installation in the lid
- external brackets for wall fixing as accessories
- colour: grey, RAL 7035
- material: PC (polycarbonate)

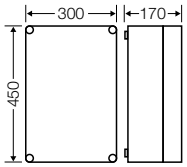
rated insulation voltage	U_i = 690 V a.c. / 1000 V d.c.
impact strength	IK 08 (5 Joule)
static load	mounting plate or DIN rail = 6.5 kg lid = 1.6 kg
power dissipation capability at $\Delta\vartheta$ = 40 K	P_{de} = 53 watts
wall thickness	enclosure = 3 mm lid = 3 mm

Empty enclosures in accordance with IEC 62208

for customized solutions and individual applications
Box walls without knockouts, can be drilled individually

K 0300

Built-in dimensions W 275 x H 425 x D 150 mm

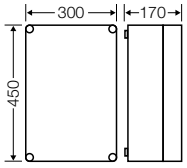


- enclosure size 3, type Mi
- for installation equipment on DIN rails or mounting plates (order separately)
- max. installation depth with built-in mounting plate 146 mm, with built-in DIN rail 135 mm
- with transparent lid
- lid fasteners for tool operation
- sealable
- box walls without knockouts
- optional hinges for device installation in the lid
- external brackets for wall fixing as accessories
- colour: grey, RAL 7035
- material: PC (polycarbonate)

rated insulation voltage	U_i = 690 V a.c. / 1000 V d.c.
impact strength	IK 08 (5 Joule)
static load	mounting plate or DIN rail = 9.2 kg lid = 3.2 kg
power dissipation capability at $\Delta\vartheta$ = 40 K	P_{de} = 71 watts
wall thickness	enclosure = 3 mm lid = 3 mm

K 0301

Built-in dimensions W 275 x H 425 x D 150 mm



- enclosure size 3, type Mi
- for installation equipment on DIN rails or mounting plates (order separately)
- max. installation depth with built-in mounting plate 146 mm, with built-in DIN rail 135 mm
- with opaque lid
- lid fasteners for tool operation
- sealable
- box walls without knockouts
- optional hinges for device installation in the lid
- external brackets for wall fixing as accessories
- colour: grey, RAL 7035
- material: PC (polycarbonate)

rated insulation voltage	U_i = 690 V a.c. / 1000 V d.c.
impact strength	IK 08 (5 Joule)
static load	mounting plate or DIN rail = 9.2 kg lid = 3.2 kg
power dissipation capability at $\Delta\vartheta$ = 40 K	P_{de} = 71 watts
wall thickness	enclosure = 3 mm lid = 3 mm

Applicaton:

Empty enclosures with installed equipment on DIN rail and mounting plate

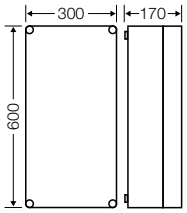
DIN rails for equipment or terminals with clip-on mounting

Device installation on mounting plates

Empty enclosures in accordance with IEC 62208
for customized solutions and individual applications
Box walls without knockouts, can be drilled individually

K 0400

Built-in dimensions W 275 x H 575 x D 150 mm

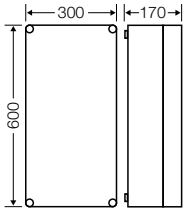


- enclosure size 4, type Mi
- for installation equipment on DIN rails or mounting plates (order separately)
- max. installation depth with built-in mounting plate 146 mm, with built-in DIN rail 135 mm
- with transparent lid
- lid fasteners for tool operation
- sealable
- box walls without knockouts
- optional hinges for device installation in the lid
- external brackets for wall fixing as accessories
- colour: grey, RAL 7035
- material: PC (polycarbonate)

rated insulation voltage	U_i = 690 V a.c. / 1000 V d.c.
impact strength	IK 08 (5 Joule)
static load	mounting plate or DIN rail = 9.2 kg lid = 3.2 kg
power dissipation capability at $\Delta\vartheta$ = 40 K	P_{de} = 93 watts
wall thickness	enclosure = 3 mm lid = 3 mm

K 0401

Built-in dimensions W 275 x H 575 x D 150 mm



- enclosure size 4, type Mi
- for installation equipment on DIN rails or mounting plates (order separately)
- max. installation depth with built-in mounting plate 146 mm, with built-in DIN rail 135 mm
- with opaque lid
- lid fasteners for tool operation
- sealable
- box walls without knockouts
- optional hinges for device installation in the lid
- external brackets for wall fixing as accessories
- colour: grey, RAL 7035
- material: PC (polycarbonate)

rated insulation voltage	U_i = 690 V a.c. / 1000 V d.c.
impact strength	IK 08 (5 Joule)
static load	mounting plate or DIN rail = 9.2 kg lid = 3.2 kg
power dissipation capability at $\Delta\vartheta$ = 40 K	P_{de} = 93 watts
wall thickness	enclosure = 3 mm lid = 3 mm

Installation example:

Empty enclosures in accordance with IEC 62208

Accessories

for EB empty enclosures

DIN rails 24

Mounting plates 25

Mounting kits for pipe and post installation 26

for KG empty enclosures

Mounting plates, DIN rails 27

PE and N terminals 28

for K empty enclosures

DIN rails 29

Mounting plates 30

External fixing, sealing, convertion sets for lid fasteners lid locks 31

Lid fasteners, multikey, convertionset for padlock, mounting kits for pipe and post installation 32

Hinges, extention frame 33

Cable entry systems (grommets, cable glands, combi climate glands) 34 - 44

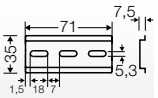
Empty enclosures in accordance with IEC 62208

Accessories
for EB empty enclosures

DK TS 01

DIN rail

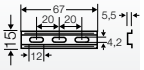
- for DK 02...., DK 04...., KF 02...., KF 04...., EB 02.., EB 04..
- for the installation of terminal blocks
- with fixing screws



DK TS 02

DIN rail

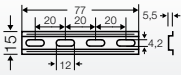
- for DK 02...., KF 02...., EB 02..
- for the installation of terminal blocks
- with fixing screws



DK TS 04

DIN rail

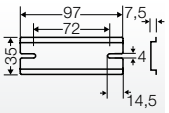
- for DK 04 ...., KF 04...., EB 04..
- for the installation of terminal blocks
- with fixing screws



DK TS 06

DIN rail

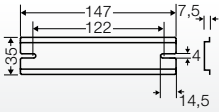
- for DK 06.... , KF 06...., EB 06..
- for the installation of terminal blocks
- with fixing screws



DK TS 10

DIN rail

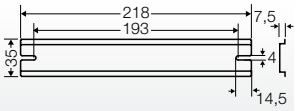
- for DK 10...., KF 10...., EB 10..
- for the installation of terminal blocks
- with fixing screws



DK TS 25

DIN rail

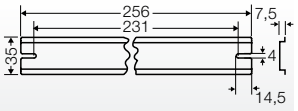
- for DK 25...., KF 25...., EB 25..
- for the installation of terminal blocks
- with fixing screws



DK TS 35

DIN rail

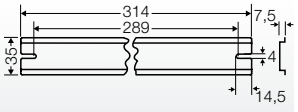
- for DK 35...., KF 35...., EB 35..
- for the installation of terminal blocks
- with fixing screws



DK TS 50

DIN rail

- for DK 50...., KF 50...., EB 50..
- for the installation of terminal blocks
- with fixing screws



Empty enclosures in accordance with IEC 62208

Accessories
for EB empty enclosures

EB MP 02

Mounting plate W 71.5 x H 71.5 mm

- material thickness 4 mm
- for EB 02.. empty boxes
- with fixing screws

material	laminated paper, coated

EB MP 04

Mounting plate W 81 x H 81 mm

- material thickness 4 mm
- for EB 04.. empty boxes
- with fixing screws

material	laminated paper, coated

EB MP 06

Mounting plate W 104.5 x H 104.5 mm

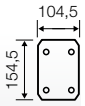
- material thickness 4 mm
- for EB 06.. empty boxes
- with fixing screws

material	laminated paper, coated

EB MP 10

Mounting plate W 104,5 x H 154,5 mm

- material thickness 4 mm
- for EB 10.. empty boxes
- with fixing screws

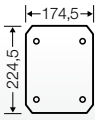


material	laminated paper, coated

EB MP 25

Mounting plate W 174.5 x H 224.5 mm

- material thickness 4 mm
- for EB 25.. empty boxes
- with fixing screws

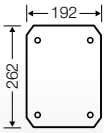


material	laminated paper, coated

EB MP 35

Mounting plate W 192 x H 262 mm

- material thickness 4 mm
- for EB 35.. empty boxes
- with fixing screws

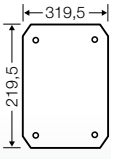


material	laminated paper, coated

EB MP 50

Mounting plate W 319.5 x H 219.5 mm

- material thickness 4 mm
- for EB 50.. empty boxes
- with fixing screws



material	laminated paper, coated

Empty enclosures in accordance with IEC 62208

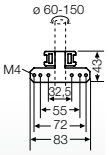
Accessories
for EB empty enclosures

DK MB 1

Mounting kit
for pipe and post installation

- for cable junction boxes DK 02.. X, KF 02.. X, WP 02.. X, EB 02 X
- for cable junction boxes DK 04.. X, KF 04.. X, WP 04.. X, EB 04 X
- for cable junction boxes DK 06.. X, KF 06.. X, WP 06.. X, EB 06 X
- suitable for pipe/pole diameters of 60 - 150 mm
- clamps and fixing screws included

material	stainless steel V2A
maximum load	5 kg

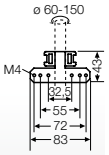


DK MB 2

Mounting kit
for pipe and post installation

- for cable junction boxes DK 10.. X, KF 10.. X, WP 10.. X, EB 10 X
- for cable junction boxes DK 16.. X, KF 16.. X
- suitable for pipe/pole diameters of 60 - 150 mm
- clamps and fixing screws included

material	stainless steel V2A
maximum load	5 kg

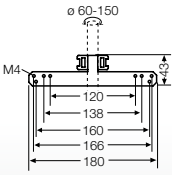


DK MB 3

Mounting kit
for pipe and post installation

- for cable junction boxes DK 25.. X, KF 25.. X, EB 25 X
- for cable junction boxes DK 35.. X, KF 35.. X, EB 35 X
- for cable junction boxes DK 50.. X, KF 50.. X, EB 50 X
- suitable for pipe/pole diameters of 60 - 150 mm
- clamps and fixing screws included

material	stainless steel V2A
maximum load	5 kg



Anwendung:

Lighting control of a sports field

Power supply of a surveillance camera in public area

Empty enclosures in accordance with IEC 62208

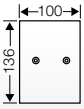
Accessories
for KG empty enclosures

KG MP 01

Mounting plate
W 100 x H 136 mm

- material thickness 4 mm
- for KG 9001 empty enclosures
- with fixing screws

material	laminated paper, coated

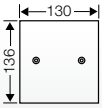


KG MP 02

Mounting plate
W 130 x H 136 mm

- material thickness 4 mm
- for KG 9002 empty enclosures
- with fixing screws

material	laminated paper, coated

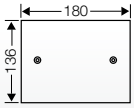


KG MP 03

Mounting plate
W 180 x H 136 mm

- material thickness 4 mm
- for KG 9003 empty enclosures
- with fixing screws

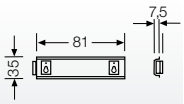
material	laminated paper, coated



KG TS 01

DIN rail for KG 9001

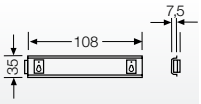
- in accordance with DIN EN 60715
- for equipment or terminals with clip-on mounting
- with fixing screws



KG TS 02

DIN rail for KG 9002

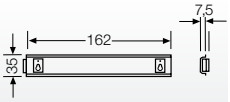
- in accordance with DIN EN 60715
- for equipment or terminals with clip-on mounting
- with fixing screws



KG TS 03

DIN rail for KG 9003

- in accordance with DIN EN 60715
- for equipment or terminals with clip-on mounting
- with fixing screws



Empty enclosures in accordance with IEC 62208

Accessories
for KG empty enclosures

KG PN 01

PE and N terminal

- for KG 9001
- per PE/N number x cross section 3 x 25 mm², 3 x 4 mm² Cu, screw-type terminal

rated insulation voltage	U_i = 400 V a.c.

KG PN 02

PE and N terminal

- for KG 9002
- per PE/N number x cross section 3 x 25 mm², 5 x 4 mm² Cu, screw-type terminal

rated insulation voltage	U_i = 400 V a.c.

KG PN 03

PE and N terminal

- for KG 9003
- per PE/N number x cross section 4 x 25 mm², 7 x 4 mm² Cu, screw-type terminal

rated insulation voltage	U_i = 400 V a.c.

Empty enclosures in accordance with IEC 62208

Accessories
for K empty enclosures

Mi TS 15

DIN rail
length 134 mm

- in accordance with DIN EN 60715
- for Mi-Empty boxes sizes 1, 6
- for equipment or terminals with clip-on mounting
- with fixing screws

Mi TS 30

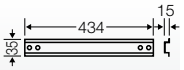
DIN rail
length 284 mm

- in accordance with DIN EN 60715
- for Mi-Empty boxes sizes 1, 2, 3, 4, 6, 8
- for equipment or terminals with clip-on mounting
- with fixing screws

Mi TS 45

DIN rail
length 434 mm

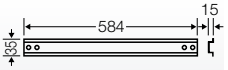
- in accordance with DIN EN 60715
- for Mi-Empty boxes sizes 3, 6
- for equipment or terminals with clip-on mounting
- with fixing screws



Mi TS 60

DIN rail
length 584 mm

- in accordance with DIN EN 60715
- for Mi-Empty boxes sizes 4, 6, 8
- for equipment or terminals with clip-on mounting
- with fixing screws



Applicaton:

DIN rails for equipment or terminals with clip-on mounting

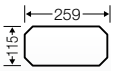
Empty enclosures in accordance with IEC 62208
Accessories
for K empty enclosures

Mi MP 1

Mounting plate
W 259 x H 115 mm

- material thickness 4 mm
- for Mi-Empty boxes sizes 1, 2, 3, 4, 6
- with fixing screws

material	laminated paper, coated

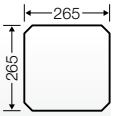


Mi MP 2

Mounting plate
W 265 x H 265 mm

- material thickness 4 mm
- for Mi-Empty boxes sizes 2, 3, 4, 6, 8
- with fixing screws

material	laminated paper, coated

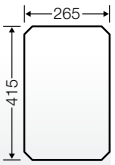


Mi MP 3

Mounting plate
W 265 x H 415 mm

- material thickness 4 mm
- for Mi-Empty boxes sizes 3, 4, 6
- with fixing screws

material	laminated paper, coated

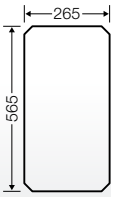


Mi MP 4

Mounting plate
W 265 x H 565 mm

- material thickness 4 mm
- for Mi-Empty boxes sizes 4, 6, 8
- with fixing screws

material	laminated paper, coated



Applicaton:

Device installation on
mounting plates

Empty enclosures in accordance with IEC 62208

Accessories
for K empty enclosures

Mi PL 2

Sealing cap

- 2 sealing caps for converting the lid fasteners

Mi SR 4

Conversion set
for hand operation on tool operation

- 4 fastening covers

Mi SN 4

Conversion set
for converting lid fasteners from tool to manual operation

- 4 manual actuators

Mi SV 2

Conversion set
for padlock (clip Ø max. 10 mm)

- 2 fastening covers
- can be used instead of fasteners for hand or tool operation in order to prevent unauthorised opening of the lids

Mi DV 01

Locking device insertion

- only in connection with Mi PL 2, Mi SR 4 or Mi SN 4

Mi ZS 11

Lid lock
with locking device I
for Mi boxes sizes 1 to 6

- can be used instead of fasteners for hand or tool operation in order to prevent unauthorised opening of the lids
- consisting of: cylinder lock, keys, locking device insertion, dust cover

Mi ZS 12

Lid lock
with locking device II
for Mi boxes sizes 1 to 6

- can be used instead of fasteners for hand or tool operation in order to prevent unauthorised opening of the lids
- consisting of: cylinder lock, keys, locking device insertion, dust cover

Mi DR 04

Lid fastener for tool operation
triangle 8 mm

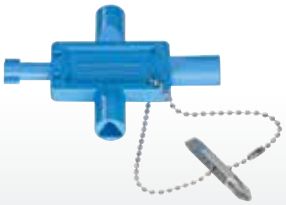
- is being used in place of fasteners for hand- or tool operation to prevent unauthorized opening of lids
- 4 locking devices with triangle 8 mm and key

Empty enclosures in accordance with IEC 62208

Accessories
for K empty enclosures

DS 1

Triangular key 8 mm



US 1

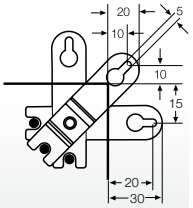
Multikey

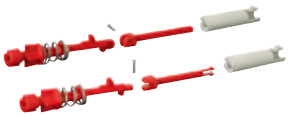
- triangular 8 mm, square 8 mm, double-bit and slot

Mi AL 40

4 stainless steel external brackets

- for external fixing of enclosures





Mi ZS 20

Mi hinge for lids
for Mi boxes sizes 1, 2, 3, 4

- For operating installation device within a large area. The lid keeps permanently connected to the box.
- When assembling several boxes, the insertion can only be carried out for the external boxes.

Mi ZS 30

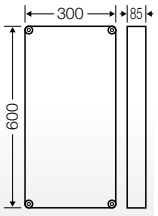
Hinge for lids

- for empty boxes K 0xxx
- with lamellar plugs for 2 lid fixing tubes
- The lid keeps permanently connected to the box

Mi ZR 4

Extension frame
for enclosure size 4

- for extension of the installation depth by 85 mm
- degree of protection IP 65 is maintained with use of up to two extension frames
- inclusive fixing material



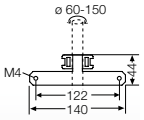
Empty enclosures in accordance with IEC 62208

Accessories
for K empty enclosures

Mi MB 1

Mounting kit
for pipe and post installation

- for enclosure width 150 mm
- suitable for pipe/pole diameters of 60 - 150 mm
- clamps and fixing screws included

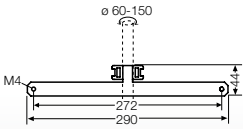


material	stainless steel V2A
maximum load	25 kg

Mi MB 2

Mounting kit
for pipe and post installation

- for enclosure width 300 mm
- suitable for pipe/pole diameters of 60 - 150 mm
- clamps and fixing screws included



material	stainless steel V2A
maximum load	25 kg

Anwendung:

Control street lighting

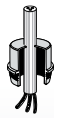
Street lighting in a commercial area

ESM 16

Grommets
for knockouts M 16

IP 55

- sealing range: Ø 4.8-11 mm
- bore-hole: Ø 16.5 mm
- wall thickness 1.5-3.5 mm
- for indoor - normal environment and (or) protected outdoor installation
- ambient temperature - 25 °C to + 35 °C
- glow wire test IEC 60695-2-11: 750 °C
- colour: grey, RAL 7035

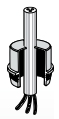


ESM 20

Grommets
for knockouts M 20

IP 55

- sealing range: Ø 6-13 mm
- bore-hole: Ø 20.5 mm
- wall thickness 1.5-3.5 mm
- for indoor - normal environment and (or) protected outdoor installation
- ambient temperature - 25 °C to + 35 °C
- glow wire test IEC 60695-2-11: 750 °C
- colour: grey, RAL 7035

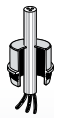


ESM 25

Grommets
for knockouts M 25

IP 55

- sealing range: Ø 9-17 mm
- bore-hole: Ø 25.5 mm
- wall thickness 1.5-3.5 mm
- for indoor - normal environment and (or) protected outdoor installation
- ambient temperature - 25 °C to + 35 °C
- glow wire test IEC 60695-2-11: 750 °C
- colour: grey, RAL 7035

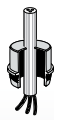


ESM 32

Grommets
for knockouts M 32

IP 55

- sealing range: Ø 9-23 mm
- bore-hole: Ø 32.5 mm
- wall thickness 1.5-3.5 mm
- for indoor - normal environment and (or) protected outdoor installation
- ambient temperature - 25 °C to + 35 °C
- glow wire test IEC 60695-2-11: 750 °C
- colour: grey, RAL 7035

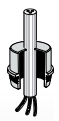


ESM 40

Grommets
for knockouts M 40

IP 55

- sealing range: Ø 17-30 mm
- bore-hole: Ø 40.5 mm
- wall thickness 1.5-3.5 mm
- for indoor - normal environment and (or) protected outdoor installation
- ambient temperature - 25 °C to + 35 °C
- glow wire test IEC 60695-2-11: 750 °C
- colour: grey, RAL 7035



AKM 12

Cable glands for knockouts M 12

IP 66/67 IP 69

- sealing range: Ø 4-6 mm
- ISO thread M 12 x 1.5
- bore-hole:Ø 12.3 mm
- wall thickness up to 3 mm
- with strain relief and locknut
- for indoor (normal environment and/or protected outdoor) and outdoor installation (harsh environment and/or outdoor)
- ambient temperature - 25 °C to + 55 °C
- glow wire test IEC 60695-2-11: 960 °C
- colour: grey, RAL 7035

tightening torque	0,9 Nm

AKM 16

Cable glands for knockouts M 16

IP 66/67 IP 69

- sealing range: Ø 5-10 mm
- ISO thread M 16 x 1.5
- bore-hole: Ø 16.3 mm
- wall thickness up to 3 mm
- with strain relief and locknut
- for indoor (normal environment and/or protected outdoor) and outdoor installation (harsh environment and/or outdoor)
- ambient temperature - 25 °C to + 55 °C
- glow wire test IEC 60695-2-11: 960 °C
- colour: grey, RAL 7035

tightening torque	3,0 Nm

AKM 20

Cable glands for knockouts M 20

IP 66/67 IP 69

- sealing range Ø 6,5-13,5 mm
- ISO thread M 20 x 1.5
- bore-hole: Ø 20.3 mm
- wall thickness up to 3 mm
- with strain relief and locknut
- for indoor (normal environment and/or protected outdoor) and outdoor installation (harsh environment and/or outdoor)
- ambient temperature - 25 °C to + 55 °C
- glow wire test IEC 60695-2-11: 960 °C
- colour: grey, RAL 7035

tightening torque	4,0 Nm

AKM 25

Cable glands for knockouts M 25

IP 66/67 IP 69

- sealing range Ø 11-17 mm
- ISO thread M 25 x 1.5
- bore-hole: Ø 25.3 mm
- wall thickness up to 3 mm
- with strain relief and locknut
- for indoor (normal environment and/or protected outdoor) and outdoor installation (harsh environment and/or outdoor)
- ambient temperature - 25 °C to + 55 °C
- glow wire test IEC 60695-2-11: 960 °C
- colour: grey, RAL 7035

tightening torque	7,5 Nm

AKM 32

Cable glands for knockouts M 32

IP 66/67 IP 69

- sealing range Ø 15-21 mm
- ISO thread M 32 x 1.5
- bore-hole: Ø 32.3 mm
- wall thickness up to 3 mm
- with strain relief and locknut
- for indoor (normal environment and/or protected outdoor) and outdoor installation (harsh environment and/or outdoor)
- ambient temperature - 25 °C to + 55 °C
- glow wire test IEC 60695-2-11: 960 °C
- colour: grey, RAL 7035

tightening torque	10,0 Nm

AKM 40

Cable glands for knockouts M 40

IP 66/67 IP 69

- sealing range: Ø 19-28 mm
- ISO thread M 40 x 1.5
- bore-hole: Ø 40.3 mm
- wall thickness up to 3 mm
- with strain relief and locknut
- for indoor (normal environment and/or protected outdoor) and outdoor installation (harsh environment and/or outdoor)
- ambient temperature - 25 °C to + 55 °C
- glow wire test IEC 60695-2-11: 960 °C
- colour: grey, RAL 7035

tightening torque	10,0 Nm

AKM 50

Cable glands for knockouts M 50

IP 66/67 IP 69

- sealing range: Ø 27-35 mm
- ISO thread M 50 x 1.5
- bore-hole: Ø 50.3 mm
- wall thickness up to 3 mm
- with strain relief and locknut
- for indoor (normal environment and/or protected outdoor) and outdoor installation (harsh environment and/or outdoor)
- ambient temperature - 25 °C to + 55 °C
- glow wire test IEC 60695-2-11: 960 °C
- colour: grey, RAL 7035

tightening torque	10,0 Nm

AKM 63

Cable glands for knockouts M 63

IP 66/67 IP 69

- sealing range: Ø 35-42 mm
- ISO thread M 63 x 1.5
- bore-hole: Ø 63.3 mm
- wall thickness up to 3 mm
- with strain relief and locknut
- for indoor (normal environment and/or protected outdoor) and outdoor installation (harsh environment and/or outdoor)
- ambient temperature - 25 °C to + 55 °C
- glow wire test IEC 60695-2-11: 960 °C
- colour: grey, RAL 7035

tightening torque	10,0 Nm

ASS 12

Cable glands for knockouts M 12

IP 66/67 IP 69

- sealing range: Ø 2-5 mm
- ISO thread M 12 x 1.5
- bore-hole:Ø 12.3 mm
- wall thickness up to 3 mm
- with strain relief and locknut
- for indoor (normal environment and/or protected outdoor) and outdoor installation (harsh environment and/or outdoor)
- ambient temperature - 25 °C to + 55 °C
- glow wire test IEC 60695-2: 960 °C
- colour: black, RAL 9005

tightening torque	0,9 Nm

ASS 16

Cable glands for knockouts M 16

IP 66/67 IP 69

- sealing range: Ø 3-10 mm
- ISO thread M 16 x 1.5
- bore-hole: Ø 16.3 mm
- wall thickness up to 3 mm
- with strain relief and locknut
- for indoor (normal environment and/or protected outdoor) and outdoor installation (harsh environment and/or outdoor)
- ambient temperature - 25 °C to + 55 °C
- glow wire test IEC 60695-2: 960 °C
- colour: black, RAL 9005

tightening torque	3,0 Nm

ASS 20

Cable glands for knockouts M 20

IP 66/67 IP 69

- sealing range: Ø 5-13 mm
- ISO thread M 20 x 1.5
- bore-hole: Ø 20.3 mm
- wall thickness up to 3 mm
- with strain relief and locknut
- for indoor (normal environment and/or protected outdoor) and outdoor installation (harsh environment and/or outdoor)
- ambient temperature - 25 °C to + 55 °C
- glow wire test IEC 60695-2: 960 °C
- colour: black, RAL 9005

tightening torque	4,0 Nm

ASS 25

Cable glands for knockouts M 25

IP 66/67 IP 69

- sealing range: Ø 8-17 mm
- ISO thread M 25 x 1.5
- bore-hole: Ø 25.3 mm
- wall thickness up to 3 mm
- with strain relief and locknut
- for indoor (normal environment and/or protected outdoor) and outdoor installation (harsh environment and/or outdoor)
- ambient temperature - 25 °C to + 55 °C
- glow wire test IEC 60695-2: 960 °C
- colour: black, RAL 9005

tightening torque	7,5 Nm

ASS 32

Cable glands for knockouts M 32

IP 66/67 IP 69

- sealing range: Ø 12-21 mm
- ISO thread M 32 x 1.5
- bore-hole: Ø 32.3 mm
- wall thickness up to 3 mm
- with strain relief and locknut
- for indoor (normal environment and/or protected outdoor) and outdoor installation (harsh environment and/or outdoor)
- ambient temperature - 25 °C to + 55 °C
- glow wire test IEC 60695-2: 960 °C
- colour: black, RAL 9005

tightening torque	10,0 Nm

ASS 40

Cable glands for knockouts M 40

IP 66/67 IP 69

- sealing range: Ø 16-28,5 mm
- ISO thread M 40 x 1.5
- bore-hole: Ø 40.3 mm
- wall thickness up to 3 mm
- with strain relief and locknut
- for indoor (normal environment and/or protected outdoor) and outdoor installation (harsh environment and/or outdoor)
- ambient temperature - 25 °C to + 55 °C
- glow wire test IEC 60695-2: 960 °C
- colour: black, RAL 9005

tightening torque	10,0 Nm

ASS 50

Cable glands for knockouts M 50

IP 66/67 IP 69

- sealing range: Ø 21-35 mm
- ISO thread M 50 x 1.5
- bore-hole: Ø 50.3 mm
- wall thickness up to 3 mm
- with strain relief and locknut
- for indoor (normal environment and/or protected outdoor) and outdoor installation (harsh environment and/or outdoor)
- ambient temperature - 25 °C to + 55 °C
- glow wire test IEC 60695-2: 960 °C
- colour: black, RAL 9005

tightening torque	10,0 Nm

ASS 63

Cable glands for knockouts M 63

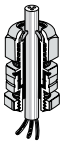
IP 66/67 IP 69

- sealing range: Ø 20-48 mm
- ISO thread M 63 x 1.5
- bore-hole: Ø 63.3 mm
- wall thickness up to 3 mm
- with counter nut
- for indoor (normal environment and/or protected outdoor) and outdoor installation (harsh environment and/or outdoor)
- ambient temperature - 25 °C to + 55 °C
- glow wire test IEC 60695-2: 960 °C
- colour: black, RAL 9005

tightening torque	10,0 Nm

KBM 20

IP 66/67



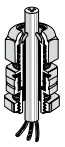
Combi climate gland for knockouts M 20

- to reduce condensation through pressure compensation
- sealing range: Ø 6-13 mm
- ISO thread M 20 x 1.5
- bore-hole: Ø 20.5 mm
- wall thickness up to 3,5 mm
- with strain relief and locknut
- for indoor (normal environment and/or protected outdoor) and outdoor installation (harsh environment and/or outdoor)
- ambient temperature - 25 °C to + 55 °C
- glow wire test IEC 60695-2: 960 °C
- In order not to exceed leakage limit of 0.07 bar with pressure compensation, one combi climate gland M20 must be used per 6 litres (6000 cm^3) of enclosure volume.
- Example: enclosure size 27 cm x 27 cm x 17 cm = 12393 cm^3 = 12,393 litres. Number of necessary combi climate glands KB. 20 (M20) ≥ 3 pieces.
- When using different gland sizes the values for the enclosure volumes of the used combi climate glands can be added on.
- If the quantity of the necessary climate glands for pressure compensation is larger, than the number of necessary cable glands for cable entry, the unused climate glands can be sealed with sealing plugs.
- colour: grey, RAL 7035

tightening torque	3,0 Nm

KBM 25

IP 66/67



Combi climate gland for knockouts M 25

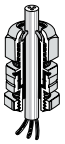
- to reduce condensation through pressure compensation
- sealing range: Ø 9-17 mm
- ISO thread M 25 x 1.5
- bore-hole: Ø 25.5 mm
- wall thickness up to 3,5 mm
- with strain relief and locknut
- for indoor (normal environment and/or protected outdoor) and outdoor installation (harsh environment and/or outdoor)
- ambient temperature - 25 °C to + 55 °C
- glow wire test IEC 60695-2: 960 °C
- In order not to exceed leakage limit of 0.07 bar with pressure compensation, one combi climate gland M25 must be used per 10 litres (10000 cm^3) of enclosure volume.
- Example: enclosure size 27 cm x 27 cm x 17 cm = 12393 cm^3 = 12,393 litres. Number of necessary combi climate glands KB. 25 (M25) ≥ 2 pieces
- When using different gland sizes the values for the enclosure volumes of the used combi climate glands can be added on.
- If the quantity of the necessary climate glands for pressure compensation is larger, than the number of necessary cable glands for cable entry, the unused climate glands can be sealed with sealing plugs.
- colour: grey, RAL 7035

tightening torque	4,0 Nm

KBM 32

Combi climate gland for knockouts M 32

IP 66/67



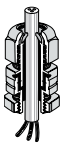
- to reduce condensation through pressure compensation
- sealing range: Ø 13-21 mm
- ISO thread M 32 x 1.5
- bore-hole: Ø 32.5 mm
- wall thickness up to 3,5 mm
- with strain relief and locknut
- for indoor (normal environment and/or protected outdoor) and outdoor installation (harsh environment and/or outdoor)
- ambient temperature - 25 °C to + 55 °C
- glow wire test IEC 60695-2: 960 °C
- In order not to exceed leakage limit of 0.07 bar with pressure compensation, one combi climate gland M32 must be used per 12 litres (12000 cm³) of enclosure volume.
- Example: enclosure size 27 cm x 27 cm x 17 cm = 12393 cm³ = 12,393 litres. Number of necessary combi climate glands KB. 32 (M32) ≥ 2 piece.
- When using different gland sizes the values for the enclosure volumes of the used combi climate glands can be added on.
- If the quantity of the necessary climate glands for pressure compensation is larger, than the number of necessary cable glands for cable entry, the unused climate glands can be sealed with sealing plugs.
- colour: grey, RAL 7035

tightening torque	4,0 Nm

KBM 40

Combi climate gland for knockouts M 40

IP 66/67



- to reduce condensation through pressure compensation
- sealing range: Ø 16-28 mm
- ISO thread M 40 x 1.5
- bore-hole: Ø 40.5 mm
- wall thickness up to 3 mm
- with strain relief and locknut
- for indoor (normal environment and/or protected outdoor) and outdoor installation (harsh environment and/or outdoor)
- ambient temperature - 25 °C to + 55 °C
- glow wire test IEC 60695-2: 960 °C
- In order not to exceed leakage limit of 0.07 bar with pressure compensation, one combi climate gland M40 must be used per 16 litres (16000 cm³) of enclosure volume.
- Example: enclosure size 27 cm x 27 cm x 17 cm = 12393 cm³ = 12.393 litres. Number of necessary KB. 40 (M40) ≥ 1 piece.
- When using different gland sizes the values for the enclosure volumes of the used combi climate glands can be added on.
- If the quantity of the necessary climate glands for pressure compensation is larger, than the number of necessary cable glands for cable entry, the unused climate glands can be sealed with sealing plugs.
- colour: grey, RAL 7035

tightening torque	6,0 Nm

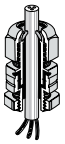
Applicaton:

Combi climate glands

KBS 20

Combi climate gland for knockouts M 20

IP 66/67



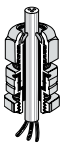
- to reduce condensation through pressure compensation
- sealing range: Ø 6-13 mm
- ISO thread M 20 x 1.5
- bore-hole: Ø 20.5 mm
- wall thickness up to 3,5 mm
- with strain relief and locknut
- for indoor (normal environment and/or protected outdoor) and outdoor installation (harsh environment and/or outdoor)
- ambient temperature - 25 °C to + 55 °C
- glow wire test IEC 60695-2: 960 °C
- In order not to exceed leakage limit of 0.07 bar with pressure compensation, one combi climate gland M20 must be used per 6 litres (6000 cm^3) of enclosure volume.
- Example: enclosure size 27 cm x 27 cm x 17 cm = 12393 cm^3 = 12,393 litres. Number of necessary combi climate glands KB. 20 (M20) ≥ 3 pieces.
- When using different gland sizes the values for the enclosure volumes of the used combi climate glands can be added on.
- If the quantity of the necessary climate glands for pressure compensation is larger, than the number of necessary cable glands for cable entry, the unused climate glands can be sealed with sealing plugs.
- colour: black, RAL 9005

tightening torque	3,0 Nm

KBS 25

Combi climate gland for knockouts M 25

IP 66/67

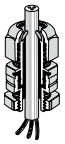


- to reduce condensation through pressure compensation
- sealing range: Ø 9-17 mm
- ISO thread M 25 x 1.5
- bore-hole: Ø 25.5 mm
- wall thickness up to 3,5 mm
- with strain relief and locknut
- for indoor (normal environment and/or protected outdoor) and outdoor installation (harsh environment and/or outdoor)
- ambient temperature - 25 °C to + 55 °C
- glow wire test IEC 60695-2: 960 °C
- In order not to exceed leakage limit of 0.07 bar with pressure compensation, one combi climate gland M25 must be used per 10 litres (10000 cm^3) of enclosure volume.
- Example: enclosure size 27 cm x 27 cm x 17 cm = 12393 cm^3 = 12,393 litres. Number of necessary combi climate glands KB. 25 (M25) ≥ 2 pieces
- When using different gland sizes the values for the enclosure volumes of the used combi climate glands can be added on.
- If the quantity of the necessary climate glands for pressure compensation is larger, than the number of necessary cable glands for cable entry, the unused climate glands can be sealed with sealing plugs.
- colour: black, RAL 9005

tightening torque	4,0 Nm

KBS 32

IP 66/67



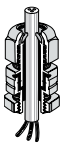
Combi climate gland for knockouts M 32

- to reduce condensation through pressure compensation
- sealing range: Ø 13-21 mm
- ISO thread M 32 x 1.5
- bore-hole: Ø 32.5 mm
- wall thickness up to 3,5 mm
- with strain relief and locknut
- for indoor (normal environment and/or protected outdoor) and outdoor installation (harsh environment and/or outdoor)
- ambient temperature - 25 °C to + 55 °C
- glow wire test IEC 60695-2: 960 °C
- In order not to exceed leakage limit of 0.07 bar with pressure compensation, one combi climate gland M32 must be used per 12 litres (12000 cm³) of enclosure volume.
- Example: enclosure size 27 cm x 27 cm x 17 cm = 12393 cm³ = 12,393 litres. Number of necessary combi climate glands KB. 32 (M32) ≥ 2 piece.
- When using different gland sizes the values for the enclosure volumes of the used combi climate glands can be added on.
- If the quantity of the necessary climate glands for pressure compensation is larger, than the number of necessary cable glands for cable entry, the unused climate glands can be sealed with sealing plugs.
- colour: black, RAL 9005

tightening torque	4,0 Nm

KBS 40

IP 66/67



Combi climate gland for knockouts M 40

- to reduce condensation through pressure compensation
- sealing range: Ø 16-28 mm
- ISO thread M 40 x 1.5
- bore-hole: Ø 40.5 mm
- wall thickness up to 3 mm
- with strain relief and locknut
- for indoor (normal environment and/or protected outdoor) and outdoor installation (harsh environment and/or outdoor)
- ambient temperature - 25 °C to + 55 °C
- glow wire test IEC 60695-2: 960 °C
- In order not to exceed leakage limit of 0.07 bar with pressure compensation, one combi climate gland M40 must be used per 16 litres (16000 cm³) of enclosure volume.
- Example: enclosure size 27 cm x 27 cm x 17 cm = 12393 cm³ = 12.393 litres. Number of necessary KB. 40 (M40) ≥ 1 piece.
- When using different gland sizes the values for the enclosure volumes of the used combi climate glands can be added on.
- If the quantity of the necessary climate glands for pressure compensation is larger, than the number of necessary cable glands for cable entry, the unused climate glands can be sealed with sealing plugs.
- colour: black, RAL 9005

tightening torque	6,0 Nm

Applicaton:

Combi climate glands

VSB 13

Sealing plug
diameter 13 mm

- for sealing combi climate glands M20 or M25, which are not used for cable entry
- ambient temperature - 25 °C to + 55 °C
- colour: red, RAL 3000

VSB 21

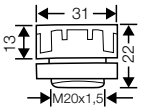
Sealing plug
diameter 21 mm

- for sealing combi climate glands M32 and M40, which are not used for cable entry
- ambient temperature - 25 °C to + 55 °C
- colour: red, RAL 3000

BM 20G

Pressure compensation element for M 20 knockouts

IP 54

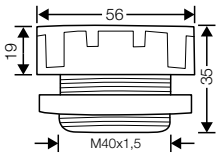


- for the reduction of condensation by pressure compensation in power distribution systems
- ISO thread M 20 x 1.5
- bore-hole: Ø 20.3 mm
- wall thickness up to 4 mm
- with counter nut
- for indoor (normal environment and/or protected outdoor) and outdoor installation (harsh environment and/or outdoor)
- ambient temperature - 25 °C to + 55 °C
- In order not to exceed leakage limit of 0.07 bar with pressure compensation, one pressure compensation element BM 20G must be used per 28 litres (28000 cm³) of enclosure volume.
- Example:
  enclosure size 30 cm x 60 cm x 17 cm = 30600 cm³ = 30.6 litres.
  Number of necessary BM 20G (M32) = 2 piece.
- technical changes reserved
- colour: grey, RAL 7035

BM 40G

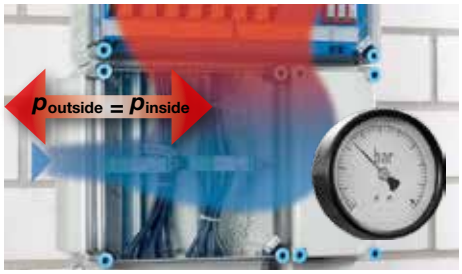
Pressure compensation element for M 40 knockouts

IP 54



- for the reduction of condensation by pressure compensation in power distribution systems
- ISO thread M 40 x 1.5
- bore-hole: Ø 40.3 mm
- wall thickness of up to 8 mm
- with counter nut
- for indoor (normal environment and/or protected outdoor) and outdoor installation (harsh environment and/or outdoor)
- ambient temperature - 25 °C to + 55 °C
- In order not to exceed leakage limit of 0.07 bar with pressure compensation, one pressure compensation element BM 40G must be used per 122 litres (122000 cm³) of enclosure volume.
- Example:
  enclosure size 60 cm x 60 cm x 17 cm = 61200 cm³ = 61.2 litres.
  Number of necessary BM 40G (M40) = 1 piece.
- technical changes reserved
- colour: grey, RAL 7035

Pressure compensation elements reduce condensation in power distribution systems



Empty enclosures in accordance with IEC 62208

Technical details

Operating and ambient conditions	46 - 47
Dimensions in mm for EB empty enclosures	58 - 51
Power dissipation	52 - 53
Recommendation for outdoor installations, formation of condensed water	54 - 55
Application examples	56 - 57
Material properties	58

Empty enclosures in accordance with IEC 62208

Techical details

Operating and ambient conditions

	Empty enclosures EB	Empty enclosures KG	Empty enclosures K ....
Application area	Suitable for for outdoor installation (harsh environment and/or outdoor). To reduce the formation and accumulation of condensed water see pages 55-56.	**Suitable for indoor installation and outdoor installation, protected against weather influences** However, pay attention to the climatic effects on the installed equipment, for example, high or low ambient temperatures or formation of condensed water see pages 55-56.	
Resistant to occasional cleaning procedures	**Resistance to occasional cleaning procedures (direct jet)** with high-pressure cleaner without cleaning additives, water pressure: max 100 bar, water temperature: max 80 °C, distance ≥ 0.15 m, in accordance with DIN EN 60529:2014-09 (IEC 60529:2013) = IP 69. **Box and cable entries at least IP 66.**		
Ambient temperature - Average value over 24 hours - Maximum value - Minimum value	 + 55 °C + 70 °C – 25 °C	 — +60 °C -25 °C	 +35 °C +40 °C -25 °C
Relative humidity - short-time	50% at 40 °C 100% at 25 °C	– –	50% at 40 °C 100% at 25 °C
Fire protection in the event of internal faults	Demands placed on electrical devices from standards and laws: Minimum requirements - Glow wire test in accordance with IEC 60695-2-11: - 650 °C for boxes and cable glands - 850 °C for conducting components		
Burning behaviour - Glow wire test IEC 60 695-2-11 - UL Subject 94	 960 °C V-0 flame-retardant self-extinguishing	 750 °C V-2 flame-retardant self-extinguishing	 960 °C V-2 flame-retardant self-extinguishing
Degree of protection against mechanical load	IK09 (10 Joule)	IK 08 (5 Joule)	IK 08 (5 Joule)
Toxic behaviour	halogen-free [1] silicone-free	halogen-free [1] silicone-free	halogen-free [1] silicone-free

[1] “Halogen-free” in accordance with IEC 60754-2“
Common test methods for cables - Determination of the amount of halogen acid gas”.

For material properties see page 45.

Empty enclosures in accordance with IEC 62208

Technical Details cable entry systems
Operating and Ambient Conditions

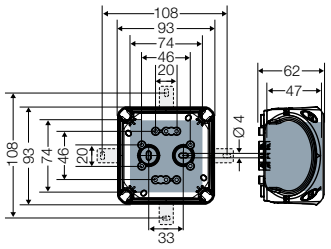
	ESM ...	AKM ... ASS ...	AKS ... KBM ... / KBS ... BM ..G
Application area	Suitable for indoor installation (normal environment and/or protected outdoor)	Suitable for **outdoor installation** - harsh environment and / or outdoor	
Ambient temperature - Average value over 24 hours - Maximum value - Minimum value	 + 35 °C + 40 °C – 25 °C	 + 55 °C + 70 °C – 25 °C	 + 55 °C + 70 °C – 25 °C
Fire protection in the event of internal faults	Demands placed on electrical devices from standards and laws: Minimum requirements - Glow wire test in accordance with IEC 60695-2-11: - 650 °C for boxes and cable glands		
Burning behaviour - Glow wire test IEC 60695-2-11 - UL Subject 94	 750 °C – flame-retardant self-extinguishing	 960 °C V-0 flame-retardant self-extinguishing	 960 °C V-2 flame-retardant self-extinguishing
Toxic behaviour	halogen-free silicone-free	halogen-free silicone-free	halogen-free silicone-free
	[1] “Halogen-free” in accordance with IEC 60754-2“ Common test methods for cables - Determination of the amount of halogen acid gas”. For material properties see page 45.		

Empty enclosures in accordance with IEC 62208

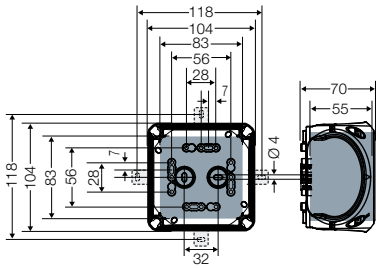
Technical details

Dimensions in mm

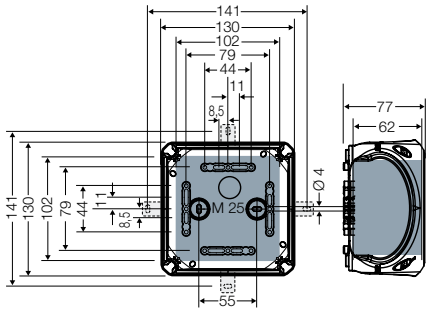
EB 02 G
EB 02 B



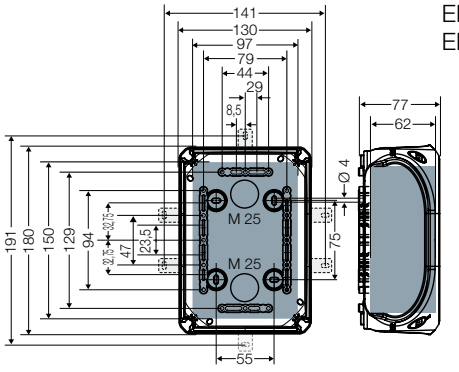
EB 04 G
EB 04 B



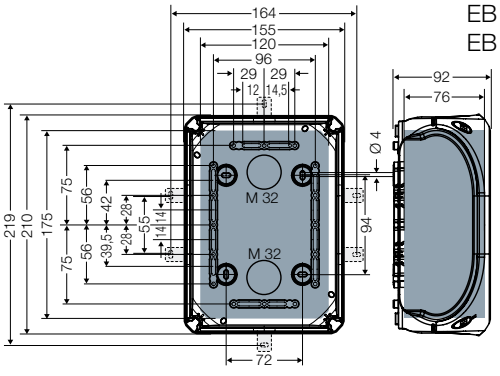
EB 06 G
EB 06 B



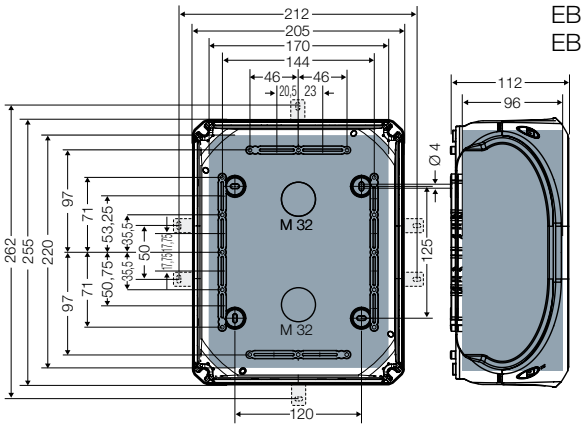
EB 10 G
EB 10 B



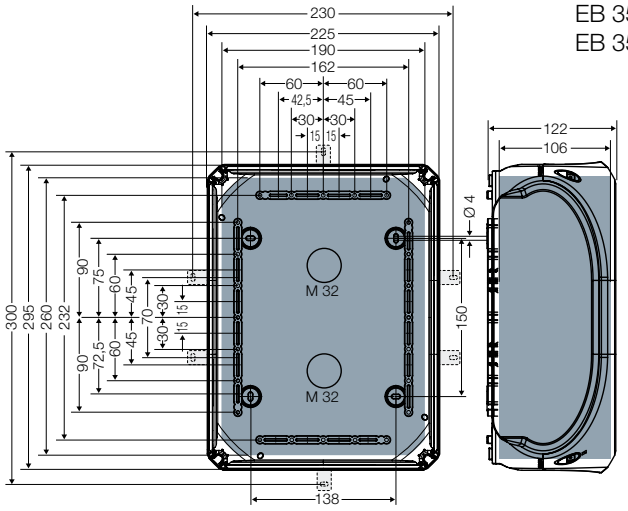
EB 16 G
EB 16 B



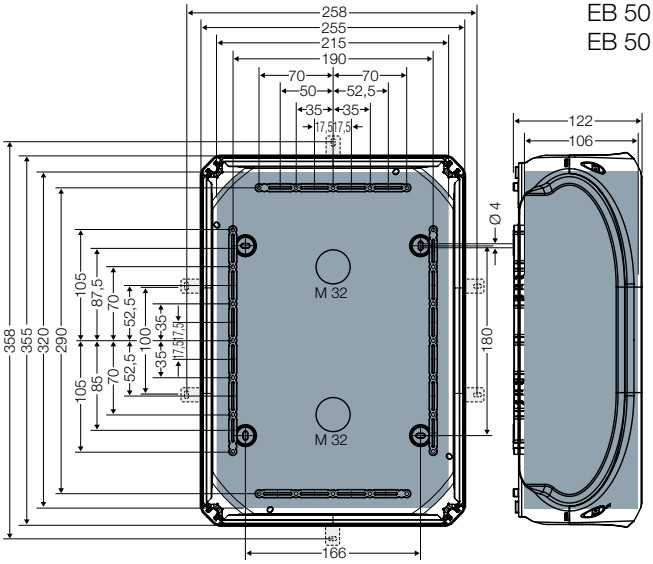
EB 25 G
EB 25 B



EB 35 G
EB 35 B



EB 50 G
EB 50 B



= usable installation space with mounted cable glands

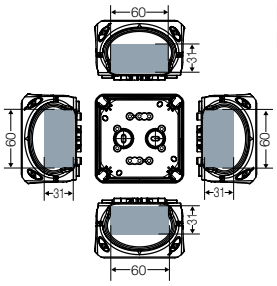
Empty enclosures in accordance with IEC 62208

Technical details

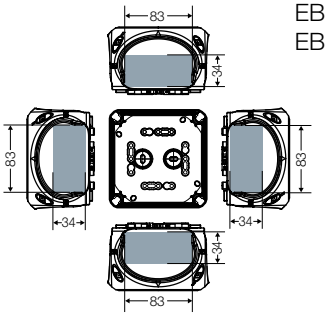
Dimensions in mm

Dimensions of the usable installation space in walls

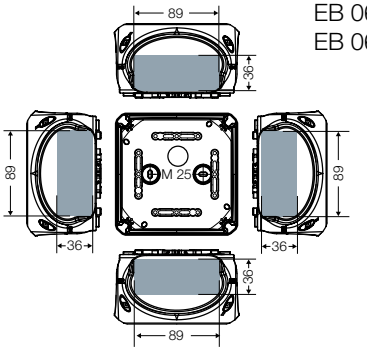
EB 02 G
EB 02 B



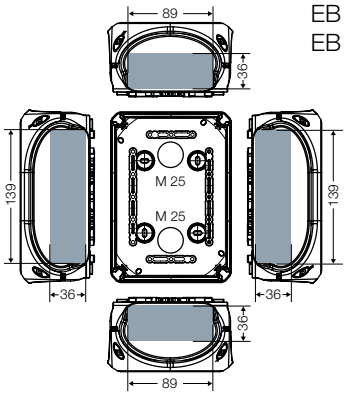
EB 04 G
EB 04 B



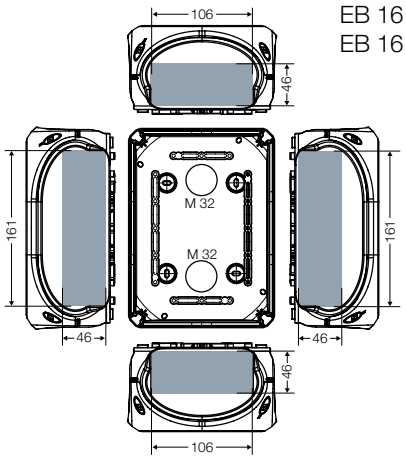
EB 06 G
EB 06 B



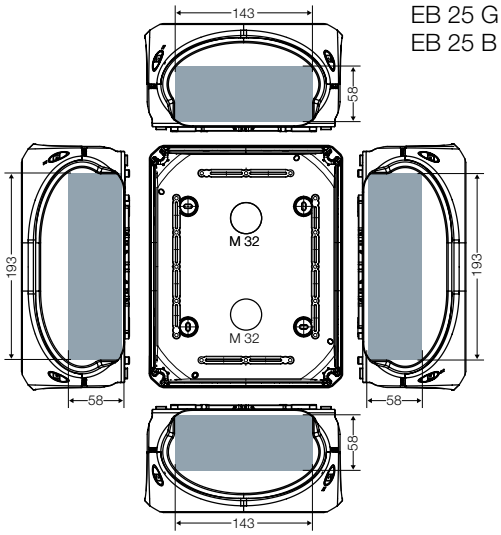
EB 10 G
EB 10 B



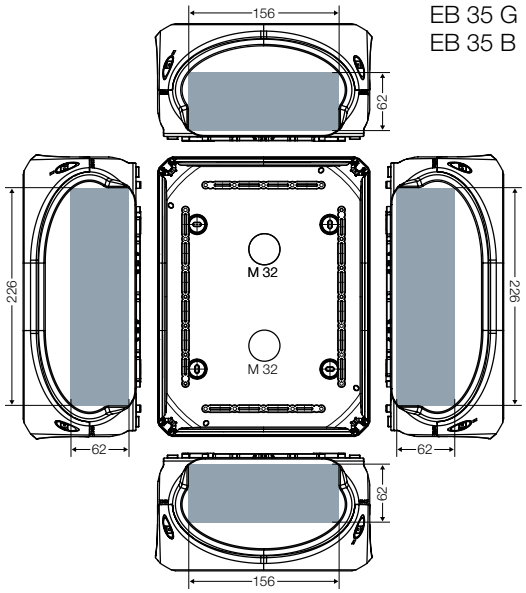
EB 16 G
EB 16 B



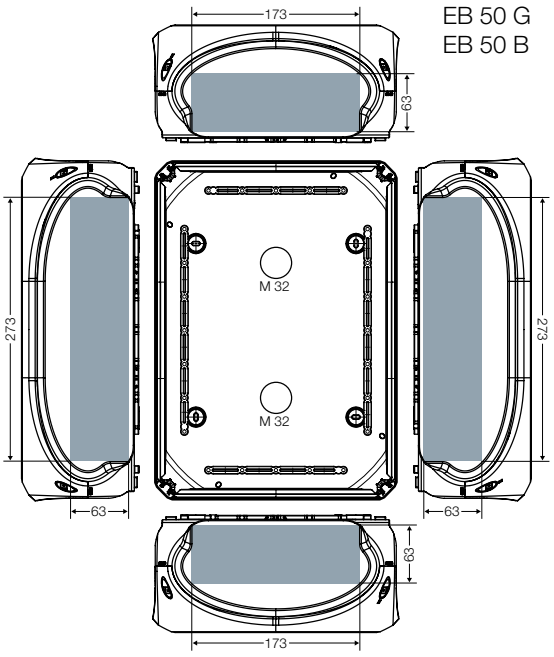
EB 25 G
EB 25 B



EB 35 G
EB 35 B



EB 50 G
EB 50 B



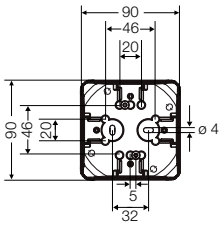
= usable installation space

Empty enclosures in accordance with IEC 62208

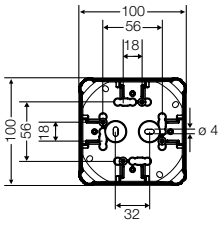
Technical details

Dimensions in mm for enclosure mounting from the back

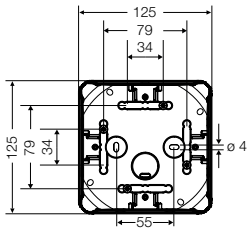
EB 02 G
EB 02 B



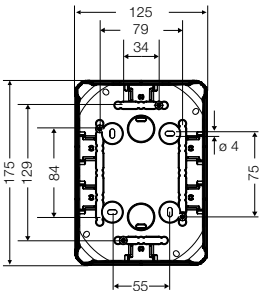
EB 04 G
EB 04 B



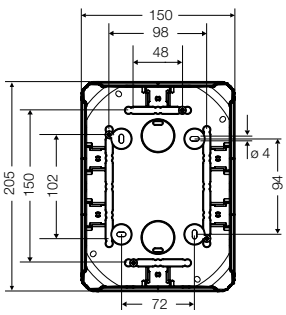
EB 06 G
EB 06 B



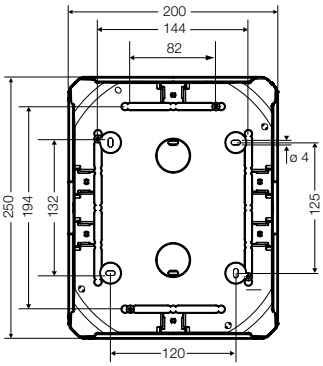
EB 10 G
EB 10 B



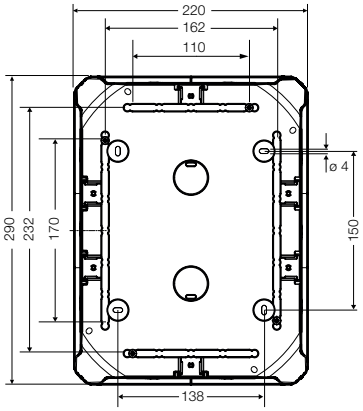
EB 16 G
EB 16 B



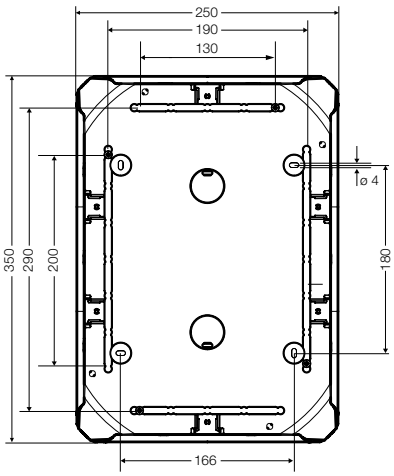
EB 25 G
EB 25 B



EB 35 G
EB 35 B



EB 50 G
EB 50 B

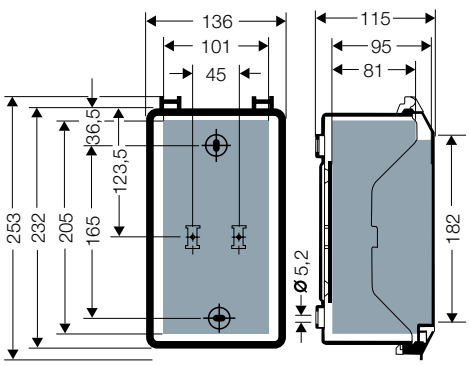


Empty enclosures in accordance with IEC 62208

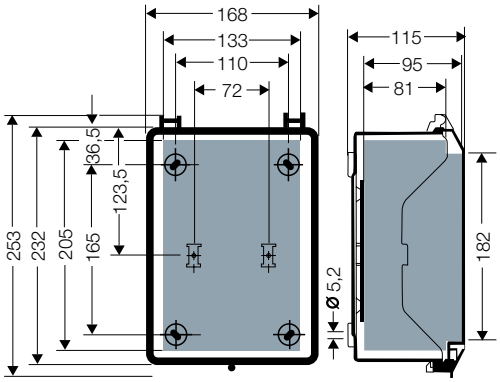
Technical details

Dimensions in mm

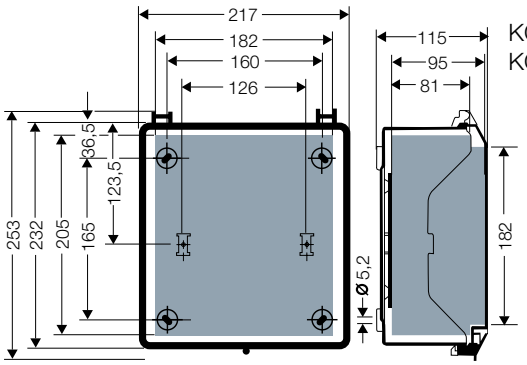
Dimensions of the interior installation depth with installed mounting plates.



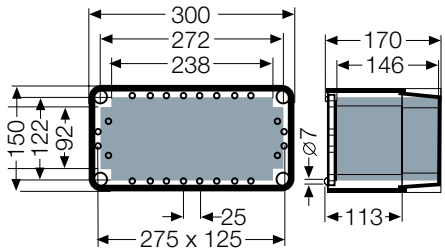
KG 9001
KG 9001 IN



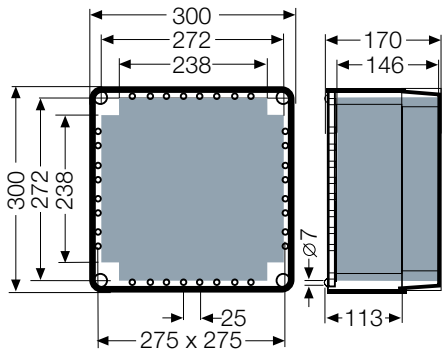
KG 9002
KG 9002 IN



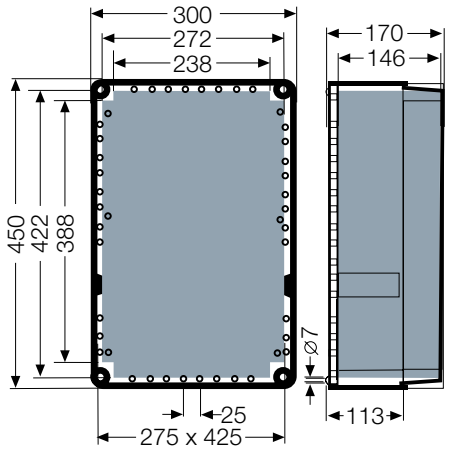
KG 9003
KG 9003 IN



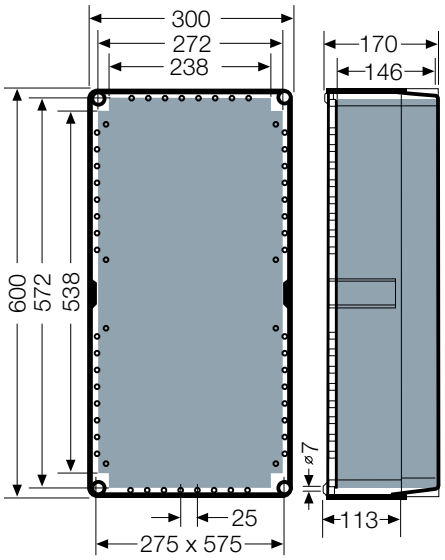
K 0100
K 0101



K 0200
K 0201



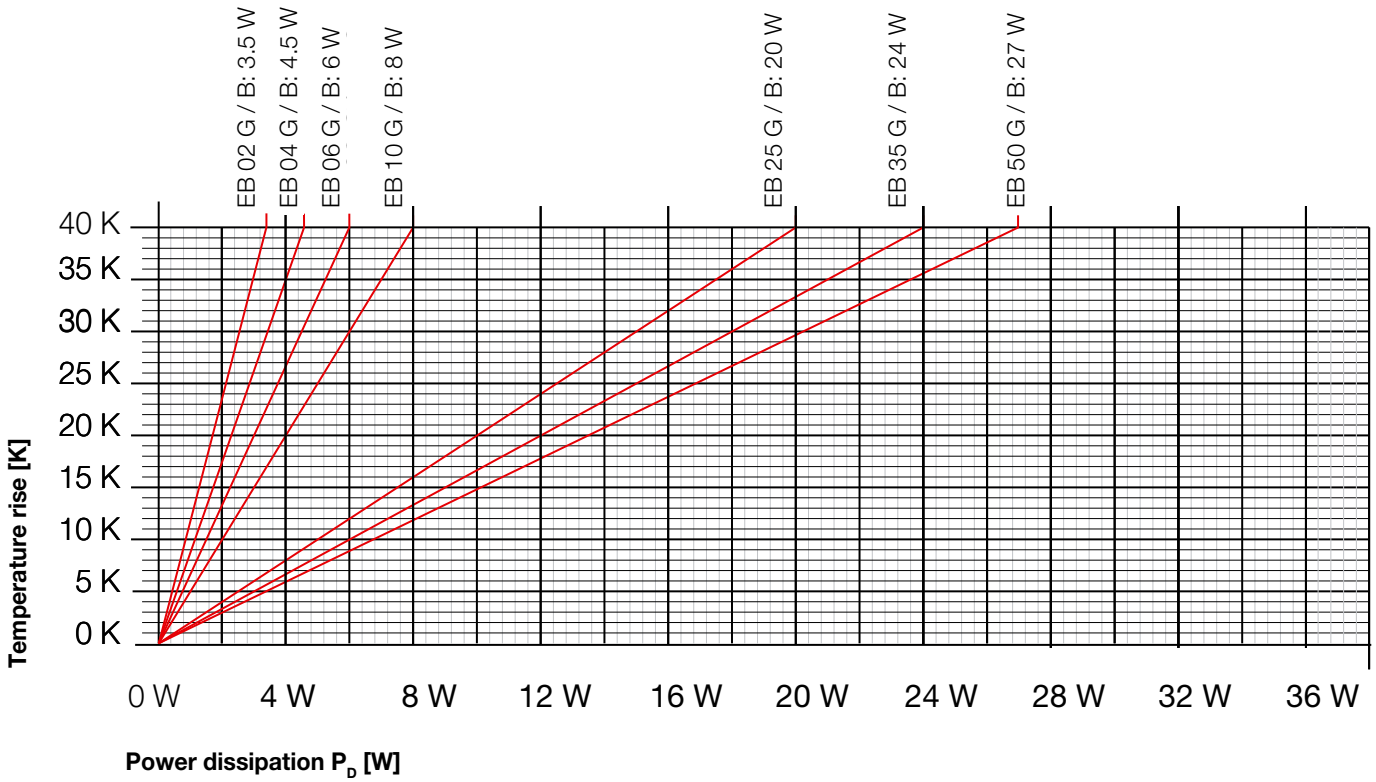
K 0300
K 0301



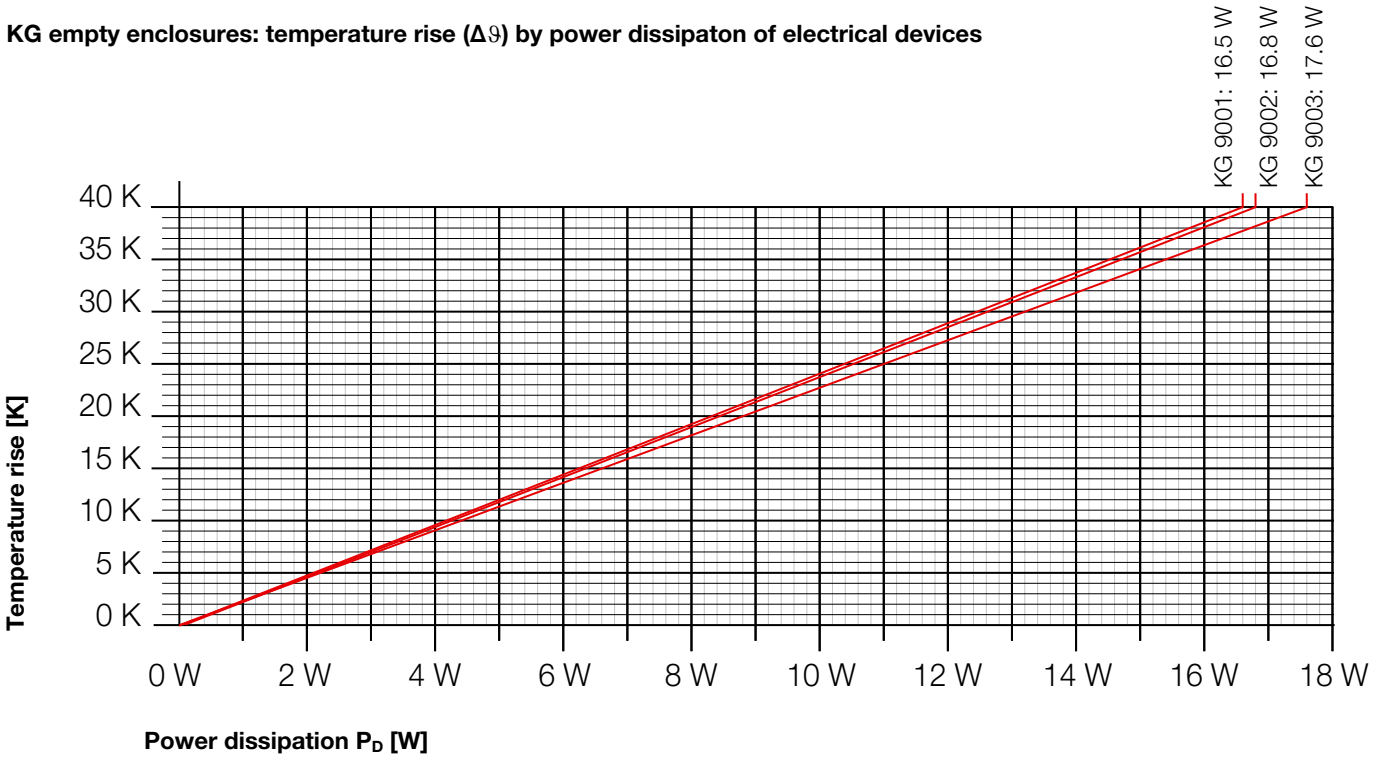
K 0400
K 0401

= usable installation space with mounted cable glands

EB empty enclosures: temperature rise (Δϑ) by power dissipaton of electrical devices



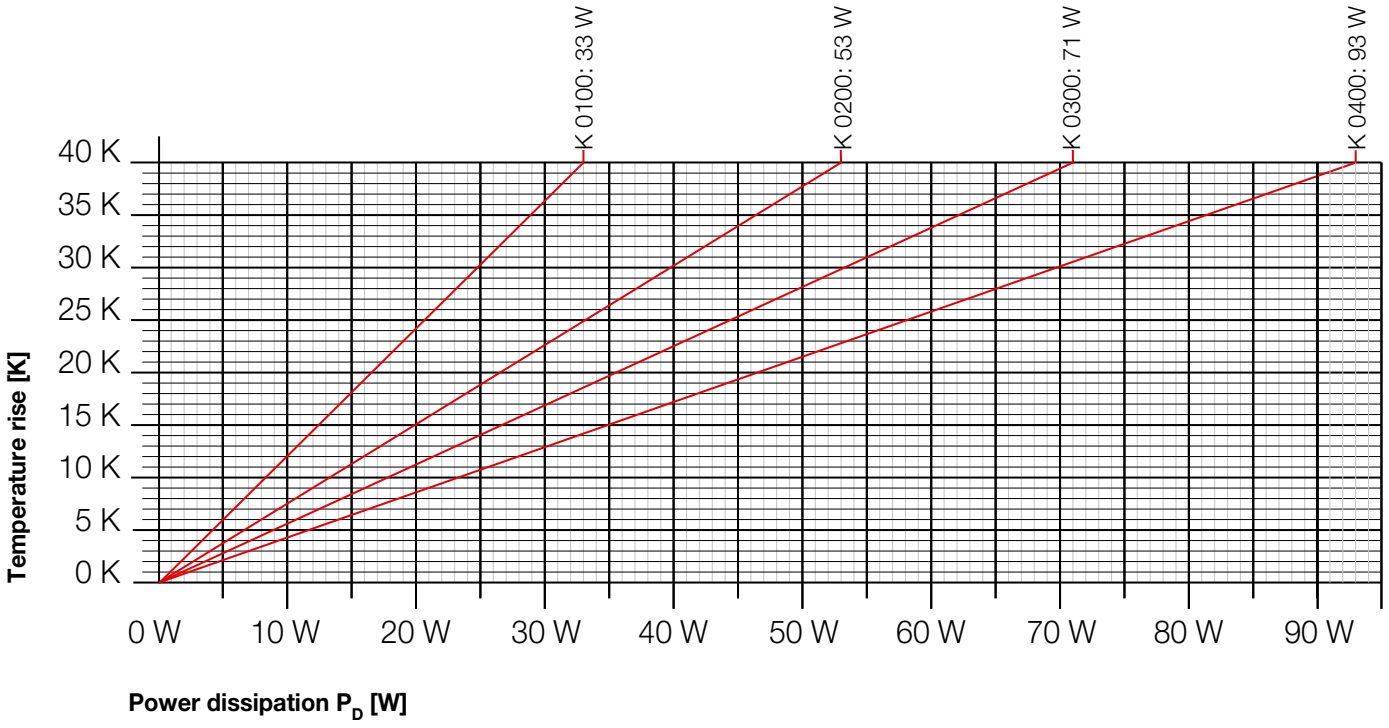
KG empty enclosures: temperature rise (Δϑ) by power dissipaton of electrical devices



Empty enclosures in accordance with IEC 62208

Technical details
Power dissipation

K empty enclosures: temperature rise (Δϑ) by power dissipaton of electrical devices



Empty enclosures in accordance with IEC 62208

Recommendation for outdoor installations, humid and wet areas and locations

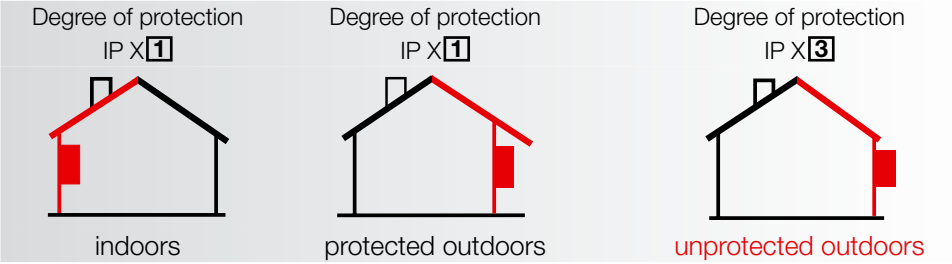
Country-specific requirements have to be observed!

Requirements of German standard DIN VDE 0100 Part 737 for compliance with IP degree of protection

1. Requirement

Protection against ingress of water for all electrical equipment (devices) with the appropriate encapsulation (2nd characteristic numeral)

1.1. Minimum requirement for electrical equipment:



Note for outdoor installation:

„Protected outdoors“

Electrical equipment has to be protected from precipitation (like rain, snow or hail) as well as from direct sunlight.

„Non-protected outdoors“

Electrical equipment can be exposed to precipitation or direct sunlight.

With both assembly sites the climatic effects on the installed equipment must be observed, for example, high or low ambient temperatures or condensation.

1.2. Minimum requirements for electrical equipment, that must withstand higher environmental stresses:

degree of protection IP X 4

with **non-direct** jets of water within occasional cleaning procedures, e.g. agriculture

degree of protection IP X 5

with **non-direct** jets of water within operational cleaning procedures, e.g. carwash

degree of protection IP X 5 and additional consultation with the manufacturer:

with **direct** jets of water within occasional cleaning procedures of enclosures, e.g. butcher's shop

Country-specific requirements have to be observed!

2. Requirement of German Standard DIN VDE 0100 Part 737

4.1 Electrical equipment must be selected taking into account the external influences to which they may be exposed. Proper operation and the effectiveness of the required degrees of protection must be assured.

Note: Data from the manufacturer!

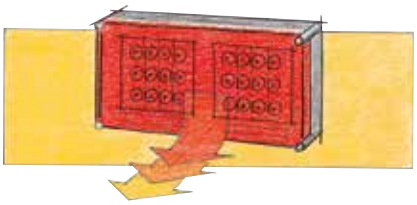
Empty enclosures in accordance with IEC 62208

Formation of condensed water

How does condensed water occur in enclosures with a high degree of protection?

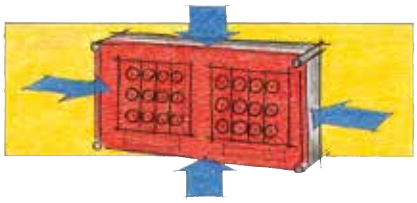
Condensed water only forms in enclosures with a higher degree of protection than IP 54 due to temperature difference from inside to outside. Humidity can not evaporate because of the high degree of protection of the enclosure.

System switched on.



The internal temperature is higher than the external temperature due to the power dissipation of the built-in devices.

System switched on.



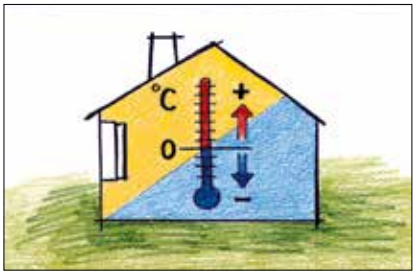
The warm air inside the enclosure attempts to accumulate moisture. This comes from outside through the seal as the enclosures are not gas-tight.

System switched off.

The internal temperature is reduced by cooling down the system e.g. by switching off the loads. The cooler air emits moisture which is collected as condensed water on the cooling inner surfaces.

How does condensed water occur in enclosures with a high degree of protection?

Formation of condensed water for **indoor installations:**



In areas where high levels of air humidity and large temperature fluctuations are expected e.g. in laundry rooms, kitchens., car washes etc.

Formation of condensed water in **protected outdoor installations** (protected against weather influences) **or unprotected outdoor** installations:

Here condensed water can be formed dependent on the weather, high air humidity, direct sunlight and temperature differences compared to the wall.

Empty enclosures in accordance with IEC 62208

Application examples

Empty enclosures in accordance with IEC 62208

Application examples

Empty enclosures in accordance with IEC 62208
Material properties

Products	Material used	Glow wire test IEC 60695-2-11	UL Subject 94	Temperature resistance	Chemical resistance [1]					
					Acid 10 %	lye 10 %	Alcohol	Petrol (MAK) 2)	Benzene (MAK) 2)	Mineral oil
EB ... bottom parts **K ... bottom parts**	PC (Polycarbonate) with GFS	960 °C	V-0	-40 °C / +120 °C	+	+	0	+	—	+
K ... lids **KG ... hinged lids**	PC (Polycarbonate)	960 °C	V-2	-40 °C / +120 °C	+	+	0	+	—	+
KG ...	PS (Polystyrene)	750 °C	V-2	-40 °C / +70 °C	+	+	+	—	—	0
Sealing **EB 02.. / EB 04.. / EB 06.. / EB 10.. / EB 16..** **KG ...** **ESM ..**	TPE (Evoprene)	750 °C	—	-25 °C / +100 °C	+	+	+	0	0	0
Sealing **EB 25.. / EB 35.. / EB 50../ K ...**	PUR (Polyurethane)	—	—	-25 °C / +80 °C	0	+	0	0	—	+
AKM .. / ASS .. / BM ...	PA (Polyamide)	960 °C	V-0	-40 °C / +100 °C	+	0	+	+	+	+
KBM .. / KBS ..	PA (Polyamide)	960 °C	V-2	-40 °C / +100 °C	+	0	+	+	+	+
Sealing **AKM .. / AKS .. /**	CR/NBR (Polychloroprene - nitrile rubber)	—	—	-20 °C / +100 °C	+	+	+	0	—	0
Sealing - inner part **ASS ..**	TPE (Evoprene)	—	—	-30 °C / +100 °C	+	—	+	—	—	—
Sealing - outer part **ASS ..**	CR (Chloroprene rubber)	—	—	-30 °C / +100 °C	+	+	+	0	—	0
Sealing **KBM .. / KBS ..**	EPDM (Ethylene propylene diene monomer rubber)	—	—	-40 °C / +130 °C	+	+	+	—	—	—

(+ = resistance; 0 = partially resistance; — = not resistant)

1) The specifications on chemical resistance are a general guide. In individual cases it may be necessary to check resistance in combination with other chemicals and ambient conditions (temperature. concentration. etc.)
2) (MAK) - Maximum allowable concentration (work place)

Notes

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