

An aerial photograph of an offshore oil rig platform in the ocean. The platform is a complex structure with multiple levels, yellow railings, and a red and yellow helipad on top. It is supported by several large, dark legs. The water is a deep blue with some white foam around the base of the rig.

Ex-Control units and control stations





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4 Material selection

At the heart of every electrical system is the control station. Even under the most adverse conditions, CEAG control stations can be used and operated reliably. The enclosures consist of impact-resistant thermoplastic, glass-fibre-reinforced polyester, light alloy or stainless steel. The robust materials, thermoplastic and polyester, fulfil the specification for surface resistance $< 10^9 \Omega$ required by EN 60079. The well-tried enclosure materials have proven their high resistance to chemicals in indoor and outdoor installations – especially in the chemical and off-shore industries. All metal parts are made of stainless steel.



Combination of moulded plastic enclosures

The modular design of the GHG 44x control-station series lets you combine distribution modules with screwless snap-on mounting logically and at low cost. Standard sizes enable enclosure mounting via flanged joints. The screwless snap-on mounting system also allows the attachment of plastic or brass flanges on the enclosures. This mounting technique also lets you quickly and easily retrofit cable entries on the flanges. System modifications and extensions can thus be implemented in short time and with little effort.



Panel mounting

CEAG control and indicating elements can be integrated in panels with a wall thickness of up to 5 mm. The CEAG components for panel mounting, such as signal lamps, pushbuttons and switches, can be instantly plugged into the control and indicating elements on the panel via a bayonet-ring fitting. The single-wire installation is clear and simple. All panel-mounted apparatus can be retrofitted for cable connection



with a slip-on strain relief and protective cap and is then completely certified. Planning and procurement of panel-mounted apparatus with different cable lengths is a thing of the past.

Installation technology

CEAG control stations have a well thought out design concept. The flameproof built-in components, such as signal lamps, pushbuttons and switches, are snap-on mounted to a rail moulded in the enclosure. They can be snapped out of the enclosure to facilitate cable-entry feeding. Notches in the mounting rails define the position of the built-in components and prevent them from being twisted out of place. Low-cut side walls allow a quick and optimised cable connection. CEAG control stations feature standard M25 moulded-plastic cable entries with an 8 to 17 mm clamping diameter. Alternatively, metal screws and flanges can be used for mounting. The metal flanges enable external earthing. The CEAG control stations are installed using pre-wired connection terminals. The wired built-in components are snap-on mounted on a stainless-steel fold-out mounting frame. To connect the control and indicating elements, the mounting frame is folded out, the cables are quickly and easily fed into enclosure and attached logically to the terminals.

4.1

GHG 273 Ex-Installation Switch 16 A

250 V for Zone 1, 2, 21 and 22

4

The explosion-protected installation switches are for use in the Zones 1, 2, 21 and 22. The materials used have proved to be safe and reliable for both indoor and outdoor installations, in particular in chemical and offshore plants. The robust housings are made of a modified polyamide material.

The large actuator surface of the installation switch allows perfect operation, even when wearing working gloves. A protective collar prevents inadvertent operation. The tog-

gle has a luminescent label which is in accordance with §7 of the Workshop Regulations and is also free from radioactive additives. Due to the external fixing facility, the switch can be installed easily while the cover is closed. Cable entry from the top is made possible by turning the base. In special cases a through wiring is possible as one can see on the illustration opposite.



Features

- Large toggle also for working gloves
- Safety standard IP66
- Cable entry from the top or bottom
- Connecting terminals easily accessible



Switch/Pushbutton

Technical data

Ex-installation switch and Ex-pushbuttons

Marking accd. to 2014/34/EU	Ⓔ II 2 G Ex de IIC T6 / Ⓔ II 2 D Ex tD A21 IP66 T80 °C
EC-Type Examination Certificate	PTB 98 ATEX 3121
IECEX Certificate of Conformity	IECEX BK1 07.0036
Marking accd. to IECEx	Ex ed IIC T6 Ex tD A21 IP66 T67 °C
Permissible ambient temperature	-20 °C up to +40 °C -55 °C up to +55 °C (option)
Rated voltage	250 V, 50 - 60 Hz
Rated current	16 A
Connecting terminals	Switch terminals: 2 x 2.5 mm ² / PE-terminals: 4 x 2.5 mm ²
Degree of protection accd. to EN 60529	IP66
Cable glands ¹⁾	Ex e cable glands max. 2 x M25; 2 x M20 thread
Weight	0.32 kg
Enclosure material	Polyamide

Ordering details

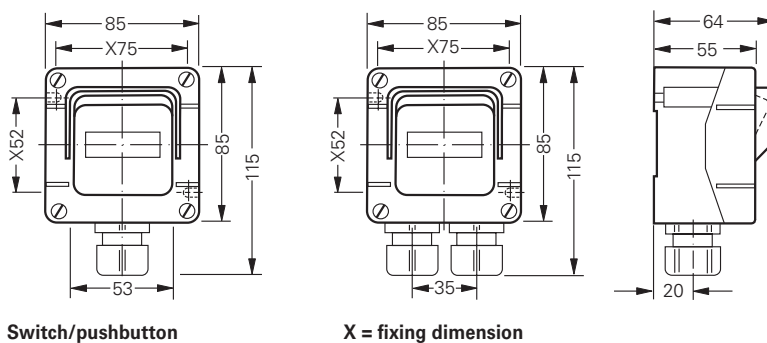
Type	Circuit	Cable glands ¹⁾	Order No.
ON-OFF switch 2-pole -55 °C up to +55 °C		1 x M25	GHG 273 2000 R0017
		2 x M25	GHG 273 2000 R0018
		2 x M20 ²⁾	GHG 273 2000 R0003
		1 x M25	GHG 273 2000 R0022
Change-over switch -55 °C up to +55 °C		1 x M25	GHG 273 6000 R0011
		2 x M20 ²⁾	GHG 273 6000 R0003
		2 x M25	GHG 273 6000 R0014
Pushbutton -55 °C up to +55 °C		1 x M25	GHG 273 4000 R0004
		2 x M25	GHG 273 4000 R0007
		1 x M25	GHG 273 4000 R0010

¹⁾ Base enclosure can be rotated after wards (entry from top or down)

²⁾ Threaded only

Other versions available on request

Dimension drawing



Switch/pushbutton

X = fixing dimension

Dimensions in mm

4.2

GHG 41 Control Stations 16 A

Moulded plastic for Zone 1, 2, 21 and 22

4 Reliable control of processes

Even under the most adverse conditions, CEAG control stations can be used and operated reliably. The enclosures consist of low-temperature impact-resistant thermoplastic which fulfils the requirements of EN 60079 and provides a high resistance to chemicals. The well thought out design with low side walls allows optimum cable connection.

Modular design

Quick fixing allows up to three CEAG built-in components, such as signal lamps, pushbuttons and switches, to be snapped on a rail in the enclosure. They can be snapped out of the enclosure to facilitate cable-entry feeding. Notches in the mounting rails prevent the built-in components from being twisted out of place.

Easy to install

Wall mounting can be carried out via easily accessible fixing apertures when the enclosure cover is sealed. CEAG mounting plates offer a time-saving fixing technique. CEAG control stations feature standard M25 moulded-plastic cable entries with an 10 to 17.5 mm clamping diameter. Coupling pieces link enclosures to each other and prevent them from being twisted out of place. Alternatively, metal screws and flanges can be used for mounting – the metal flanges also enable external earthing.

Free mounting areas can be provided for retrofitting certified CEAG components. These are then factory sealed with blanking elements



Features

- Flat side walls
- Quick fixing of all built-in components
- High chemical resistance
- Different enclosures can be combined



Technical data

Ex-control stations Type 411 81 | Type 411 82 | Type 411 83

Marking accd. to 2014/34/EU	Ⓢ II 2 G Ex ed ib m IIC T6 Ⓢ II 2 D Ex tD A21 IP66 T80 °C	
EC-Type Examination Certificate	PTB 00 ATEX 3117	
IECEX Certificate of Conformity	IECEX BK1 04.0003	
Marking accd. to IECEx	Ex e II T6, Ex e ib IIC T6, Ex ed IIC T6 or Ex ed ib IIC T6	
Permissible ambient temperature	-20 °C up to +40 °C -55 °C up to +55 °C (option)	
Rated voltage	690 V AC	
Rated current	16 A	
Rated making-/rated breaking capacity accd. EN 60947-5-1	Ex41 AC-15: U _e 250 V / I _e 6 A U _e 500 V / I _e 4 A DC-13: U _e 24 V / I _e 6 A U _e 110 V / I _e 0.5 A	Ex23 AC-15: U _e 230 V / I _e 6 A U _e 500 V / I _e 4 A DC-13: U _e 24 V / I _e 2 A U _e 230 V / I _e 0.5 A
Connecting terminals	2 x 2.5 mm ²	
Protection class	I	
Degree of protection accd. to EN 60529	IP66 (standard)	
Cable glands/Gland plates/Enclosure drilling	1 x M25 cable gland or 1 x M20 thread with brass flange	
Enclosure material	Polyamide	
Enclosure colour	black	

Type 411 81

Dimensions (L x W x H)	85 x 85 x 77.5 mm
Weight (empty)	0.25 kg

Type 411 82

Dimensions (L x W x H)	125 x 85 x 77.5 mm
Weight (empty)	0.35 kg

Type 411 83

Dimensions (L x W x H)	165 x 85 x 77.5 mm
Weight (empty)	0.45 kg

Type 411 82 with measuring instrument AM 72

Movement	Moving iron	Moving coil
Marking accd. to 2014/34/EU	Ⓢ II G Ex e II	Ⓢ II G Ex ib IIC
Accuracy	Class 2.5	Class 1.5
Overload range	10-fold -25 sec. 25-fold - 4 sec. 50-fold - 1 sec.	10-fold -5 sec.
Measuring range	n / 1A 0 - 25 A direct	0 - 20 mA 4 - 20 mA
Inductance Li	-	≤ 0.1 mH
Capacitance Ci	-	≤ 0.1 nF
Open circuit voltage max. Ui	-	30 V
Short circuit current max. Ii	-	150 mA
Connecting terminals	2 x 1.5 - 4 mm ²	
Weight	0.70 kg	

¹⁾ Base enclosure can be rotated after wards (entry from top or down)
Other versions available on request

Ex-moulded plastic control stations GHG 411



Type 411 81...01



Type 411 81...12



Type 411 81...18



Type 411 81...04

4 Ordering details Type 411 81 with 1 built-in component

Content	Built-in components	Weight approx.	Order No.
	1 x pushbutton DRT 1 NO + 1 NC label: "0, I, START, STOP"	0.40 kg	GHG 411 8100 R0001
	1 x mushroom-head pushbutton SGTE 1 NO + 1 NC "Emergency stop"	0.45 kg	GHG 411 8100 R0002
	1 x mushroom-head pushbutton SGTE 1 NO + 1 NC "Emergency stop" with key unlocking	0.50 kg	GHG 411 8100 R0012
	1 x double pushbutton DDT 1 NO + 1 NC label: "0, I, START, STOP"	0.45 kg	GHG 411 8100 R0009
	1 x key-operated switch SLS 2 NO SW 5 "engaging-engaging-engaging" label: "I 0 II"	0.52 kg	GHG 411 8100 R0018
	1 x control switch SCT 1 change-over SW 6 "engaging-engaging" label: HAND – AUTO	0.45 kg	GHG 411 8100 R0003
	label: "0 – I"	0.45 kg	GHG 411 8100 R0004
	label: "I – II"	0.45 kg	GHG 411 8100 R0005
	1 x control switch SCT 2 NO SW 5 "engaging-engaging-engaging" label: HAND – 0 – AUTO	0.45 kg	GHG 411 8100 R0006
	label: "I 0 II"	0.45 kg	GHG 411 8100 R0007
	label: "Local Remote Auto"	0.45 kg	GHG 411 8100 R0008



Type 411 82...18



Type 411 82...17



Type 411 82...03



Type 411 82...01

Ordering details Type 411 82 with 2 built-in components

Content	Built-in components	Weight approx.	Order No.
	2 x pushbutton DRT 1 NO + 1 NC each label: "0, I, START, STOP"	0.54 kg	GHG 411 8200 R0001
X1—⊗—X2 	1 x signal lamp SIL 20-250 V AC/DC coloured lens cover: „white, red, green, yellow“ 1 x double pushbutton DDT 1 NO + 1 NC label: "0, I, START, STOP"	0.65 kg	GHG 411 8200 R0003
	1 x double pushbutton DDT 1 NO + 1 NC label: "0, I, START, STOP" 1 x mushroom-head pushbutton SGT 1 NO + 1 NC "emergency stop"	0.57 kg	GHG 411 8200 R0016
	1 x control switch SCT 1 change-over SW 6 "engaging-engaging" label: "0 - I" 1 x mushroom-head pushbutton SGTE 1 NO + 1 NC "emergency stop"	0.57 kg	GHG 411 8200 R0017
X1—⊗—X2 	1 x signal lamp SIL 20-250 V AC/DC coloured lens cover: „white, red, green, yellow“ 1 x key-operated switch 2 NO SW 5 "engaging-engaging-engaging" label: "I 0 II"	0.65 kg	GHG 411 8200 R0018

Ex-moulded plastic control stations GHG 411



Type 411 83...01



Type 411 83...03



Type 411 83...23



Type 411 83...04

4 Ordering details Type 411 83 with 3 built-in components

Content	Built-in components	Weight approx.	Order No.
<p>X1—⊗—X2</p>	<p>1 x signal lamp SIL 20-250 V AC/DC coloured lens cover: „white, red, green, yellow“ 2 x pushbutton DRT 1 NO + 1 NC each label: “0, I, START, STOP”</p>	0.76 kg	GHG 411 8300 R0001
<p>X1—⊗—X2</p>	<p>1 x signal lamp SIL 20-250 V AC/DC coloured lens cover: „white, red, green, yellow“ 1 x double pushbutton DDT 1 NO + 1 NC label: “0, I, START, STOP” 1 x mushroom-head pushbutton SGTE 1 NO + 1 NC “emergency stop”</p>	0.80 kg	GHG 411 8300 R0003
<p>1—⊗—2</p>	<p>1 x measuring instrument AM72 CT connection n/1A Scale 0 –100%/150% 1 x control switch SCT 1 NO + 1 NC SW 8 “engaging-engaging-spring return” label: “0 – I”</p>	0.92 kg	GHG 411 8300 R0023
<p>X1—⊗—X2</p>	<p>1 x signal lamp SIL 20-250 V AC/DC coloured lens cover: „white, red, green, yellow“ 1 x double pushbutton DDT 1 NO + 1 NC label: “0, I, START, STOP” 1 x control switch SCT 1 change-over SW 6 “engaging-engaging” label: “HAND - AUTO”</p>	0.80 kg	GHG 411 8300 R0004



Measuring instrument AM72

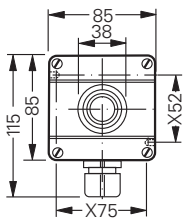
Ordering details measuring instrument AM72, Type 411 82

Content	Movement	Weight	Order No.
Version direct measurement with 1 x entry and cable gland M25			
0 - 1 / 1.5 A	Moving iron	0.70 kg	GHG 411 8281 R0002
0 - 2.5 / 3.75 A	Moving iron	0.70 kg	GHG 411 8281 R0003
0 - 5 / 7.5 A	Moving iron	0.70 kg	GHG 411 8281 R0004
0 - 10 / 15 A	Moving iron	0.70 kg	GHG 411 8281 R0005
0 - 16 / 24 A	Moving iron	0.70 kg	GHG 411 8281 R0007
0 - 20 / 24 mA 0-100% / 120% (Ri =320 Ω)	Moving coil	0.80 kg	GHG 411 8285 R0033
4 - 20 / 24 mA 0-100% / 120% (Ri =320 Ω)	Moving coil	0.80 kg	GHG 411 8286 R0035

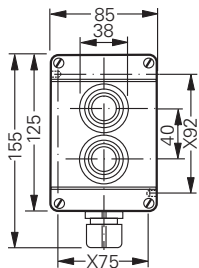
Version CT connection n/1A with 1 x entry and cable gland M25

0 - 1 / 1.5 A	Moving iron	0.70 kg	GHG 411 8282 R0002
0 - 2.5 / 3.75 A	Moving iron	0.70 kg	GHG 411 8282 R0003
0 - 5 / 7.5 A	Moving iron	0.70 kg	GHG 411 8282 R0004
0 - 10 / 15 A	Moving iron	0.70 kg	GHG 411 8282 R0005
0 - 15 / 22.5 A	Moving iron	0.70 kg	GHG 411 8282 R0007
0 - 20 / 30 A	Moving iron	0.70 kg	GHG 411 8282 R0008
0 - 30 / 45 A	Moving iron	0.70 kg	GHG 411 8282 R0009
0 - 40 / 60 A	Moving iron	0.70 kg	GHG 411 8282 R0010
0 - 50 / 75 A	Moving iron	0.70 kg	GHG 411 8282 R0011
0 - 60 / 90 A	Moving iron	0.70 kg	GHG 411 8282 R0012
0 - 75 / 112.5 A	Moving iron	0.70 kg	GHG 411 8282 R0013
0 - 100 / 150 A	Moving iron	0.70 kg	GHG 411 8282 R0014
0 - 100% / 150%	Moving iron	0.70 kg	GHG 411 8282 R0001

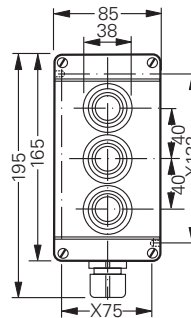
Dimension drawing



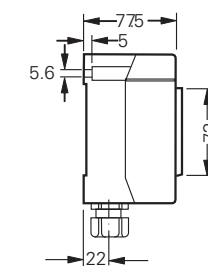
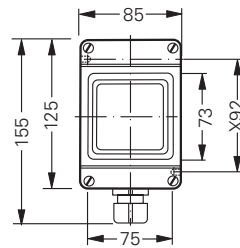
Type 411 81



Type 411 82



Type 411 83



Measuring instrument AM 72

X = fixing dimension

Accessories for Ex-control stations

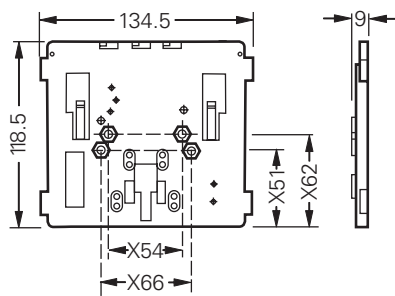


4 Accessories

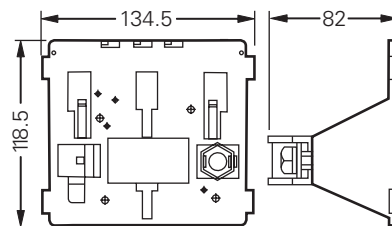
Type	Application	Fixing method	OU	Order No.
Mounting plate for type 411 81				
Size 1	Wall mounting	screwless mounting	1	GHG 610 1953 R0101
Size 1	Pipe clamp	screwless mounting	1	GHG 610 1953 R0102
Size 1	Trellis-work mounting	screwless mounting	1	GHG 610 1953 R0103
Size 4	Wall mounting	snap-on ¹⁾	1	GHG 610 1953 R0126
Size 4	Trellis-work mounting	snap-on ¹⁾	1	GHG 610 1953 R0126
Size 4	Pipe clamp	snap-on ¹⁾	1	GHG 610 1953 R0130
Mounting plate for type 411 82 and 411 83				
Size 2	Wall mounting	screwless mounting	1	GHG 610 1953 R0104
Size 2	Pipe clamp	screwless mounting	1	GHG 610 1953 R0105
Size 2	Trellis-work mounting	screwless mounting	1	GHG 610 1953 R0106
Size 4	Wall mounting	snap-on ¹⁾	1	GHG 610 1953 R0126
Size 4	Trellis-work mounting	snap-on ¹⁾	1	GHG 610 1953 R0126
Size 4	Pipe clamp	snap-on ¹⁾	1	GHG 610 1953 R0130
Plug-in fastener for CEAG modules with 5.5 mm and 11 mm mounting size per 4 pieces			10	GHG 610 1953 R0041

¹⁾ snap-on with snap-on mounting 5.5 mm

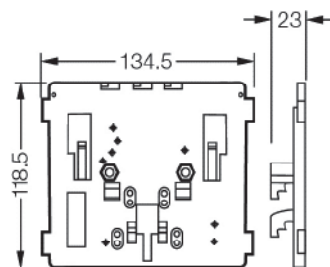
Dimension drawing



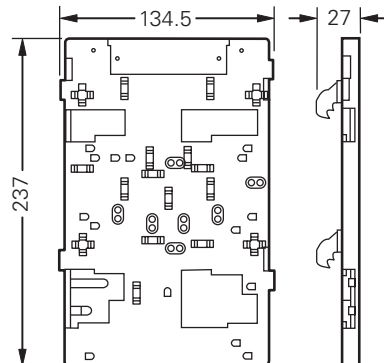
Size 1 wall mounting



Size 1 pipe mounting



Size 1 trellis-work mounting



Size 4 wall mounting

X = fixing dimension

Dimensions in mm



Type 434...



Type 432...

Technical data

Ex-control stations Type 432 I Type 434

Marking accd. to 2014/34/EU	Ⓢ II 2 G Ex ed ib m IIC T6 Ⓢ II 2 D Ex tD A21 IP66 T80 °C	
EC-Type Examination Certificate	PTB 00 ATEX 3117	
IECEX Certificate of Conformity	IECEX BK1 04.0003	
Marking accd. to IECEx	Ex e II T6, Ex e ib IIC T6, Ex ed IIC T6 or Ex ed ib IIC T6	
Permissible ambient temperature	-20 °C up to +40 °C -55 °C up to +55 °C (option)	
Rated voltage	690 V AC (with control switch GHG 23 up to 500 V)	
Rated current	16 A (with control switch GHG 23 max. 10 A)	
Rated making-/rated breaking capacity accd. EN 60947-5-1	Ex41 AC-15: U_g 250 V / I_g 6 A U_g 500 V / I_g 4 A DC-13: U_g 24 V / I_g 6 A U_g 110 V / I_g 0.5 A	Ex23 AC-15: U_g 230 V / I_g 6 A U_g 500 V / I_g 4 A DC-13: U_g 24 V / I_g 2 A U_g 230 V / I_g 0.5 A
Connecting terminals	2 x 4 mm ²	
Protection class	I	
Degree of protection accd. to EN 60529	IP66	
Cable glands/Gland plates/Enclosure drilling	2 x M25 cable gland incl. 1 blanking plug or optional 2 x M20 thread with internal brass plate	
Enclosure material	Polyamide	
Enclosure colour	black	

Type 432

Dimensions (L x W x H)	156 x 100 x 90 mm
Weight (empty)	0.47 kg

Type 434

Dimensions (L x W x H)	245 x 100 x 90 mm
Weight (empty)	0.70 kg

Type 434 with measuring instrument AM 72

Movement	Moving iron	Moving coil
Marking accd. to 2014/34/EU	Ⓢ II G Ex e II	Ⓢ II G Ex ib IIC
Accuracy	Class 2.5	Class 1.5
Overload range	10-fold -25 sec. 25-fold - 4 sec. 50-fold - 1 sec. indicated 1:1.5, optional 1:6, 1:10	10-fold -5 sec.
Measuring range	n / 1A 0 - 25 A direct	0 - 20 mA 4 - 20 mA
Inductance L_i	-	≤ 0.1 mH
Capacitance C_i	-	≤ 0.1 nF
Open circuit voltage max. U_i	-	30 V
Short circuit current max. I_i	-	150 mA
Connecting terminals	2 x 1.5 - 4 mm ²	
Weight	1.25 kg	

¹⁾ Base enclosure can be rotated after wards (entry from top or down)

Other versions available on request

Ex-moulded plastic control stations GHG 432



Type 432...01



Type 432...02



Type 432...03



Type 432...05

4 Ordering details Type 432 with 2 built-in components

Content	Built-in components	Weight approx.	Order No.
	2 x pushbutton DRT 1 NO + 1 NC each label: "0, I, START, STOP"	0.85 kg	GHG 432 0011 R0001
X1 — — X2	1 x signal lamp SIL 20-250 V AC/DC coloured lens cover: „white, red, green, yellow“ 1 x double pushbutton DDT 1 NO + 1 NC label: "0, I, START, STOP"	0.90 kg	GHG 432 0011 R0002
	1 x double pushbutton DDT 1 NO + 1 NC label: "0, I, START, STOP"	0.85 kg	GHG 432 0011 R0003
	1 x mushroom-head pushbutton SGTE 1 NO + 1 NC "emergency stop"	0.85 kg	GHG 432 0011 R0003
1 — — 2	1 x measuring instrument AM45 CT connection n/1A Scale 0 – 100%/150% 1 x double pushbutton DDT 2 NC + 1 NO label: "0, I, START, STOP"	0.95 kg	GHG 432 0011 R0005



Type 432...17



Type 432...05



Type 432...03

Ordering details Type 432 with 1 control switch GHG 23

Content	Built-in components	Weight approx.	Order No.
	1 x control switch GHG 23 1 change-over SW 6 "engaging-engaging" label: "HAND - AUTO" label: "0 - I"	0.70 kg 0.70 kg	GHG 432 0001 R0003 GHG 432 0001 R0004
	1 x control switch GHG 23 2 NO SW 5 "engaging-engaging-engaging" label: "HAND 0 AUTO" label: "I 0 II"	0.70 kg 0.70 kg	GHG 432 0001 R0005 GHG 432 0001 R0006
	1 x control switch GHG 23 1 NO + 1 NC SW 8 "engaging-engaging-spring return" label: "0 - I" label: "AUS-Betrieb-EIN" label: "0 IN START"	0.70 kg 0.70 kg 0.70 kg	GHG 432 0001 R0012 GHG 432 0001 R0013 GHG 432 0001 R0014
	1 x control switch GHG 23 2 C/O SW 6 "engaging-engaging" label: "I - II" label: "HAND - AUTO"	0.70 kg 0.70 kg	GHG 432 0001 R0015 GHG 432 0001 R0016
	1 x control switch GHG 23 2 NO + 1 NC SW 5 "engaging-engaging-engaging" label: "I II III"	0.86 kg	GHG 432 0001 R0017
	1 x control switch GHG 23 2 NO + 1 NC SW 8 "engaging-engaging-spring return" label: "0 - I" label: "AUS-Betrieb-EIN" label: "0 IN START"	0.86 kg 0.86 kg 0.86 kg	GHG 432 0001 R0018 GHG 432 0001 R0019 GHG 432 0001 R0020

Ex-moulded plastic control stations GHG 432



Type 432...10



Type 432...09


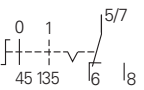

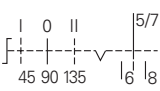

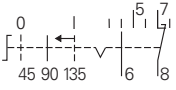


Type 432...08



Type 432...06

4 Ordering details Type 432 with 2 built-in components

Content	Built-in components	Weight approx.	Order No.
1  2 	1 x measuring instrument AM45 CT connection n/1A Scale 0 – 100%/150% 1 x control switch GHG 23 1 change-over SW 6 "spring return-engaging" label: "0 – I"	1.35 kg	GHG 432 0011 R0006
1  2 	1 x measuring instrument AM45 CT connection n/1A Scale 0 – 100%/150% 1 x control switch GHG 23 2 NO SW 5 "engaging-engaging-engaging" label: "I 0 II"	1.35 kg	GHG 432 0011 R0008
1  2 	1 x measuring instrument AM45 CT connection n/1A Scale 0 – 100%/150% 1 x control switch GHG 23 1 NO + 1 NC SW 8 "engaging-engaging-spring return" label: "0 – I"	1.35 kg	GHG 432 0011 R0009



Type 434...11



Type 434...10



Type 434...02

Ordering details Type 434 with 4 built-in components

Content	Built-in components	Weight approx.	Order No.
1 — — 2 	1 x measuring instrument AM72 CT connection n/1A Scale 0 –100%/150% 1 x double pushbutton DDT 1 NO + 1 NC label: "0, I, START, STOP" 1 x mushroom-head pushbutton SGT 1 NO + 1 NC "emergency stop"	1.40 kg	GHG 434 0111 R0002
1 — — 2 	1 x measuring instrument AM72 CT connection n/1A Scale 0 –100%/150% 1 x mushroom-head pushbutton SGTE 1 NO + 1 NC "emergency stop" 1 x control switch GHG 23 1 change-over SW 6 "engaging-engaging" label: "0 – I"	1.55 kg	GHG 434 0111 R0010
1 — — 2 	1 x measuring instrument AM72 CT connection n/1A Scale 0 –100%/150% 1 x mushroom-head pushbutton SGTE 1 NO + 1 NC "emergency stop" 1 x control switch GHG 23 1 NO + 1 NC SW 8 "engaging-engaging-spring return" label: "0 – I"	1.55 kg	GHG 434 0111 R0011

Ex-moulded plastic control stations GHG 434



Type 434...04



Type 434...05



Type 434...09

4 Ordering details Type 434 with 4 built-in components

Content	Built-in components	Weight approx.	Order No.
<p>X1—⊗—X2</p>	<p>1 x signal lamp SIL 20-250 V AC/DC coloured lens cover: „white, red, green, yellow“ 2 x pushbutton DRT 1 NO + 1 NC label: “O, I, START, STOP” 1 x mushroom-head pushbutton SGTE 1 NO + 1 NC “emergency stop”</p>	1.45 kg	GHG 434 1111 R0004
<p>X1—⊗—X2</p>	<p>2 x signal lamp SIL 20-250 V AC/DC coloured lens cover: „white, red, green, yellow“ 2 x double pushbutton DDT 1 NO + 1 NC label: “O, I, START, STOP”</p>	1.45 kg	GHG 434 1111 R0005
<p>X1—⊗—X2</p>	<p>1 x signal lamp SIL 20-250 V AC/DC coloured lens cover: „white, red, green, yellow“ 1 x double pushbutton DDT 1 NO + 1 NC label: “O, I, START, STOP” 1 x mushroom-head pushbutton SGTE 1 NO + 1 NC “emergency stop” 1 x key-operated switch 2 NO SW 5 “engaging-engaging-engaging” label: “I 0 II”</p>	1.55 kg	GHG 434 1111 R0009

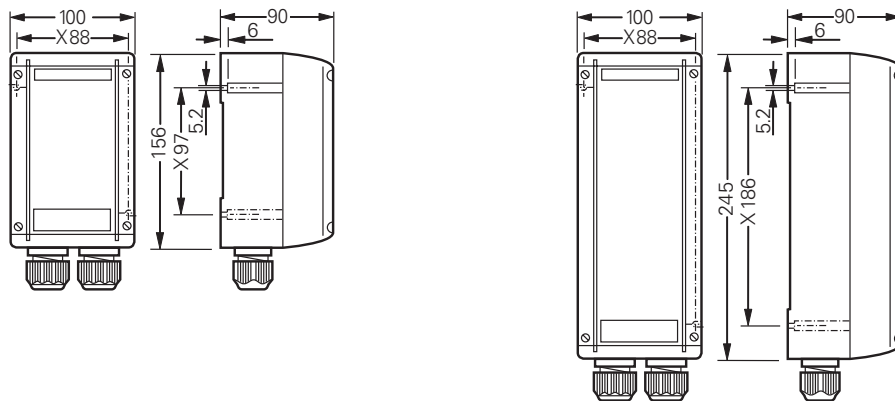


Accessories

Type	Application	Fixing method	OU	Order No.
Mounting plate for type 432				
Size 2	Wall mounting	screwless mounting	1	GHG 610 1953 R0104
Size 2	Pipe clamp	screwless mounting	1	GHG 610 1953 R0105
Size 2	Trellis-work mounting	screwless mounting	1	GHG 610 1953 R0106
Size 5	Wall mounting	snap on *	1	GHG 610 1953 R0128
Size 5	Trellis-work mounting	snap on *	1	GHG 610 1953 R0128
Size 5	Pipe clamp	snap on *	1	GHG 610 1953 R0132
Mounting plate for type 434				
Size 3	Wall mounting	screwless mounting	1	GHG 610 1953 R0118
Size 3	Pipe clamp	screwless mounting	1	GHG 610 1953 R0110
Size 3	Trellis-work mounting	screwless mounting	1	GHG 610 1953 R0118
Size 5	Wall mounting	snap on *	1	GHG 610 1953 R0128
Size 5	Trellis-work mounting	snap on *	1	GHG 610 1953 R0128
Size 5	Pipe clamp	snap on *	1	GHG 610 1953 R0132
Plug-in fastener for CEAG modules with 5.5 mm and 11 mm mounting size per 4 pieces			10	GHG 610 1953 R0041

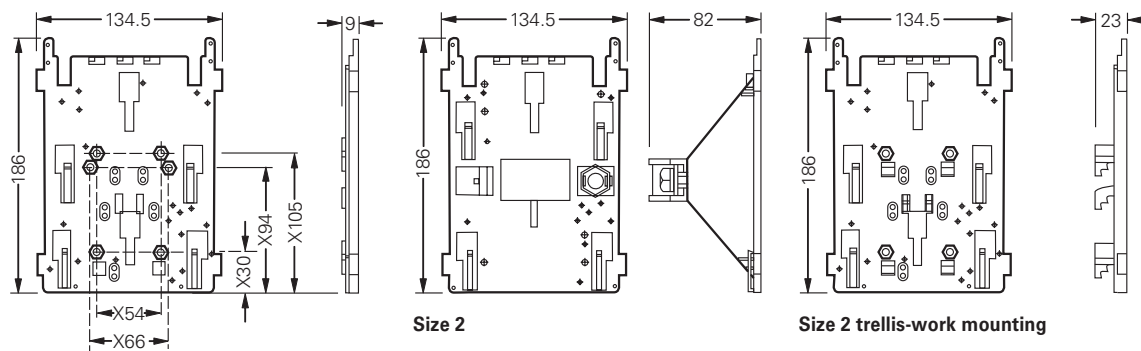
* snap-on with snap-on mounting 5.5 mm

Dimension drawing



Type 432

Type 434



Size 2 wall mounting

Size 2

Size 2 trellis-work mounting

X = fixing dimension

Dimensions in mm

4.3

GHG 413 Control Stations 16 A

Light alloy version for Zone 1, 2, 21 and 22

4

Light-alloy control stations in explosion-protected design are equipped with up to four components. These control stations are made of high-quality cast aluminium-silicon (AlSi). A robust plastic powder coating according to RAL 7031 protects the CEAG control stations against aggressive atmospheres and chemicals. Cover screws as well as all internal and external metal parts are made of stainless steel. CEAG flameproof built-in components, such as signal lamps, pushbuttons and switches, provide snap-on mounting on rails screwed into the enclosures.

To facilitate insertion of cables into the entries, the built-in components can be snapped out of the enclosures. Notches in the mounting rails define the position of the built-in components and prevent them from being twisted out of place.

Free mounting areas can be provided for retrofitting certified CEAG components. These are then factory sealed with blanking elements.



Features

- High mechanical, chemical and thermal resistance
- Individual configuration
- Impact-resistant plastic powder coating



Measuring instrument AM72



Type 413 85



Type 413 84

Technical data

Ex-control stations Type 413 84 | Type 413 85

Marking accd. to 2014/34/EU	Ⓢ II 2 G Ex ed ibm IIC T6 Ⓢ II 2 D Ex tD A21 IP66 T80 °C	
EC-Type Examination Certificate	PTB 00 ATEX 3117	
IECEX Certificate of Conformity	IECEX BK1 04.0003	
Marking accd. to IECEx	Ex e II T6, Ex e ib IIC T6, Ec ed IIC T6 or Ex ed ib IIC T6	
Permissible ambient temperature	-20 °C up to +40 °C -55 °C up to +55 °C (option)	
Rated voltage	690 V AC (with control switch GHG 23 to 500 V)	
Rated current	16 A (with control switch GHG 23 max. 10 A)	
Rated making-/rated breaking capacity accd. EN 60947-5-1	Ex41 AC-15: U_g 250 V / I_g 6 A U_g 500 V / I_g 4 A DC-13: U_g 24 V / I_g 6 A U_g 110 V / I_g 0.8 A	Ex23 AC-15: U_g 230 V / I_g 6 A U_g 500 V / I_g 4 A DC-13: U_g 24 V / I_g 2 A U_g 230 V / I_g 0.5 A
Connecting terminals	2 x 4 mm ²	
Protection class	I	
Degree of protection accd. to EN 60529	IP66	
Cable glands/Gland plates/Enclosure drilling	1 x M20 threaded entry	
Enclosure material	High quality cast aluminium (AlSi)	
Enclosure colour	grey RAL 7031	

Type 413 84

Dimensions (L x W x H)	122 x 120 x 81 mm
Weight (empty)	0.85 kg

Type 413 85

Dimensions (L x W x H)	220 x 120 x 81 mm
Weight (empty)	1.45 kg

Type 413 84 with measuring instrument AM 72

Movement	Moving iron	Moving coil
Marking accd. to 2014/34/EU	Ⓢ II G Ex e II	Ⓢ II G Ex ib IIC
Accuracy	Class 2.5	Class 1.5
Overload range	10-fold -25 sec. 25-fold - 4 sec. 50-fold - 1 sec. indicated 1:1.5, optional 1:6, 1:10	10-fold -5 sec.
Measuring range	n / 1A 0 - 25 A direct	0 - 20 mA 4 - 20 mA
Inductance L_i	–	≤ 0.1 mH
Capacitance C_i	–	≤ 0.1 nF
Open circuit voltage max. U_i	–	30 V
Short circuit current max. I_i	–	150 mA
Connecting terminals	2 x 1.5 - 4 mm ²	
Weight	1.25 kg	

¹⁾ Base enclosure can be rotated after wards (entry from top or down)

Other versions available on request

Ex-light metal control stations GHG 413 84



Type 413 84...01



Type 413 84...02



Type 413 84...03



Type 413 84...04

4 Ordering details Type 413 84 with 2 built-in components

Content	Built-in components	Weight approx.	Order No.
	2 x pushbutton DRT 1 NO + 1 NC each label: "0, I, START, STOP"	1.25 kg	GHG 413 8400 R0001
X1 — — X2 	1 x signal lamp SIL 20-250 V AC/DC coloured lens cover: „white, red, green, yellow“ 1 x double pushbutton DDT 1 NO + 1 NC label: "0, I, START, STOP"	1.30 kg	GHG 413 8400 R0002
	1 x double pushbutton DDT 1 NO + 1 NC label: "0, I, START, STOP" 1 x mushroom-head pushbutton SGTE 1 NO + 1 NC "emergency stop"	1.30 kg	GHG 413 8400 R0003
1 — — 2 	1 x measuring instrument AM45 CT connection n/1A Scale 0 –100%/150% 1 x double pushbutton DDT 1 NO + 1 NC label: "0, I, START, STOP"	1.35 kg	GHG 413 8400 R0004



Type 413 85...03



Type 413 85...02



Type 413 85...01

Ordering details Type 413 85 with 4 built-in components

Content	Built-in components	Weight approx.	Order No.
<p>X1—⊗—X2</p>	<p>1 x signal lamp SIL 20-250 V AC/DC coloured lens cover: „white, red, green, yellow” 2 x pushbutton DRT 1 NO + 1 NC label: “0, I, START, STOP” 1 x mushroom-head pushbutton SGTE 1 NO + 1 NC “emergency stop”</p>	2.10 kg	GHG 413 8500 R0001
<p>X1—⊗—X2</p>	<p>2 x signal lamp SIL 20-250 V AC/DC coloured lens cover: „white, red, green, yellow” 2 x double pushbutton DDT 1 NO + 1 NC label: “0, I, START, STOP”</p>	2.10 kg	GHG 413 8500 R0002
<p>X1—⊗—X2</p> <p>() — I 0 II — 13 14 23 24</p>	<p>1 x signal lamp SIL 20-250 V AC/DC coloured lens cover: „white, red, green, yellow” label: “I 0 II” 1 x double pushbutton DDT 1 NO + 1 NC label: “0, I, START, STOP” 1 x mushroom-head pushbutton SGTE 1 NO + 1 NC “emergency stop” 1 x key-operated switch 2 NO SW 5 “engaging-engaging-engaging” label: “I 0 II”</p>	2.20 kg	GHG 413 8500 R0003

Ex-light metal control stations GHG 413 84



Measuring instrument AM72

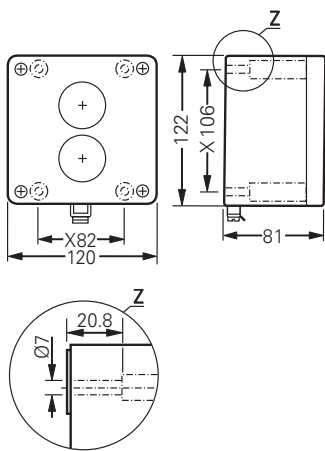
4 Ordering details Type 413 84 with measuring instrument AM72

Content	Movement	Weight approx.	Order No.
Version direct measurement with 1 x threaded entry M20			
0 – 1 / 1.5 A	Moving iron	1.25 kg	GHG 413 8481 R0002
0 - 2.5 / 3.75 A	Moving iron	1.25 kg	GHG 413 8481 R0003
0 - 5 / 7.5 A	Moving iron	1.25 kg	GHG 413 8481 R0004
0 - 10 / 15 A	Moving iron	1.25 kg	GHG 413 8481 R0005
0 - 16 / 24 A	Moving iron	1.25 kg	GHG 413 8481 R0007
0 - 20 / 24 mA 0-100% / 120% (Ri =320 Ω)	Moving coil	1.35 kg	GHG 413 8481 R0033
4 - 20 / 24 mA 0-100% / 120% (Ri =320 Ω)	Moving coil	1.35 kg	GHG 413 8481 R0035

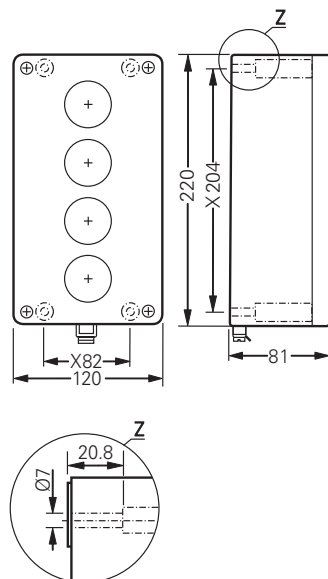
Version CT connection n/1A with 1 x threaded entry M20

0 – 1 / 1.5 A	Moving iron	1.25 kg	GHG 413 8482 R0002
0 - 2.5 / 3.75 A	Moving iron	1.25 kg	GHG 413 8482 R0003
0 - 5 / 7.5 A	Moving iron	1.25 kg	GHG 413 8482 R0004
0 - 10 / 15 A	Moving iron	1.25 kg	GHG 413 8482 R0005
0 - 15 / 22.5 A	Moving iron	1.25 kg	GHG 413 8482 R0007
0 - 20 / 30 A	Moving iron	1.25 kg	GHG 413 8482 R0008
0 - 30 / 45 A	Moving iron	1.25 kg	GHG 413 8482 R0009
0 - 40 / 60 A	Moving iron	1.25 kg	GHG 413 8482 R0010
0 - 50 / 75 A	Moving iron	1.25 kg	GHG 413 8482 R0011
0 - 60 / 90 A	Moving iron	1.25 kg	GHG 413 8482 R0012
0 - 75 / 112.5 A	Moving iron	1.25 kg	GHG 413 8482 R0013
0 - 100 / 150 A	Moving iron	1.25 kg	GHG 413 8482 R0014
0 – 100% / 150%	Moving iron	1.25 kg	GHG 413 8482 R0033

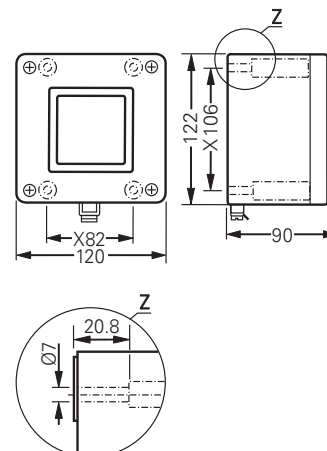
Dimension drawing



Type 413 84



Type 413 85



Type 413 84

X = fixing dimension

Dimensions in mm



4.4

GHG 414 Control Stations 16 A

Stainless steel version for Zone 1, 2, 21 and 22

4 CEAG explosion-protected control stations made of high-grade 316L stainless steel are designed to accommodate up to four built-in components. These stainless-steel control stations with electro-polished surfaces offer protection for applications in the off-shore industry and at sites with especially severe mechanical, chemical and climatic conditions.

CEAG flameproof built-in components, such as signal lamps, pushbuttons and switches, provide snap-on mounting on rails screwed into the enclosures. To facilitate insertion of cables into the entries, the built-in components can be snapped out of

the enclosures. Notches in the mounting rails define the position of the built-in components and prevent them from being twisted out of place.

Free mounting areas can be provided for retrofitting certified CEAG components. These are then factory sealed with blanking elements.



Features

- High mechanical, chemical and thermal resistance
- Individual configuration



Type 414 81..



Type GHG 414 82



Type GHG 414 81

Technical data

Ex-control stations Type 414 81 | Type 414 82

Marking accd. to 2014/34/EU	Ⓢ II 2 G Ex ed ib m IIC T6 Ⓢ II 2 D Ex tD A21 IP66 T80 °C	
EC-Type Examination Certificate	PTB 00 ATEX 3117	
IECEX Certificate of Conformity	IECEX BK1 04.0003	
Marking accd. to IECEx	Ex e II T6, Ex e ib IIC T6, Ec ed IIC T6 or Ex ed ib IIC T6	
Permissible ambient temperature	-20 °C up to +40 °C -55 °C up to +55 °C (option)	
Rated voltage	690 V AC (with control switch GHG 23 up to 500 V)	
Rated current	16 A (with control switch GHG 23 max. 10 A)	
Rated making-/rated breaking capacity accd. EN 60947-5-1	Ex41 AC-15: U_g 250 V / I_g 6 A U_g 500 V / I_g 4 A DC-13: U_g 24 V / I_g 6 A U_g 220 V / I_g 1 A with gold contact points max. 0.4 A	Ex23 AC-15: U_g 230 V / I_g 6 A U_g 500 V / I_g 4 A DC-13: U_g 24 V / I_g 2 A U_g 230 V / I_g 0.5 A
Connecting terminals	2 x 4 mm ²	
Protection class	I	
Degree of protection accd. to EN 60529	IP66	
Cable glands/Gland plates/Enclosure drilling	1 x thread Ø 21 mm for cable gland M20	
Enclosure material	Stainless steel AISI 316 L	

Type 414 81

Dimensions (L x W x H)	166 x 140 x 76 mm
Weight (empty)	1.40 kg

Type 414 82

Dimensions (L x W x H)	286 x 140 x 76 mm
Weight (empty)	2.10 kg

Type 414 81 with measuring instrument AM 72

Movement	Moving iron	Moving coil
Marking accd. to 2014/34/EU	Ⓢ II G Ex e II	Ⓢ II G Ex ib IIC
Accuracy	Class 2.5	Class 1.5
Overload range	10-fold -25 sec. 25-fold - 4 sec. 50-fold - 1 sec. indicated 1:1.5	10-fold -5 sec.
Measuring range	n / 1A 0 - 25 A direct	0 - 20 mA 4 - 20 mA
Inductance Li	-	≤ 0.1 mH
Capacitance Ci	-	≤ 0.1 nF
Open circuit voltage max. Ui	-	30 V
Short circuit current max. Ii	-	150 mA
Connecting terminals	2 x 1.5 - 4 mm ²	
Weight	1.25 kg	

¹⁾ Base enclosure can be rotated after wards (entry from top or down)

Other versions available on request

Ex-stainless steel control stations GHG 414 81



Type 414 81...01



Type 414 81...02



Type 414 81...03



Type 414 81...04

4 Ordering details Type 414 81 with 2 built-in components

Content*	Built-in components	Weight approx.	Order No.
	2 x pushbutton DRT NO + 1 NC each label: "0, I, START, STOP"	1.80 kg	GHG 414 8100 R0001
X1 — — X2 	1 x signal lamp SIL 20-250 V AC/DC coloured lens cover: „white, red, green, yellow“ 1 x double pushbutton DDT 1 NO + 1 NC label: "0, I, START, STOP"	1.85 kg	GHG 414 8100 R0002
	1 x double pushbutton DDT 1 NO + 1 NC label: "0, I, START, STOP" 1 x mushroom-head pushbutton SGTE 1 NO + 1 NC "emergency stop"	1.85 kg	GHG 414 8100 R0003
1 — — 2 	1 x measuring instrument AM45 CT connection n/1A Scale 0 – 100%/150% 1 x double pushbutton DDT 1 NO + 1 NC label: "0, I, START, STOP"	1.85 kg	GHG 414 8100 R0004

*Without external fixing lugs (see accessories NO. 9.30)



Type 414 82...03



Type 414 82...02



Type 414 82...01

Ordering details Type 414 82 with 4 built-in components

Content*	Built-in components	Weight approx.	Order No.
<p>X1 ⊗ X2</p>	<p>1 x signal lamp SIL 20-250 V AC/DC coloured lens cover: „white, red, green, yellow“ 2 x pushbutton DRT 1 NO + 1 NC label: “0, I, START, STOP” 1 x mushroom-head pushbutton SGT 1 NO + 1 NC “emergency stop”</p>	2.80 kg	GHG 414 8200 R0001
<p>X1 ⊗ X2</p>	<p>2 x signal lamp SIL 20-250 V AC/DC coloured lens cover: „white, red, green, yellow“ 2 x double pushbutton DDT 1 NO + 1 NC label: “0, I, START, STOP”</p>	2.80 kg	GHG 414 8200 R0002
<p>X1 ⊗ X2</p>	<p>1 x signal lamp SIL 20-250 V AC/DC coloured lens cover: „white, red, green, yellow“ 1 x double pushbutton DDT 1 NO + 1 NC label: “0, I, START, STOP” 1 x mushroom-head pushbutton SGT 1 NO + 1 NC “emergency stop” 1 x key-operated switch 2 NO SW 5 “engaging-engaging-engaging” label: “I 0 II”</p>	2.90 kg	GHG 414 8200 R0003

*Without external fixing lugs (see accessories NO. 9.30)

Ex-stainless steel control stations GHG 414 81



Type 414 81..

4 Ordering details Type 414 81 with measuring instrument AM72

Content	Movement	Weight approx.	Order No.
Version direct measurement with 1 x threaded entry Ø 21 mm (without external fixing lugs)			
0 - 1 / 1.5 A	Moving iron	1.25 kg	GHG 414 8181 R0002
0 - 2.5 / 3.75 A	Moving iron	1.25 kg	GHG 414 8181 R0003
0 - 5 / 7.5 A	Moving iron	1.25 kg	GHG 414 8181 R0004
0 - 10 / 15 A	Moving iron	1.25 kg	GHG 414 8181 R0005
0 - 16 / 24 A	Moving iron	1.25 kg	GHG 414 8181 R0007
0 - 20 / 24 mA 0-100% / 120% (Ri =320 Ω)	Moving coil	1.35 kg	GHG 414 8181 R0033
4 - 20 / 24 mA 0-100% / 120% (Ri =320 Ω)	Moving coil	1.35 kg	GHG 414 8181 R0035

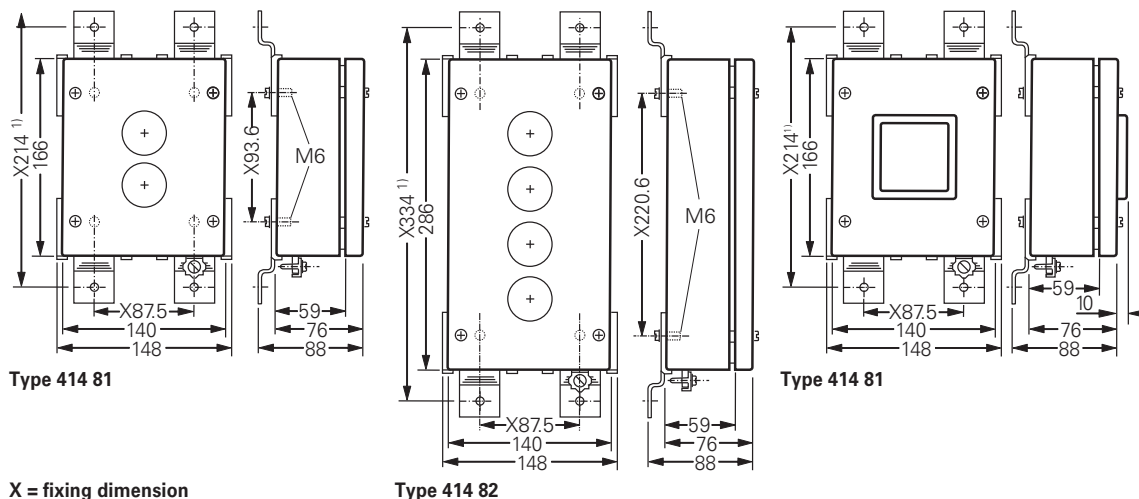
Version CT connection n/1A with 1 x threaded entry Ø 21 mm (without external fixing lugs)

0 - 1 / 1.5 A	Moving iron	1.25 kg	GHG 414 8182 R0002
0 - 2.5 / 3.75 A	Moving iron	1.25 kg	GHG 414 8182 R0003
0 - 5 / 7.5 A	Moving iron	1.25 kg	GHG 414 8182 R0004
0 - 10 / 15 A	Moving iron	1.25 kg	GHG 414 8182 R0005
0 - 15 / 22.5 A	Moving iron	1.25 kg	GHG 414 8182 R0007
0 - 20 / 30 A	Moving iron	1.25 kg	GHG 414 8182 R0008
0 - 30 / 45 A	Moving iron	1.25 kg	GHG 414 8182 R0009
0 - 40 / 60 A	Moving iron	1.25 kg	GHG 414 8182 R0010
0 - 50 / 75 A	Moving iron	1.25 kg	GHG 414 8182 R0011
0 - 60 / 90 A	Moving iron	1.25 kg	GHG 414 8182 R0012
0 - 75 / 112.5 A	Moving iron	1.25 kg	GHG 414 8182 R0013
0 - 100 / 150 A	Moving iron	1.25 kg	GHG 414 8182 R0014
0 - 100% / 150%	Moving iron	1.25 kg	GHG 414 8182 R0033

Accessories

Type	Order No.
External fixing lugs (2 pcs)	GHG 610 1941 R0013

Dimension drawing



¹⁾ Scope of delivery without fixing lugs



4.5

Ex Control Stations for Individual Configuration

Moulded-plastic version for Zone 1, 21, 2 and 21

4 CEAG control stations can be combined according to customers' specifications. Quick fixing allows up to three CEAG built-in components, such as signal lamps, pushbuttons and switches, to be snapped on a rail in the enclosure. The enclosures consist of low-temperature impact-resistant thermoplastic which fulfils the requirements of EN 60079 and provides a high resistance to chemicals. The well thought out design with low side walls allows optimum cable connection. The components can be snapped out of the enclosure to facilitate cable-entry feeding. Notches in the mounting rails prevent the

built-in components from being twisted out of place.

CEAG's optional mounting plates offer a time-saving fixing technique. Coupling pieces link enclosures to each other and prevent them from being twisted out of place. Alternatively, metal screws and flanges can be used for mounting – the metal flanges also enable external earthing.

The built-in components differ in size. The diverse enclosure types allow variable combinations of these components. Example diagrams of the enclosure types show the placement options for the built-in components with numbers or predefined positions.

Free mounting areas can be provided for retrofitting certified CEAG components. These are then factory sealed with blanking elements.



Features

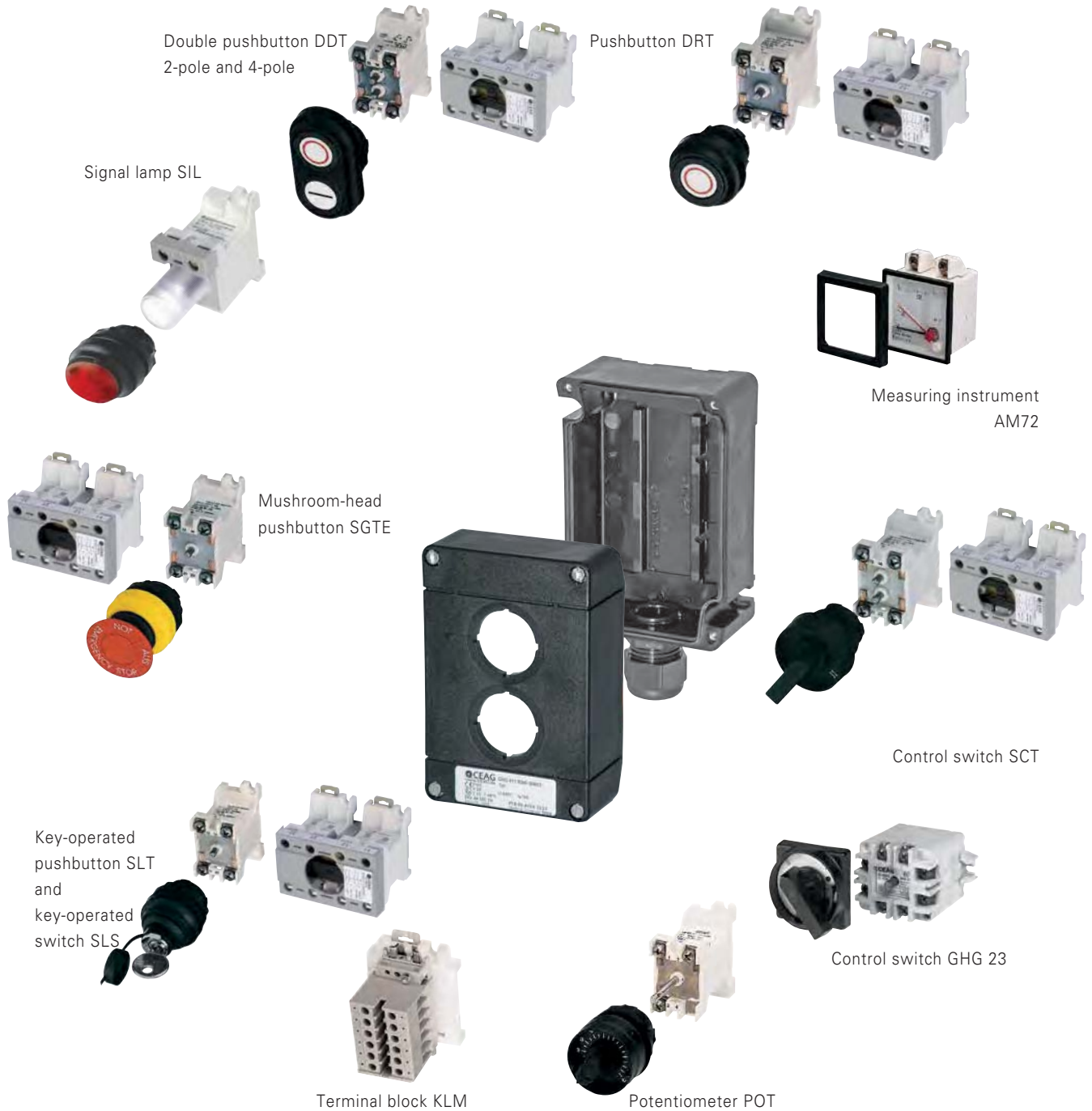
- Flat side walls
- Quick fixing for all built-in components
- High chemical resistance
- Different enclosures can be combined

Customised control stations, covered by type examination certificates, can be individually combined from CEAG's numerous built-in components.

A coding system for these components with unique designations

can be used for planning, selection and ordering. The sum of the code numbers designates a complete control station.

For the selection of control units and components, please see page 2.4.36 pp.



For an easy selection of certified components two temperature information are provided:

1. Operating temperature range

This defines the max. permitted temperature range of component in the installed state. This has to be considered when configuring

2. Ambient temperature range

These temperature range defines the expected ambient temperature range for a fully planned equipment and is based on the experiences of configured devices at normal installation conditions. However, it must be observed in any case, the conditions of the type examination certificate. These temperatures are purely based on explosion protection. Mechanical and electrical function based on the installation situation (e.g. self-heating) have to be considered. For binding function ambient temperatures please refer to the product manual.

Order code for individual control units

Individual control units can be defined by 4 groups of components:

1. Empty Enclosure
2. Components per mounting area
3. Accessories
4. Cable glands

Code 1: Empty enclosure



Code for enclosure

MA		411 81
MA		411 82
MA		411 83
MA		432
MA		434
MA		414 81
MA		414 82
MA		413 84
MA		413 85

Code 2: Components per mounting area (max. 4)

A	C	D(1)	(D2)	E	F	Mounting area 1
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	MA1
A	C	D(1)	(D2)	E	F	Mounting area 2
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	MA2
A	C	D(1)	(D2)	E	F	Mounting area 3
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	MA3
A	C	D(1)	(D2)	E	F	Mounting area 4
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	MA4



Order code for individual control units

Example: Enclosure Type 434, Code 1: 434..
 Pushbutton (MA4), Code 2 MA4: DRT 14 001
 Signal lamp (MA3) Code 2 MA3: SIL 1 10
 Emergency stop Code 2 MA2 SGTE 13 1 1 2
 Mushroom head pushbutton (MA2) Code 2 MA1: DDT15 001 007
 Double pushbutton (MA1)

Code 3 MA1: ZUB 19
 Code 3 MA2: ZUB 19
 Code 3 MA3: ZUB 02
 Code 3 MA4: --
 Code 4: GEH 1 GK M25 2

Code 3: Labels and padlocking facility

A	B	C	Mounting area 1 MA1
<input type="text"/>	<input type="text"/>	<input type="text"/>	
A	B	C	Mounting area 2 MA2
<input type="text"/>	<input type="text"/>	<input type="text"/>	
A	B	C	Mounting area 3 MA3
<input type="text"/>	<input type="text"/>	<input type="text"/>	
A	B	C	Mounting area 4 MA4
<input type="text"/>	<input type="text"/>	<input type="text"/>	



Label with holder
ZUB 20



Padlocking facility mushroom-head
pushbutton ZUB 14



Padlocking facility with hammer
ZUB 05



Padlocking facility mushroom-head
pushbutton ZUB 22



Padlocking facility double pushbutton
ZUB 17

Code 4: Cable entries and flanges

A	B	C	D	E
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>



Metal flange plate
FLM



Plastic cable gland GK



Plastic trumpet-shaped
cable gland TR



Position for
drilling/gland

Ex-control stations - enclosures moulded plastic GHG 41 / 43



Type 411 81



Type 411 82



Type 432



Type 434

4 Technical data

Ex-control stations Type 41. and 43. for individual configuration

Marking accd. to 2014/34/EU	⊕ II 2 G Ex ed ib m IIC T6 ¹⁾ ⊕ II 2 D Ex tD A21 IP66 T80 °C
EC-Type Examination Certificate	PTB 00 ATEX 3117 ¹⁾
IECEX Certificate of Conformity	IECEX BK1 04.0003 ¹⁾
Marking accd. to IECEx	Ex e II T6, Ex e ib IIC T6, Ex ed IIC T6 or Ex ed ib IIC T6 ¹⁾
Permissible ambient temperature	-20 °C up to +40 °C ¹⁾ -55 °C up to +55 °C (option)
Rated voltage	690 V AC
Rated current	16 A
Connecting terminals	2 x 4 mm ²
Protection class	I
Degree of protection accd. to EN 60529	IP66 (standard)
Enclosure material	Polyamide
Enclosure colour	black

Type 411 81

Cable glands/Gland plates/Enclosure drilling	Ex e cable glands max. 2 x M25; 2 x M20 thread
Dimensions (L x W x H)	85 x 85 x 77.5 mm
Weight (empty)	0.25 kg
Components arrangement	1 mounting area

Type 411 82

Cable glands/Gland plates/Enclosure drilling	Ex e cable glands max. 2 x M25; 2 x M20 thread
Dimensions (L x W x H)	125 x 85 x 77.5 mm
Weight (empty)	0.35 kg
Components arrangement	2 mounting areas

Type 411 83

Cable glands/Gland plates/Enclosure drilling	Ex e cable glands max. 2 x M25; 2 x M20 thread
Dimensions (L x W x H)	165 x 85 x 77.5 mm
Weight (empty)	0.45 kg
Components arrangement	3 mounting areas

Type 432

Cable glands/Gland plates/Enclosure drilling	Ex e cable glands max. 2 x M25; 3 x M20 thread
Dimensions (L x W x H)	156 x 100 x 90 mm
Weight (empty)	0.47 kg
Components arrangement	2 mounting areas

Type 434

Cable glands/Gland plates/Enclosure drilling	Ex e cable glands max. 2 x M25; 3 x M20 thread
Dimensions (L x W x H)	245 x 100 x 90 mm
Weight (empty)	0.70 kg
Components arrangement	4 mounting areas

¹⁾Data for ready configured product



Type 434



Type 432



Type 411 82



Type 411 81

Ordering codes (Code 1)

1. Enclosure	2. Components arrangement/terminals				3. Labels/ padlocking facility	4. Cable glands
	Mounting area 1	Mounting area 2	Mounting area 3	Mounting area 4		
411 81 ¹⁾	X	–	–	–	X	X
411 82	X	X	–	–	X	X
411 83	X	X	X	–	X	X
432	X	X	–	–	X	X
434	X	X	X	X	X	X

Possible components (Code 1)

Component	Code	Component	Code
Pushbutton (2-pole or 4-pole ²⁾)	DRT	Measuring instrument	AM72 ²⁾
Double pushbutton (2-pole or 4-pole ²⁾)	DDT	Measuring instrument	AM45
Key-operated pushbutton (2-pole or 4-pole ²⁾)	SLT	Signal lamp	SIL
Key-operated switch (2-pole or 4-pole ²⁾)	SLS	Potentiometer	POT
Control switch (2-pole or 4-pole ²⁾)	SCT	Terminal block (4 mm ²)	KLM
Mushroom-head pushbutton (2-pole or 4-pole ²⁾)	SGT	Blanking element	BLV
Control switch	GHG 23 ³⁾		

¹⁾ 4-pole component not possible

²⁾ 2 mounting areas are needed

³⁾ only for type 43., 2 mounting areas are needed

Ex-control stations - enclosures GHG 41 / 43



Type 411 81



Type 411 82

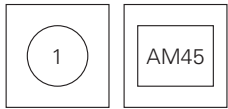


Type 432

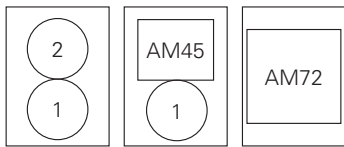
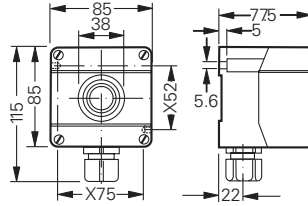


Type 434

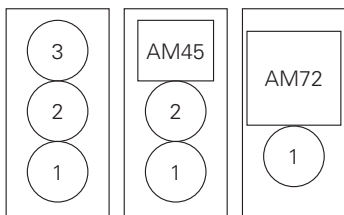
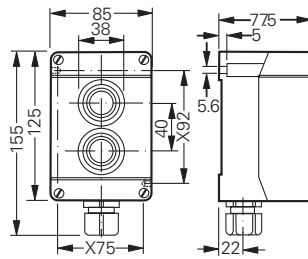
4 Mounting areas | Dimension drawing



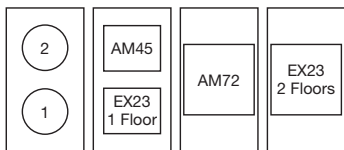
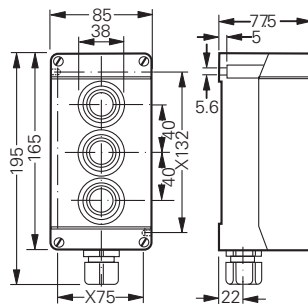
Type 411 81



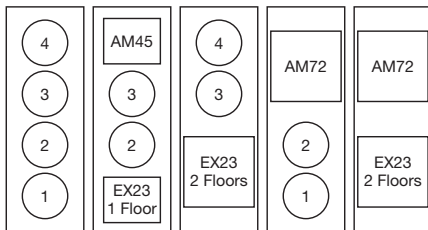
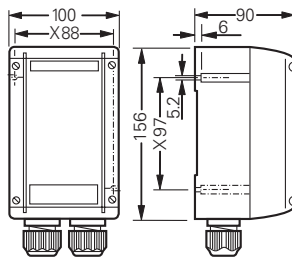
Type 411 82



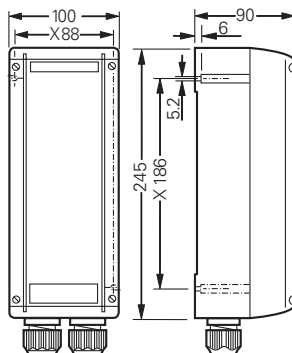
Type 411 83



Type 432



Type 434



X = fixing dimension

Dimensions in mm



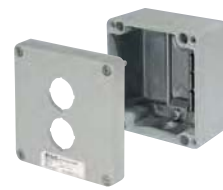
Type 414 82



Type 414 81



Type 413 85



Type 413 84

Technical data

Ex-control stations type 413. and 414. for individual configuration

Marking accd. to 2014/34/EU	⊕ II 2 G Ex ed ib m IIC T6 ¹⁾ ⊕ II 2 D Ex tD A21 IP66 T80 °C
EC-Type Examination Certificate	PTB 00 ATEX 3117 ¹⁾
IECEX Certificate of Conformity	IECEX BK1 04.0003 ¹⁾
Marking accd. to IECEx	Ex e II T6, Ex e ib IIC T6, Ex ed IIC T6 or Ex ed ib IIC T6 ¹⁾
Permissible ambient temperature	-20 °C up to +40 °C ¹⁾ -55 °C up to +55 °C (option)
Rated voltage	690 V AC
Rated current	16 A
Connecting terminals	see technical data for built-in components
PE-connecting terminals	2 x 4 mm ²
Protection class	I
Degree of protection accd. to EN 60529	IP66 (standard)

	Type 413 84	Type 413 85
Cable glands/Gland plates/Enclosure drilling	max. 2 x M25; 2 x M20	max. 2 x M25; 2 x M20
Dimensions (L x W x H)	122 x 120 x 81 mm	122 x 120 x 81 mm
Weight (empty)	0.85 kg	1.45 kg
Enclosure material	cast aluminium-silicon (AlSi)	cast aluminium-silicon (AlSi)
Enclosure colour	grey RAL 7031	grey RAL 7031
Components arrangement	2 mounting areas	4 mounting areas

	Type 414 81	Type 414 82
Cable glands/Gland plates/Enclosure drilling	max. 3 x Ø 21 for cable gland M20 max. 2 x Ø 25.5 for cable gland M25	max. 4 x Ø 21 for cable gland M20 max. 2 x Ø 25.5 for cable gland M25
Dimensions (L x W x H)	166 x 140 x 76 mm	286 x 140 x 76 mm
Weight (empty)	1.40 kg	2.10 kg
Enclosure material	stainless steel AISI 316 L	stainless steel AISI 316 L
Enclosure colour	polished	polished
Components arrangement	2 mounting areas	4 mounting areas

¹⁾Data for ready configured product

Ex-control stations - enclosures GHG 413 / 414



Type 413 84



Type 413 85



Type 414 81



Type 414 82

4 Ordering codes (Code 1)

1. Enclosure	2. Components arrangement/terminals				3. Labels/ padlocking facility	4. Cable glands
	Mounting area 1	Mounting area 2	Mounting area 3	Mounting area 4		
413 84	X	X	–	–	X	X
413 85	X	X	X	X	X	X
414 81	X	X	–	–	X	X
414 82	X	X	X	X	X	X

Possible components (Code 1)

Component	Code	Component	Code
Pushbutton (2-pole or 4-pole ¹⁾)	DRT	Measuring instrument	AM72 ¹⁾
Double pushbutton (2-pole or 4-pole ¹⁾)	DDT	Measuring instrument	AM45
Key-operated pushbutton (2-pole or 4-pole ¹⁾)	SLT	Signal lamp	SIL
Key-operated switch (2-pole or 4-pole ¹⁾)	SLS	Potentiometer	POT
Control switch (2-pole or 4-pole ¹⁾)	SCT	Terminal block (4 mm ²)	KLM
Mushroom-head pushbutton (2-pole or 4-pole ¹⁾)	SGT	Blanking element	BLV
Control switch	GHG 23 ¹⁾		

¹⁾ 2 mounting areas are needed



Type 414 82



Type 414 81

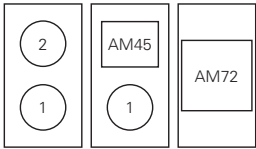


Type 413 85

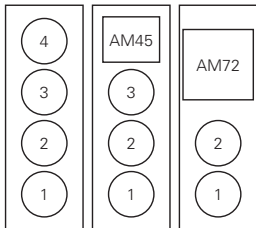
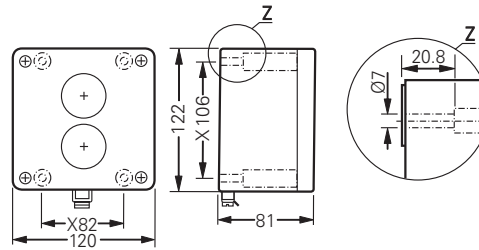


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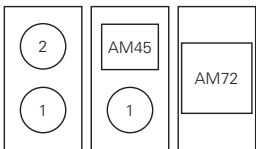
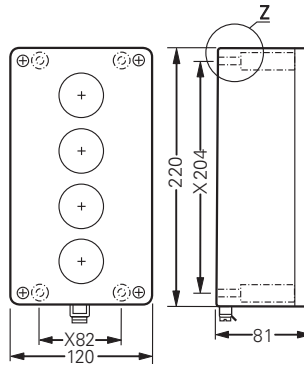
Mounting areas I Dimension drawing



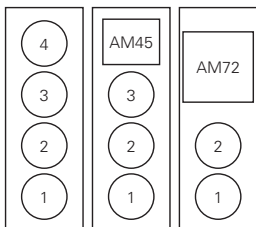
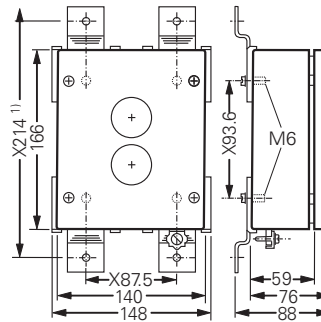
Type 413 84



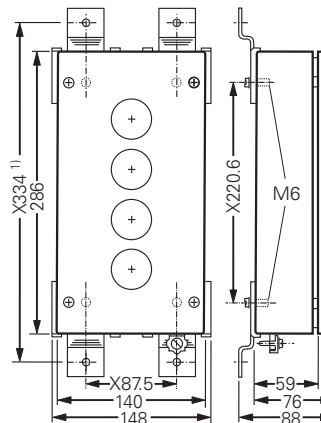
Type 413 85



Type 414 81



Type 414 82



X = fixing dimension

Dimensions in mm

Ex-control stations - enclosures GHG 44



Type 444 23



Type 448 23



Type 449 23



Type 447 23

4 Technical data

Ex-control stations Typ 444, 448, 449, and 447 for individual configuration

Marking accd. to 2014/34/EU	⊕ II 2 G Ex de ia/ib m [ia/ib] IIC T6 ¹⁾ ⊕ II 2 D Ex tD A21 IP66/IP65 T80 °C
EC-Type Examination Certificate	PTB 99 ATEX 1044 ¹⁾
IECEX Certificate of Conformity	IECEX BK1 07.0023 ¹⁾
Marking accd. to IECEx	Ex de ia/ib m [ia/ib] IIC T4 .. T6 ¹⁾ Ex tD A21 IP66 T80 °C
Permissible ambient temperature	-20 °C up to +40 °C ¹⁾ -55 °C up to +55 °C (option)
Rated voltage	690 V AC
Rated current	40 A
Connecting terminals	see technical data for built-in components
PE-Connecting terminals	2 x 4 mm ²
Protection class	I
Degree of protection accd. to EN 60529	IP66 (standard)
Cable glands/Gland plates/Enclosure drilling	as ordered accd. to manufacturer's specification
Enclosure material	glass-fibre reinforced polyester
Enclosure colour	black

Type 444 23

Connecting terminals	max. 20 terminals UT 4
Dimensions (L x W x H)	271 x 134 x 136 mm
Weight (empty)	1.5 kg with mounting framework
Components arrangement	6 mounting areas

Type 448 23

Connecting terminals	max. 30 terminals UT 4
Dimensions (L x W x H)	271 x 271 x 136 mm
Weight (empty)	2.5 kg with mounting framework
Components arrangement	distance 40 mm max. 18 mounting areas distance 50 mm max. 15 mounting areas distance 60 mm max. 12 mounting areas

Type 449 23

Connecting terminals	max. 60 terminals UT 4
Dimensions (L x W x H)	544 x 271 x 136 mm
Weight (empty)	4.5 kg with mounting framework
Components arrangement	distance 40 mm max. 36 mounting areas distance 50 mm max. 30 mounting areas distance 60 mm max. 24 mounting areas

Type 447 23

Connecting terminals	max. 90 terminals UT 4
Dimensions (L x W x H)	817 x 271 x 136 mm
Weight (empty)	6.5 kg with mounting framework
Components arrangement	distance 40 mm max. 64 mounting areas distance 50 mm max. 45 mounting areas distance 60 mm max. 36 mounting areas

¹⁾ Data for ready configured product



Type 447 23



Type 449 23



Type 448 23



Type 444 23

Ordering codes (Code 1)

1. Enclosure	2. Components arrangement/terminals				3. Labels/ padlocking facility	4. Cable glands
	Mounting 1 ... 6	Mounting 7 ... 18	Mounting 19 ... 27	Mounting 37 ... 64		
444 23	X	-	-	-	X	X
448 23	X	X	-	-	X	X
449 23	X	X	X	-	X	X
447 23	X	X	X	X	X	X

Possible components (Code 1)

Component	Code	Component	Code
Pushbutton (2-pole or 4-pole ²⁾)	DRT	Measuring instrument	AM72 ¹⁾
Double pushbutton (2-pole or 4-pole ²⁾)	DDT	Measuring instrument	AM45
Key-operated pushbutton (2-pole or 4-pole ²⁾)	SLT	Signal lamp	SIL
Key-operated switch (2-pole or 4-pole ²⁾)	SLS	Potentiometer	POT
Control switch (2-pole or 4-pole ²⁾)	SCT	Terminal block (4 mm ²)	KLM ... A ²⁾
Mushroom-head pushbutton (2-pole or 4-pole ²⁾)	SGT	Terminal block (4 mm ²)	KLM ... B
Control switch	GHG 23 ¹⁾	Blanking element	BLV

¹⁾ 2 mounting areas are needed

²⁾ Serial terminals and PE-Terminal are mounted on a rail below the hinged frame

Ex-control stations - enclosures GHG 44



Type 444 23



Type 448 23

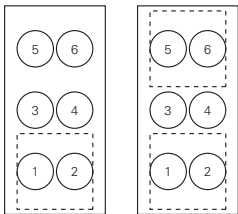
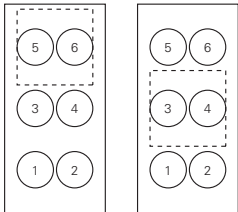


Type 449 23

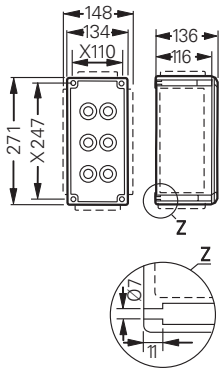


Type 447 23

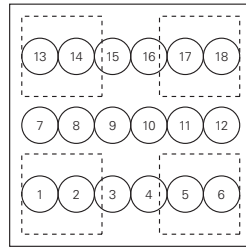
4 Mounting areas I Dimension drawing



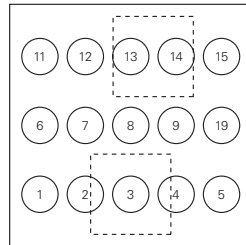
Distance between centres 40, 50 and 60 mm for positioning of built-in components



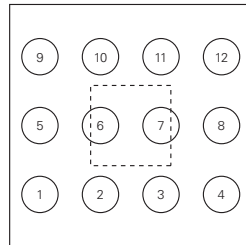
Type 444 23



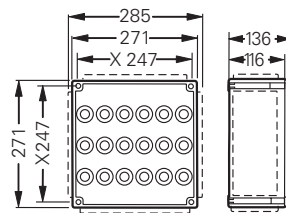
Distance between centres 40 mm



Distance between centres 50 mm



Distance between centres 60 mm



Type 448 23

X = fixing dimension

= mounting space for switch, pushbutton (2-pole) or signal lamp

= mounting space for switch, pushbutton (4-pole) ampere- or voltmeter

Dimensions in mm



Type 447 23



Type 449 23

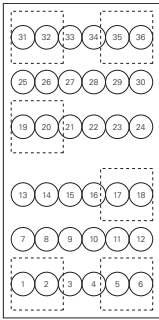


Type 448 23

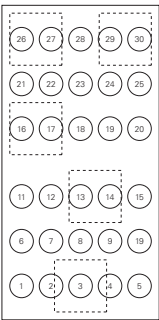


Type 444 23

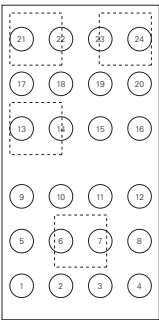
Mounting areas | Dimension drawing



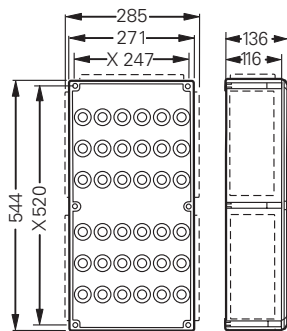
Distance between centres 40 mm



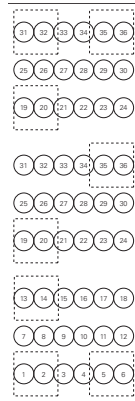
Distance between centres 50 mm



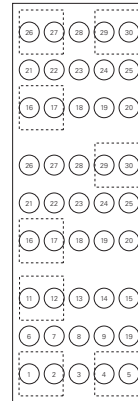
Distance between centres 60 mm



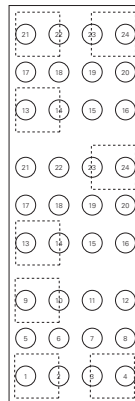
Type 449 23



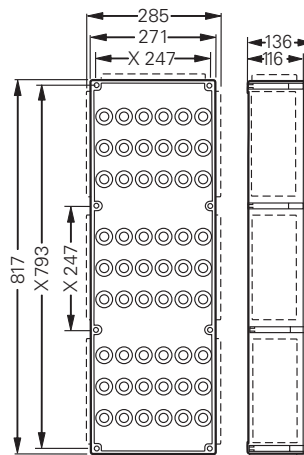
Distance between centres 40 mm



Distance between centres 50 mm



Distance between centres 60 mm



Type 447 23

X = fixing dimension

Ex-control stations - enclosures GHG 443



Type 443 34

4 Technical data

Ex-control stations Typ 443 34 for individual configuration

Marking accd. to 2014/34/EU	Ⓢ II 2 G Ex ed ia/ib m IIC T6 ¹⁾ Ⓢ II 2 D Ex tD A21 IP66 T80 °C
EC-Type Examination Certificate	PTB 01 ATEX 1115 ¹⁾
Permissible ambient temperature	-20 °C up to +40 °C ¹⁾ -55 °C up to +55 °C (option)
Rated voltage	690 V AC
Rated current	63 A
Connecting terminals	as ordered accd. to manufacturer's specification
PE-Connecting terminals	2 x 4 mm ²
Protection class	I
Degree of protection accd. to EN 60529	IP66
Cable glands/Gland plates/Enclosure drilling	as ordered accd. to manufacturer's specification
Dimensions (L x W x H)	280 x 180 x 90 mm
Weight	2.3 kg with mounting framework
Enclosure material	cast aluminium-silicon (AlSi)
Enclosure colour	grey RAL 7031
Components arrangement	max. 9 mounting areas

¹⁾Data for ready configured product

Ordering codes (Code 1)

1. Enclosure	2. Components arrangement/terminals			3. Labels/ padlocking facility	4. Cable glands
	Mounting 1 ... 3	Mounting 4 ... 6	Mounting 7 ... 9		
443 34	X	X	X	X	X

Possible components (Code 1)

Component	Code	Component	Code
Pushbutton (2-pole or 4-pole ²⁾)	DRT	Measuring instrument	AM72 ¹⁾
Double pushbutton (2-pole or 4-pole ²⁾)	DDT	Measuring instrument	AM45
Key-operated pushbutton (2-pole or 4-pole ²⁾)	SLT	Signal lamp	SIL
Key-operated switch (2-pole or 4-pole ²⁾)	SLS	Potentiometer	POT
Control switch (2-pole or 4-pole ²⁾)	SCT	Terminal block (4 mm ²)	KLM ... A ²⁾
Mushroom-head pushbutton (2-pole or 4-pole ²⁾)	SGT	Terminal block (4 mm ²)	KLM ... B
Control switch	GHG 23 ¹⁾	Blanking element	BLV

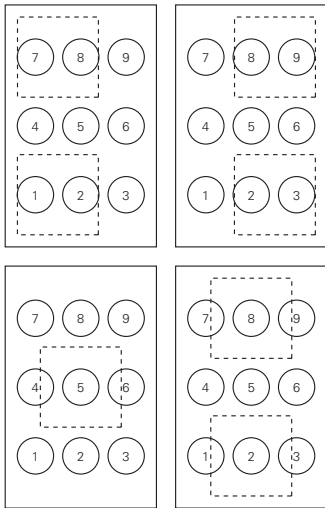
¹⁾ 2 mounting areas are needed

²⁾ Serial terminals and PE-Terminal are mounted on a rail below the hinged frame

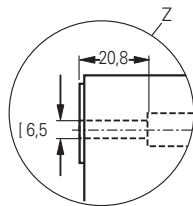
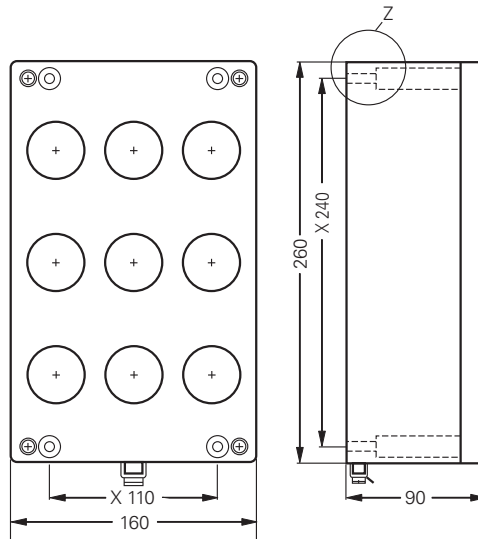


Type 443 34

Mounting areas | Dimension drawing





Distance between centres 40, 50 and 60 mm for positioning of built-in components



Type 443 34

X = fixing dimension

 = mounting space for switch, pushbutton (2-pole) or signal lamp

 = mounting space for switch, pushbutton (4-pole) ampere- or voltmeter

Ex-control stations - enclosures GHG 44. 33



Type 444 33



Type 448 33



Type 449 33



Type 447 33

4 Technical data

Ex-control stations Typ 444, 448, 449, and 447 stainless steel for individual configuration

Marking accd. to 2014/34/EU	⊕ II 2 G Ex de ia/ib m [ia/ib] IIC T6 ¹⁾ ⊕ II 2 D Ex tD A21 IP66/IP65 T80 °C
EC-Type Examination Certificate	PTB 99 ATEX 1044 ¹⁾
IECEX Certificate of Conformity	IECEX BK1 07.0023 ¹⁾
Marking accd. to IECEx	Ex de ia/ib m [ia/ib] IIC T4 .. T6 ¹⁾ Ex tD A21 IP66 T80 °C
Permissible ambient temperature	-20 °C up to +40 °C ¹⁾ -55 °C up to +55 °C (option)
Rated voltage	690 V AC
Rated current	40 A
Connecting terminals	see technical data for built-in components
PE-Connecting terminals	2 x 4 mm ²
Protection class	I
Degree of protection accd. to EN 60529	IP66 (standard)
Cable glands/Gland plates/Enclosure drilling	as ordered accd. to manufacturer's specification
Enclosure material	Stainless steel AISI 316 L
Enclosure colour	polished

Type 444 33

Connecting terminals	max. 20 terminals UT 4
Dimensions (L x W x H)	312.5 x 175 x 135 mm
Weight (empty)	3.5 kg with mounting framework
Components arrangement	6 mounting areas

Type 448 33

Connecting terminals	max. 30 terminals UT 4
Dimensions (L x W x H)	312.5 x 312.5 x 135 mm
Weight (empty)	7.5 kg with mounting framework
Components arrangement	distance 40 mm max. 18 mounting areas distance 50 mm max. 15 mounting areas distance 60 mm max. 12 mounting areas

Type 449 33

Connecting terminals	max. 60 terminals UT 4
Dimensions (L x W x H)	627 x 312.5 x 135 mm
Weight (empty)	11.5 kg with mounting framework
Components arrangement	distance 40 mm max. 36 mounting areas distance 50 mm max. 30 mounting areas distance 60 mm max. 24 mounting areas

Type 447 33

Connecting terminals	max. 90 terminals UT 4
Dimensions (L x W x H)	941.5 x 312.5 x 135 mm
Weight (empty)	16.5 kg with mounting framework
Components arrangement	distance 40 mm max. 54 mounting areas distance 50 mm max. 45 mounting areas distance 60 mm max. 36 mounting areas

¹⁾Data for ready configured product



Type 447 33



Type 449 33



Type 448 33



Type 444 33

Ordering codes (Code 1)

1. Enclosure	2. Components arrangement/terminals				3. Labels/ padlocking facility	4. Cable glands
	Mounting 1 ... 6	Mounting 7 ... 18	Mounting 19 ... 27	Mounting 37 ... 64		
444 33	X	–	–	–	X	X
448 33	X	X	–	–	X	X
449 33	X	X	X	–	X	X
447 33	X	X	X	X	X	X

Possible components (Code 1)

Component	Code	Component	Code
Pushbutton (2-pole or 4-pole ²⁾)	DRT	Measuring instrument	AM72 ¹⁾
Double pushbutton (2-pole or 4-pole ²⁾)	DDT	Measuring instrument	AM45
Key-operated pushbutton (2-pole or 4-pole ²⁾)	SLT	Signal lamp	SIL
Key-operated switch (2-pole or 4-pole ²⁾)	SLS	Potentiometer	POT
Control switch (2-pole or 4-pole ²⁾)	SCT	Terminal block (4 mm ²)	KLM ... A ²⁾
Mushroom-head pushbutton (2-pole or 4-pole ²⁾)	SGT	Terminal block (4 mm ²)	KLM ... B
Control switch	GHG 23 ¹⁾	Blanking element	BLV

¹⁾ 2 mounting areas are needed

²⁾ Serial terminals and PE-Terminal are mounted on a rail below the hinged frame

Ex-control stations - enclosures GHG 44. 33



Type 444 33



Type 448 33

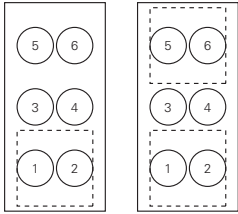
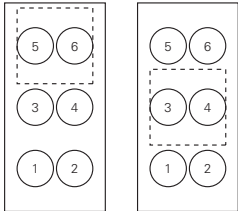


Type 449 33

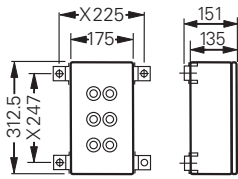


Type 447 33

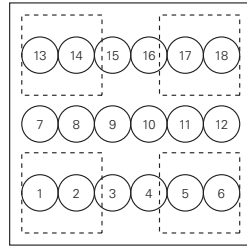
4 Mounting area I Dimension drawing



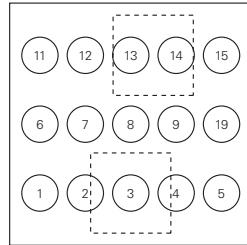
Distance between centres 40, 50 and 60 mm



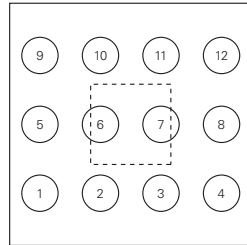
Type 444 33



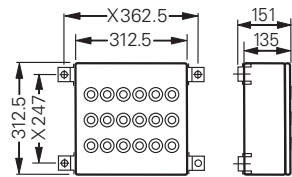
Distance between centres 40 mm



Distance between centres 50 mm



Distance between centres 60 mm



Type 448 33

X = fixing dimension

○ = mounting space for switch, pushbutton (2-pole) or signal lamp

┌ ─ ─ ─ ┐
| | = mounting space for switch, pushbutton (4-pole) ampere- or voltmeter
└ ─ ─ ─ ┘

Dimensions in mm



Type 447 33



Type 449 33

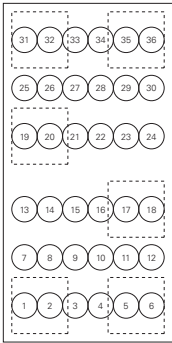


Type 448 33

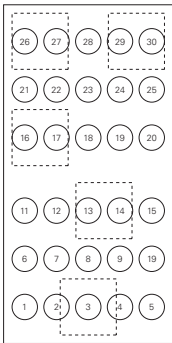


Type 444 33

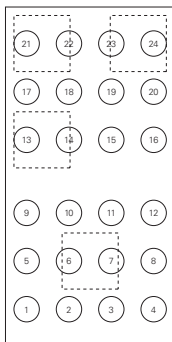
Mounting area | Dimension drawing



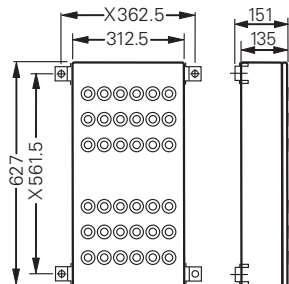
Distance between centres 40 mm



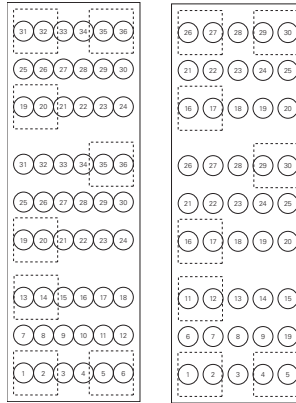
Distance between centres 50 mm



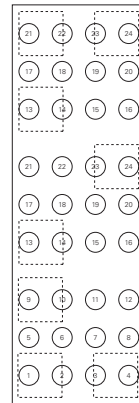
Distance between centres 60 mm



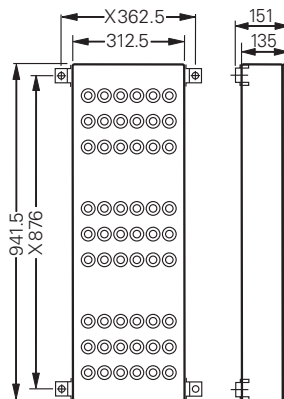
Type 449 33



Distance between centres 40 mm 50 mm



Distance between centres 60 mm



Type 447 33

X = fixing dimension

Built-in components pushbutton



DRT 1 x 2-pole



DRT 4 x 1-pole



DDT 2 x 1-pole



DDT 2 x 2-pole

4 Technical data

Ex-pushbutton DRT and double pushbutton DDT

Marking accd. to 2014/34/EU	Ⓔ II 2 G Ex de IIC/IIB Gb / Ⓔ I M2 Ex de I Mb
EC-Type Examination Certificate	IBExU 14 ATEX 1030 U
IECEX Certificate of Conformity	IECEX IBE 14.0005U
Marking accd. to IECEx	Ex de IIC Gb Ex de IIB Gb Ex de I Mb
Operating temperature	-45 °C up to +80 °C (IIC) -60 °C up to +80 °C (IIB)
Application temperature ¹⁾	-45 °C up to +55 °C (IIC) -60 °C up to +55 °C (IIB)
Rated voltage	500 V AC
Rated current	16 A
Rated current with gold contact points	0.4 A
Rated making-/rated breaking capacity accd. EN 60947-5-1	AC-15: U _b 250 V / I _b 6 A U _b 500 V / I _b 4 A DC-13: U _b 24 V / I _b 6 A U _b 220 V / I _b 1 A
Degree of protection accd. to EN 60529	IP66 (installed condition)
Type of mounting	DIN rail mounting
Enclosure colour	grey
Gasket material	Neoprene (standard), Fluorsilikon or Viton on request

2-pole version

Connecting terminals	2 x 2.5 mm ²
Dimensions (L x W x H)	59 x 31 x 45 mm
Weight	0.15 kg

4-pole version²⁾

Connecting terminals	4 x 2.5 mm ²
Dimensions (L x W x H)	59 x 73 x 45 mm
Weight	0.35 kg

¹⁾ The limits of the operating temperature range and the max. permissible temperature rise of the components have to be taken into account. See also pages 2.4.34/35.

²⁾ The 4-pole pushbutton needs two mounting areas. The actuator will be in the middle of the two mounting areas.



DDT 2 x 2-pole



DDT 2 x 1-pole



DRT 4 x 1-pole



DRT 1 x 2-pole

Ordering code for component (Code 2)

Code	Component	Code
A	Pushbutton, for enclosure mounting	DRT
	Double pushbutton, for enclosure mounting	DDT

Code	Circuit	Contacts		Code	
		DRT	DDT	silver contact points	gold contact points
C	2 NC			13	16
	2 NO			14	17
	1 NO + 1 NC			15	18
	4 NC			20	25
	1 NC + 3 NO			21	26
	2 NC + 2 NO			22	27
	3 NC + 1 NO			23	28
	4 NO			24	29

Built-in components pushbutton



DRT 1 x 2-pole



DRT 4 x 1-pole



DDT 2 x 1-pole



DDT 2 x 2-pole

4 Ordering code for component (Code 2)

Code	Label	Inscription	Code	Inscription	Code
D1, D2		0, I, Start, Stop	001	0	002
		I	003	I I	004
		☛	005	STOP	006
		START	007	emergency stop	008
		LANGSAM	009	SCHNELL	010
		EMERG.STOP	011	➔	012
		ARRET	014	MARCHE	015
		AUF	016	AB	017
		Neutral white	018	Neutral green	019
		0, I, Arret, Marche	020	UP	024
		DOWN	025	ZU	026
		ON	027	OFF	028
		+	030	-	031
		Neutral rot	033	Neutral yellow	034
		EIN	036	AUS	037
		AUTO	039	HAND	050
		SENKEN	051	HEBEN	052
		LINKS	053	RECHTS	054
		FAST	055	SLOW	056
		RESET	057	OPEN	058



DDT 2 x 2-pole



DDT 2 x 1-pole



DRT 4 x 1-pole



DRT 1 x 2-pole

Ordering code for component (Code 2)

Content	Circuit	Code	Ordering code				
			A	B	C	D1	D2

Pushbutton with silver contact points
Version with standard label (0, I, START, STOP)

2 NC	2 NC	13	DRT	0	13	001	---
2 NO	2 NO	14	DRT	0	14	001	---
1 NO + 1 NC	1 NO + 1 NC	15	DRT	0	15	001	---
4 NC	4 NC	20	DRT	0	20	001	---
3 NO + 1 NC	3 NO + 1 NC	21	DRT	0	21	001	---
2 NO + 2 NC	2 NO + 2 NC	22	DRT	0	22	001	---
1 NC + 3 NO	1 NC + 3 NO	23	DRT	0	23	001	---
4 NO	4 NO	24	DRT	0	24	001	---

Double pushbutton with gold contact points
Version with standard label (0, I, START, STOP)

2 NC	2 NC	16	DDT	0	16	001	001
2 NO	2 NO	17	DDT	0	17	001	001
1 NO + 1 NC	1 NO + 1 NC	18	DDT	0	18	001	001
4 NC	4 NC	25	DRT	0	25	001	001
3 NO + 1 NC	3 NO + 1 NC	26	DRT	0	26	001	001
2 NO + 2 NC	2 NO + 2 NC	27	DRT	0	27	001	001
1 NC + 3 NO	1 NC + 3 NO	28	DRT	0	28	001	001
4 NO	4 NO	29	DRT	0	29	001	001

Built-in components - key-operated pushbutton



SLT 1 x 2-pole



SLT 1 x 4-pole

Technical data

Ex-key-operated pushbutton SLT

Marking accd. to 2014/34/EU	⊕ II 2 G Ex de IIC/IIB Gb / ⊕ I M2 Ex de I Mb
EC-Type Examination Certificate	IBExU 14 ATEX 1030 U
IECEX Certificate of Conformity	IECEX IBE 14.0005U
Marking accd. to IECEx	Ex de IIC Gb / Ex de IIB Gb / Ex de I Mb
Operating temperature range	-45 °C up to +80 °C (IIC) / -60 °C up to +80 °C (IIB)
Application temperature ¹⁾	-45 °C up to +55 °C (IIC) / -60 °C up to +55 °C (IIB)
Rated voltage	500 V AC
Rated current	16 A
Rated current with gold contact points	0.4 A
Rated making-/rated breaking capacity accd. EN 60947-5-1	AC-15: U _b 250 V / I _b 6 A / U _b 500 V / I _b 4 A DC-13: U _b 24 V / I _b 6 A / U _b 220 V / I _b 1 A
Degree of protection accd. to EN 60529	IP66 (installed condition)
Type of mounting	DIN rail mounting
Enclosure colour	grey
Gasket material	Neoprene (standard), Fluoric Silicone or Viton on request
Latch point	CEAG 1 (others on request)

2-pole version

Connecting terminals	2 x 2.5 mm ²
Dimensions (L x W x H)	59 x 31 x 45 mm
Weight	0.15 kg

4-pole version¹⁾

Connecting terminals	4 x 2.5 mm ²
Dimensions (L x W x H)	59 x 73 x 45 mm
Weight	0.35 kg

¹⁾ The limits of the operating temperature range and the max. permissible temperature rise of the components have to be taken into account. See also pages 2.4.34/35.

²⁾ The 4-pole pushbutton needs two mounting areas. The actuator will be in the middle of the two mounting areas.

Ordering code for component (Code 2)

Content	Circuit	Code	Ordering code				
			A	B	C	D1	D2

Key-operated pushbutton with silver contact points

Version with contact function: lockable/removable/lockable/removable (Code 10)

2 NC	2 NC	13	SLT	0	13	10	---
2 NO	2 NO	14	SLT	0	14	10	---
1 NO + 1 NC	1 NO + 1 NC	15	SLT	0	15	10	---
2 NO + 2 NC	2 NO + 2 NC	22	SLT	0	22	10	---
4 NC	4 NC	20	SLT	0	20	10	---
4 NO	4 NO	24	SLT	0	24	10	---
3 NO + 1 NC	3 NO + 1 NC	21	SLT	0	21	10	---
1 NO + 3 NC	1 NO + 3 NC	23	SLT	0	23	10	---

Key-operated pushbutton with gold contact points

Version with contact function: lockable/removable/lockable/removable (Code 10)

2 NO + 2 NC	2 NO + 2 NC	27	SLT	0	27	10	001
4 NC	4 NC	25	SLT	0	25	10	001
4 NO	4 NO	29	SLT	0	29	10	001
3 NO + 1 NC	3 NO + 1 NC	26	SLT	0	26	10	001
1 NO + 3 NC	1 NO + 3 NC	28	SLT	0	28	10	001

Built-in components key-operated pushbutton



Ordering code for component (Code 2)

Code	Component	Code				
A	Key-operated pushbutton	SLT				
Code	Circuit	Contacts	Code	silver contact points	gold contact points	
C	2 NC		13	16		
	2 NO		14	17		
	1 NO + 1 NC		15	18		
	4 NC		20	25		
	1 NC + 3 NO		21	26		
	2 NC + 2 NO		22	27		
	3 NC + 1 NO		23	28		
	4 NO		24	29		
Code	Function	Pushbutton not pressed	Key	Pushbutton pressed	Key	Code
D		lockable	removable	lockable	removable	10
		lockable	removable	lockable	not removable	11
		lockable	removable	not lockable	not removable	12
		lockable	not removable	lockable	removable	13
		not lockable	not removable	lockable	removable	14
		not lockable	removable	auto lockable	removable	15

Built-in components - key-operated switch



SLS 1 x 2-pole



SLS 1 x 4-pole

4 Technical data

Key-operated switch SLS

Marking accd. to 2014/34/EU	Ⓔ II 2 G Ex de IIC/IIB Gb / Ⓔ I M2 Ex de I Mb
EC-Type Examination Certificate	IBExU 14 ATEX 1030 U
IECEX Certificate of Conformity	IECEX IBE 14.0005U
Marking accd. to IECEX	Ex de IIC Gb Ex de IIB Gb Ex de I Mb
Operating temperature range	-45 °C up to +80 °C (IIC) -60 °C up to +80 °C (IIB)
Application temperature ¹⁾	-45 °C up to +55 °C (IIC) -60 °C up to +55 °C (IIB)
Rated voltage	500 V AC
Rated current	16 A
Rated current with gold contact points	0.4 A
Rated making-/rated breaking capacity accd. EN 60947-5-1	AC-15: U _e 250 V / I _e 6 A U _e 500 V / I _e 4 A DC-13: U _e 24 V / I _e 6 A U _e 60 V / I _e 0.8 A U _e 110 V / I _e 0.5 A
Switching system	engaging – engaging – engaging
Degree of protection accd. to EN 60529	IP66 (installed condition)
Type of mounting	DIN rail mounting
Enclosure colour	grey
Latch point	CEAG 1 (others on request)

2-pole version

Connecting terminals	2 x 2.5 mm ²
Dimensions (L x W x H)	59 x 31 x 45 mm
Weight	0.15 kg

4-pole version¹⁾

Connecting terminals	4 x 2.5 mm ²
Dimensions (L x W x H)	59 x 73 x 45 mm
Weight	0.35 kg

¹⁾ The limits of the operating temperature range and the max. permissible temperature rise of the components have to be taken into account. See also pages 2.4.34/35.

²⁾ The 4-pole pushbutton needs two mounting areas. The actuator will be in the middle of the two mounting areas.

Built-in components -key-operated switch



SLS 1 x 4-pole



SLS 1 x 2-pole

Ordering code for component (Code 2)

Code	Component		Code	
A	Key-switch		SLS	
Code	Circuit	Contacts	Code	
			silver contact points	gold contact points
2 NO			04	14
2 NO			18	18
4 NO			29	25
2 NC + 2 NO			26	26
4 NO			27	27

Code	Contact label	Inscription	Code
D	I 0 II		01
	Fern 0 Ort		02
	Hand 0 Auto		03

Example for ordering code (Code 2)

Contact system	Ordering code		
	A	C	D
Key switch with silver contact points and label „I 0 II			
04	SLS 5	04	01
05	SLS 5	05	01

Built-in components - mushroom-head pushbutton



SGTE 1 x 2-pole



SGTE 1 x 4-pole



SGT 1 x 2-pole



SGT 1 x 4-pole

4 Technical data

Ex-mushroom-head pushbutton (emergency stop „SGTE“ and normal version „SGT“)

Marking accd. to 2014/34/EU	Ⓔ II 2 G Ex de IIC/IIB Gb / Ⓔ I M2 Ex de I Mb
EC-Type Examination Certificate	IBExU 14 ATEX 1030 U
IECEX Certificate of Conformity	IECEX IBE 14.0005U
Marking accd. to IECEx	Ex de IIC Gb Ex de IIB Gb Ex de I Mb
Operating temperature range	-45 °C up to +80 °C (IIC) -60 °C up to +80 °C (IIB)
Application temperature ¹⁾	-45 °C up to +55 °C (IIC) -60 °C up to +55 °C (IIB)
Rated voltage	500 V AC
Rated current	16 A
Rated current with gold contact points	0.4 A
Rated making-/rated breaking capacity accd. EN 60947-5-1	AC-15: U _b 250 V / I _b 6 A U _b 500 V / I _b 4 A DC-13: U _b 24 V / I _b 6 A U _b 220 V / I _b 1 A
Degree of protection accd. to EN 60529	IP66 (installed condition)
Type of mounting	DIN rail mounting
Enclosure colour	grey
Gasket material	Neoprene (standard), Fluoric Silicone or Viton on request

2-pole version

Connecting terminals	2 x 2.5 mm ²
Dimensions (L x W x H)	59 x 31 x 45 mm
Weight	0.15 kg

4-pole version

Connecting terminals	4 x 2.5 mm ²
Dimensions (L x W x H)	59 x 73 x 45 mm
Weight	0.35 kg

¹⁾ The limits of the operating temperature range and the max. permissible temperature rise of the components have to be taken into account. See also pages 2.4.34/35.

²⁾ The 4-pole pushbutton needs two mounting areas. The actuator will be in the middle of the two mounting areas. The pushbutton „Emergency Stop“ will be equipped with a black plate in the centre of the pushbutton actuator.

Built-in components - mushroom-head pushbutton



SGT 1 x 4-pole



SGT 1 x 2-pole



SGTE 1 x 4-pole



SGTE 1 x 2-pole

Ordering code for component (Code 2)

Code	Component		Code	
A	Mushroom-head pushbutton		SGT	
	Mushroom-head pushbutton (emergency stop)		SGTE	
Code	Circuit	Contacts	Code	
			silver contact points	gold contact points
C	2 NC		13	16
	2 NO		14	17
	1 NO + 1 NC		15	18
	4 NC		20	25
	1 NC + 3 NO		21	26
	2 NC + 2 NO		22	27
	3 NC + 1 NO		23	28
	4 NO		24	29

Built-in components - mushroom-head pushbutton



SGTE 1 x 2-pole



SGTE 1 x 4-pole



SGT 1 x 2-pole



SGT 1 x 4-pole

4 Ordering code for component (Code 2)

Code	Label	Inscription	Code	Inscription	Code
D		emergency stop (German - Englisch) ¹⁾	1	0	002
		emergency stop (German - French) ¹⁾	4	I I	004
		0, I, START, STOP	01	STOP	006
		0	02	emergency stop	008
		I	03	SCHNELL	010
		I I	04	-	012
		💡	05	MARCHE	015
		STOP	06	AB	017
		START	07	Neutral green	019
		LANGSAM	09	UP	024
		SCHNELL	10	ZU	026
		-	12	OFF	028
		ARRET	14	-	031
		MARCHE	15	Neutral yellow	034
		0, I, Arret, Marche	20	AUS	037
		UP	24	HAND	050
		DOWN	25	HEBEN	052
		ZU	26	RECHTS	054
		ON	27	SLOW	056
		OFF	28	OPEN	058
		+	30		
		-	31		

Code	Mushroom head inscription	Colour	Code
E		red	1
		yellow ²⁾	2
		black ²⁾	3

pushbutton

Code	Function	released	engaged	unlocking	Code
F		not lockable	not lockable	n/a (pushbutton function)	1 ²⁾
		not lockable	lockable	hand released	2
		not lockable	lockable	key released	3

1) only SGTE

2) only SGT

Built-in components - mushroom-head pushbutton



SGT 1 x 4-pole



SGT 1 x 2-pole



SGTE 1 x 4-pole



SGTE 1 x 2-pole

Ordering code for component (Code 2)

Circuit

Ordering code

A C D E F

EMERGENCY STOP mushroom-head pushbutton red, with silver contact points

Version with inscription D/E, hand released

2 NC	SGTE 0	13	1	1	2
2 NO	SGTE 0	14	1	1	2
1 NO + 1 NC	SGTE 0	15	1	1	2
2 NO + 2 NC	SGTE 0	22	1	1	2
4 NC	SGTE 0	20	1	1	2
4 NO	SGTE 0	24	1	1	2
3 NO + 1 NC	SGTE 0	21	1	1	2
1 NO + 3 NC	SGTE 0	23	1	1	2

Mushroom-head pushbutton with silver contact points, without locking, mushroom head, black

Version with standard label (0, I, START, STOP)

2 NC	SGT 0	13	01	3	1
2 NO	SGT 0	14	01	3	1
1 NO + 1 NC	SGT 0	15	01	3	1
2 NO + 2 NC	SGT 0	22	01	3	1
4 NC	SGT 0	20	01	3	1
4 NO	SGT 0	24	01	3	1
3 NO + 1 NC	SGT 0	21	01	3	1
1 NO + 3 NC	SGT 0	23	01	3	1

Built-in components - mini-control switch



SCT 1 x 2-pole



SCT 1 x 4-pole

4 Technical data

Ex-Mini-control switch SCT

Marking accd. to 2014/34/EU	⊕ II 2 G Ex de IIC/IIB Gb / ⊕ I M2 Ex de I Mb
EC-Type Examination Certificate	IBExU 14 ATEX 1030 U
IECEX Certificate of Conformity	IECEX IBE 14.0005U
Marking accd. to IECEx	Ex de IIC Gb Ex de IIB Gb Ex de I Mb
Operating temperature range	-45 °C up to +80 °C (IIC) -60 °C up to +80 °C (IIB)
Application temperature ¹⁾	-45 °C up to +55 °C (IIC) -60 °C up to +55 °C (IIB)
Rated voltage	500 V AC
Rated current	16 A
Rated current with gold contact points	0.4 A
Rated making-/rated breaking capacity accd. EN 60947-5-1	AC-15: U _b 250 V / I _b 6 A U _b 500 V / I _b 4 A DC-13: U _b 24 V / I _b 6 A U _b 220 V / I _b 1 A
Degree of protection accd. to EN 60529	IP66 (installed condition)
Type of mounting	DIN rail mounting
Enclosure colour	grey

2-pole version

Connecting terminals	2 x 2.5 mm ²
Dimensions in mm (L x W x H)	59 x 31 x 45
Weight	0.15 kg

4-pole version¹⁾

Connecting terminals	4 x 2.5 mm ²
Dimensions (L x W x H)	59 x 73 x 45 mm
Weight	0.35 kg

¹⁾ The limits of the operating temperature range and the max. permissible temperature rise of the components have to be taken into account. See also pages 2.4.34/35.

²⁾ The 4-pole pushbutton needs two mounting areas. The actuator will be in the middle of the two mounting areas.

Built-in components - mini-control switch









SCT 1 x 4-pole



SCT 1 x 2-pole

Ordering code for component (Code 2) Code A - C - D - E

Code	Component	Ordering code	
A	Mini Control switch	SCT	
Code	Switching system	Version	Code
C	4	spring – engaging – spring	4
			
	5	engaging – engaging – engaging	5
			
	6	engaging – engaging	6
			
	7	spring – engaging – engaging	7
			
	8	engaging – engaging – spring	8
			
	9	engaging – spring	9
			

Built-in components - mini-control switch



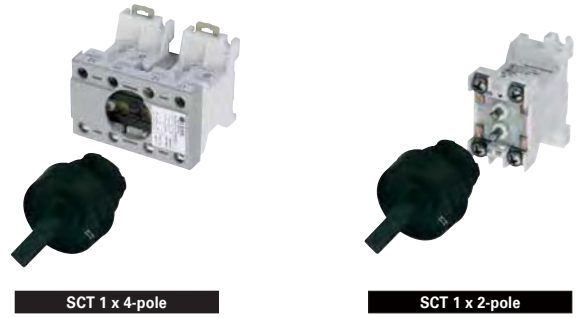
SCT 1 x 2-pole

SCT 1 x 4-pole

4 Ordering code for component (Code 2) Code A - C - D - E

Code	Circuit	Contacts	Code	
			silver contact points	gold contact points
D			01	11
			02	12
			03	13
			04	14
			05	15
			07	17
			22	32
			23	33
			21	31
			26	36
			25	35
			27	37
			24	34

Built-in components - mini-control switch



SCT 1 x 4-pole

SCT 1 x 2-pole

Ordering code for component (Code 2)

Code	Inscription	Code	Inscription	Code	Inscription	Code
E	0	I	01	0	I	18
	I	II	02	AUS	AUTO	19
	STOP	START	03	AUS	HAND	20
	HAND	AUTO	04	ÖRTLICH	AUS	21
	SENKEN	HEBEN	05	START	NORMAL	22
	REMOTE	LOCAL	06	OFF	0	23
	I	0	07	HAND	OFF	24
	AUS	BETRIEB	08	0	IN	25
	AUS	0	09	MAN	AUTO	26
	AUF	0	10	START	STOP	27
	Enriegelt	0	11	HEBEN	SENKEN	28
	OUT	OF	12	OFF	ON	29
	LOCAL	REMOTE	13	AUS	EIN	30

Other lables on request

Example for ordering code (Code 2)

Circuit	Switching system	Contacts Code	Ordering code			
			A	C	D	E
Control switch with silver contact points						
Switch can be locked in all positions						
I II	6	01	SCT	6	01 or 21	02
0 I	6	03	SCT	6	03 or 23	01
I II	6	02	SCT	6	02 or 22	02
I 0 II	4	04	SCT	4	04 or 24	07
I 0 II	5	05	SCT	5	05 or 26	07
0 I	7	07	SCT	7	07 or 27	01

Built-in components - potentiometer



Potentiometer

4 Technical data

Ex-potentiometer POT

Marking accd. to 2014/34/EU	⊕ II 2 G Ex de IIC/IIB Gb / ⊕ I M2 Ex de I Mb
EC-Type Examination Certificate	IBExU 14 ATEX 1030 U
IECEX Certificate of Conformity	IECEX IBE 14.0005U
Marking accd. to IECEX	Ex de IIC Gb Ex de IIB Gb Ex de I Mb
Operating temperature range	-45 °C up to +80 °C (IIC) -60 °C up to +80 °C (IIB)
Application temperature ¹⁾	-45 °C up to +55 °C (IIC) -60 °C up to +55 °C (IIB)
Rated voltage	up to 250 V
Power consumption (VA)	max. 1 W
Resistance range	100 – 10000 Ohm
Tolerance	± 20 %
Connecting terminals	2 x 2.5 mm ²
Degree of protection accd. to EN 60529	IP66 (installed condition)
Dimensions (L x W x H)	approx. 59 x 31 x 45 mm
Weight	0.15 kg
Type of mounting	DIN rail mounting
Enclosure colour	grey
Angle of rotation	270°
Scale	0 - 100 %

¹⁾ The limits of the operating temperature range and the max. permissible temperature rise of the components have to be taken into account. See also pages 2.4.34/35.

Ordering code for component (Code 2) - code A - C

Code	Component	Code
A	Potentiometer	POT
Code	Resistance	Code
C	0 - 100 Ohm	01
	0 - 220 Ohm	02
	0 - 470 Ohm	03
	0 - 1000 Ohm	04
	0 - 2200 Ohm	07
	0 - 4700 Ohm	05
	0 - 10000 Ohm	06

Example for ordering code (Code 2)

Content	Code
Potentiometer 1 W 25 % tolerance	
0 - 100 Ohm	POT 01
0 - 470 Ohm	POT 03
0 - 4700 Ohm	POT 05



Signal lamp

Technical data

		Ex-signal lamp SIL
Marking accd. to 2014/34/EU		⊕ II 2 G Ex d e IIC/IIB Gb / ⊕ II 2 G Ex d ia IIC/IIB Gb
EC-Type Examination Certificate		IBExU 12 ATEX 1047 U
IECEX Certificate of Conformity		IECEX IBE 13.0031U
Marking accd. to IECEx		Ex de IIC/IIB Gb Ex d ia IIC/IIB Gb
Operating temperature range		-45 °C up to +68 °C (IIC) -60 °C up to +68 °C (IIB)
Application temperature ¹⁾		-45 °C up to +60 °C (IIC) -60 °C up to +60 °C (IIB)
Rated voltage (Ex ed IIC) (Ex d ia IIC) (Ex ed IIC)		20 V up to 254 V AC/DC 10 V up to 30 V DC 12 V up to 24 V AC/DC
Rated current	20 V to 254 V 10 V up to 30 V (Ex d ia IIC) 12 V up to 24 V	approx. 4 - 15 mA max. 25 mA max. 24 mA
Max. values for Ex ia		U _i = 30 V DC, I _i = 100 mA, P _i = 750 mW
Connecting terminals		2 x 2.5 mm ²
Degree of protection accd. to EN 60529		IP66
Dimensions (L x W x H)		approx. 59 x 31 x 45 mm
Weight		0.15 kg
Type of mounting		DIN rail mounting
Enclosure colour		grey

¹⁾ The limits of the operating temperature range and the max. permissible temperature rise of the components have to be taken into account. See also pages 2.4.34/35.

Ordering code for component (Code 2) - code A - C - D

Code	Component	Code
A	Signal lamp	SIL
Code	Colour of the lens	Code
C	white	1
	yellow	2
	red	3
	blue	4
	green	5
Code	Voltage	Code
D	20 V - 254 V AC/DC	10
	10 V - 30 V DC (Ex-i)1)	34
	12 V - 24 V AC/DC	11

¹⁾ Supply by valve-driver components, e. gl., with data: U_o = 20 V - 18 V DC with R_i = 200 Ω - 500 Ω or U_o = 10 V - 18 V DC with R_i = 100 Ω - 200 Ω
No effective C_i and L_i values.

Example for ordering code (Code 2)

Content	Ordering code		
	A	C	D
Signal lamp SIL (examples)			
Universal voltage 20 V - 254 V AC/DC white	SIL	1	10
For intrinsically safe circuits 18 V up to 30 V DC blue	SIL	4	34
Low voltage 12 V up to 24 V AC/DC red	SIL	3	11

Built-in components - measuring instrument AM 45/AM 72



AM 45



AM 72

4 Technical data

Ex-measuring instrument AM 45/AM 72	Moving iron	Moving coil
Marking accd. to 2014/34/EU	⊕ II 2 G Ex e II / ⊕ II 2 G Ex e mb II ⊕ I M 2 Ex e I	⊕ II 2 G Ex ib IIC ⊕ I M 2 Ex ib I
EC-Type Examination Certificate	PTB 99 ATEX 2032 U	
Application temperature	-20 °C up to +40 °C -55 °C up to +55 °C (option)	
Rated voltage	up to 420 V (AM 45) up to 750 V (AM 72)	
Power consumption (VA)	max. 0.31 A	
Overload range	10 fold - 25 sec. 25 fold - 4 sec. 50 fold - 1 sec. indicated 1 : 1.5, optional 1:6, 1:10	10 fold - 5 sec.
Measuring range	max. 0 - 25 A direct / n / 1A	0/4 - 24 mA
Inductance Li		< 0.1 mH
Capacitance Ci		< 0.1 nF
Winding specification of moving coil		26.5 windings
Internal resistance		2.5 Ω ±30 %
Open circuit voltage max. Ui		30 V
Connecting terminals max. Ii		150 mA
Accuracy	Class 2.5	Class 1.5
Movement	Moving iron	Moving coil
Connecting terminals	2 x 1.5 - 4 mm ²	
Degree of protection accd. to EN 60529	IP66 (installed condition)	
Display size	40 x 40 mm (AM 45) 68 x 68 mm (AM 72)	
Weight	0.35 kg	
Type of mounting	DIN rail mounting	
Enclosure material	Polycarbonate	



Ordering code for component (Code 2) Code A - C - D

Code	Component	Code
A	Measuring instrument AM 45	AM 45
	Measuring instrument AM 72	AM 72

Code	Movement	Code
C	Direct connection	1
	CT connection n/1 A	2
	CT connection n/5 A	3
	Power connection 0 - 20/24 mA (Scale 0-100% / 120%) ¹⁾	5
	Power connection 4 - 20/24 mA (Scale 0-100% / 120%) ¹⁾	6
	Moving-coil connection 0 - 20/24 mA (Scale 0-100% / 120%) ^{1) 3)}	7
	Moving-coil connection 4 - 20/24 mA (Scale 0-100% / 120%) ^{1) 3)}	8

Code	Measuring range	Code	Measuring range	Code
D	0 - 1	02	0 - 75 / 112.5 A	13
	0 - 2.5 / 3.75 A ²⁾	03	0 - 100 / 150 A	14
	0 - 5 / 7.5 A ²⁾	04	0 - 150 / 225 A	15
	0 - 10 / 15 A ²⁾	05	0 - 200 / 300 A	16
	0 - 15 / 22.5 A	06	0 - 250 / 375 A	17
	0 - 20 / 30 A ²⁾	08	0 - 300 / 450 A	18
	0 - 30 / 45 A	09	0 - 400 / 600 A	19
	0 - 40 / 60 A	10	0 - 500 / 750 A	20
	0 - 50 / 75 A	11	0 - 600 / 900 A	21
	0 - 60 / 90 A	12	0 - 100% / 150%	33

¹⁾ Movements 0 - 20 mA / 4 - 20 mA and with moving-coil connection are only available with scale 0 - 100 %/120 %v

²⁾ Version for direct connection or with CT connection n/1 A possible.

³⁾ Moving coil only for Ex-i or Ex-d flameproof applications - Other interchangeable scales available on request

Example for ordering code (Code 2)

Movement	Measuring range	Ordering code		
		A	C	D
Measuring instrument AM 45				
Version with direct connection				
Direct (moving iron)	0 - 1 / 1.5 A	AM45	1	02
Direct (moving iron)	0 - 10 / 15 A	AM45	1	05
0 - 20 / 24 mA (moving coil)	0-100% / 120%	AM45	5	33
4 - 20 / 24 mA (moving coil)	0-100% / 120%	AM45	6	33
Moving iron measuring instrument AM 72				
Version with CT connection n/1A				
Converter n / 1A	0 - 100% / 150%	AM72	2	33
Moving-coil measuring instrument AM 45 (Ex-i application only)				
Version with direct connection				
0 - 20 / 24 mA	0-100% / 120%	AM45	7	33
4 - 20 / 24 mA	0-100% / 120%	AM45	8	33

Built-in components - control switch Ex 23 and Ex 29



Ex 23



Ex 29

4

Technical data

Ex-Built-in components for individual control stations Control switch Ex 23 and Ex 29

	Ex 23	Ex 29
Marking accd. to 2014/34/EU	<ul style="list-style-type: none"> ⊕ I M2 Ex d e I Mb ⊕ II 2G Ex d e IIB/IIC Gb ⊕ II 2G Ex d ia/ib IIB/IIC Gb 	⊕ II 2 G Ex de IIC
IECEX Certificate of Conformity	IECEX IBE 13.0108 U	
Marking accd. to IECEx	<ul style="list-style-type: none"> Ex d e I Mb Ex d e IIB/IIC Gb Ex d ia/ib IIB/IIC Gb 	
EC-Type Examination Certificate	BVS 13 ATEX E 107U	PTB 98 ATEX 1118 U
Operating temperature range	<ul style="list-style-type: none"> -45 °C up to +80 °C (IIC) -60 °C up to +80 °C (IIB) 	
Application temperature ¹⁾	<ul style="list-style-type: none"> -45 °C up to +55 °C (IIC) -60 °C up to +55 °C (IIB) 	<ul style="list-style-type: none"> -20 °C up to +40 °C -55 °C up to +55 °C (option)
Rated voltage	up to 500 V	up to 500 V
Rated current	10 A	16 A ²⁾
Rated current with gold contact points	0.4 A	0.4 A
Rated making-/rated breaking capacity accd. EN 60947-5-1	<ul style="list-style-type: none"> AC-15: U_e 230 V / I_e 6 A U_e 500 V / I_e 4 A DC-13: U_e 24 V / I_e 6 A U_e 230 V / I_e 0.5 A 	<ul style="list-style-type: none"> AC-15: U_e 230 V / I_e 6 A U_e 400 V / I_e 4 A DC-13: U_e 24 V / I_e 2 A U_e 230 V / I_e 0.3 A
Connecting terminals	2 x 0.5 - 2.5 mm ²	2 x 0.5 - 2.5 mm ² or 1 x 1.0 - 6.0 mm ²
Weight	<ul style="list-style-type: none"> 1 level: approx. 0.2 kg 2 level: approx. 0.35 kg 3 level: - 	<ul style="list-style-type: none"> approx. 0.25 kg approx. 0.40 kg approx. 0.55 kg
Type of mounting	DIN rail mounting	
Enclosure colour	grey	black

¹⁾ The limits of the operating temperature range and the max. permissible temperature rise of the components have to be taken into account. See also pages 2.4.34/35.

²⁾ min. cross section of used cable ≥ 12 A: 2.5 mm²



Ordering code for component (Code 2) Code A - C - D - E - F

Code	Component	Code		
A	Ex 23	Ex 23		
	Ex 29	Ex 29		
Code	Switching system	Code		
C	spring – engaging – spring	4		
	engaging – engaging – engaging	5		
	engaging – engaging	6		
	spring – engaging – engaging	7		
	engaging – engaging – spring	8		
D	Contacts Silver contact points	Code	Contacts Silver contact points	Code
		060		034
		062		037
		065		049
		061		023
		063		019
		067		033
		011		024

Versions with gold contact points are available on request.
 Versions with compulsory NO are possible.

Built-in components - control switch Ex 23 and Ex 29



Ex 23

Ex 29

4 Ordering code for component (Code 2) Code A - C - D - E - F

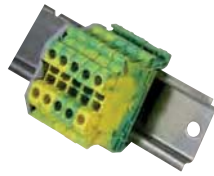
Code	Inscription (labels)		Code	Inscription (labels)			Code
E	0	I	01	0	I	II	18
	I	II	02	AUS	AUTO	EIN	19
	STOP	START	03	AUS	HAND	AUTO	20
	HAND	AUTO	04	ÖRTLICH	AUS	FERN	21
	SENKEN	HEBEN	05	START	NORMAL	STOP	22
	REMOTE	LOCAL	06	OFF	0	ON	23
	I 0	II	07	HAND	OFF	AUTO	24
	AUS BETRIEB	EIN	08	0	IN	START	25
	AUS 0	EIN	09	MAN		AUTO	26
	AUF 0	AB	10	START		STOP	27
	Entriegelt 0	Verriegelt	11	HEBEN		SENKEN	28
	OUT OF	HAND	12	OFF		ON	29
	LOCAL REMOTE	AUTO	13	AUS		EIN	30
	STOP 0	START	14	HAND		AUTO	31
	HAND 0	AUTO	15	ON		OFF	32
	AUF AUS	ZU	16	I	II	III	33

Code	Padlocking facility		Code
F	none	<input type="checkbox"/>	0
	centre	<input type="checkbox"/>	1
	right	<input checked="" type="checkbox"/>	2
	left	<input checked="" type="checkbox"/>	3

Example for ordering code (Code 2)

Content	Component	Contacts	Label	Code	Code	Code	Code	Code	Code	Code	Code	Code	Code	
A	Switching system B	C	D	E	A	B	C	D	E	A	B	C	D	E
Ex 23	6		060 - II	02	none	<input type="checkbox"/>	0	Ex 23	6	060	02	0		
Ex 23	5		034 - 0 - II	07	centre	<input type="checkbox"/>	1	Ex 23	5	034	07	1		
Ex 29	6		060 - II	02	left	<input checked="" type="checkbox"/>	3	Ex 29	6	060	02	3		
Ex 29	6		065 0 - I	01	right	<input checked="" type="checkbox"/>	2	Ex 29	6	065	01	2		

Other combination available on request



UT4 PE



UT4



MKX 4

Technical data

Ex-Built-in components for individual control stations
Terminals

	MXK 4-Ex	UT 4 / UT 4 PE
Marking accd. to 2014/34/EU	⊕ II 2 G Ex e II	⊕ II 2 G Ex e II ⊕ II 2 D Ex e II
EC-Type Examination Certificate	PTB 99 ATEX 3132U	KEMA 04 ATEX 2048 U
IECEX Certificate of Conformity	IECEX KEMA 06.0027U	
Marking accd. to IECEx	Ex e II	
Application temperature	-50 °C up to +55 °C	-50 °C up to +55 °C
Rated voltage	up to 420 V	up to 690 V
Rated current	max. 27 A	max. 30 A
Connecting terminals	4 mm ²	0.14 mm ² - 4 mm ² multi-wire 0.14 mm ² - 6 mm ² solid-wire
Dimensions (L x W x H)	6.2 mm width	47.7 mm x 6.2 mm
Weight	0.01 kg	0.01 kg
Type of mounting	NS 35 DIN rail mounting	NS 35 DIN rail mounting
Enclosure colour	grey	grey

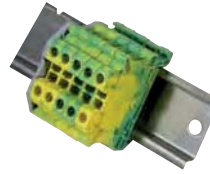
Built-in components - terminals



MKX 4



UT4



UT4 PE

4 Ordering code for component (Code 2) Code A - C - D - E - F

Code	Component	Code
A	KLM	KLM
Code	Content	Code
C	Ex-e	1
	Ex-i	2
Code	Terminal type	Code
D	Terminal block MXK4-Ex max. 6 terminals	B
	Terminal insert max. 3 terminals	E
	Terminals UT 4 / UT 4 PE	A
Code	Number of terminals	Code
E	1	001
	2	002
	3	003
	ect.	ect.

Other variants, e.g. modules with resistors or fine-wire fuses, available on request.

Example for ordering code (Code 2)

Content	Number	Ordering code				
		A	C	D	E	F
Terminal block MXK 4-EX 6 x Ex-e terminals MXK 4 + 1 PE-terminal, Ex-e connection terminals	6	KLM	1	B	006	01
Terminal UK 4 12 x Ex-e terminals UT 4 + 2 PE-terminals, Ex-e terminals	12	KLM	1	A	012	02



ZUB 17



ZUB 31



ZUB 22



ZUB 20

Ordering code for labels and locking facilities (Code 3) Code A - B - C - D

Code	Label			Code
A	52.0 x 13 mm			ZUB 19
	37.0 x 17 mm with holder			ZUB 20
Code	Inscription			Code
B	text to be determined			1 ... 4
Code	Padlocking facility	for operating element	Material	Code
C	with flap (blank)	pushbutton	stainless steel	ZUB 12
	with flap (red)	pushbutton	stainless steel	ZUB 13
	with flap without „0“ activated	double pushbutton	stainless steel	ZUB 16
	with flap with „0“ activated	double pushbutton	stainless steel	ZUB 17
	with flap (blank)	mushroom-head pushbutton	stainless steel	ZUB 02
	with flap (red)	mushroom-head pushbutton	stainless steel	ZUB 01
	with bolt and chain	mushroom-head pushbutton	stainless steel	ZUB 14
	Fire alarm (red) with hammer	mushroom-head pushbutton	stainless steel	ZUB 15
	Fire alarm (red) with hammer	activates alarm when broken	stainless steel	ZUB 05
	with flap, not activated	pushbutton	plastic	ZUB 23
	with flap, with activated	pushbutton	plastic	ZUB 24
	with flap, with activated	mushroom-head pushbutton	plastic	ZUB 22
	with flap, not activated	mushroom-head pushbutton	plastic	ZUB 21
	protective collar yellow	pushbutton / mushroom-head pushbutton	light alloy	ZUB 30
	protective collar red	pushbutton / mushroom-head pushbutton	light alloy	ZUB 31
Code	Mounting area			Code
D				1 ... 4

Example for ordering code

Content	Number	Ordering code			
		A	B	C	D
Protective collar yellow at mounting area 3	X	-	-	ZUB 30	3

Built-in components - accessories



Metal flange FLM



Cable gland GK



Trumpet shaped cable gland TR



Screw plug SV

4 Ordering code for cable glands and flanges (Code 4) Code A - B - C - D - E

Code	Content	Component	Code
A	Entry type	Entry direct in enclosure	GEH
		Entry via plastic flange	FLK
		Entry via metal flange	FLM
Code	Content	Component	Code
B	Entry side	Entry side on bottom (left or right)	1, 2
	Position	Entry side on top (left or right)	3, 4
Code	Content	Component	Code
C	Entry element	Only entry	OE
		Threaded entry	BO
		Screw plug	SV
		Cable plastic gland	GK
		Cable metal* gland	GM*
		Cable entry with plastic plug	GV
		Trumpet-shaped plastic gland	TR
Code	Content	Component	Code
D	Size	M12, M16, M20, M25, M32, M40, M50, M63	M..
		Ø21, Ø26	d..
Code	Content	Component	Code
E	Number	Number of entries	..(No)

Example for ordering code

Content	Number	Ordering code				
		A	B	C	D	E
2 cable entries M25 moulded plastic, Version without plug direct from below into the enclosure	2	GEH	1	GK	M25	02



4.6

Ex-Control and Signal Units for Panel Mounting

Certified products for individual designed panels

4 CEAG control and indicating elements can be integrated in panels with a wall thickness of up to 5 mm.

The CEAG components for panel mounting, such as signal lamps, pushbuttons and switches, can be instantly plugged into the control and indicating elements on the panel via bayonet-ring fitting. The single-wire installation is clear and simple.

All panel-mounted apparatus can be retrofitted for cable connection with a slip-on strain relief and protective cover and is then completely certified. Planning and procurement of panel-mounted apparatus with different cable lengths is a thing of the past.

The completely certified measuring instruments for direct and indirect measurement are available for different amperage ranges. The instruments are equipped with a transformer for easy adaptation to other ranges on the interchangeable scales.



Features

- Bayonet-ring catch for quick one-hand mounting
- Complete certification of built-in apparatus
- Connection terminals for variable, low-cost wiring
- Standard actuator-element size of Ø 30.5 mm



Double pushbutton

Pushbutton

Technical data

Pushbutton Typ 418 811 and double pushbutton Typ 418 814

	Complete certificate ¹⁾	Component certificate
Marking accd. to 2014/34/EU	II 2 G Ex de IIC T6	II 2 G Ex de IIC/IIB Gb I M2 Ex de I Mb
EC-Type Examination Certificate	PTB 99 ATEX 1034	IBExU 14 ATEX 1030 U
IECEX Certificate of Conformity		IECEX IBE 14.0005 U
Marking accd. to IECEx		Ex de IIC/IIB Gb Ex de I Mb
Operating temperature range	-55 °C up to + 80 °C	-45 °C up to +80 °C (IIC) -60 °C up to +80 °C (IIB)
Permissible ambient temperature	-55 °C up to + 50 °C	
Application temperature ²⁾		-45 °C up to +55 °C (IIC) -60 °C up to +55 °C (IIB)
Rated voltage	400 V AC	500 V AC
Rated current	16 A	16 A
Rated current with gold contact points	0.4 A	0.4 A
Rated making-/rated breaking capacity accd. EN 60947-5-1	AC-15: U _e 250 V / I _e 6 A U _e 400 V / I _e 4 A DC-13: U _e 24 V / I _e 6 A U _e 220 V / I _e 1 A	AC-15: U _e 250 V / I _e 6 A U _e 500 V / I _e 4 A DC-13: U _e 24 V / I _e 6 A U _e 220 V / I _e 1 A
Connecting terminals	2 x 2.5 mm ²	2 x 2.5 mm ²
Degree of protection accd. to EN 60529	IP66 ¹⁾ / IP65 ¹⁾ (double pushbutton)	IP00
Dimensions (L x W x H)	approx. 140 x 38 x 67 mm	approx. 91 x 38 x 57 mm
Weight	0.25 kg	0.20 kg
Cable gland	M25x1.5 Ø 6- 15 mm	--
Type of mounting	Ø 30.3 mm fixing hole	Ø 30.3 mm fixing hole
Enclosure colour	grey	grey
Gasket material	Neoprene (standard), Fluoric Silicone or Viton on request	

¹⁾ with protective cover IP66 / IP65

²⁾ The limits of the operating temperature range and the max. permissible temperature rise of the components have to be taken into account. See also pages 2.4.34/35.

Ex-pushbutton for panel mounting



Pushbutton



Double pushbutton

4 Ordering code for components Code A - B - C1 - (C2)

Code **A** **B** **C2** **C1**
 Order No. **GHG 418 81__** **R** **—** **—**

Code	Component	Code
A	Pushbutton	GHG 418 811
	Double pushbutton	GHG 418 814

Code	Circuit	Contacts	Code	
			silver contact points	gold contact points
B	2 NC		3	6
	2 NO		4	7
	1 NO + 1 NC		5	8

Code	Inscription (label)	Code	Inscription	Code
C1, C2	0, I, Start, Stop	01	0	02
	I	03	I I	04
		05	STOP	06
	START	07	LANGSAM	09
	SCHNELL	10	EMERG.STOP	11
		12		13
	ARRET	14	MARCHE	15
	AUF	16	AB	17
	Neutral white	18	Neutral grün	19
	0, I, Arret, Marche	20	UP	24
	DOWN	25	ZU	26
	ON	27	OFF	28
	+	30	-	31
	Neutral rot	33	Neutral yellow	34
	EIN	36	AUS	37
	Neutral black	38	AUTO	39
	Neutral blau	40	HAND	50
	SENKEN	51	HEBEN	52
	LINKS	53	RECHTS	54
	FAST	55	SLOW	56
	RESET	57	OPEN	58



Double pushbutton



Pushbutton

Example for order No

Content	Label	Order No.			
		A	B	C1	C2
Circuit					
Pushbutton without protective cover, silver contact points					
2 NC	(0, I, START, STOP)	GHG 418 811 3	R0001	–	
2 NO	(0, I, START, STOP)	GHG 418 811 4	R0001	–	
1 NO + 1 NC	(0, I, START, STOP)	GHG 418 811 5	R0001	–	
Double pushbutton without protective cover, with gold contact points					
2 NC	(0, I, START, STOP)	GHG 418 814 6	R00	01	
2 NO	(0, I, START, STOP)	GHG 418 814 7	R00	01	
1 NO + 1 NC	(0, I, START, STOP)	GHG 418 814 8	R00	01	

Accessories

Type	OU	Order No.
Protective cover to meet IP66	5	GHG 410 1939 R0002

Please pay attention that only order units (OU) according to the ordering details can be delivered.

Ex-pushbutton for panel mounting

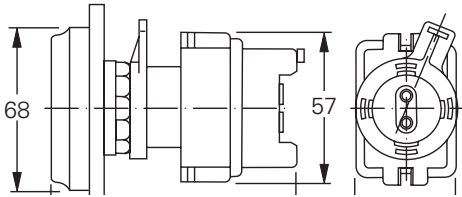


Pushbutton

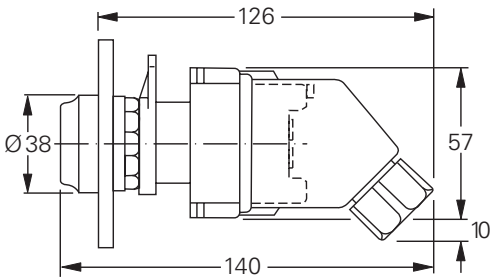


Double pushbutton

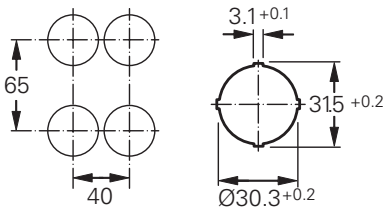
4 Dimension drawing



(Double-)pushbutton without protective cover



(Double-)pushbutton with protective cover



Minimum distances



Key-operated pushbutton

Technical data

Key-operated pushbutton Typ 418 812

	Complete certificate ¹⁾	Component certificate
Marking accd. to 2014/34/EU	II 2 G Ex de IIC T6	II 2 G Ex de IIC/IIB Gb I M2 Ex de I Mb
EC-Type Examination Certificate	PTB 99 ATEX 1034	IBExU 14 ATEX 1030 U
IECEX Certificate of Conformity		IECEX IBE 14.0005 U
Marking accd. to IECEx		Ex de IIC/IIB Gb Ex de I Mb
Operating temperature range	-55 °C up to + 80 °C	-45 °C up to +80 °C (IIC) -60 °C up to +80 °C (IIB)
Permissible ambient temperature	-55 °C up to + 50 °C	
Application temperature ²⁾		-45 °C up to +55 °C (IIC) -60 °C up to +55 °C (IIB)
Rated voltage	400 V AC	500 V AC
Rated current	16 A	16 A
Rated current with gold contact points	0.4 A	0.4 A
Rated making-/rated breaking capacity accd. EN 60947-5-1	AC-15: U _b 250 V / I _b 6 A U _b 400 V / I _b 4 A DC-13: U _b 24 V / I _b 6 A U _b 220 V / I _b 1 A	AC-15: U _b 250 V / I _b 6 A U _b 500 V / I _b 4 A DC-13: U _b 24 V / I _b 6 A U _b 220 V / I _b 1 A
Connecting terminals	2 x 2.5 mm ²	2 x 2.5 mm ²
Degree of protection accd. to EN 60529	IP661)	IP00
Dimensions (L x W x H)	approx. 182 x 38 x 67 mm	approx. 133 x 38 x 57 mm
Weight	0.30 kg	0.3 kg
Cable gland	M25x1.5 Ø 6 - 15 mm	--
Type of mounting	Ø 30.3 mm fixing hole	Ø 30.3 mm fixing hole
Enclosure colour	grey	grey
Gasket material	Neoprene (standard), Fluoric Silicone or Viton on request	

¹⁾ with protective cover IP66

²⁾ The limits of the operating temperature range and the max. permissible temperature rise of the components have to be taken into account. See also pages 2.4.34/35.

Ex-key-operated pushbutton for panel mounting



Key-operated pushbutton

4 Ordering code for components Code A - B - C1 - (C2)

Code A B C
Order No. GHG 418 812 _ R00 _

Code	Component	Contacts		Code	Code
A	Key-operated pushbutton				GHG 41 812
Code	Circuit			silver contact points	gold contact points
B	2 NC			3	6
	2 NO			4	7
	1 NO + 1 NC			5	8
Code	released	Key	engaged	Key	Code
C	lockable	removable	lockable	removable	10
	lockable	removable	lockable	not removable	11
	lockable	removable	not lockable	not removable	12
	lockable	not removable	lockable	removable	13
	not lockable	not removable	lockable	removable	14
	not lockable	removable	autom. lockable	removable	15

Example for order No.

Content	Label		Order No.		
	released	engaged	A	B	C
Key-operated switch with silver contact points, without protective cover					
1 NO + 1 NC	lockable, Key removable	lockable, Key removable	GHG 418 812	5 R00	10
2 NC	lockable, Key removable	lockable, Key not removable	GHG 418 812	3 R00	11
2 NO	lockable, Key removable	not lockable, Key not removable	GHG 418 812	4 R00	12
Key-operated switch with gold contact points, without protective cover					
1 NO + 1 NC	lockable, Key removable	lockable, Key removable	GHG 418 812	8 R00	10
2 NC	lockable, Key removable	lockable, Key not removable	GHG 418 812	6 R00	11
2 NO	lockable, Key removable	not lockable, Key not removable	GHG 418 812	7 R00	12

Accessories

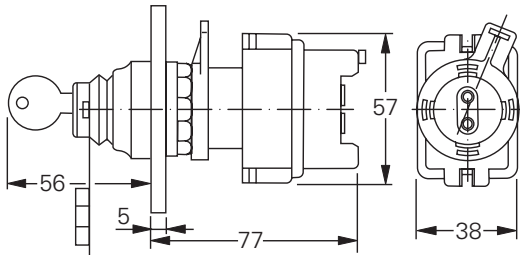
Type	OU	Order No.
Protective cover to meet IP66	5	GHG 410 1939 R0002

Please pay attention that only order units (OU) according to the ordering details can be delivered.

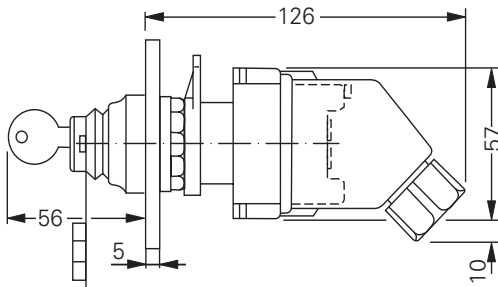


Key-operated pushbutton

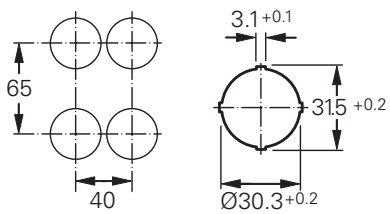
Dimension drawing



Key-operated switch without protective cover



Key-operated switch with protective cover



Minimum distances

Ex-key-operated switch for panel mounting



Key-operated switch

4 Technical data

Key-operated switch Type 418 8195

	Complete certificate ¹⁾	Component certificate
Marking accd. to 2014/34/EU	II 2 G Ex de IIC T6	II 2 G Ex de IIC/IIB Gb I M2 Ex de I Mb
EC-Type Examination Certificate	PTB 99 ATEX 1034	IBExU 14 ATEX 1030 U
IECEX Certificate of Conformity		IECEX IBE 14.0005 U
Marking accd. to IECEx		Ex de IIC/IIB Gb Ex de I Mb
Operating temperature range	-55 °C up to +80 °C	-45 °C up to +80 °C (IIC) -60 °C up to +80 °C (IIB)
Permissible ambient temperature	-25 °C up to +50 °C	
Application temperature ²⁾		-45 °C up to +55 °C (IIC) -60 °C up to +55 °C (IIB)
Rated voltage	400 V AC	500 V AC
Rated current	16 A	16 A
Rated current with gold contact points	0.4 A	0.4 A
Rated making-/rated breaking capacity accd. EN 60947-5-1	AC-15: U _e 250 V / I _e 6 A U _e 400 V / I _e 4 A DC-13: U _e 24 V / I _e 6 A U _e 220 V / I _e 1 A	AC-15: U _e 250 V / I _e 6 A U _e 500 V / I _e 4 A DC-13: U _e 24 V / I _e 6 A U _e 220 V / I _e 1 A
Connecting terminals	2 x 2.5 mm ²	2 x 2.5 mm ²
Degree of protection accd. to EN 60529	IP66 ¹⁾	IP00
Dimensions (L x W x H)	approx. 188 x 38 x 67 mm	approx. 139 x 38 x 57 mm
Weight	0.30kg	0.25 kg
Cable gland	M25x1.5 Ø 6 - 15 mm	--
Type of mounting	Ø 30.3 mm fixing hole	Ø 30.3 mm fixing hole
Enclosure colour	grey	grey
Gasket material	Neoprene (standard), Fluoric Silicone or Viton on request	

¹⁾ with protective cover IP66

²⁾ The limits of the operating temperature range and the max. permissible temperature rise of the components have to be taken into account. See also pages 2.4.34/35.



Key-operated switch

Ordering code for components A - B - C1 - (C2)

Code A B C
 Order No. GHG 418 8195 R5 _ _

Code	Component	Code	
A	Key-operated switch	GHG 418 8195	
Code	Circuit	Contacts	Code silver contact points gold contact points
B	2 NC		4 7
	2 NO		5 8
Code	Inscription	Code	
C	I - 0 - II	07	
	Fern - 0 - Ort	08	
	Hand - 0 - Auto	09	

Example for order No.

Switching mechanism	Contact-system	Label	Order No.		
			A	C	D
Key-operated switch, without protective cover					
4		I 0 II	GHG 418 8195	R 5 4	07
4		FERN 0 ORT	GHG 418 8195	R 5 4	08
4		HAND 0 AUTO	GHG 418 8195	R 5 4	09
5		I 0 II	GHG 418 8195	R 5 5	07
5		FERN 0 ORT	GHG 418 8195	R 5 5	08
5		HAND 0 AUTO	GHG 418 8195	R 5 5	09

Switch can be locked in all positions and key can be removed in all positions

Key-operated switch with gold contact points, without protective cover

4		I 0 II	GHG 418 8195	R 5 7	07
4		FERN 0 ORT	GHG 418 8195	R 5 7	08
4		HAND 0 AUTO	GHG 418 8195	R 5 7	09
5		I 0 II	GHG 418 8195	R 5 8	07
5		FERN 0 ORT	GHG 418 8195	R 5 8	08
5		HAND 0 AUTO	GHG 418 8195	R 5 8	09

Accessories

Type	OU	Order No.
Protective cover to meet IP66	5	GHG 410 1939 R0002

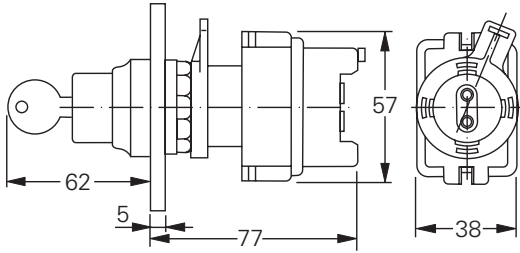
Please pay attention that only order units (OU) according to the ordering details can be delivered.

Ex-key-operated switch for panel mounting

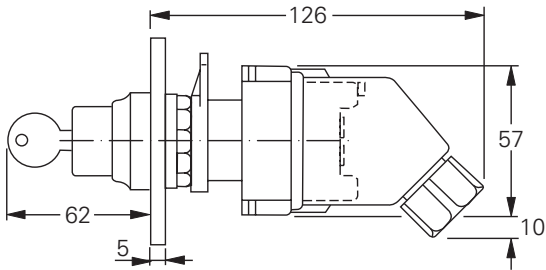


Key-operated switch

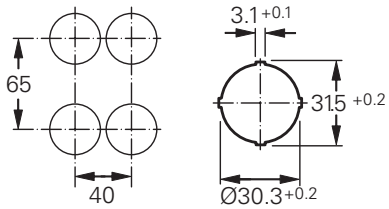
4 Dimension drawing



Key-operated switch without protective cover



Key-operated switch with protective cover



Minimum distances



Mushroom-head pushbutton



Emergency-Stop pushbutton

Technical data

Mushroom-head pushbutton (Emergency stop and normal version)

	Complete certificate ¹⁾	Component certificate
Marking accd. to 2014/34/EU	II 2 G Ex de IIC T6	II 2 G Ex de IIC/IIB Gb I M2 Ex de I Mb
EC-Type Examination Certificate	PTB 99 ATEX 1034	IBExU 14 ATEX 1030 U
IECEX Certificate of Conformity		IECEX IBE 14.0005 U
Marking accd. to IECEx		Ex de IIC/IIB Gb Ex de I Mb
Operating temperature range	-55°C up to + 80 °C	-45 °C up to +80 °C (IIC) -60 °C up to +80 °C (IIB)
Permissible ambient temperature	-25 °C up to + 50 °C	
Application temperature ²⁾		-45 °C up to +55 °C (IIC) -60 °C up to +55 °C (IIB)
Rated voltage	400 V AC	500 V AC
Rated current	16 A	16 A
Rated current with gold contact points	0.4 A	0.4 A
Rated making-/rated breaking capacity accd. EN 60947-5-1	AC-15: U _b 250 V / I _b 6 A U _b 400 V / I _b 4 A DC-13: U _b 24 V / I _b 6 A U _b 220 V / I _b 1 A	AC-15: U _b 250 V / I _b 6 A U _b 500 V / I _b 4 A DC-13: U _b 24 V / I _b 6 A U _b 220 V / I _b 1 A
Connecting terminals	2 x 2.5 mm ²	2 x 2.5 mm ²
Degree of protection accd. to EN 60529	IP661)	IP00
Dimensions (L x W x H)	approx. 156 x 38 x 67 mm	approx. 139 x 38 x 57 mm
Weight	0.30 kg	0.25 kg
Cable gland	M25x1.5 Ø 6 - 15 mm	--
Type of mounting	Ø 30.3 mm fixing hole	Ø 30.3 mm fixing hole
Enclosure colour	grey	grey
Gasket material	Neoprene (standard), Fluoric Silicone or Viton on request	

¹⁾ with protective cover IP66

²⁾ The limits of the operating temperature range and the max. permissible temperature rise of the components have to be taken into account. See also pages 2.4.34/35.

Ex-mushroom-head pushbutton for panel mounting



Emergency-Stop pushbutton

Mushroom-head pushbutton

4 Ordering code for components Code A - B - C - D - E

Code A B C D E
 Order No. GHG 418 815 _ R - - -

Code	Component	Code			
A	Mushroom-head pushbutton	GHG 418 815			
Code	Circuit	Contacts manual	Code key released	silver contact points	gold contact points
B	2 NC			3	6
	2 NO			4	7
	1 NO + 1 NC			5	8
Code	Mushroom-head pushbutton inscription and colour				Code
C	emergency stop EMERGENCY STOP (German - English) ¹⁾				1
	emergency stop ARRET D'URGENCE (German - French) ¹⁾				4
	red				1
	yellow ¹⁾				2
	black ²⁾				3
Code	released	engaged	unlocking	Code	
D	not lockable	not lockable	n/a (pushbutton function)	1 ²⁾	
	not lockable	lockable	hand released	2 ¹⁾	
	not lockable	lockable	key released	3 ¹⁾	
Code	Inscription (label)	Code	Inscription	Code	
E	0, I, Start, Stop	01	0	02	
	I	03	II	04	
		05	STOP	06	
	START	07	NOT-AUS1)	00	

¹⁾ only emergency stop mushroom head pushbutton

²⁾ only mushroom-head pushbutton normal version

Ex-mushroom-head pushbutton for panel mounting



Mushroom-head pushbutton



Emergency-Stop pushbutton

Example for order No.

Contact system	Pushbutton colour	Inscription	Order No.				
			A	B	C	D	E
EMERGENCY STOP mushroom-head pushbutton red, with silver contact points, without protective cover							
content with inscription D/E, hand released							
2 NC	red	German/English	GHG 418 815 3	R 1	2	00	
2 NC	red	German/French	GHG 418 815 3	R 4	2	00	
2 NO	red	German/English	GHG 418 815 4	R 1	2	00	
2 NO	red	German/French	GHG 418 815 4	R 4	2	00	
1 NO + 1 NC	red	German/English	GHG 418 815 5	R 1	2	00	
1 NO + 1 NC	red	German/French	GHG 418 815 5	R 4	2	00	
Version with inscription D/E, key released							
2 NC	red	German/English	GHG 418 815 3	R 1	3	00	
2 NC	red	German/French	GHG 418 815 3	R 4	3	00	
2 NO	red	German/English	GHG 418 815 4	R 1	3	00	
2 NO	red	German/French	GHG 418 815 4	R 4	3	00	
1 NO + 1 NC	red	German/English	GHG 418 815 5	R 1	3	00	
1 NO + 1 NC	red	German/French	GHG 418 815 5	R 4	3	00	
Mushroom-head pushbutton, with silver contact points, without protective cover							
version with inscription D/E, pushbutton function only							
2 NC	black	0, I, START, STOP	GHG 418 815 3	R 3	1	01	
2 NC	yellow	0, I, START, STOP	GHG 418 815 3	R 2	1	01	
2 NO	black	0, I, START, STOP	GHG 418 815 4	R 3	1	01	
2 NO	yellow	0, I, START, STOP	GHG 418 815 4	R 2	1	01	
1 NO + 1 NC	black	0, I, START, STOP	GHG 418 815 5	R 3	1	01	
1 NO + 1 NC	yellow	0, I, START, STOP	GHG 418 815 5	R 2	1	01	

Accessories

Type	OU	Order No.
Protective cover to meet IP66	5	GHG 410 1939 R0002

Please pay attention that only order units (OU) according to the ordering details can be delivered.

Ex-mushroom-head pushbutton for panel mounting



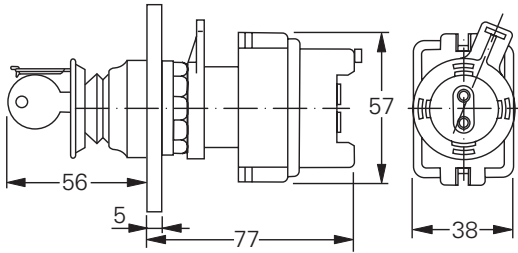
Mushroom-head pushbutton



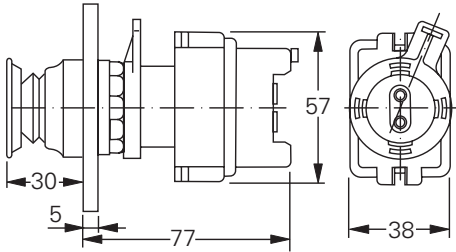
Mushroom-head pushbutton

4

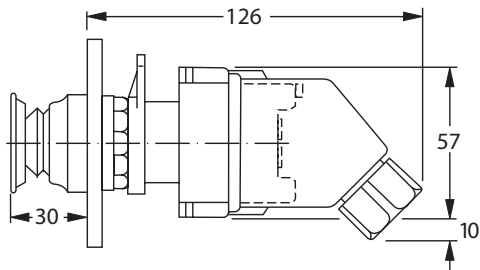
Dimension drawing



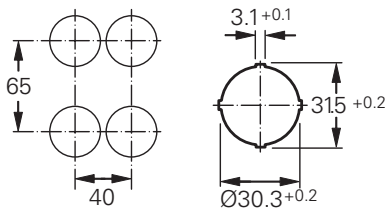
Mushroom-head pushbutton without protective cover with key release



Mushroom-head pushbutton without protective cover



Mushroom-head pushbutton with protective cover



Minimum distances



Mini-control switch

Technical data

Mini-control switch Type 418 8190

	Complete certificate ¹⁾	Component certificate
Marking accd. to 2014/34/EU	II 2 G Ex de IIC T6	II 2 G Ex de IIC/IIB Gb I M2 Ex de I Mb
EC-Type Examination Certificate	PTB 99 ATEX 1034	IBExU 14 ATEX 1030 U
IECEX Certificate of Conformity		IECEX IBE 14.0005 U
Marking accd. to IECEx		Ex de IIC/IIB Gb Ex de I Mb
Operating temperature range	-55 °C up to + 80 °C	-45 °C up to +80 °C (IIC) -60 °C up to +80 °C (IIB)
Permissible ambient temperature	-55 °C up to + 50 °C	
Application temperature ²⁾		-45 °C up to +55 °C (IIC) -60 °C up to +55 °C (IIB)
Rated voltage	400 V AC	500 V AC
Rated current	16 A	16 A
Rated current with gold contact points	0.4 A	0.4 A
Rated making-/rated breaking capacity accd. EN 60947-5-1	AC-15: U _b 250 V / I _b 6 A U _b 400 V / I _b 4 A DC-13: U _b 24 V / I _b 6 A U _b 220 V / I _b 1 A	AC-15: U _b 250 V / I _b 6 A U _b 500 V / I _b 4 A DC-13: U _b 24 V / I _b 6 A U _b 220 V / I _b 1 A
Connecting terminals	2 x 2.5 mm ²	2 x 2.5 mm ²
Degree of protection accd. to EN 60529	IP661)	IP00
Dimensions (L x W x H)	approx. 150 x 38 x 67 mm	approx. 101 x 38 x 57 mm
Weight	0.25 kg	0.20kg
Cable gland	M25x1.5 Ø 6- 15 mm	--
Type of mounting	Ø 30.3 mm fixing hole	Ø 30.3 mm fixing hole
Enclosure colour	grey	grey
Gasket material	Neoprene (standard), Fluoric Silicone or Viton on request	

¹⁾ with protective cover IP66

²⁾ The limits of the operating temperature range and the max. permissible temperature rise of the components have to be taken into account. See also pages 2.4.34/35.

Ex-mini-control switch for panel mounting



Mini-control switch

4 Ordering code for components Code A - B - C - D - E

Code **A** **B** **C** **D** **E**
 Order No. **GHG 418 819** _ **R** _ _ _

Code	Component	Code
A	Mini-control switch	GHG 418 819
Code	Contact material	Code
B	silver	0
	gold	1
Code	Switching system	Code
C	spring – engaging – spring	4
	engaging – engaging – engaging	5
	engaging – engaging	6
	spring – engaging – engaging	7
	engaging – engaging – spring	8
Code	Contacts	Code
D		0
		1
		2
		3
		5
		7

¹⁾ only emergency stop mushroom head pushbutton

²⁾ only mushroom-head pushbutton normal version

Code	Inscription (label)	Code	Inscription (label)	Code
E	0	I	01	HAND
	I	II	02	AUF
	STOP	START	03	HAND
	HAND	AUTO	04	0
	SENKEN	HEBEN	05	AUS
	REMOTE	LOCAL	06	AUS
	I 0	II	07	ÖRTLICH
	AUS	BETRIEB	08	START
	AUS	0	09	OFF
	AUF	0	10	HAND
	STOP	0	14	0
				IN
				START
				15
				16
				17
				18
				19
				20
				21
				22
				23
				24
				25



Mini-control switch

Example for order No.

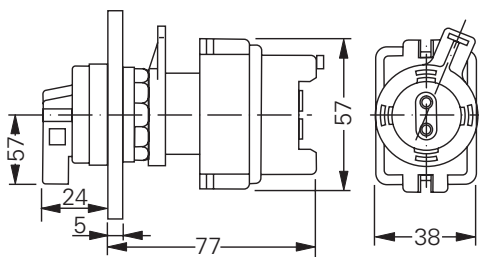
Switching mechanism	Code	Circuit	Code	Label	Order No.			
					A	B	C	D
Key-operated switch, without protective cover								
	6		0		GHG 418 819	0 R 6	0	02
	6		2	0	GHG 418 819	0 R 6	2	01
	6		1		GHG 418 819	0 R 6	1	02
	5		3	0	GHG 418 819	0 R 5	3	07
	5		5	0	GHG 418 819	0 R 5	5	07
	8		7	0	GHG 418 819	0 R 8	7	01

Accessories

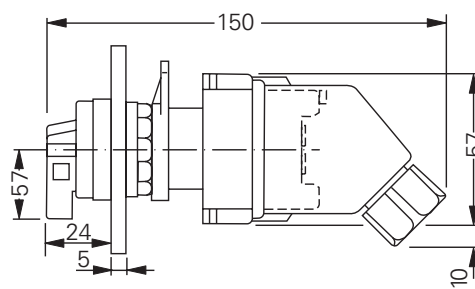
Type	OU	Order No.
Protective cover to meet IP66	5	GHG 410 1939 R0002

Please pay attention that only order units (OU) according to the ordering details can be delivered.

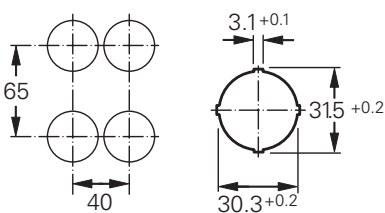
Dimension drawing



Mini-control switch without protective cover



Mini-control switch with protective cover



Minimum distances

Ex-control switch GHG 249 for panel mounting



Control switch GHG 249

4 Technical data

Control switch GHG 249

Marking accd. to 2014/34/EU	Ⓢ II 2 G Ex de IIC/IIB Gb Ⓢ II G Ex de ib [ia/ib] IIC/IIB Gb
EC-Type Examination Certificate	BVS 14 ATEX E 076 U ¹⁾
Operating temperature range	-45 °C up to +80 °C (IIC) -55 °C up to +80 °C (IIB)
Application temperature ²⁾	-45 °C up to +80 °C (IIC) -55 °C up to +80 °C (IIB)
IECEX Certificate of Conformity	IECEX BVS 14.0047 U
Marking accd. to IECEx	Ex de IIC Gb Ex de IIB Gb
Rated voltage	up to 690 V AC
Rated current	up to 20 A
Rated current with gold contact points	up to 0.4 A
Rated making-/rated breaking capacity accd. EN 60947-5-1	AC-3: U _e 230 V / I _e 8 A U _e 400 V / I _e 6 A AC-11: U _e 24 V / I _e 6 A U _e 230 V / I _e 0.4 A
Connecting terminals	2 x 2.5 mm ² flexibel, 6 mm ² starr
Weight	0.55 kg
Type of mounting	Ø 30.3 mm fixing hole
Enclosure colour	grey

¹⁾ Must be installed in a certified enclosure

²⁾ The limits of the operating temperature range and the max. permissible temperature rise of the components have to be taken into account. See also pages 2.4.34/35.



Control switch GHG 249

Ordering code for component (Code 2) Code A - B - C - D ¹⁾

Code	Component		Code				
A	Control switch GHG 249		249				
Code	Switching system		Code				
B	spring – engaging – spring		4				
	engaging – engaging – engaging		5				
	engaging – engaging		6				
	spring – engaging – engaging		7				
	engaging – engaging – spring		8				
D	Contacts Silver contact points	Code	Contacts Silver contact points	Code			
		019		037			
		021		038			
		024		039			
		033		049			
Code	Inscription (labels)	Code	Inscription (labels)	Code			
E	0	I	01	0	I	II	18
	I	II	02	AUS	AUTO	EIN	19
	STOP	START	03	AUS	HAND	AUTO	20
	HAND	AUTO	04	ÖRTLICH	AUS	FERN	21
	SENKEN	HEBEN	05	START	NORMAL	STOP	22
	REMOTE	LOCAL	06	OFF	0	ON	23
	I	0	07	HAND	OFF	AUTO	24
	AUS	BETRIEB	08	0	IN	START	25
	AUS	0	09	MAN		AUTO	26
	AUF	0	10	START		STOP	27
	Enriegelt	0	11	HEBEN		SENKEN	28
	OUT	OF	12	OFF		ON	29
	LOCAL	REMOTE	13	AUS		EIN	30
	STOP	0	14	HAND		AUTO	31
	HAND	0	15	ON		OFF	32
	AUF	AUS	16	I	II	III	33

Versions with gold contact points are available on request.

¹⁾ The code will represent only a selected part of configuration.

Ex-control switch GHG 249 for panel mounting

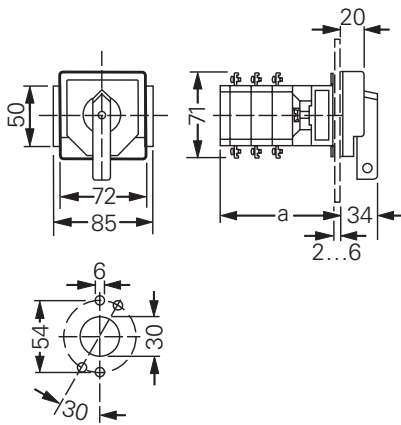


Control switch GHG 249

4 Example for ordering code (Code 2)

Content A	Switching system	Code B	Contact	Code C	Label	Code D	Order code
GHG 249		6		019	0 - I	01	GHG 249 0004 R0056
GHG 249		6		037	STOP - 0 - START	14	GHG 249 0004 R0039
GHG 249		6		033	I - II	02	GHG 249 0004 R0084

Dimension drawing



Control switch with	dimension a
1 switch compartment	63 mm
2 switch compartments	81 mm
3 switch compartments	99 mm



Potentiometer

Technical data

Potentiometer Type 418 8131

	Complete certificate ¹⁾	Component certificate
Marking accd. to 2014/34/EU	II 2 G Ex de IIC T6	II 2 G Ex de IIC/IIB Gb I M2 Ex de I Mb
EC-Type Examination Certificate	PTB 99 ATEX 1034	IBExU 14 ATEX 1030 U
IECEX Certificate of Conformity		IECEX IBE 14.0005 U
Marking accd. to IECEx		Ex de IIC/IIB Gb Ex de I Mb
Operating temperature range	-55 °C up to + 80 °C	-45 °C up to +80 °C (IIC) -60 °C up to +80 °C (IIB)
Permissible ambient temperature	-55 °C up to + 50 °C	
Application temperature ²⁾		-45 °C up to +55 °C (IIC) -60 °C up to +55 °C (IIB)
Rated voltage	up to 250 V AC	up to 250 V AC
Power consumption (VA)	max. 1 W	max. 1 W
Resistance range	100 - 10000 Ω	100 - 10000 Ω
Tolerance	± 20 %	± 20 %
Connecting terminals	2 x 2.5 mm ²	2 x 2.5 mm ²
Degree of protection accd. to EN 60529	IP661)	IP00
Dimensions (L x W x H)	101 x 38 x 57 mm	150 x 38 x 57 mm
Weight	0.20 kg	0.15 kg
Type of mounting	Ø 30.3 mm fixing hole	Ø 30.3 mm fixing hole
Enclosure colour	grey	grey
Angle of rotation	270°	270°
Scale	0 - 100 %	0 - 100 %

¹⁾ with protective cover IP66

²⁾ The limits of the operating temperature range and the max. permissible temperature rise of the components have to be taken into account. See also pages 2.4.34/35.

Ex-potentiometer for panel mounting



Potentiometer

4 Ordering code for component (Code 2) - code A - B

Code	A	B
Order No.	GHG 481 8131 R00	—

Ordering code for component (Code 2) - code A - B

Code	Component	Code
A	Potentiometer	GHG 418 8131 R00
Code	Resistance	Code
C	0 - 100 Ohm	11
	0 - 220 Ohm	12
	0 - 470 Ohm	13
	0 - 1000 Ohm	14
	0 - 2200 Ohm	17
	0 - 4700 Ohm	15
	0 - 10000 Ohm	16

Example for ordering code (Code 2)

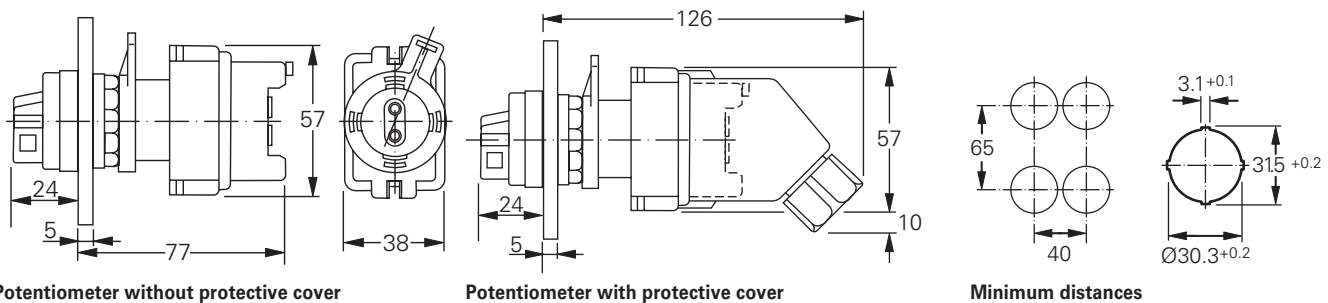
Content	Order No.	
	A	B
Potentiometer 1 W 25 % tolerance, without protective cover		
0 - 100 Ohm	GHG 418 8131 R00	11
0 - 470 Ohm	GHG 418 8131 R00	12
0 - 4700 Ohm	GHG 418 8131 R00	15

Accessories

Type	OU	Order No.
Protective cover to meet IP66	5	GHG 410 1939 R0002

Please pay attention that only order units (OU) according to the ordering details can be delivered.

Dimension drawing



Potentiometer without protective cover

Potentiometer with protective cover

Minimum distances

Dimensions in mm



Signal lamp

Technical data

4

Signal lamp Type 418 8170

		Complete certificate ¹⁾	Component certificate
Marking accd. to 2014/34/EU		Ⓢ II 2 G Ex de IIC T6 Ⓢ II 2G Ex d ia IIC/IIB Gb	Ⓢ II 2 G Ex de IIC/IIB Gb Ⓢ I M2 Ex d e IIC/IIB Gb
EC-Type Examination Certificate		PTB 99 ATEX 1034	IBExU 12 ATEX 1047 U
IECEX Certificate of Conformity		IECEX IBE 14.0005 U	
Marking accd. to IECEx		Ex de IIC/IIB Gb Ex de I Mb	
Operating temperature range		-45 °C up to +68 °C (IIC) -60 °C up to +68 °C (IIB)	
Permissible ambient temperature		-55 °C up to +50 °C	
Application temperature ²⁾		-45 °C up to +60 °C (IIC) -60 °C up to +60 °C (IIB)	
Rated voltage	Ex ed IIC) (LED)	20 V up to 254 V AC/DC	20 V up to 254 V AC/DC
	(Ex d ia IIC)	10 V up to 30 V DC	10 V up to 30 V DC
	(Ex ed IIC)	12 V up to 24 V AC/DC	12 V up to 24 V AC/DC
Rated current	(20 V up to 250 V) (LED)	approx. 4 - 15 mA	max. 25 mA
	(10 V up to 30 V Ex d ia IIC)	max. 25 mA	max. 24 mA
	(12 V up to 24 V) DC	max. 24 mA	
max. value for Ex ia		U _i = 30 V DC, I _i = 100 mA, P _i = 750 mW	U _i = 30 V DC, I _i = 100 mA, P _i = 750 mW
Connecting terminals		2 x 2.5 mm ²	
Degree of protection accd. to EN 60529		IP66 ¹⁾	IP00
Dimensions (L x W x H)		147 x 38 x 67 mm	99 x 38 x 57 mm
Weight		0.20 kg	0.15 kg
Type of mounting		Ø 30.3 mm fixing hole	
Enclosure colour		grey	
Angle of rotation		270°	
Scale		0 - 100 %	

¹⁾ with protective cover IP66

²⁾ The limits of the operating temperature range and the max. permissible temperature rise of the components have to be taken into account.
See also pages 2.4.34/35.

Ex-signal lamp for panel mounting



Signal lamp

4 Ordering code for component (Code 2) - code A - B

Code A B
 Order No. GHG 481 81710 R00 —

Ordering code for component (Code 2) - code A - B

Code	Component	Code
A	Signal lamp	GHG 418 8170 R00
Code	Voltage	Code
B	20 V - 254 V AC/DC	51
	10 V - 30 V DC (Ex-i ¹⁾)	52
	12 V - 24 V AC/DC	53

Example for ordering code (Code 2)

Content	Order No.	
	A	B
Version without protective cover with lens cover yellow, red, green and white		
Universal voltage 20 V - 254 V AC/DC	GHG 418 81 70 R00	51
For intrinsically safe circuits (10 V up to 30 V DC)1)	GHG 418 81 70 R00	52
Low voltage 12 V up to 24 V AC/DC	GHG 418 81 70 R00	53

¹⁾ Supply by valve-driver components, e.g., with data

$U_o = 20\text{ V} - 28\text{ V DC}$ with $R_i = 200\ \Omega - 500\ \Omega$ or $U_o = 10\text{ V} - 18\text{ V DC}$ with $R_i = 100\ \Omega - 200\ \Omega$

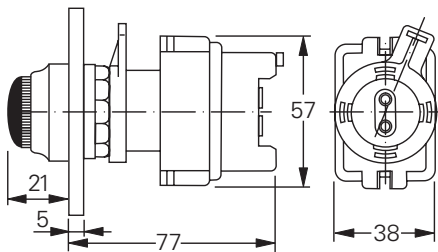
No effective Ci and Li values.

Accessories

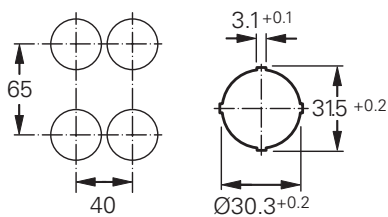
Type	OU	Order No.
Protective cover to meet IP66	5	GHG 410 1939 R0002

Please pay attention that only order units (OU) according to the ordering details can be delivered.

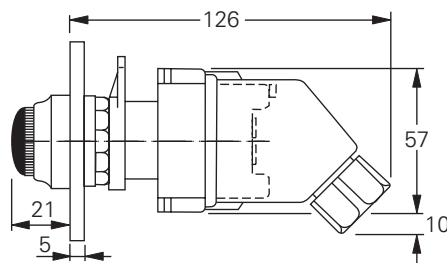
Dimension drawing



Signal lamp without protective cover



Minimum distances



Signal lamp with protective cover

Dimensions in mm



Interchangeable scales



Measuring instrument

Technical data

Type 412 82 with measuring instrument AM 72

	Moving iron	Moving coil
Marking accd. to 2014/34/EU	⊕ II 2 G Ex e II / ⊕ II 2 G Ex e mb II	⊕ II 2 G Ex ib IIC
EC-Type Examination Certificate	PTB 00 ATEX 3117	PTB 00 ATEX 3117
Permissible ambient temperature	-20 °C up to +40 °C -55 °C up to +55 °C (option)	-20 °C up to +40 °C -55 °C up to +55 °C (option)
Rated voltage	up to 690 V AC	up to 690 V AC
Power consumption (VA)	max. 0.31 VA	max. 0.31 VA
Overload range	10 fold - 25 sec. 25 fold - 4 sec. 50 fold - 1 sec. indicated 1 : 1.5, optional 1:6	10-fold - 5 sec.
Measuring range	max. 0 - 25 A direct / n / 1A	0/4 - 24 mA
Winding specification of moving coil		26.5 windings
Internal resistance		2.5 Ω ± 30 %
Inductance Li		< 0.1 mH
Capacitance Ci		< 0.1 nF
Open circuit voltage Ui		≤ 30 V
Short circuit current max. Ii		≤ 150 mA
Accuracy	Class 2.5	Class 1.5
Connecting terminals	2 x 1.5 - 4 mm ²	
Degree of protection accd. to EN 60529	IP66	
Cable glands/Gland plates/Enclosure drilling	1 x M25 cable gland	
Dimensions (L x W x H)	160 x 95 x 62 mm	
Display size AM 72	72 x 72 mm	
Weight	0.8 kg	
Type of mounting	DIN rail mounting	
Enclosure colour	grey	

Ex-measuring instrument AM 72 for panel mounting



Measuring instrument



Interchangeable scales

4 Ordering code for component (Code 2) - code A - B - C

Code **A** **B** **C**
Order No. **GHG 412 828** **— R0** **—**

Ordering code for component (Code 2) - code A - B

Code	Component	Code		
A	Measuring instrument AM 72	GHG 412 828		
Code	Voltage	Code		
B	Direct connection	1		
	CT connection 1 /A	2		
	Power connection 0 - 20/24 mA (Scale 0-100% / 120%) ¹⁾	5		
	Power connection 4 - 20/24 mA (Scale 0-100% / 120%) ¹⁾	6		
	Moving-coil connection 0 - 20/24 mA (Scale 0-100% / 120%) ^{1) 3)}	7		
	Moving-coil connection 4 - 20/24 mA (Scale 0-100% / 120%) ^{1) 3)}	8		
Code	Measuring range/Scale	Code C	Measuring range/Scale	Code C
C	0 - 1	002	0 - 75 /112.5 A	013
	0 - 2.5 / 3.75 A ²⁾	003	0 - 100 / 150 A	014
	0 - 5 / 7.5 A ²⁾	004	0 - 150 / 225 A	015
	0 - 10 / 15 A ²⁾	005	0 - 200 / 300 A	016
	0 - 15 / 22.5 A	006	0 - 250 / 375 A	017
	0 - 20 / 30 A ²⁾	008	0 - 300 / 450 A	018
	0 - 30 / 45 A	009	0 - 400 / 600 A	019
	0 - 40 / 60 A	010	0 - 500 / 750 A	020
	0 - 50 / 75 A	011	0 - 600 / 900 A	021
	0 - 60 / 90 A	012	0 - 100% / 150%	033

¹⁾ Movements 0 - 20 mA/ 4 - 20 mA and with moving-coil connection are only available with scale 0 - 100%/ 120%.

²⁾ Version for direct connection or with CT connection n/1 A possible.

³⁾ Moving coil only for Ex-i or Ex-d flameproof applications

Other interchangeable scales available on request.



Interchangeable scales

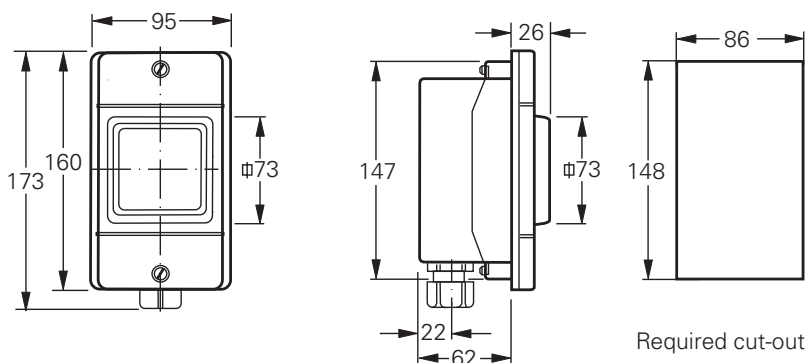


Measuring instrument

Example for order No.

Measuring range	Movement	Order No.
Measuring instrument AM 72, direct measurement		
Version with 1 x cable gland M25		
0 – 1 / 1.5 A	Moving iron	GHG 412 8281 R0002
0 - 2.5 / 3.75 A	Moving iron	GHG 412 8281 R0003
0 - 5 / 7.5 A	Moving iron	GHG 412 8281 R0004
0 - 10 / 15 A	Moving iron	GHG 412 8281 R0005
0 - 16 / 24 A	Moving iron	GHG 412 8281 R0007
0 - 20 / 24 mA 0-100% / 120% (Ri = 320 Ω)	Moving coil	GHG 412 8285 R0033
4 - 20 / 24 mA 0-100% / 120% (Ri = 320 Ω)	Moving coil	GHG 412 8286 R0035
Measuring instrument AM 72, CT connection n/1A		
Version with 1 x cable gland M25		
0 – 1 / 1.5 A	Moving iron	GHG 412 8282 R0002
0 - 2.5 / 3.75 A	Moving iron	GHG 412 8282 R0003
0 - 5 / 7.5 A	Moving iron	GHG 412 8282 R0004
0 - 10 / 15 A	Moving iron	GHG 412 8282 R0005
0 - 15 / 22.5 A	Moving iron	GHG 412 8282 R0006
0 - 20 / 30 A	Moving iron	GHG 412 8282 R0008
0 - 30 / 45 A	Moving iron	GHG 412 8282 R0009
0 - 40 / 60 A	Moving iron	GHG 412 8282 R0010
0 - 50 / 75 A	Moving iron	GHG 412 8282 R0011
0 - 60 / 90 A	Moving iron	GHG 412 8282 R0012
0 - 75 / 112.5 A	Moving iron	GHG 412 8282 R0013
0 - 100 / 150 A	Moving iron	GHG 412 8282 R0014
0 - 150 / 225 A	Moving iron	GHG 412 8282 R0015
0 - 200 / 300 A	Moving iron	GHG 412 8282 R0016
0 - 250 / 375 A	Moving iron	GHG 412 8282 R0017
0 - 300 / 450 A	Moving iron	GHG 412 8282 R0018
0 - 400 / 600 A	Moving iron	GHG 412 8282 R0019
0 - 500 / 750 A	Moving iron	GHG 412 8282 R0020
0 - 600 / 900 A	Moving iron	GHG 412 8282 R0021
0 - 100% / 150%	Moving iron	GHG 412 8282 R0031

Dimension drawing



Required cut-out

Accessories for panel mounting



Interchangeable scales

4 Ordering details

Scale	Order unit	Order No. AM45	Order No. AM72
Interchangeable scales for measuring instrument, CT connection n/1A for AM 45/AM 72			
0 - 1 / 1.5 A	10 pieces	GHG 410 1926 R0001	GHG 410 1928 R0001
0 - 2.5 / 3.75 A	10 pieces	GHG 410 1926 R0002	GHG 410 1928 R0002
0 - 5 / 7.5 A	10 pieces	GHG 410 1926 R0003	GHG 410 1928 R0003
0 - 10 / 15 A	10 pieces	GHG 410 1926 R0004	GHG 410 1928 R0004
0 - 15 / 22.5 A	10 pieces	GHG 410 1926 R0005	GHG 410 1928 R0005
0 - 20 / 30 A	10 pieces	GHG 410 1926 R0006	GHG 410 1928 R0006
0 - 25 / 37.5 A	10 pieces	GHG 410 1926 R0021	GHG 410 1928 R0021
0 - 30 / 45 A	10 pieces	GHG 410 1926 R0007	GHG 410 1928 R0007
0 - 40 / 60 A	10 pieces	GHG 410 1926 R0008	GHG 410 1928 R0008
0 - 50 / 75 A	10 pieces	GHG 410 1926 R0009	GHG 410 1928 R0009
0 - 60 / 90 A	10 pieces	GHG 410 1926 R0010	GHG 410 1928 R0010
0 - 75 / 112.5 A	10 pieces	GHG 410 1926 R0011	GHG 410 1928 R0011
0 - 100 / 150 A	10 pieces	GHG 410 1926 R0012	GHG 410 1928 R0012
0 - 150 / 225 A	10 pieces	GHG 410 1926 R0013	GHG 410 1928 R0013
0 - 200 / 300 A	10 pieces	GHG 410 1926 R0014	GHG 410 1928 R0014
0 - 250 / 375 A	10 pieces	GHG 410 1926 R0015	GHG 410 1928 R0015
0 - 300 / 450 A	10 pieces	GHG 410 1926 R0016	GHG 410 1928 R0016
0 - 400 / 600 A	10 pieces	GHG 410 1926 R0017	GHG 410 1928 R0017
0 - 500 / 750 A	10 pieces	GHG 410 1926 R0018	GHG 410 1928 R0018
0 - 600 / 900 A	10 pieces	GHG 410 1926 R0019	GHG 410 1928 R0019
0 - 100% / 150%	10 pieces	GHG 410 1926 R0020	GHG 410 1928 R0051

Special scales available on request.



Ordering code

Labels for pushbutton

Inscription	Code	Inscription	Code
0, I, Start, Stop	001	0	002
I	003	I I	004
D	005	STOP	006
START	007	emergency stop	008
LANGSAM	009	SCHNELL	010
EMERG.STOP	011		012
ARRET	014	MARCHE	015
AUF	016	AB	017
Neutral white	018	Neutral grün	019
0, I, Arret, Marche	020	UP	024
DOWN	025	ZU	026
ON	027	OFF	028
+	030	-	031
Neutral rot	033	Neutral yellow	034
EIN	036	AUS	037
AUTO	039	HAND	050
SENKEN	051	HEBEN	052
LINKS	053	RECHTS	054
FAST	055	SLOW	056
RESET	057	OPEN	058
HALT	069	I I I	070
VOR	073	ZURÜCK	074
FIRE ALARM	094	FORWARD	095
REVERSE	096	RUN	100
HIGH	101	LOW	102
LP	151	HQ	152
LQ	157	STÖR. QUITT	162
SPERREN	163	ENTSPERREN	164
ENTRIEGELN	165	VERRIEGELN	166

Accessories for panel mounting



Flap with 0-activation



Plastic flap



Combination piece



Labels

4 Ordering code

Content	Operating element	OU	Order No.
Padlocking facility			
with flap (blank)	Mushroom-head pushbutton	1	GHG 410 1901 R0124
with flap (red)	Mushroom-head pushbutton	1	GHG 410 1901 R0125
with bolt and chain (blank)	Mushroom-head pushbutton	1	GHG 410 1901 R0126
Fire alarm (red) ¹⁾ with hammer	Mushroom-head pushbutton	1	GHG 410 1901 R0128
Fire alarm (red) with hammer	Mushroom-head pushbutton	1	GHG 410 1901 R0141
with plastic flap	Mushroom-head pushbutton activated		GHG 410 1994 R0001
with plastic flap	Mushroom-head pushbutton non-activated		GHG 410 1994 R0002
with plastic flap	Pushbutton activated		GHG 410 1994 R0003
with plastic flap	Pushbutton non-activated		GHG 410 1994 R0004
with plastic flap	Emergency Stop		GHG 410 1994 R0005
with flap (blank)		1	GHG 410 1901 R0132
with flap (red)	Pushbutton Pushbutton	1	GHG 410 1901 R0133
with lap without „0“-activation (blank)	Double pushbutton	1	GHG 410 1901 R0134
with lap with „0“-activation (blank)	Double pushbutton	1	GHG 410 1901 R0135
with bracket (1 set)	Switch GHG 23/28	5	GHG 440 1917 R0001

¹⁾ released when window is broken – select appropriate activation element.

Type	Content	OU	Order No.
Protective collar			
Protective collar (yellow)	for pushbutton and mushroom-head pushbutton	1	GHG 410 1901 R1033
Protective collar (yellow)	for pushbutton and mushroom-head pushbutton	5	GHG 410 1901 R1034
Protective collar (yellow)	for pushbutton and mushroom-head pushbutton	10	GHG 410 1901 R1035
Protective collar (red)	for pushbutton and mushroom-head pushbutton	1	GHG 410 1901 R1036
Protective collar (red)	for pushbutton and mushroom-head pushbutton	5	GHG 410 1901 R1037
Protective collar (red)	for pushbutton and mushroom-head pushbutton	10	GHG 410 1901 R1038

Type	Content	OU	Order No.
Labels and tools for control switches			
Labels with label holder	Blank (can be engraved)	10	GHG 410 1953 R0001
Combination piece for control station type 411	incl. twist protection and sealing	1	GHG 410 1921 R0001
Mounting and dismantling tool for lock nuts on operating elements	Spanner	1	GHG 410 1914 R0001
Blanking element for control units	incl. seal and lock nut	10	GHG 410 1920 R0001
Protective cap	for panel-mounted operating elements	5	GHG 410 1939 R0002

Please pay attention that only order units (OU) according to the ordering details can be delivered.



4.7

Ex-Control Switches with Plastic Enclosure

With or without measuring instruments for Zone 1 and 21

4

The GHG 29 control switch series features an easy-to-install and easy-to-connect design.

This control switch can be implemented with up to 6 contacts and for 2 to 5 switch positions. Thus, practically all applications in modern control engineering can be covered. Contacts are protected against contact to VBG 4 and have a terminal cross section of up to 6 mm² for the connection of single and multi-wire conductors. The rated current of the control switch at 500 V is 16 A.

The external contours of the enclosure facilitate access to the connection terminals and thus allow easy installation.

Further installation advantages result from the snap-on/snap-off switch contact block and measuring instrument.

A labyrinth seal in the cover guarantees the degree of protection IP66. The impact-resistant, glass-fibre-reinforced polyester enclosure material is a prerequisite for withstanding even the most rugged industrial operating conditions. The switch can be padlocked using the integrated locking facility.

The locking position is indicated by a red pin. An interchangeable apparatus label and a neutral switch-position label are supplied with each switch.

With CEAG installation system, control switches can be installed with high cost-efficiency.

The control switches are also available on request with snap-on metal or moulded-plastic flanges.



Features

- Decisive cost saving with the CEAG mounting system
- Easily accessible connection terminals
- Degree of protection IP66
- Cable connection range up to 6 mm²
- Integrated locking facility
- Optional forced contact on request



GHG 293



GHG 292

Technical data

Ex-control switch Typ 292 without and Typ 293 with measuring instrument

	with GHG 29 Switch	with GHG 28 Switch
Marking accd. to 2014/34/EU	Ⓢ II 2 G Ex ed ia IIC T5/T6 Ⓢ II 2 D Ex tD A21 IP66 T80 °C	Ⓢ II 2 G Ex ad ia IIC T5/T6 Ⓢ II 2 D Ex tD A21 IP66 T80 °C
EC-Type Examination Certificate	PTB 99 ATEX 1163	PTB 99 ATEX 1163
IECEX Certificate of Conformity	IECEX BKI 07.0011	IECEX BKI 07.0011
Marking accord. to IECEx	Ex ed ia IIC T5 or T6 Ex tD A21 IP66 T49 °C	Ex ed ia IIC T5 or T6 Ex tD A21 IP66 T49 °C
Permissible ambient temperature	-20 °C up to +40 °C -55 °C up to +47 °C (T6) ... +55 °C (T5) Option	
Rated voltage	max. 500 V	max. 690 V
Rated current	16 A	20 A
Rated current with gold contact points	0.4 A	
Overload range (Type 293 only)	10 fold - 25 sec. 25 fold - 4 sec. 50 fold - 1 sec. indicated 1 : 1.5	
Measuring range (type only 293)	max. 0 - 25 A direct / n / 1A	
Accuracy (type 293 only)	Class 2.5	
Movement (type 293 only)	Moving iron	
Rated making-/rated breaking capacity accd. EN 60947-5-1	AC-15: U_e 230 V / I_e 6 A U_e 400 V / I_e 4 A DC-13: U_e 24 V / I_e 2 A U_e 230 V / I_e 0.3 A	AC-15: U_e 230 V / I_e 8 A U_e 400 V / I_e 6 A DC-13: U_e 24 V / I_e 6 A U_e 230 V / I_e 0.4 A
Connecting terminals	2 x 0.5 - 2.5 mm ² or 1 x 1.0 - 6.0 mm ²	
Degree of protection accd. to EN 60529	IP66	
Cable glands/Gland plates/Enclosure drilling	1 x M25 cable gland ^{1) 2)}	
Dimensions (L x W x H)	GHG 292 GHG 293	170 x 110 x 129 mm 225 x 110 x 129 mm
Weight	GHG 292 GHG 293	approx. 1.10 kg (1 level) approx. 1.25 kg (2 level) approx. 1.40 kg (3 level) approx. 1.90 kg (1 level) approx. 2.05 kg (2 level) approx. 2.20 kg (3 level)
Enclosure material	glass-fibre reinforced polyester	
Enclosure colour	black	

¹⁾ Brass flange for metal entries available on request

²⁾ Control switches with direct indicating measuring instruments in the standard version are delivered with 2 looping terminals and PE terminal as well as M32 and M25 cable entries.

Ex-control switch GHG 292 and GHG 293



GHG 292



GHG 293

4 Ordering code for control switch (Code 2) Code A - B1 - B2 - C - D - E - E2 - F¹⁾

Code **A** **B1 B2 C D E E2 F¹⁾**

Order No. **GHG 29_** - - - - - - -

Code	Component		Code	
A	Control switch		GHG 292	
	Control switch with measuring instrument		GHG 293	
Code	Switching system		Code	
B1	spring – engaging – spring		4	
	engaging – engaging – engaging		5	
	engaging – engaging		6	
	spring – engaging – engaging		7	
	engaging – engaging – spring		8	
Code	Contact	code for silver contact points	Contact	silver contact points
B2		062		034
		062		037
		065		049
		061		023
		063		019
		067		033
		011		024

Other versions as well as gold contact points are available on request.

Code	Inscription (labels)	Code	Inscription (labels)	Code
C	0	I	001	0
	I	II	002	AUS
	STOP	START	003	AUS
	HAND	AUTO	004	ÖRTLICH
	SENKEN	HEBEN	005	START
	REMOTE	LOCAL	006	OFF
	I	0	007	HAND
	AUS	BETRIEB	008	0
	AUS	0	009	MAN
	AUF	0	010	START
	Entriegelt	0	011	HEBEN
	OUT	OF	012	OFF
	LOCAL	REMOTE	013	AUS
	STOP	0	014	HAND
	HAND	0	015	ON
	AUF	AUS	016	I
	HAND	AUS	017	II
				III
				018
				019
				020
				021
				022
				023
				024
				025
				026
				027
				028
				029
				030
				031
				032
				033



GHG 293



GHG 292

Ordering code for control switch (Code 2) Code A - B1 - B2 - C - D - E1 - E2 - F

Code	Component		Code
D	none	<input type="checkbox"/>	0
	centre	<input type="checkbox"/>	1
	left	<input type="checkbox"/>	2
	right	<input type="checkbox"/>	3

Code	Movement	Code
E1	Direct connection	01
	CT connection 1 /A	02
	Connection 0 - 20/24 mA (scale 0-100% / 120%)	05
	Connection 4 - 20/24 mA (scale 0-100% / 120%)	06
	Moving-coil connection 0 - 20/24 mA (scale 0-100% / 120%)	07
	Moving-coil connection 4 - 20/24 mA (scale 0-100% / 120%)	08

Code	Measuring range/Scale	Code	Measuring range/Scale	Code
E2	0 - 1	002	0 - 75 /112.5 A	013
	0 - 2.5 / 3.75 A 2)	003	0 - 100 / 150 A	014
	0 - 5 / 7.5 A 2)	004	0 - 150 / 225 A	015
	0 - 10 / 15 A 2)	005	0 - 200 / 300 A	016
	0 - 15 / 22.5 A	006	0 - 250 / 375 A	017
	0 - 20 / 30 A 2)	008	0 - 300 / 450 A	018
	0 - 30 / 45 A	009	0 - 400 / 600 A	019
	0 - 40 / 60 A	010	0 - 500 / 750 A	020
	0 - 50 / 75 A	011	0 - 600 / 900 A	021
	0 - 60 / 90 A	012	0 - 100% / 150%	031

Code	Built-in components	Description	
F1	Entry type	entry direct in enclosure	GEH
		entry via plastic flange	FLK
		entry via metal flange	FLM
F2	Entry element	only threaded entry	BO
		screw plug	SV
		cable entry moulded plastic	GK
		cable entry moulded metal ²⁾	GM2)
		cable entry with plug	GV
F3	Size	M12, M16, M20, M25, M32, M40	M1 Ø ..
		Ø21, Ø26	
F4	Number	number of entries	..

¹⁾ The code will represent only a selected part of configuration.

²⁾ Only available with metal flange

Ex-control switch GHG 292 and GHG 293



GHG 292



GHG 293

4 Example for ordering code (Code 2)

Control switch with silver contact points, Switching system „5“, Circuit „063“,
Labels „HAND-0-AUTO“, can be locked at „0“,
Measuring instrument AM72 for CT connection „n/1A“, Scale „0 - 50/75 A“,
Cable gland 1 x threaded entry M25 on bottom direct entry.

Code A B1 B2 C D E1 E2 F1 F2 F3 F4
GHG 293 / 5 / 063 / 015 / 1 / 2 / 011 / GEH / BO / M25 / 1

Ordering details

Switching system	Circuit	Code	Labels	Order No.
Control switch Typ 292 with silver contact points				
Version with padlocking facility in „0“-, or position „right (Code 3)“; cable gland 1 x M25 bottom.				
6		062	0 I	GHG 292 1000 R0001
6		065	0 I	GHG 292 1000 R0002
4		067	0 I	GHG 292 1000 R0003
8		067	0 I	GHG 292 1000 R0004
4		037	0 I	GHG 292 2000 R0002
8		037	0 I	GHG 292 2000 R0003
5		024	I 0 II	GHG 292 2000 R0004
5		023	HAND OFF AUTO	GHG 292 2001 R0001

Switching system	Circuit	Code	Labels	Order No.
Control switch with measuring instrument type 293 with silver contact points. Version with padlocking facility in „0“-, or position „left“; measuring instrument AM 72 for CT connection n/1A, Scale 0 - 100/150 %. 1 x M32 bottom.				

6		062	0 I	GHG 293 1000 R0001
6		065	0 I	GHG 293 1000 R0002

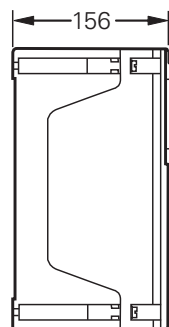
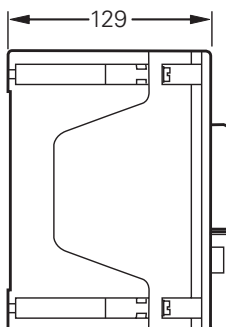
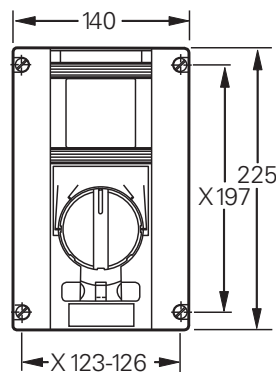
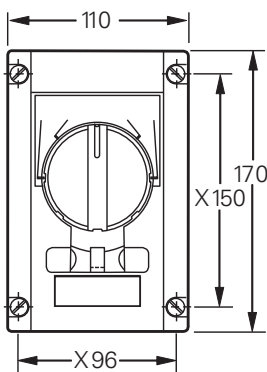


Accessories

Type	Application	Fixing method	OU	Order No.
Mounting plate for type 292				
Size 2	wall mounting	snap on	1	GHG 610 1953 R0104
Size 2	pipe clamp	snap on	1	GHG 610 1953 R0105
Size 2	trellis-work mounting	snap on	1	GHG 610 1953 R0106
Size 4	wall mounting	snap on *	1	GHG 610 1953 R0128
Size 4	trellis-work mounting	snap on *	1	GHG 610 1953 R0128
Size 4	pipe clamp	snap on *	1	GHG 610 1953 R0132
Mounting plate for type 293				
Size 3	wall mounting	snap on	1	GHG 610 1953 R0118
Size 3	pipe clamp	snap on	1	GHG 610 1953 R0110
Size 3	trellis-work mounting	snap on	1	GHG 610 1953 R0118
Size 5	wall mounting	snap on *	1	GHG 610 1953 R0128
Size 5	trellis-work mounting	snap on *	1	GHG 610 1953 R0128
Size 5	pipe clamp	snap on *	1	GHG 610 1953 R0132
Plug-in fastener for CEAG modules with 5.5 mm and 11 mm fixing elements 4 pieces			10	GHG 610 1953 R0041

*snap-on with snap-on mounting 5.5 mm

Dimension drawing



GHG 292

GHG 293

X = fixing dimensions

Dimensions in mm

4.8

Ex-Light Alloy Control Switches

Light alloy Version for Zone 1 and 21

4

CEAG explosion-protected control switches are made of high-quality cast aluminium-silicon (AlSi). A robust plastic powder coating according to RAL 7031 protects the CEAG control switches against aggressive atmospheres and chemicals. Cover screws as well as all internal and external metal parts are made of stainless steel.

These switches feature an easy-to-install and easy-to-connect design.

The cam switch version allows implementation of many variants, covering almost all applications in modern control engineering.

An optional locking facility allows to secure the switch against unauthorised or inadvertent actuation with a padlock.



Features

- High mechanical, chemical and thermal resistance
- Impact-resistant plastic powder coating
- Snap-on switch holder



GHG 295



GHG 294

Technical data

Ex-control switch Typ 294 without and Typ 295 with measuring instrument

	with GHG 29 switch	with GHG 28 switch
Marking accd. to 2014/34/EU	Ⓢ II 2 G Ex ed ia IIC T5/T6 Ⓢ II 2 D Ex tD A21 IP66 T80 °C	Ⓢ II 2 G Ex ed ia IIC T5/T6 Ⓢ II 2 D Ex tD A21 IP66 T80 °C
EC-Type Examination Certificate	PTB 99 ATEX 1163	PTB 99 ATEX 1163
IECEX Certificate of Conformity	IECEX BKI 07.0011	IECEX BKI 07.0011
Marking accord. to IECEx	Ex ed ia IIC T5 or T6 Ex tD A21 IP66 T49 °C	Ex ed ia IIC T5 or T6 Ex tD A21 IP66 T49 °C
Permissible ambient temperature	-20 °C up to +40 °C -55 °C up to +47 °C (T6) ... +55 °C (T5) option	
Rated voltage	max. 500 V	max. 690 V
Rated current	16 A	20 A
Rated current with gold contact points	0.4 A	
Overload range (type 293 only)	10 fold - 25 sec. 25 fold - 4 sec. 50 fold - 1 sec. indicated 1 : 1.5	
Measuring range (type 293 only)	max. 0 - 25 A direct / n / 1A	
Accuracy (type 293 only)	Class 2.5	
Circuit (type 293 only)	Moving iron	
Rated making-/rated breaking capacity accd. EN 60947-5-1	AC-15: U_e 230 V / I_e 6 A U_e 400 V / I_e 4 A DC-13: U_e 24 V / I_e 2 A U_e 230 V / I_e 0.3 A	AC-15: U_e 230 V / I_e 8 A U_e 400 V / I_e 6 A DC-13: U_e 24 V / I_e 6 A U_e 230 V / I_e 0.4 A
Connecting terminals	2 x 0.5 - 2.5 mm ² or 1 x 1.0 - 6.0 mm ²	
Degree of protection accd. to EN 60529	IP66	
Cable glands/Gland plates/Enclosure drilling	1 x M25 cable gland, 1 x threaded plug M25 ¹⁾²⁾	
Dimensions (L x W x H)	GHG 294 GHG 295	170 x 130 x 129 mm 260 x 160 x 129 mm
Weight	GHG 294 GHG 295	approx. 1.90 kg (1 level) approx. 2.05 kg (2 level) approx. 2.90 kg (1 level) approx. 3.05 kg (2 level)
Enclosure material	high quality cast aluminium-silicon (AlSi)	
Enclosure colour	grey RAL 7031	

¹⁾ Brass flange for metal entries available on request

²⁾ Control switches with direct indicating measuring instruments in the standard version are delivered with 2 looping terminals and PE terminal as well as M32 and M25 cable entries.

Ex-control switch GHG 294 and GHG 295



GHG 294



GHG 295

4 Ordering code for control switch (Code 2) Code A - B1 - B2 - C - D - E - E2 - F¹⁾

Code **A** **B1 B2 C D E E2 F¹⁾**
Order No. **GHG 29_** - - - - -

Code	Component		Code	
A	Control switch		GHG 294	
	Control switch with measuring instrument		GHG 295	
Code	Switching system		Code	
B1	spring – engaging – spring		4	
	engaging – engaging – engaging		5	
	engaging – engaging		6	
	spring – engaging – engaging		7	
	engaging – engaging – spring		8	
Code	Contact	code for silver contact points	Contact	silver contact points
B2		062		034
		062		037
		065		049
		061		023
		063		019
		067		033
		011		024

Other versions as well as gold contact points are available on request.

Code	Inscription (labels)	Code	Inscription (labels)	Code				
C	0	I	001	0	I	II	018	
	I	II	002	AUS	AUTO	EIN	019	
	STOP	START	003	AUS	HAND	AUTO	020	
	HAND	AUTO	004	ÖRTLICH	AUS	FERN	021	
	SENKEN	HEBEN	005	START	NORMAL	STOP	022	
	REMOTE	LOCAL	006	OFF	0	ON	023	
	I	0	II	007	HAND	OFF	AUTO	024
	AUS	BETRIEB	EIN	008	0	IN	START	025
	AUS	0	EIN	009	MAN		AUTO	026
	AUF	0	AB	010	START		STOP	027
	Entriegelt	0	Verriegelt	011	HEBEN		SENKEN	028
	OUT	OF	HAND	012	OFF		ON	029
	LOCAL	REMOTE	AUTO	013	AUS		EIN	030
	STOP	0	START	014	HAND		AUTO	031
	HAND	0	AUTO	015	ON		OFF	032
	AUF	AUS	ZU	016	I	II	III	033
	HAND	AUS	AUTO	017				



GHG 295



GHG 294

Ordering code for control switch (Code 2) Code A - B1 - B2 - C - D - E1 - E2 - F

Code	Component		Code
D	none	<input type="checkbox"/>	0
	centre	<input type="checkbox"/>	1
	left	<input type="checkbox"/>	2
	right	<input type="checkbox"/>	3

Code	Movement	Code
E1	Direct connection	01
	CT connection 1 /A	02
	Connection 0 - 20/24 mA (scale 0-100% / 120%)	05
	Connection 4 - 20/24 mA (scale 0-100% / 120%)	06
	Moving-coil connection 0 - 20/24 mA (scale 0-100% / 120%)	07
	Moving-coil connection 4 - 20/24 mA (scale 0-100% / 120%)	08

Code	Measuring range/Scale	Code	Measuring range/Scale	Code
E2	0 - 1	002	0 - 75 /112.5 A	013
	0 - 2.5 / 3.75 A 2)	003	0 - 100 / 150 A	014
	0 - 5 / 7.5 A 2)	004	0 - 150 / 225 A	015
	0 - 10 / 15 A 2)	005	0 - 200 / 300 A	016
	0 - 15 / 22.5 A	006	0 - 250 / 375 A	017
	0 - 20 / 30 A 2)	008	0 - 300 / 450 A	018
	0 - 30 / 45 A	009	0 - 400 / 600 A	019
	0 - 40 / 60 A	010	0 - 500 / 750 A	020
	0 - 50 / 75 A	011	0 - 600 / 900 A	021
	0 - 60 / 90 A	012	0 - 100% / 150%	031

Code	Built-in components	Description	
F1	Entry type	entry direct in enclosure	GEH
		entry via plastic flange	FLK
		entry via metal flange	FLM
F2	Entry element	only threaded entry	BO
		screw plug	SV
		cable entry moulded plastic	GK
		cable entry moulded metal ²⁾	GM2)
		cable entry with plug	GV
F3	Size	M12, M16, M20, M25, M32, M40	M1 Ø ..
		Ø21, Ø26	
F4	Number	number of entries	..

¹⁾ The code will represent only a selected part of configuration.

²⁾ Only available with metal flange

Ex-control switch GHG 294 and GHG 295



GHG 294



GHG 295

4 Example for ordering code (Code 2)

Control switch with silver contact points, Switching system „5“, Circuit „063“,
Labels „HAND-0-AUTO“, can be locked „0“,
Measuring instrument AM72 for CT connection „n/1A“, Scale „0 - 50/75 A“,
Cable entry 1 x threaded entry M25 on bottom direct entry.

Code A B1 B2 C D E1 E2 F1 F2 F3 F4
GHG 295 / 5 / 063 / 015 / 1 / 2 / 011 / GEH / BO / M25 / 1

Ordering details

Switching system Circuit	Code	Labels	Order No.
--------------------------	------	--------	-----------

Control switch type 294 with silver contact points
Version with locking facility in „0“-, or position „right (Code 3)“, cable gland 1 x M25 bottom.

6			062	0 I	GHG 294 1000 R0001
6			065	0 I	GHG 294 1000 R0002
4			067	0 I	GHG 294 1000 R0003
8			067	0 I	GHG 294 1000 R0004
4			037	0 I	GHG 294 2000 R0002
8			037	0 I	GHG 294 2000 R0003
5			024	I 0 II	GHG 294 2000 R0004

Switching system Circuit	Code	Labels	Order No.
--------------------------	------	--------	-----------

Control switch with measuring instrument type 295 with silver contact points. Version with padlocking facility in „0“-, or position „left“, measuring instrument AM 72 for CT connection n/1A, Scale 0 - 100/150 %. 1 x M32 bottom.

6			062	0 I	GHG 295 1000 R0001
6			065	0 I	GHG 295 1000 R0002

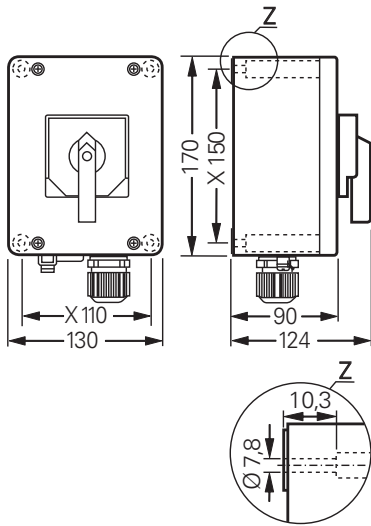


GHG 295

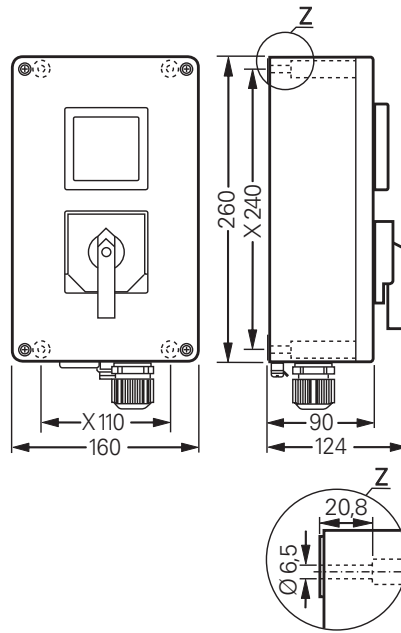


GHG 294

Dimension drawing



GHG 294



GHG 295

X = fixing dimensions

4.9

Ex-Light Alloy Control Stations

Ex-d pushbutton and control switches for Zone 1 and 21

4 Ex-d explosion-protected control stations made of light alloy metal are equipped with up to three components to switch and control processes in areas of Zone 1, 2, 21 and 22 at no risk of explosion.

Built-in components, such as signal lamps, pushbuttons and switches are ready installed inside of the enclosures. To facilitate insertion of cables into the entries, Ex-d threads for 3/4" Ex-d cable glands are available at the enclosures.

A high "IP degree of protection" allows universal use in areas at risk of explosion. The light metal control stations have an outside earthing connection.



Features

- High degree of protection IP67
- High mechanical, chemical and thermal resistance
- Individual configuration



EFS 72



EFS A/A/V



EFS A



EFS D

Technical data

Ex-d control stations type EFS

Marking accd. to 2014/34/EU	⊕ II 2 G Ex d IIC T6 / ⊕ II 2 D IP67 T 85 °C
EC-Type Examination Certificate	LOM 03 ATEX 2034
IECEX Certificate of Conformity	IECEX BK1 07.0027
Marking accd. to IECEx	Ex d IIC T6 Ex tD A21 IP67 T80 °C
Permissible ambient temperature	-20 °C up to +55 °C
Rated voltage	max. 660 V AC
Rated current	max. 20 A
PE Connecting terminals	2 x 2.5 mm ² / PE ext.: 2 x 6 mm ²
Protection class	I
Incandescent lamp	230 V 3 W
Degree of protection accd. to EN 60529	IP67
Cable glands/Gland plates/Enclosure drilling	2 x 3/4" drilling, one plugged
Enclosure material	light alloy
Enclosure colour	natural finish
Other versions available on request	

Ordering details

Type	Content	Weight	Order No.
Control units			
EFS A	1 x pushbutton, 1 NO + 1 NC, label „white“	0.75 kg	NOR 000 114 110 511
EFS A/A	2 x pushbutton, 1 NO + 1 NC, label „I - 0“	0.85 kg	NOR 000 114 110 553
EFS D	1 x mushroom-head pushbutton, 1 NO + 1 NC, label „0“	0.80 kg	NOR 000 114 110 587
EFS A/D	1 x pushbutton 1 NO, 1 x mushroom-head pushbutton NC, label „I - 0“	0.85 kg	NOR 000 114 110 540
EFS L	1 x alarm pushbutton, 1 NO + 1 NC, with window	0.85 kg	NOR 000 114 110 595
EFS A/A/A	3 x pushbutton, 1 NO + 1 NC, label „0 - I - II“	1.50 kg	NOR 000 114 110 747
EFS A/A/V	2 x pushbutton, 1 NO + 1 NC, label „0 - I - II“, 1 x green signal lamp	1.50 kg	NOR 000 114 110 748
EFS 72	for measuring instrument AM 72 (72 mm x 72 mm), not part of the delivery	1.20 kg	NOR 000 114 110 740

Control switches

EFS I	0 - 1		0.90 kg	NOR 000 003 110 945
EFS H	1 - 2		0.90 kg	NOR 000 003 110 937
EFS J	1 - 0 - 2		0.90 kg	NOR 000 003 110 953
EFS P	0 - 1		0.90 kg	NOR 000 003 110 995
EFS P40	0 - 1		0.90 kg	NOR 000 114 110 738

Ex-d control stations



EFS 72



EFS A/A/V

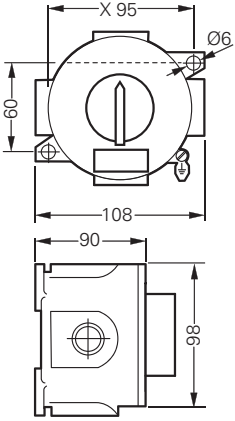


EFS A



EFS D

4 Dimension drawing



EVS...

X = fixing dimensions