

# EX-CONTROL UNITS AND CONTROL STATIONS

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EX-CONTROL UNITS AND CONTROL STATIONS

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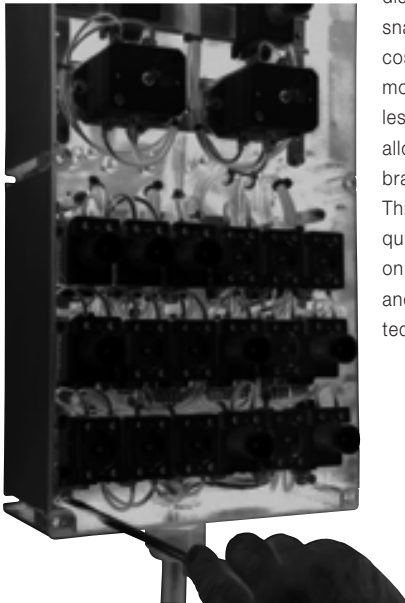
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### Material selection

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 flame-proof 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.

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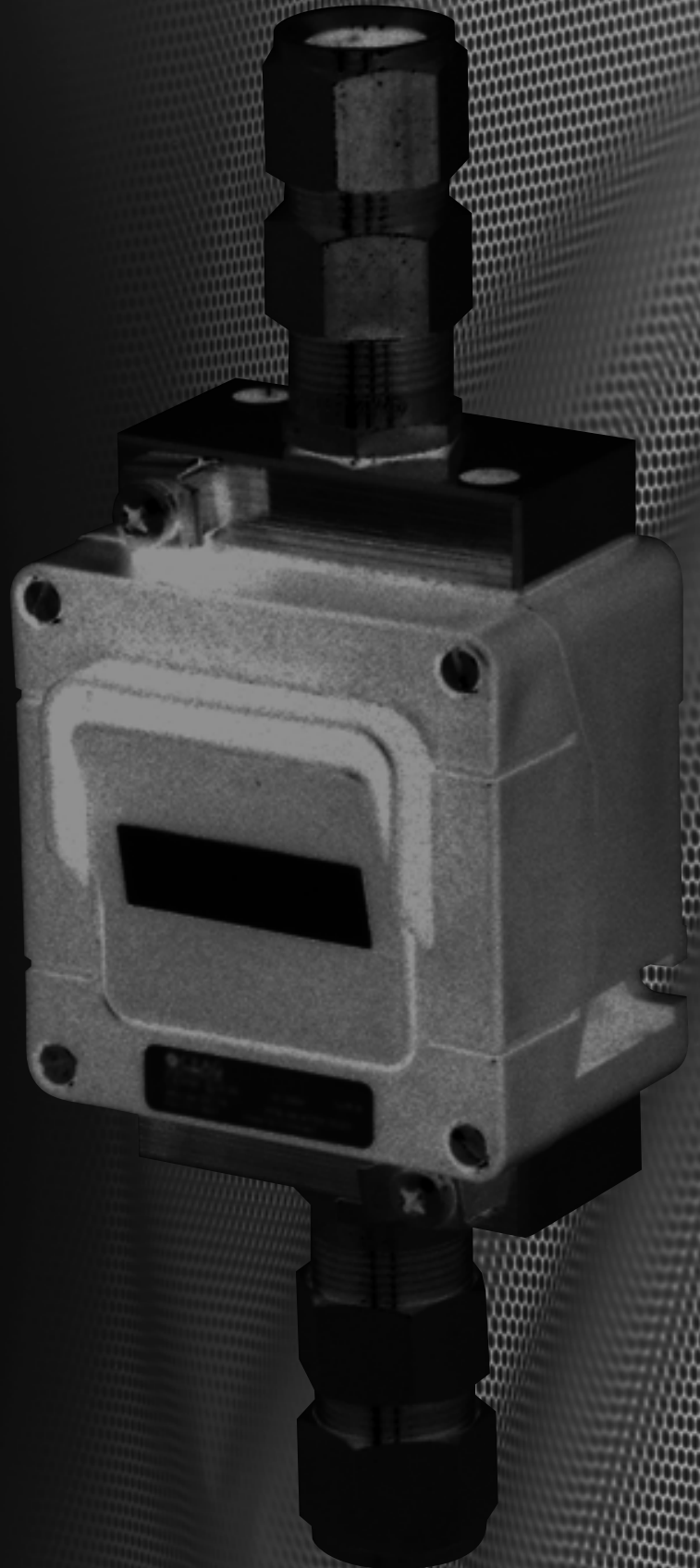
# EX - INSTALLATION SWITCH

**16 A, 250 V**  
**Plastic version for Zone 1 and Zone 21**

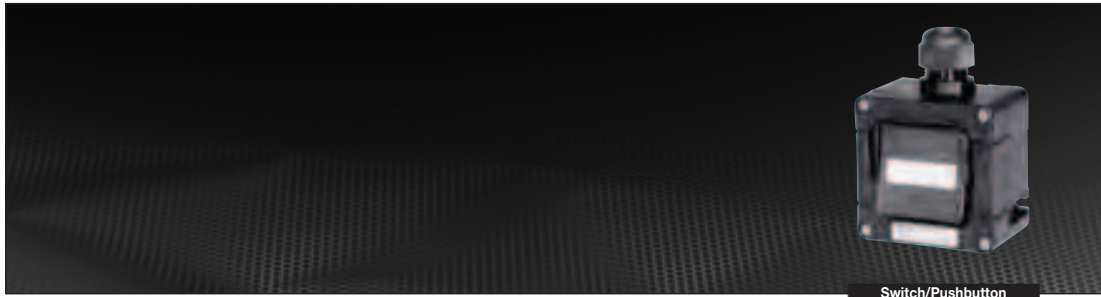
The explosion-protected installation switches are for use in the Zones 1, 2, 21 and 22. The materials used have proved to be safe and reliable for both indoor and outdoor installations, in particular in chemical and off-shore plants. The robust housings are made of a modified polyamide material.

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

**International approvals.**



-  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 switches and Ex-pushbuttons

Marking to 94/9/EC	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 acc. IECEx	Ex ed IIC T6 Ex tD A21 IP66 T67 °C
Permissible ambient temperature	-20 °C to +40 °C -55 °C to +55 °C (option)
Rated voltage	250 V, 50 - 60 Hz
Rated current	16 A
Connecting terminals	Switch terminals: 2 x 2.5 mm <sup>2</sup> / PE-terminals: 4 x 2.5 mm <sup>2</sup>
Degree of protection accd. to EN 60529	IP66
Cable glands <sup>1)</sup>	Ex-e cable glands max. 2 x M25; 2 x M20 thread
Weight	0.32 kg
Enclosure material	Polyamide

Ordering details

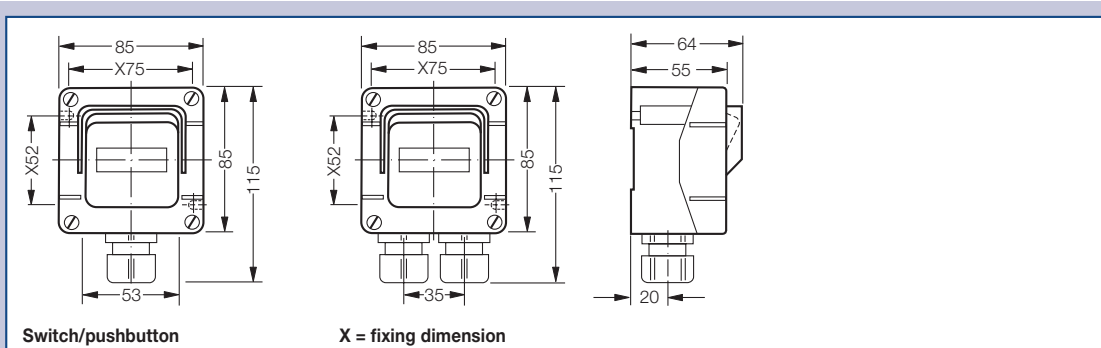
Type	Contact arrangement	Cable glands <sup>1)</sup>	Order No.
ON-OFF switch 2-pole		1 x M25	GHG 273 2000 R0017
		2 x M25	GHG 273 2000 R0018
		2 x M20 <sup>2)</sup>	GHG 273 2000 R0003
Change-over switch		1 x M25	GHG 273 6000 R0011
		2 x M20 <sup>2)</sup>	GHG 273 6000 R0003
		2 x M25	GHG 273 6000 R0014
Pushbutton		1 x M25	GHG 273 4000 R0004
		2 x M25	GHG 273 4000 R0007

<sup>1)</sup> Base enclosure can be rotated afterwards (entry from top or down)

<sup>2)</sup> Threaded only

Other versions available on request

Dimension drawing



# E X - C O N T R O L S T A T I O N S

## Moulded plastic Version for Zone 1 and Zone 21

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. 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. 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 8 to 17 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.

**Internationally approved.**

- 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 to 94/9/EC	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 BKI 04.0003	
Marking acc. 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 to +40 °C -55 °C to +55 °C (option)	
Rated voltage	690 V AC	
Rated current	16 A	
Rated making-/rated breaking capacity	Ex41	Ex23
accd. EN 60947-5-1	AC-15: U <sub>e</sub> 250 V / I <sub>e</sub> 6 A U <sub>e</sub> 500 V / I <sub>e</sub> 4 A DC-13: U <sub>e</sub> 24 V / I <sub>e</sub> 6 A U <sub>e</sub> 220 V / I <sub>e</sub> 1 A	AC-15: U <sub>e</sub> 230 V / I <sub>e</sub> 6 A U <sub>e</sub> 500 V / I <sub>e</sub> 4 A DC-13: U <sub>e</sub> 24 V / I <sub>e</sub> 2 A U <sub>e</sub> 230 V / I <sub>e</sub> 0.5 A
Connecting terminals	2 x 2.5 mm <sup>2</sup>	
Insulation class	I	
Degree of protection accd. EN 60529	IP66 (standard)	
Cable glands/Gland plates/Enclosure drilling	1 x M25 Ex-e cable gland for cables from Ø 8 - 17 mm or 1 x M20 thread	
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 to 94/9/EC	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 L <sub>i</sub>	-	≤ 0.1 mH
Capacitance C <sub>i</sub>	-	≤ 0.1 nF
Open circuit voltage U <sub>i</sub>	-	30 V
Short circuit current I <sub>i</sub>	-	150 mA
Connecting terminals	2 x 1.5 - 4 mm <sup>2</sup>	
Weight	0.70 kg	

<sup>1)</sup> Base enclosure can be rotated afterwards (entry from top or down)  
Other versions available on request

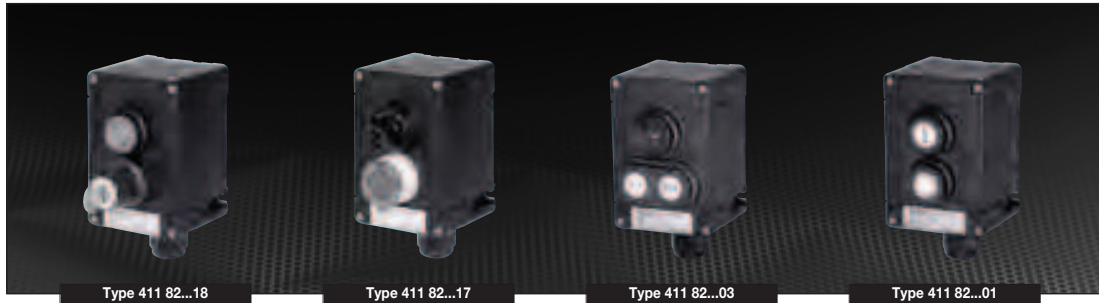
## Ex-control stations



### Ordering details type 411 81 with 1 built-in component

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





**Ordering details type 411 82 with 2 built-in components**

Version	Built-in components	Weight approx.	Order No.
	2 x pushbutton DRT 1 NO + 1 NC each label: "0, I, START, STOP"	0.54 kg	<b>GHG 411 8200 R0001</b>
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	<b>GHG 411 8200 R0003</b>
	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"	0.57 kg	<b>GHG 411 8200 R0016</b>
	1 x control switch SCT 1 change-over SW 6 "engaging-engaging" label: "0 - I" 1 x mushroom-head pushbutton SGT 1 NO + 1 NC "Emergency stop"	0.57 kg	<b>GHG 411 8200 R0017</b>
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	<b>GHG 411 8200 R0018</b>

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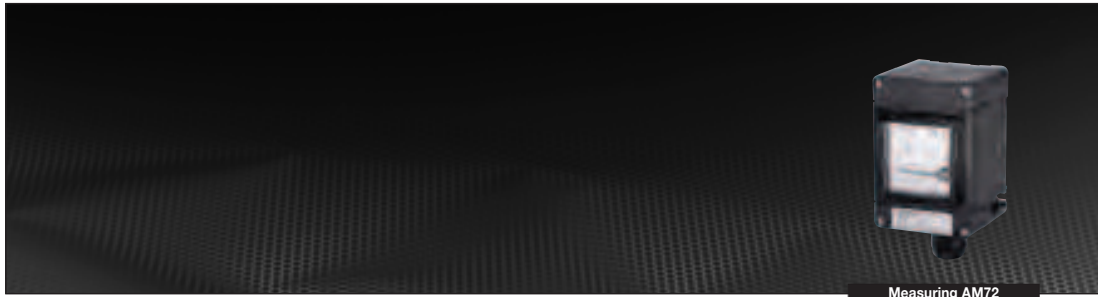
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## Ex-control stations



### Ordering details type 411 83 with 3 built-in components

Version	Built-in components	Weight approx.	Order No.
X1—⊗—X2 	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"	0.76 kg	<b>GHG 411 8300 R0001</b>
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 x mushroom-head pushbutton SGTE 1 NO + 1 NC "Emergency stop"	0.80 kg	<b>GHG 411 8300 R0003</b>
1—⊗—2 	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" label: "0 - I"	0.92 kg	<b>GHG 411 8300 R0023</b>
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 x control switch SCT 1 change-over SW 6 "engaging-engaging" label: "HAND - AUTO"	0.80 kg	<b>GHG 411 8300 R0004</b>

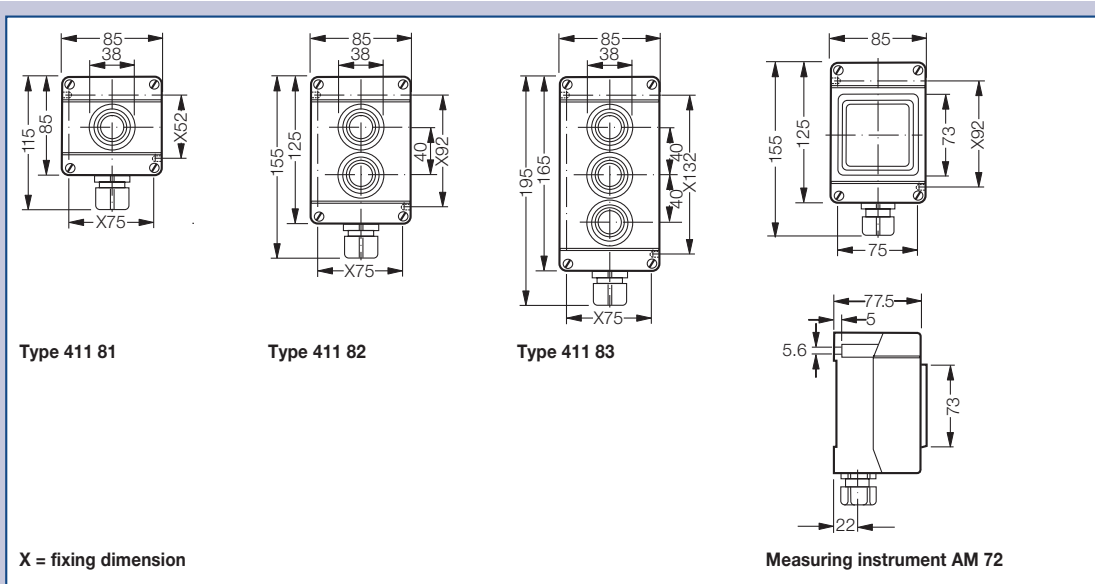


Measuring AM72

Ordering details measuring instrument AM72, type 411 82

Version	Movement	Weight	Order No.
Version direct measurement with 1 x cable entry 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 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

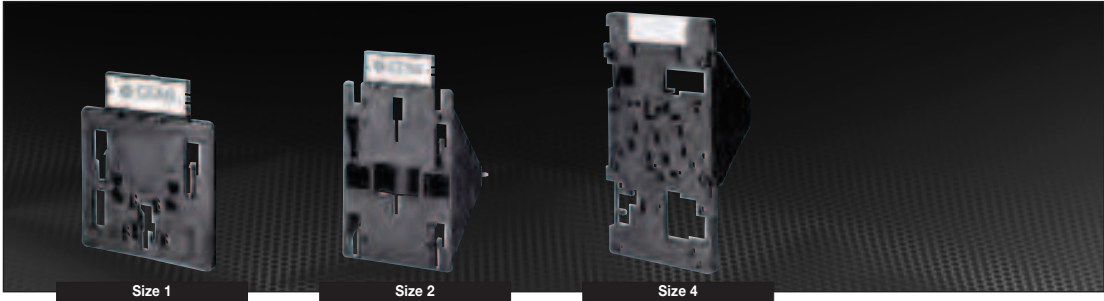
Dimension drawing



Dimensions in mm

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**| Ex-control stations |**



**Accessories**

**Mounting plate for type 411 81**

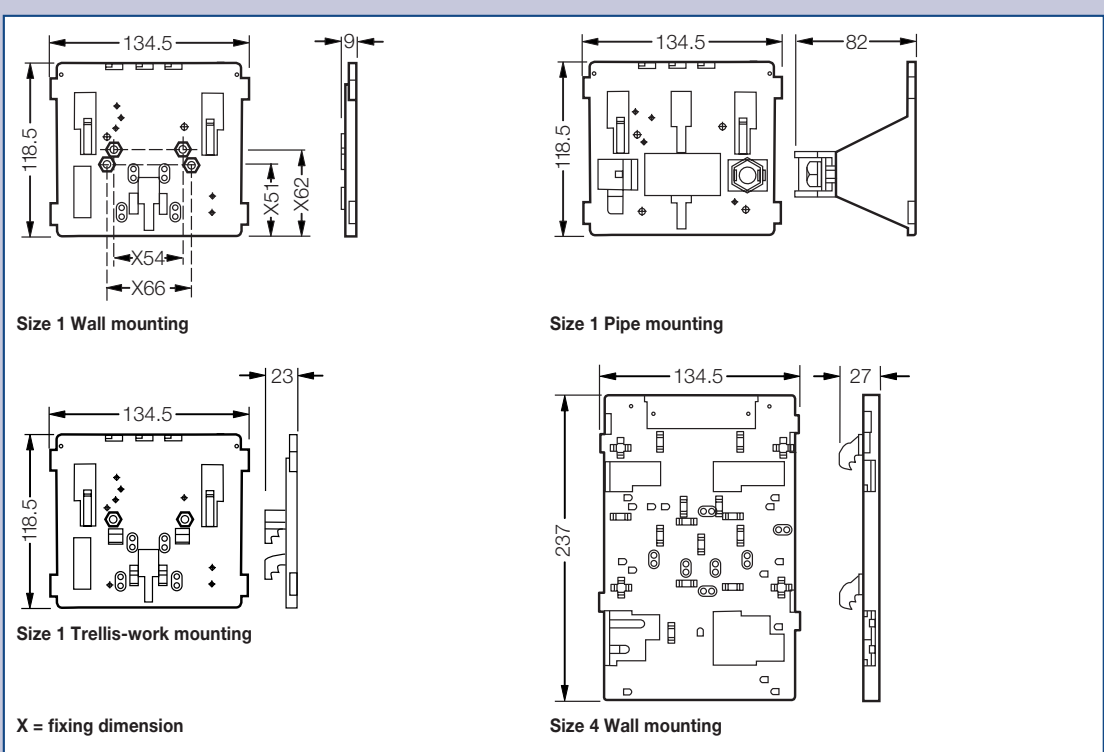
Type	Application	Mounting technique	OU	Order No.
Size 1	Wall mounting	screw-on	1	GHG 610 1953 R0101
Size 1	Pipe mounting	screw-on	1	GHG 610 1953 R0102
Size 1	Trellis-work mounting	screw-on	1	GHG 610 1953 R0103
Size 4	Wall mounting	snap-on <sup>1)</sup>	1	GHG 610 1953 R0126
Size 4	Trellis-work mounting	snap-on <sup>1)</sup>	1	GHG 610 1953 R0126
Size 4	Pipe mounting	snap-on <sup>1)</sup>	1	GHG 610 1953 R0130

**Mounting plate for type 411 82 and 411 83**

Type	Application	Mounting technique	OU	Order No.
Size 2	Wall mounting	screw-on	1	GHG 610 1953 R0104
Size 2	Pipe mounting	screw-on	1	GHG 610 1953 R0105
Size 2	Trellis-work mounting	screw-on	1	GHG 610 1953 R0106
Size 4	Wall mounting	snap-on <sup>1)</sup>	1	GHG 610 1953 R0126
Size 4	Trellis-work mounting	snap-on <sup>1)</sup>	1	GHG 610 1953 R0126
Size 4	Pipe mounting	snap-on <sup>1)</sup>	1	GHG 610 1953 R0130
Snap-on mounting for CEAG apparatus with 5.5 mm and 11 mm mounting size per 4 pieces			10	GHG 610 1953 R0041

<sup>1)</sup> snap-on with snap-on mounting 5.5 mm

**Dimension drawing**



Dimensions in mm



**Technical data**

**Ex-Control stations Type 432 | Type 434**

Marking to 94/9/EC	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 BKI 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 to +40 °C -55 °C 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	Ex41	Ex23
accd. EN 60947-5-1	AC-15: U <sub>e</sub> 250 V / I <sub>e</sub> 6 A	AC-15: U <sub>e</sub> 230 V / I <sub>e</sub> 6 A
	U <sub>e</sub> 500 V / I <sub>e</sub> 4 A	U <sub>e</sub> 500 V / I <sub>e</sub> 4 A
	DC-13: U <sub>e</sub> 24 V / I <sub>e</sub> 6 A	DC-13: U <sub>e</sub> 24 V / I <sub>e</sub> 2 A
	U <sub>e</sub> 220 V / I <sub>e</sub> 1 A	U <sub>e</sub> 230 V / I <sub>e</sub> 0.5 A
Connecting terminals	2 x 4 mm <sup>2</sup>	
Insulation class	I	
Degree of protection accd. EN 60529	IP66 (standard)	
Cable glands/Gland plates/Enclosure drilling	2 x M25 Ex-e cable gland for cables from Ø 8 - 17 mm incl. 1 blanking plug or 2 x M20 thread	
Enclosure material	Polyamide	
Enclosure colour	Black	

**Type 432**

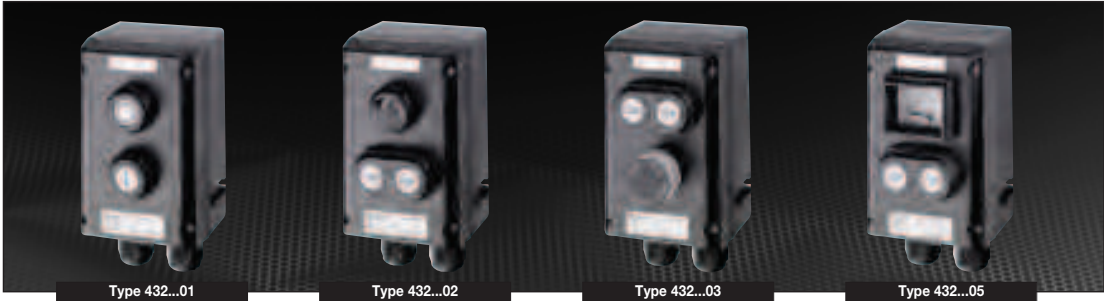
Dimensions (L x W x H)	156 x 100 x 90 mm
Weight (empty)	0.47 kg

**Type 434**

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

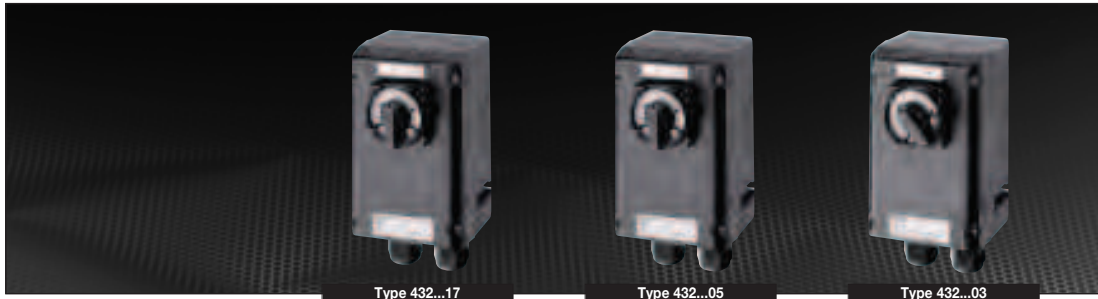
<sup>1)</sup> Base enclosure can be rotated afterwards (entry from top or down)  
Other versions available on request

**| Ex-control stations |**



**Ordering details type 432 with 2 built-in components**

Version	Built-in components	Weight approx.	Order No.
	2 x pushbutton DRT 1 NO + 1 NC each label: "0, I, START, STOP"	0.85 kg	<b>GHG 432 0011 R0001</b>
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	<b>GHG 432 0011 R0002</b>
	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"	0.85 kg	<b>GHG 432 0011 R0003</b>
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"	0.95 kg	<b>GHG 432 0011 R0005</b>



Ordering details type 432 with 1 control switch GHG 23

Version	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	<b>GHG 432 0001 R0003</b> <b>GHG 432 0001 R0004</b>
	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	<b>GHG 432 0001 R0005</b> <b>GHG 432 0001 R0006</b>
	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	<b>GHG 432 0001 R0012</b> <b>GHG 432 0001 R0013</b> <b>GHG 432 0001 R0014</b>
	1 x control switch GHG 23 2 change-over SW 6 "engaging-engaging" label: "I - II" label: "HAND I AUTO"	0.70 kg 0.70 kg	<b>GHG 432 0001 R0015</b> <b>GHG 432 0001 R0016</b>
	1 x control switch GHG 23 2 NO + 1 NC SW 5 "engaging-engaging-engaging" label: "I II III"	0.86 kg	<b>GHG 432 0001 R0017</b>
	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	<b>GHG 432 0001 R0018</b> <b>GHG 432 0001 R0019</b> <b>GHG 432 0001 R0020</b>

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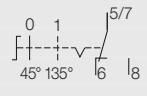

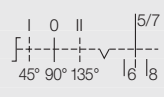

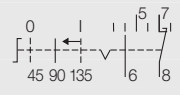


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## Ex-control stations



### Ordering details type 432 with 2 built-in components

Version	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	<b>GHG 432 0011 R0006</b>
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	<b>GHG 432 0011 R0008</b>
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” label: “0 – I”	1.35 kg	<b>GHG 432 0011 R0009</b>
1 —  — 2  	2 x measuring instrument AM45 CT connection n/1A Scale 0 –100%/150% 1 x control switch GHG 23 2 NO + 1 NC SW 5 “engaging-engaging-engaging” label: “I II III”	1.35 kg	<b>GHG 432 0011 R0010</b>





**Ordering details type 434 with 4 built-in components**

Version	Built-in components	Weight approx.	Order No.
	1 x measuring 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	<b>GHG 434 0111 R0002</b>
	1 x measuring 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	<b>GHG 434 0111 R0010</b>
	1 x measuring 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	<b>GHG 434 0111 R0011</b>

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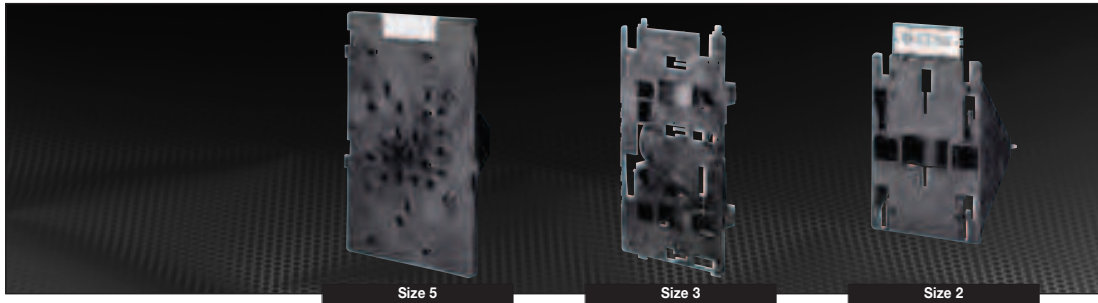
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**Ex-control stations**



**Ordering details type 434 with 4 built-in components**

Version	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>	1.45 kg	<b>GHG 434 1111 R0004</b>
<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>	1.45 kg	<b>GHG 434 1111 R0005</b>
<p>X1—⊗—X2</p> <p>( ) —   0   II   13   23     14   24  </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" 1 x key-operated switch 2 NO SW 5 "engaging-engaging-engaging" label: "I 0 II"</p>	1.55 kg	<b>GHG 434 1111 R0009</b>



Accessories

Mounting plate for type 432

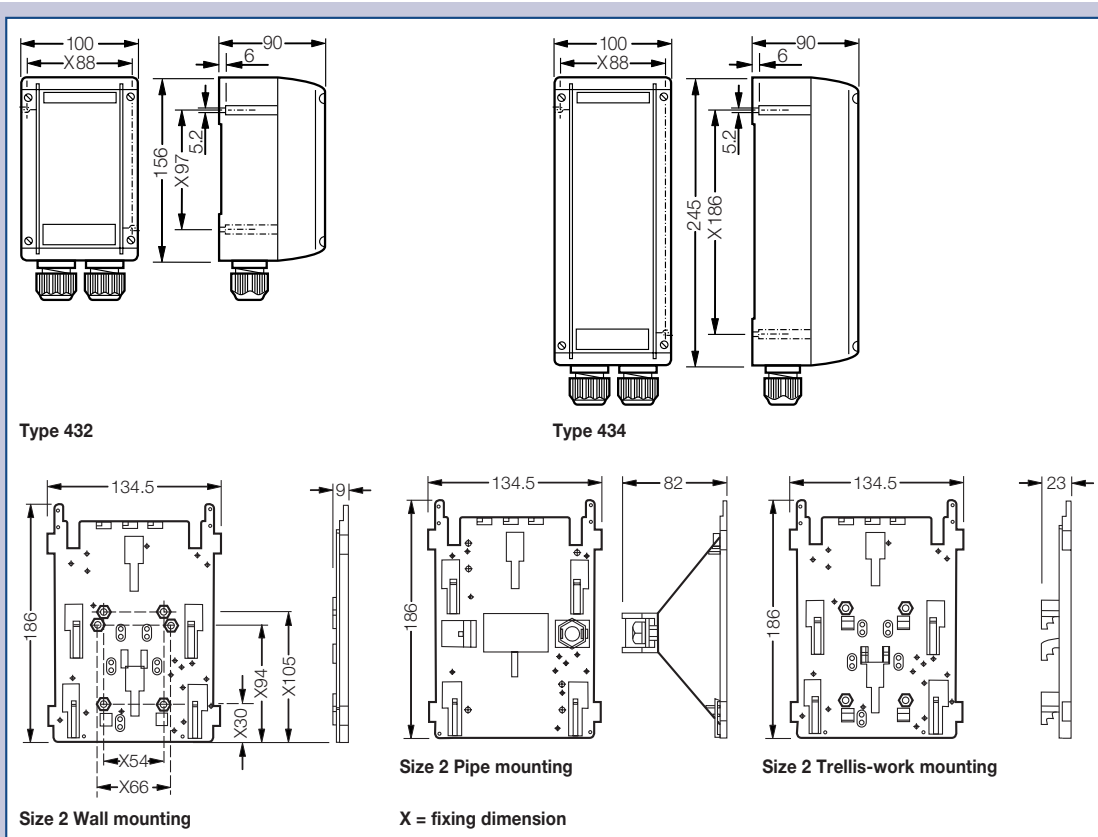
Type	Application	Mounting technique	OU	Order No.
Size 2	Wall mounting	screw-on	1	GHG 610 1953 R0104
Size 2	Pipe mounting	screw-on	1	GHG 610 1953 R0105
Size 2	Trellis-work mounting	screw-on	1	GHG 610 1953 R0106
Size 5	Wall mounting	snap-on *	1	GHG 610 1953 R0128
Size 5	Trellis-work mounting	snap-on *	1	GHG 610 1953 R0128
Size 5	Pipe mounting	snap-on *	1	GHG 610 1953 R0132

Mounting plate for type 434

Type	Application	Mounting technique	OU	Order No.
Size 3	Wall mounting	screw-on	1	GHG 610 1953 R0118
Size 3	Pipe mounting	screw-on	1	GHG 610 1953 R0110
Size 3	Trellis-work mounting	screw-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 mounting	snap-on *	1	GHG 610 1953 R0132
Snap-on mounting for CEAG apparatus 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



# E X - C O N T R O L S T A T I O N S

## Light alloy Version for Zone 1 and Zone 21

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.

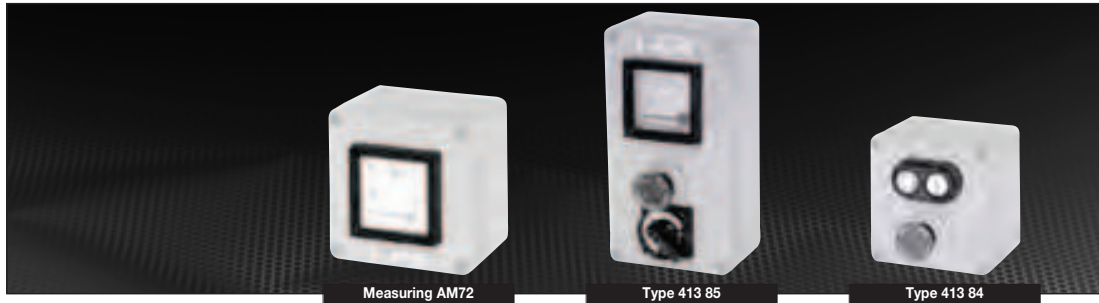
To facilitate insertion of cables into the entries, the built-in components can be snapped out of the enclosures. Notches in the mounting rails define the position of the built-in components and prevent them from being twisted out of place.

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

**Internationally approved.**

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





**Technical data**

**Ex-Control stations Type 413 84 | Type 413 85**

Marking to 94/9/EC	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 BKI 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 to +40 °C -55 °C to +55 °C (option)	
Rated voltage	690 V AC (with control switch GHG 23 to 500 V)	
Rated current	35 A (with control switch GHG 23 max. 10 A)	
Rated making-/rated breaking capacity accd. EN 60947-5-1	Ex41 Ex23	
	AC-15: U <sub>e</sub> 250 V / I <sub>e</sub> 6 A U <sub>e</sub> 500 V / I <sub>e</sub> 4 A	AC-15: U <sub>e</sub> 230 V / I <sub>e</sub> 6 A U <sub>e</sub> 500 V / I <sub>e</sub> 4 A
	DC-13: U <sub>e</sub> 24 V / I <sub>e</sub> 6 A U <sub>e</sub> 220 V / I <sub>e</sub> 1 A	DC-13: U <sub>e</sub> 24 V / I <sub>e</sub> 2 A U <sub>e</sub> 230 V / I <sub>e</sub> 0.5 A
Connecting terminals	2 x 4 mm <sup>2</sup>	
Insulation class	I	
Degree of protection accd. EN 60529	IP66 (standard)	
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**

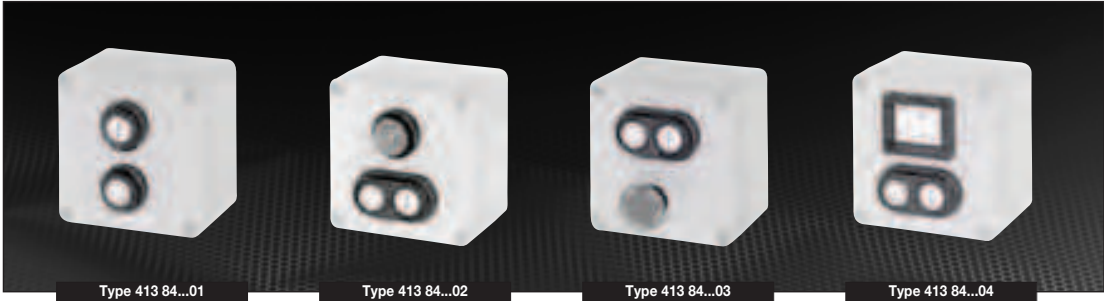
Dimensions (L x W x H)	122 x 120 x 81 mm
Weight (empty)	1.45 kg

**Type 413 84 with measuring instrument AM 72**

Movement	Moving iron	Moving coil
Marking to 94/9/EC	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 L <sub>i</sub>	-	≤ 0.1 mH
Capacitance C <sub>i</sub>	-	≤ 0.1 nF
Open circuit voltage U <sub>i</sub>	-	30 V
Short circuit current I <sub>i</sub>	-	150 mA
Connecting terminals	2 x 1.5 - 4 mm <sup>2</sup>	
Weight	1.25 kg	

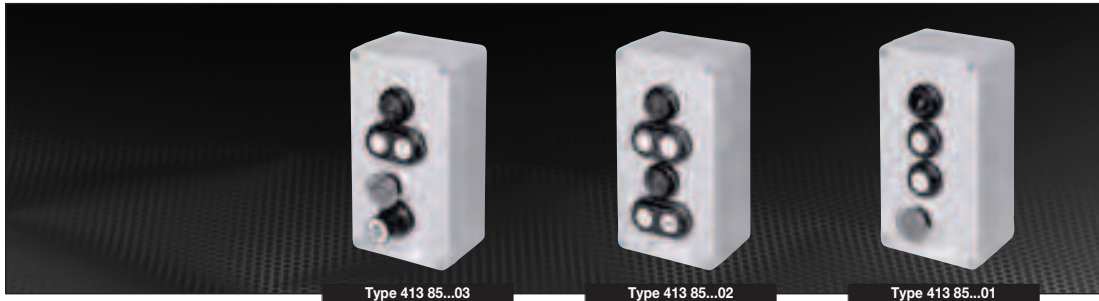
<sup>1)</sup> Base enclosure can be rotated afterwards (entry from top or down)  
Other versions available on request

**| Ex-control stations |**



**Ordering details type 413 84 with 2 built-in components**

Version	Built-in components	Weight approx.	Order No.
	2 x pushbutton DRT 1 NO + 1 NC each label: "0, I, START, STOP"	1.25 kg	<b>GHG 413 8400 R0001</b>
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	<b>GHG 413 8400 R0002</b>
	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	<b>GHG 413 8400 R0003</b>
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	<b>GHG 413 8400 R0004</b>



**Ordering details type 413 85 with 4 built-in components**

Version	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	<b>GHG 413 8500 R0001</b>
<p>X1 ⊗ X2</p> <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	<b>GHG 413 8500 R0002</b>
<p>X1 ⊗ X2</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	<b>GHG 413 8500 R0003</b>

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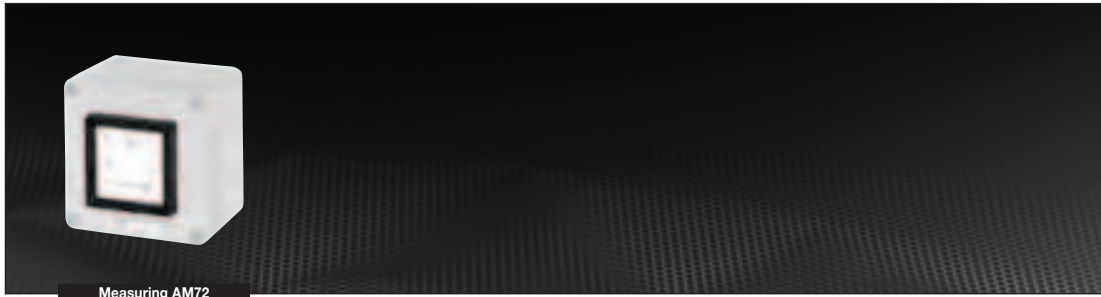
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## Ex-control stations

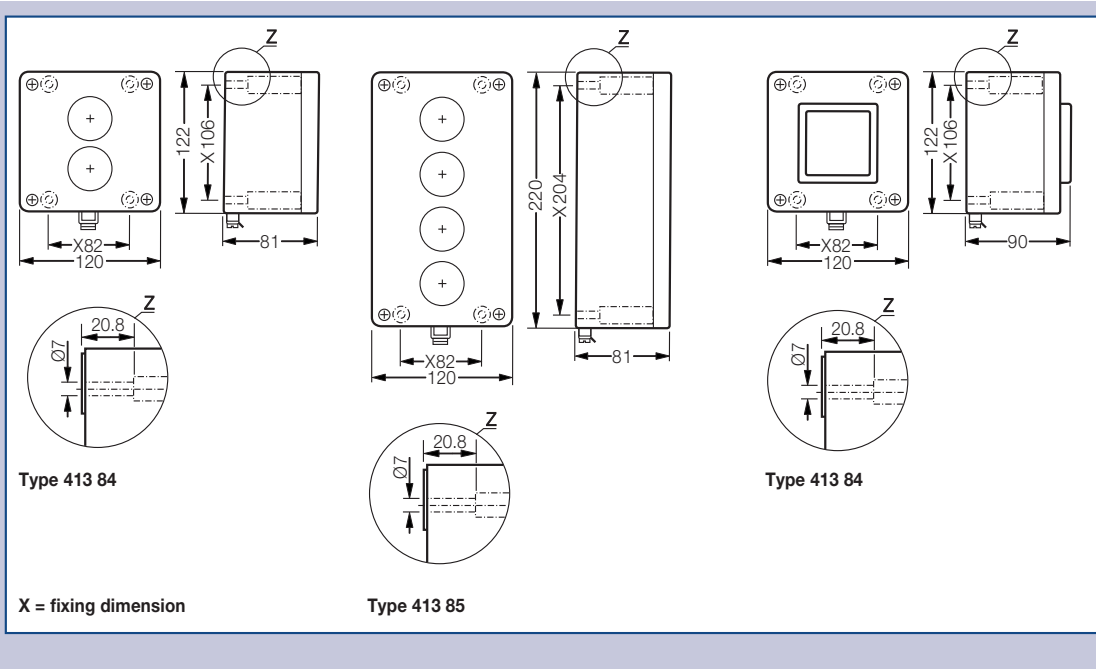


Measuring AM72

### Ordering details type 413 84 with measuring instrument AM72

Version	Movement	Weight approx.	Order No.
<b>Version direct measurement with 1 x threaded entry M20</b>			
0 - 1 / 1.5 A	moving iron	1.25 kg	<b>GHG 413 8481 R0002</b>
0 - 2.5 / 3.75 A	moving iron	1.25 kg	<b>GHG 413 8481 R0003</b>
0 - 5 / 7.5 A	moving iron	1.25 kg	<b>GHG 413 8481 R0004</b>
0 - 10 / 15 A	moving iron	1.25 kg	<b>GHG 413 8481 R0005</b>
0 - 16 / 24 A	moving iron	1.25 kg	<b>GHG 413 8481 R0007</b>
0 - 20 / 24 mA 0-100% / 120% (Ri =320 Ω)	moving coil	1.35 kg	<b>GHG 413 8481 R0033</b>
4 - 20 / 24 mA 0-100% / 120% (Ri =320 Ω)	moving coil	1.35 kg	<b>GHG 413 8481 R0035</b>
<b>Version CT connection n/1A with 1 x threaded entry M20</b>			
0 - 1 / 1.5 A	moving iron	1.25 kg	<b>GHG 413 8482 R0002</b>
0 - 2.5 / 3.75 A	moving iron	1.25 kg	<b>GHG 413 8482 R0003</b>
0 - 5 / 7.5 A	moving iron	1.25 kg	<b>GHG 413 8482 R0004</b>
0 - 10 / 15 A	moving iron	1.25 kg	<b>GHG 413 8482 R0005</b>
0 - 15 / 22.5 A	moving iron	1.25 kg	<b>GHG 413 8482 R0007</b>
0 - 20 / 30 A	moving iron	1.25 kg	<b>GHG 413 8482 R0008</b>
0 - 30 / 45 A	moving iron	1.25 kg	<b>GHG 413 8482 R0009</b>
0 - 40 / 60 A	moving iron	1.25 kg	<b>GHG 413 8482 R0010</b>
0 - 50 / 75 A	moving iron	1.25 kg	<b>GHG 413 8482 R0011</b>
0 - 60 / 90 A	moving iron	1.25 kg	<b>GHG 413 8482 R0012</b>
0 - 75 / 112.5 A	moving iron	1.25 kg	<b>GHG 413 8482 R0013</b>
0 - 100 / 150 A	moving iron	1.25 kg	<b>GHG 413 8482 R0014</b>
0 - 100% / 150%	moving iron	1.25 kg	<b>GHG 413 8482 R0033</b>

### Dimension drawing





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# E X - C O N T R O L S T A T I O N

## Stainless steel Version for Zone 1 and Zone 21

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.

**Internationally approved.**



High mechanical, chemical and thermal resistance

Individual configuration

Clean-room applications



Technical data

Ex-Control stations Type 414 81 | Type 414 82

Marking to 94/9/EC	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 BKI 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 to +40 °C -55 °C 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	Ex41	Ex23
accd. EN 60947-5-1	AC-15: U <sub>e</sub> 250 V / I <sub>e</sub> 6 A U <sub>e</sub> 500 V / I <sub>e</sub> 4 A	AC-15: U <sub>e</sub> 230 V / I <sub>e</sub> 6 A U <sub>e</sub> 500 V / I <sub>e</sub> 4 A
	DC-13: U <sub>e</sub> 24 V / I <sub>e</sub> 6 A U <sub>e</sub> 220 V / I <sub>e</sub> 1 A	DC-13: U <sub>e</sub> 24 V / I <sub>e</sub> 2 A U <sub>e</sub> 230 V / I <sub>e</sub> 0.5 A
	with gold contact points max. 0.4 A	
Connecting terminals	2 x 4 mm <sup>2</sup>	
Insulation class	I	
Degree of protection accd. EN 60529	IP66 (standard)	
Cable glands/Gland plates/Enclosure drilling	1 x drilling 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

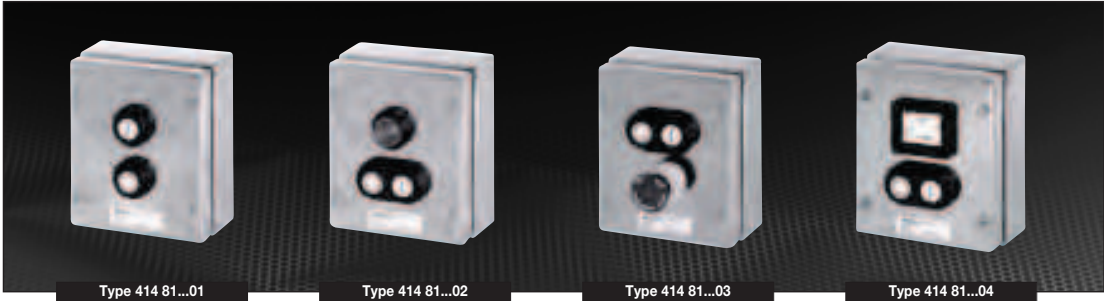
Dimensions (L x W x H)	286 x 140 x 76 mm
Weight (empty)	2.10 kg

Type 414 81 with measuring instrument AM 72

Movement	Moving iron	Moving coil
Marking to 94/9/EC	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 L <sub>i</sub>	-	≤ 0.1 mH
Capacitance C <sub>i</sub>	-	≤ 0.1 nF
Open circuit voltage U <sub>i</sub>	-	30 V
Short circuit current I <sub>i</sub>	-	150 mA
Connecting terminals	2 x 1.5 - 4 mm <sup>2</sup>	
Weight	1.25 kg	

<sup>1)</sup> Base enclosure can be rotated afterwards (entry from top or down)  
Other versions available on request

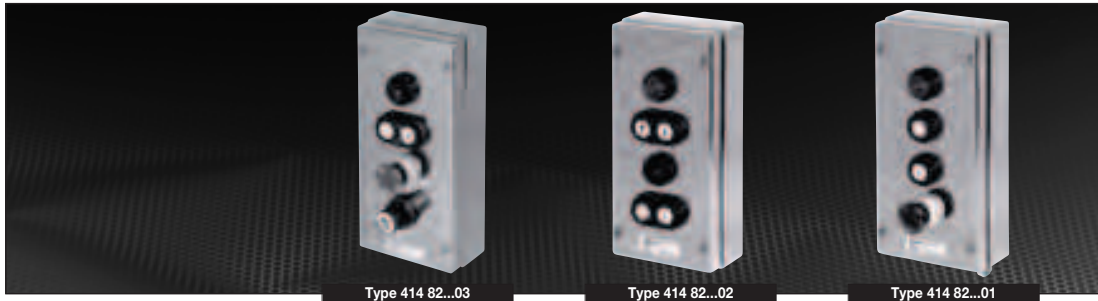
**| Ex-control stations |**



**Ordering details type 414 81 with 2 built-in components**

Version*	Built-in components	Weight approx.	Order No.
	2 x pushbutton DRT 1 NO + 1 NC each label: "0, I, START, STOP"	1.80 kg	<b>GHG 414 8100 R0001</b>
	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	<b>GHG 414 8100 R0002</b>
	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	<b>GHG 414 8100 R0003</b>
	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	<b>GHG 414 8100 R0004</b>

\*Without external fixing lugs (see accessories page 9.30)



**Ordering details type 414 82 with 4 built-in components**

Version*	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>	2.80 kg	<b>GHG 414 8200 R0001</b>
<p>X1 ⊗ X2</p> <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	<b>GHG 414 8200 R0002</b>
<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" 1 x key-operated switch 2 NO SW 5 "engaging-engaging-engaging" label: "I 0 II"</p>	2.90 kg	<b>GHG 414 8200 R0003</b>

\*Without external fixing lugs (see accessories page 9.30)

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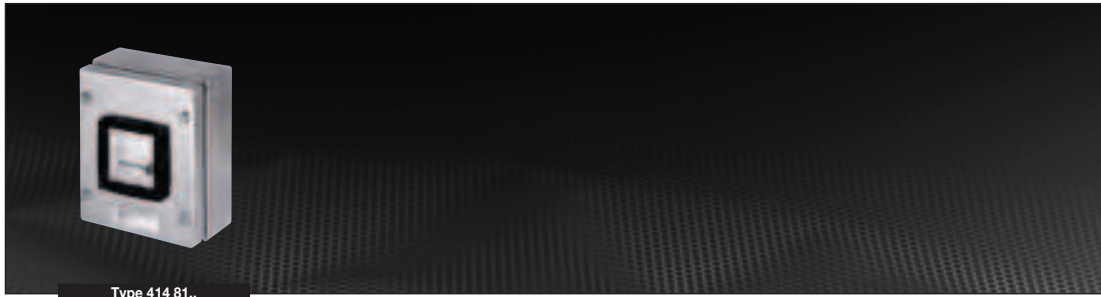
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## Ex-control stations



Type 414 81..

### Ordering details type 414 81 with measuring AM72

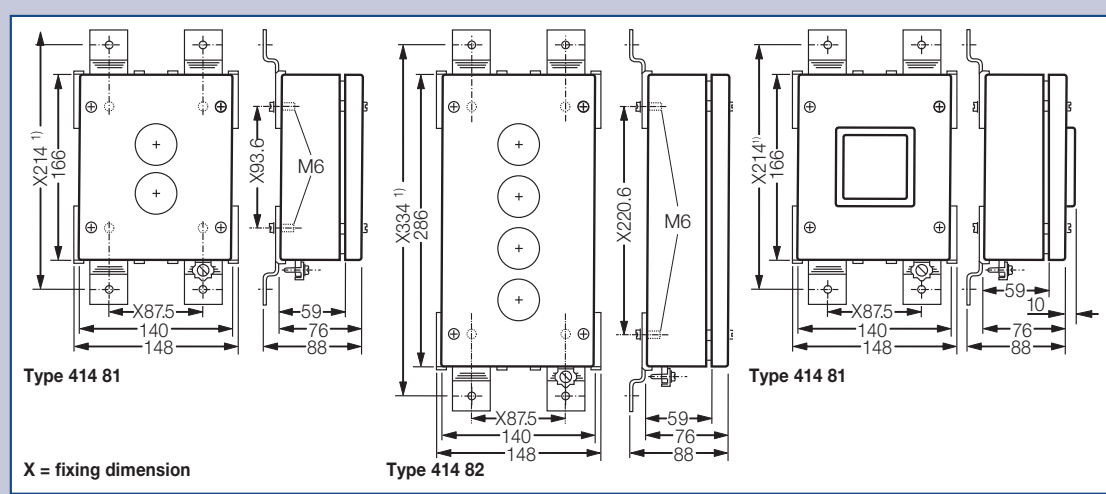
Version	Movement	Weight approx.	Order No.
Version direct measurement with 1 x threaded entry Ø 21 mm (without external fixing lugs)			
0 - 1 / 1.5 A	moving iron	1.25 kg	<b>GHG 414 8181 R0002</b>
0 - 2.5 / 3.75 A	moving iron	1.25 kg	<b>GHG 414 8181 R0003</b>
0 - 5 / 7.5 A	moving iron	1.25 kg	<b>GHG 414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

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

### Accessories

Type	Order No.
External fixing lugs (2 pcs)	<b>GHG 610 1941 R0013</b>

### Dimension drawing



Dimensions in mm

<sup>1)</sup> Scope of delivery without fixing lugs

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# E X - C O N T R O L S T A T I O N S

**For individual controls  
Moulded-plastic version for Zone 1 and Zone 21**

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.

**Internationally approved.**



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



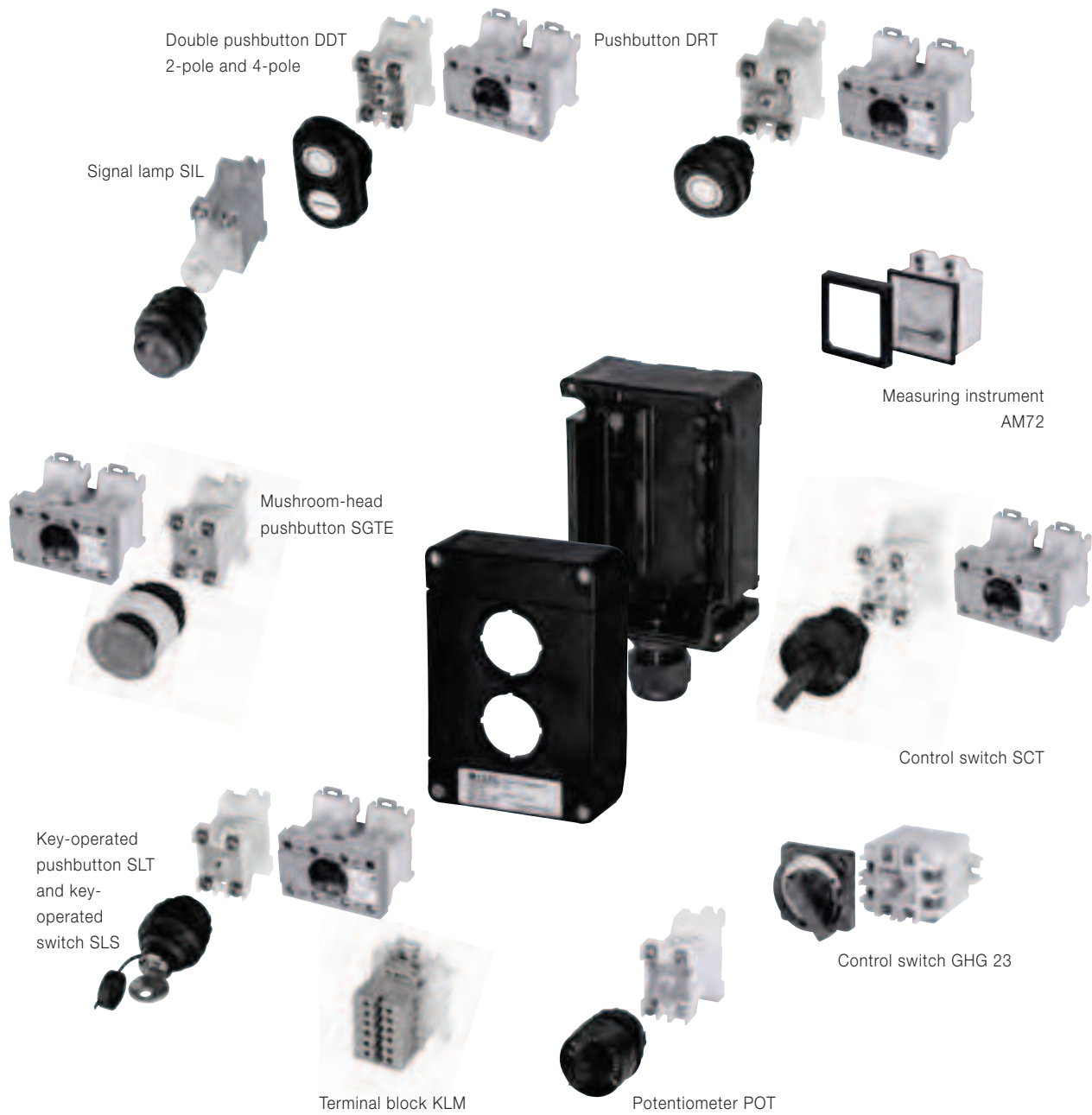
Customised control stations, covered by type examination certificates, can be individually combined from CEAG's numerous built-in components.

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 9.34 pp.

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**| 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

Pushbutton DRT  
2-pole 4-pole

Signal lamp  
SIL

Double-pushbutton DDT  
2-pole 4-pole

Potentiometer  
POT

Key-operated pushbutton SLT  
2-pole 4-pole

Control switch  
Ex 23 Ex 29

Key-operated switch SLS  
2-pole 4-pole

Measuring instrument  
AM 45 AM 72

Mushroom-head pushbutton  
SGTE SGT

Terminal block  
KLM

**Order Code for Individual Control Units**

Example: Enclosure Type 434,  
 Pushbutton (MA4),  
 Signal lamp (MA3)  
 Emergency stop  
 Mushroom head pushbutton (MA2)  
 Double pushbutton (MA1)

Code 1: 434..  
 Code 2 MA4: DRT 14 001  
 Code 2 MA3: SIL 1 10  
 Code 2 MA2 SGTE 13 1 1 2  
 Code 2 MA1: DDT15 001 007

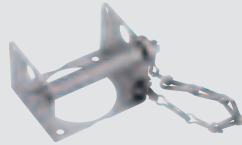
Code 3 MA1: ZUB 19  
 Code 3 MA2: ZUB 19  
 Code 3 MA3: ZUB 02  
 Code 3 MA4: --  
 Code 4: GEH 1 GK M25 2

**Code 3: Labels and locking facilities**

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"/>	



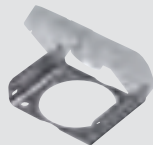
Label with holder  
ZUB 20



locking facility  
ZUB 14



locking facility with hammer  
ZUB 05



locking facility  
ZUB 22



locking 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"/>



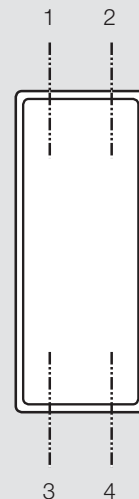
Metal flange plate  
FLM



plastic cable gland  
GK



plastic trumpet-shaped  
cable gland TR



position for  
drilling/gland

1

2

3

4

5

6

7

8

9

10

11

12

## Ex-control stations



### Technical data

#### Ex-Control stations Type 41. and 43. for individual configuration

Marking to 94/9/EC	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 BKI 04.0003
Marking accord. 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 to +40 °C -55 °C to +55 °C (option)
Rated voltage	690 V AC
Rated current	16 A
Connecting terminals	2 x 4 mm <sup>2</sup>
Insulation class	I
Degree of protection accord. EN 60529	IP66 (standard)
Enclosure material	Polyamide
Enclosure colour	black

#### Type 411 81

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

#### Type 411 82

Cable glands/Gland plates/Enclosure drilling	1 x M25 Ex-e cable gland max. 2 x M25; 2 x M20 Gewinde
Dimensions (L x W x H)	125 x 85 x 77.5 mm
Weight (empty)	0.35 kg
Mounting arrangements	2 mounting areas

#### Type 411 83

Cable glands/Gland plates/Enclosure drilling	1 x M25 Ex-e cable gland max. 2 x M25; 2 x M20 Gewinde
Dimensions (L x W x H)	165 x 85 x 77.5 mm
Weight (empty)	0.45 kg
Mounting arrangements	3 mounting areas

#### Type 432

Cable glands/Gland plates/Enclosure drilling	2 x M25 Ex-e cable gland max. 2 x M25; 3 x M20 Gewinde incl. 1 blanking plug or 2 x M20 thread
Dimensions (L x W x H)	156 x 100 x 90 mm
Weight (empty)	0.47 kg
Mounting arrangements	2 mounting areas

#### Type 434

Cable glands/Gland plates/Enclosure drilling	2 x M25 Ex-e cable gland max. 2 x M25; 3 x M20 Gewinde incl. 1 blanking plug or 2 x M20 thread
Dimensions (L x W x H)	245 x 100 x 90 mm
Weight (empty)	0.70 kg
Mounting arrangements	4 mounting areas



**Ordering codes (Code 1)**

1. Empty enclosure	2. Components arrangement/Terminals				3. Labels/Locking devices	4. Cable glands
	Mounting area 1	Mounting area 2	Mounting area 3	Mounting area 4		
411 81 <sup>1)</sup>	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 <sup>2)</sup> )	DRT	Measuring instrument	AM72 <sup>2)</sup>
Double pushbutton (2-pole or 4-pole <sup>2)</sup> )	DDT	Measuring instrument	AM45
Key-operated pushbutton (2-pole or 4-pole <sup>2)</sup> )	SLT	Signal lamp	SIL
Key switch (2-pole or 4-pole <sup>2)</sup> )	SLS	Potentiometer	POT
Control switch (2-pole or 4-pole <sup>2)</sup> )	SCT	Terminal block (4 mm <sup>2</sup> )	KLM
Mushroom-head pushbutton (2-pole or 4-pole <sup>2)</sup> )	SGT	Blanking element	BLV
Control switch	GHG 23 <sup>3)</sup>		

<sup>1)</sup> 4-pole component not possible

<sup>2)</sup> 2 mounting areas are needed

<sup>3)</sup> only for type 43., 2 mounting areas are needed

1

2

3

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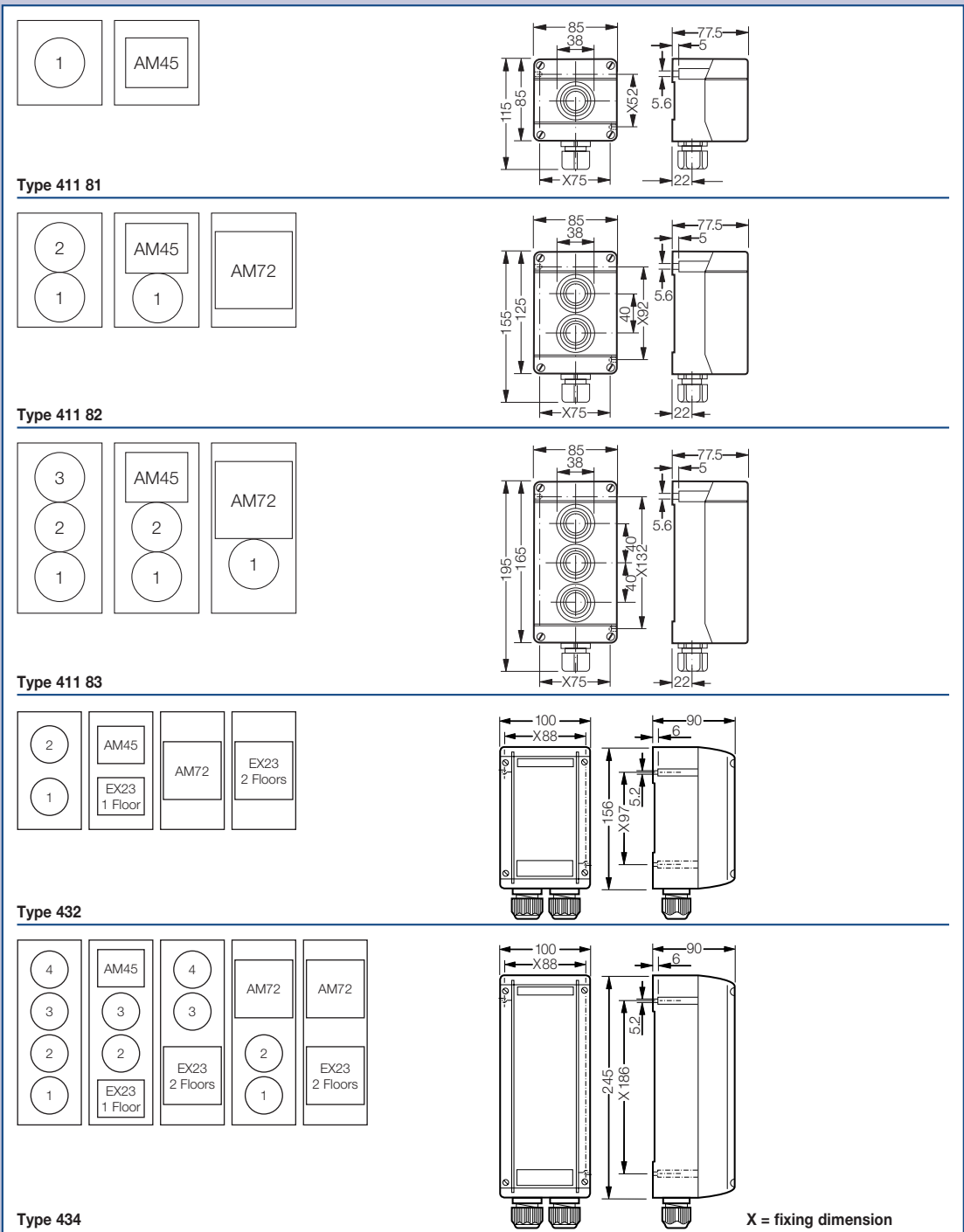
11

12

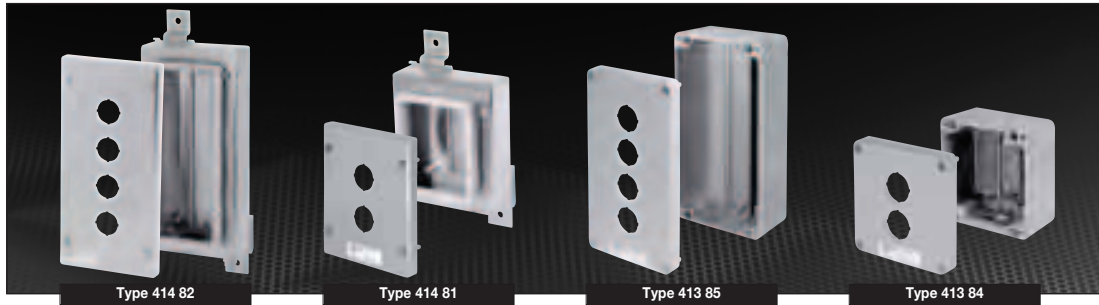
**| Ex-control stations |**



**Mounting areas | Dimension drawing**



Dimensions in mm



**Technical data**

**Ex-Control stations Type 413. and 414. for individual configuration**

Marking to 94/9/EC	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 BKI 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 to +40 °C -55 °C to +55 °C (option)
Rated voltage	690 V AC
Rated current	16 A
Connecting terminals	see technical data for built-in components
PE-connection terminals	2 x 4 mm <sup>2</sup>
Insulation class	I
Degree of protection accd. EN 60529	IP66 (standard)

**Type 413 84**

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

**Type 413 85**

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

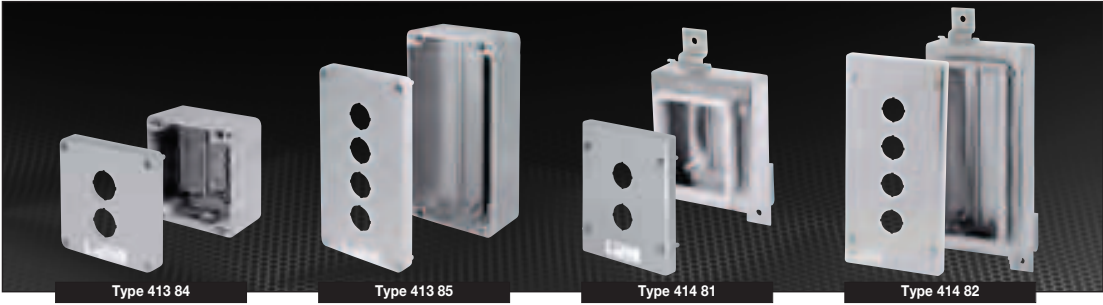
**Type 414 81**

Cable glands/Gland plates/Enclosure drilling	max. 3 x Ø 21 mm for cable gland M20 max. 2 x Ø 25.5 mm for cable gland M25
Dimensions (L x W x H)	166 x 140 x 76 mm
Weight (empty)	1.40 kg
Enclosure material	Stainless steel AISI 316 L
Enclosure colour	polished
Mounting arrangements	2 mounting areas

**Type 414 82**

Cable glands/Gland plates/Enclosure drilling	max. 4 x Ø 21 mm for cable gland M20 max. 2 x Ø 25.5 mm for cable gland M25
Dimensions (L x W x H)	286 x 140 x 76 mm
Weight (empty)	2.10 kg
Enclosure material	Stainless steel AISI 316 L
Enclosure colour	polished
Mounting arrangements	4 mounting areas

**| Ex-control stations |**



**Ordering codes (Code 1)**

1. Empty enclosure	2. Components arrangement/Terminals				3. Labels/Locking devices	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

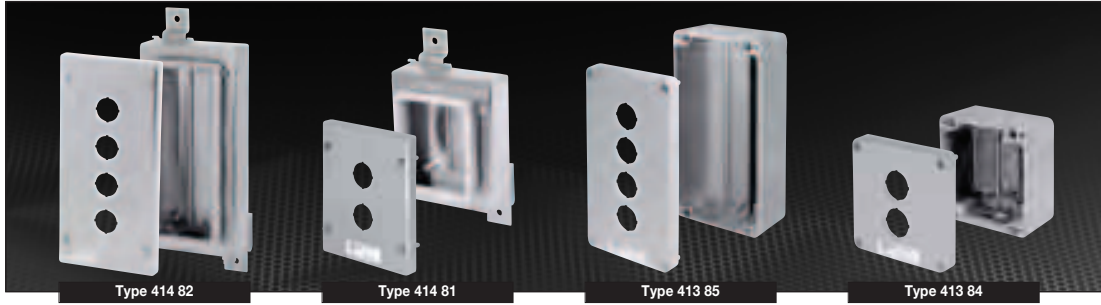
**Possible components (Code 1)**

Component	Code
Pushbutton (2-pole or 4-pole <sup>1)</sup> )	DRT
Double pushbutton (2-pole or 4-pole <sup>1)</sup> )	DDT
Key-operated pushbutton (2-pole or 4-pole <sup>1)</sup> )	SLT
Key switch (2-pole or 4-pole <sup>1)</sup> )	SLS
Control switch (2-pole or 4-pole <sup>1)</sup> )	SCT
Mushroom-head pushbutton (2-pole or 4-pole <sup>1)</sup> )	SGT
Control switch	GHG 23 <sup>1)</sup>

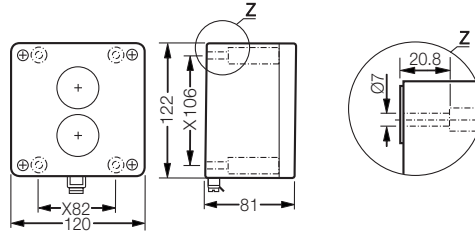
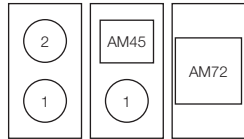
Component	Code
Measuring instrument	AM72 <sup>1)</sup>
Measuring instrument	AM45
Signal lamp	SIL
Potentiometer	POT
Terminal block (4 mm <sup>2</sup> )	KLM
Blanking element	BLV

<sup>1)</sup> 2 mounting areas are needed

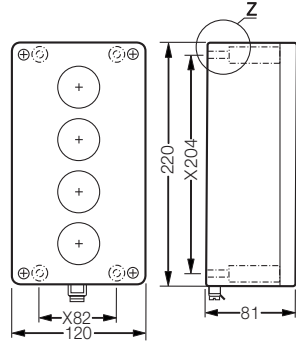
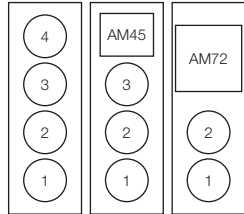




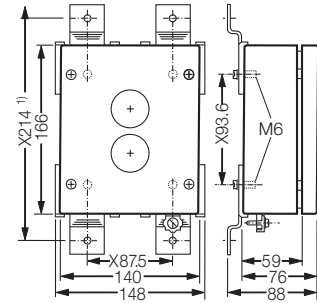
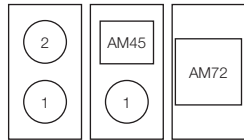
Mounting areas | Dimension drawing



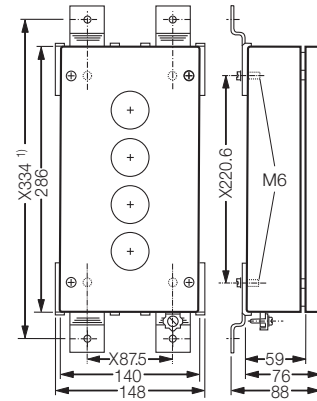
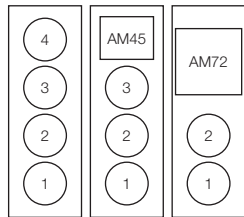
Type 413 84



Type 413 85



Type 414 81

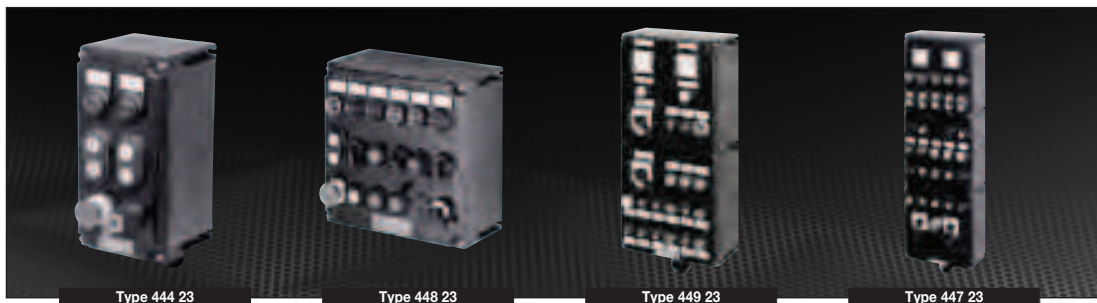


Type 414 82

X = fixing dimension

Dimensions in mm

## Ex-control stations



## Technical data

### Ex-Control stations Type 444, 448, 449, and 447 for individual configuration

Marking to 94/9/EC	II 2 G Ex de ia/lb m [ia/lb] IIC T6 II 2 D Ex tD A21 IP66/IP65 T80 °C
EC-Type Examination Certificate	PTB 99 ATEX 1044
IECEX Certificate of conformity	IECEX BKI 07.0023
Marking accd. to IECEx	Ex de ia/lb m [ia/lb] IIC T4 .. T6 Ex tD A21 IP66 T80 °C
Permissible ambient temperature	-20 °C to +40 °C -55 °C to +55 °C (option)
Rated voltage	690 V AC
Rated current	40 A
Connecting terminals	see technical data for built-in components
PE-connection terminals	2 x 4 mm <sup>2</sup>
Insulation class	I
Degree of protection accd. 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
Mounting arrangements	6 mounting areas

#### Type 448 23

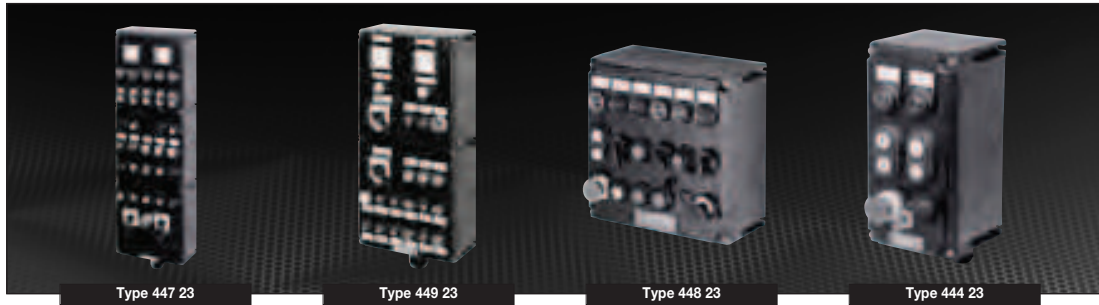
Connecting terminals	max. 30 terminals UT 4
Dimensions (L x W x H)	271 x 271 x 136 mm
Weight (empty)	2.5 kg with mounting framework
Mounting arrangements	distance 40 mm    max. 18 mounting areas distance 50 mm    max. 15 mounting areas distance 60 mm    max. 12 mounting areas

#### 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
Mounting arrangements	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
Mounting arrangements	distance 40 mm    max. 64 mounting areas distance 50 mm    max. 45 mounting areas distance 60 mm    max. 36 mounting areas



Ordering codes (Code 1)

1. Empty enclosure	2. Components arrangement/Terminals				3. Labels/Locking devices	4. Cable glands
	Mounting area 1 ... 6	Mounting area 7 ... 18	Mounting area 19 ... 36	Mounting area 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

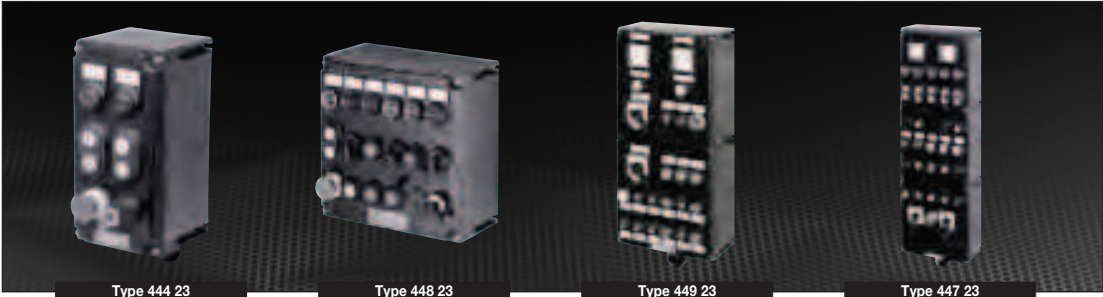
Possible components (Code 1)

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

<sup>1)</sup> 2 mounting areas are needed

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

**| Ex-control stations |**



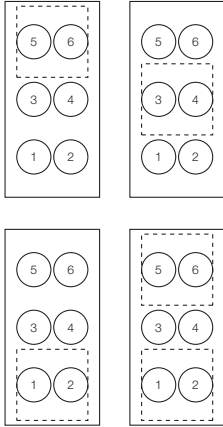
Type 444 23

Type 448 23

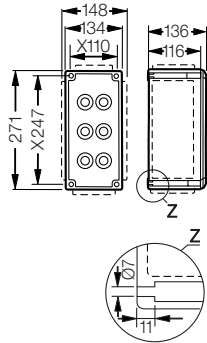
Type 449 23

Type 447 23

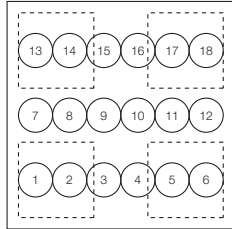
**Mounting areas | Dimension drawing**



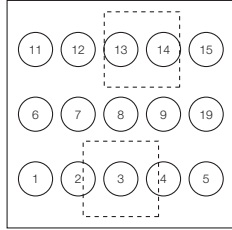
Distance between centres 40, 50 and 60 mm for positioning of built-in components



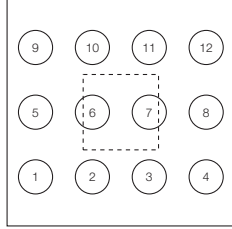
Type 444 23



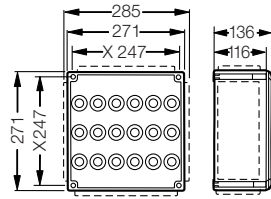
Distance between centres 40 mm



Distance between centres 50 mm



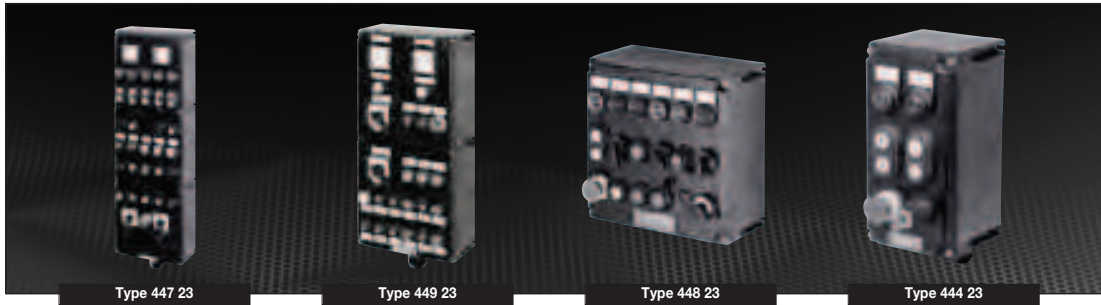
Distance between centres 60 mm



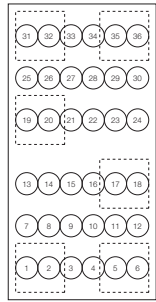
Type 448 23

X = fixing dimension

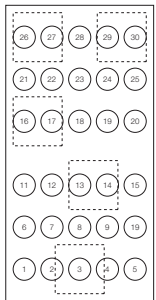
Dimensions in mm



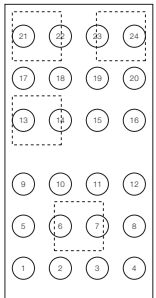
Mounting areas | Dimension drawing



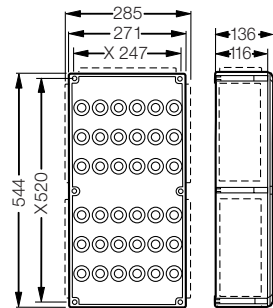
Distance between centres 40 mm



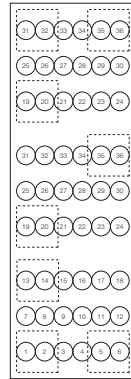
Distance between centres 50 mm



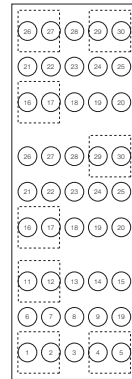
Distance between centres 60 mm



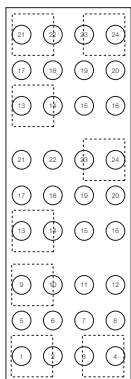
Type 449 23



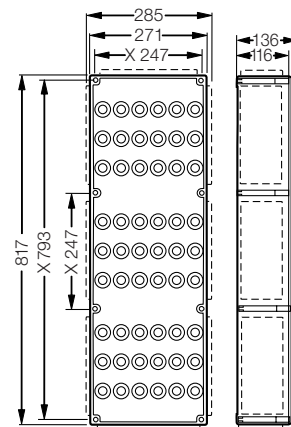
Distance between centres 40 mm



Distance between centres 50 mm



Distance between centres 60 mm

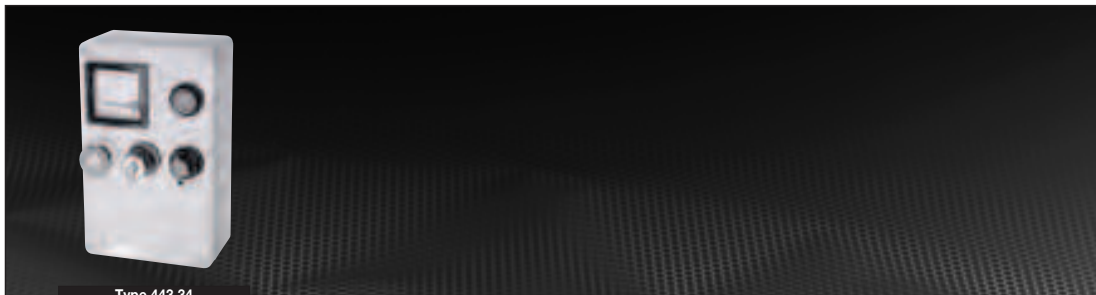


Type 447 23

X = fixing dimension

Dimensions in mm

## Ex-control stations



Type 443 34

### Technical data

#### Ex-Control stations Type 443 34 for individual configuration

Marking to 94/9/EC	II 2 G Ex ed ia/ib m IIC T6 II 2 D Ex tD A21 IP66 T80 °C
EC-Type Examination Certificate	PTB 01 ATEX 1115
Permissible ambient temperature	-20 °C to +40 °C -55 °C to +55 °C (option)
Rated voltage	690 V AC
Rated current	63 A
Connecting terminals	as ordered accd. to manufacturer's specification
PE-connection terminals	2 x 4 mm <sup>2</sup>
Insulation class	I
Degree of protection accd. EN 60529	IP66 (standard)
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
Mounting arrangements	max. 9 mounting areas

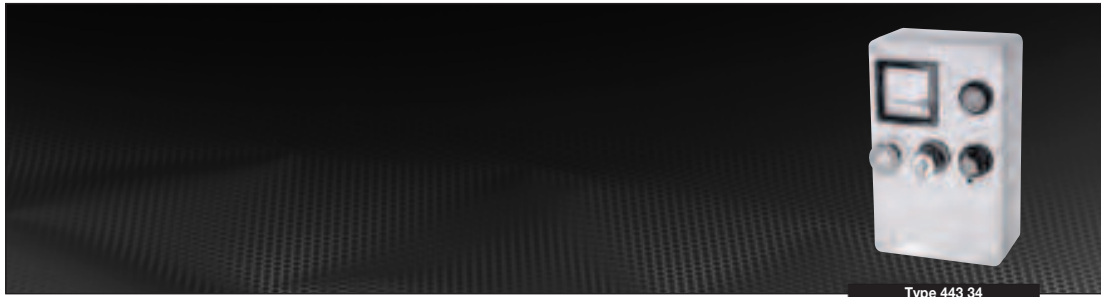
### Ordering codes (Code 1)

1. Empty enclosure	2. Components arrangement/Terminals			3. Labels/Locking devices	4. Cable glands
	Mounting area 1 ... 3	Mounting area 4 ... 6	Mounting area 7 ... 9		
443 34	X	X	X	X	X

### Possible components (Code 1)

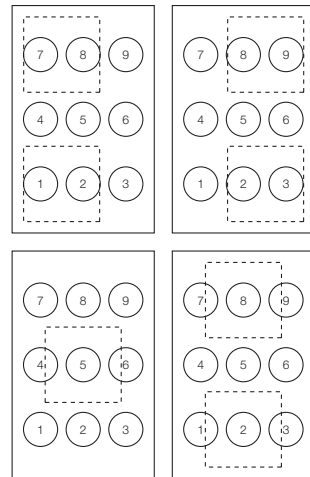
Component	Code	Component	Code
Pushbutton (2-pole or 4-pole <sup>1)</sup> )	DRT	Measuring instrument	AM72 <sup>1)</sup>
Double pushbutton (2-pole or 4-pole <sup>1)</sup> )	DDT	Measuring instrument	AM45
Key-operated pushbutton (2-pole or 4-pole <sup>1)</sup> )	SLT	Blanking element	BLV
Key switch (2-pole or 4-pole <sup>1)</sup> )	SLS	Control switch	GHG 23 <sup>1)</sup>
Mushroom-head pushbutton (2-pole or 4-pole <sup>1)</sup> )	SGT	Control switch	GHG 29 <sup>1)</sup>
Control switch (2-pole or 4-pole <sup>1)</sup> )	SCT	Terminal (4 mm <sup>2</sup> )	KLM ... A <sup>1)</sup>
Signal lamp	SIL	Terminal block (4 mm <sup>2</sup> )	KLM ... B <sup>1)</sup>
Potentiometer	POT		

<sup>1)</sup> 2 mounting areas are needed

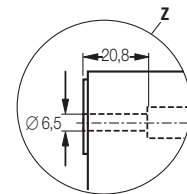
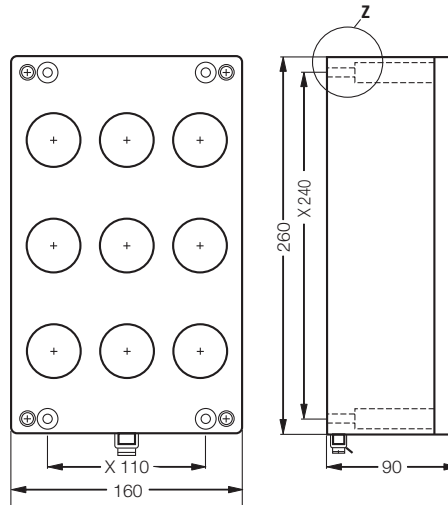


Type 443 34

Mounting areas | Dimension drawing



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



Type 443 34

X = fixing dimension

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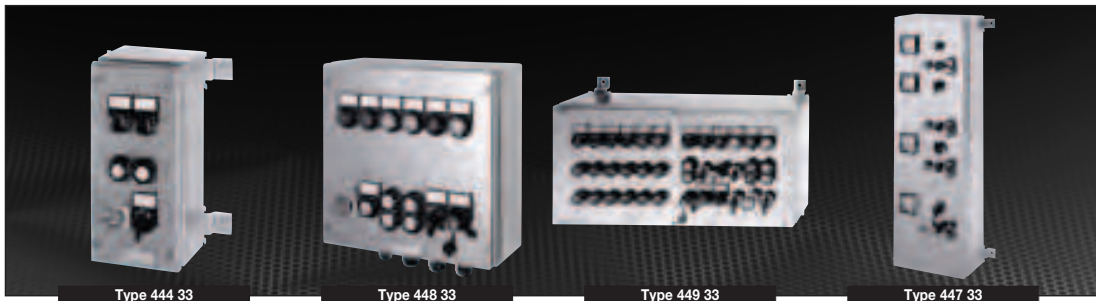
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Dimensions in mm

## Ex-control stations



### Technical data

#### Ex-Control stations Type 444, 448, 449, and 447 stainless steel for individual configuration

Marking to 94/9/EC	II 2 G Ex de ia/lb m [ia/lb] IIC T6 II 2 D Ex tD A21 IP66/IP65 T80 °C
EC-Type Examination Certificate	PTB 99 ATEX 1044
IECEX Certificate of conformity	IECEX BKI 07.0023
Marking accd. to IECEx	Ex de ia/lb m [ia/lb] IIC T4 .. T6 Ex tD A21 IP66 T80 °C
Permissible ambient temperature	-20 °C to +40 °C -55 °C to +55 °C (option)
Rated voltage	690 V AC
Rated current	40 A
Connecting terminals	see technical data for built-in components
PE-connection terminals	2 x 4 mm <sup>2</sup>
Insulation class	I
Degree of protection accd. 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
Mounting arrangements	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
Mounting arrangements	distance 40 mm    max. 18 mounting areas distance 50 mm    max. 15 mounting areas distance 60 mm    max. 12 mounting areas

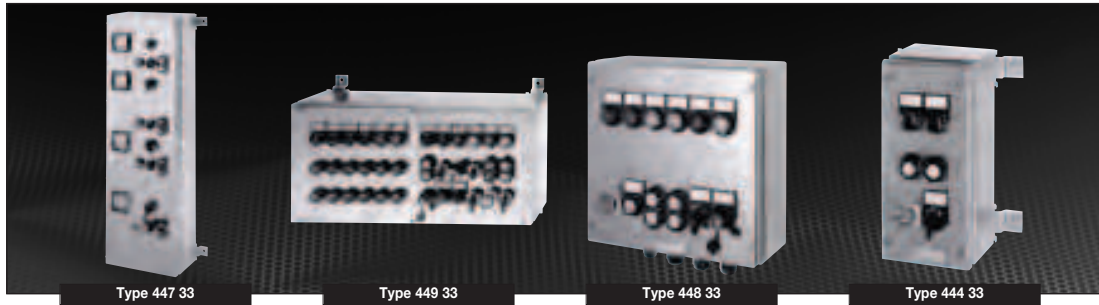
#### Type 449 33

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
Mounting arrangements	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
Mounting arrangements	distance 40 mm    max. 54 mounting areas distance 50 mm    max. 45 mounting areas distance 60 mm    max. 36 mounting areas





**Ordering codes (Code 1)**

1. Empty enclosure	2. Components arrangement/Terminals				3. Labels/Locking devices	4. Cable glands
	Mounting area 1 ... 6	Mounting area 7 ... 18	Mounting area 19 ... 36	Mounting area 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 <sup>1)</sup> )	DRT	Measuring instrument	AM72 <sup>1)</sup>
Double pushbutton (2-pole or 4-pole <sup>1)</sup> )	DDT	Measuring instrument	AM45
Key-operated pushbutton (2-pole or 4-pole <sup>1)</sup> )	SLT	Blanking element	BLV
Key switch (2-pole or 4-pole <sup>1)</sup> )	SLS	Control switch	GHG 23 <sup>1)</sup>
Mushroom-head pushbutton (2-pole or 4-pole <sup>1)</sup> )	SGT	Control switch	GHG 29 <sup>1)</sup>
Control switch (2-pole or 4-pole <sup>1)</sup> )	SCT	Terminal (4 mm <sup>2</sup> )	KLM ... A <sup>2)</sup>
Signal lamp	SIL	Terminal block (4 mm <sup>2</sup> )	KLM ... B
Potentiometer	POT		

<sup>1)</sup> 2 mounting areas are needed

<sup>2)</sup> Terminal blocks and PE-terminals are attached to terminal rail under the fold-out mounting frame

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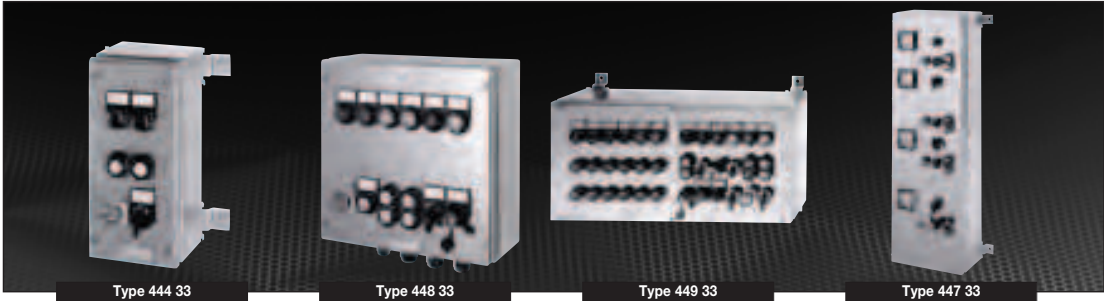
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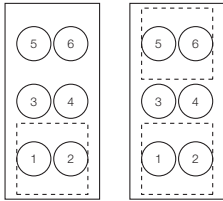
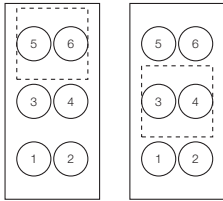
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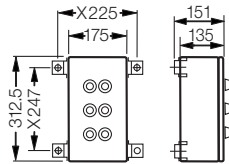
**| Ex-control stations |**



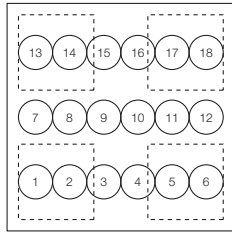
**Mounting area | Dimension drawing**



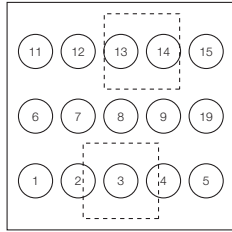
Distance between centres 40, 50 and 60 mm



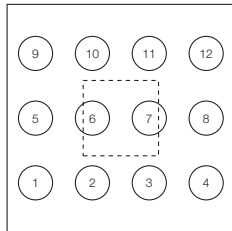
Type 444 33



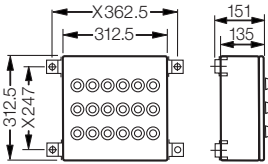
Distance between centres 40 mm



Distance between centres 50 mm



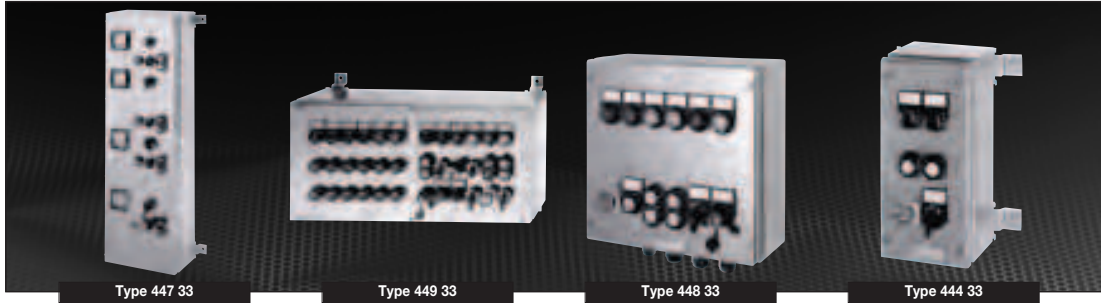
Distance between centres 60 mm



Type 448 33

X = fixing dimension

Dimensions in mm



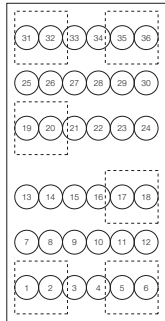
Type 447 33

Type 449 33

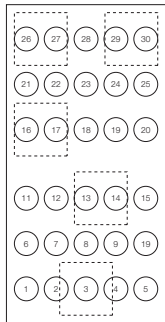
Type 448 33

Type 444 33

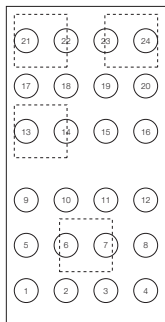
Mounting area | Dimension drawing



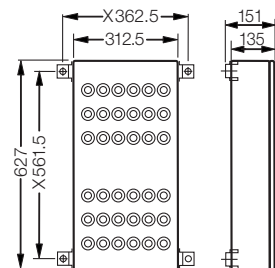
Distance between centres 40 mm



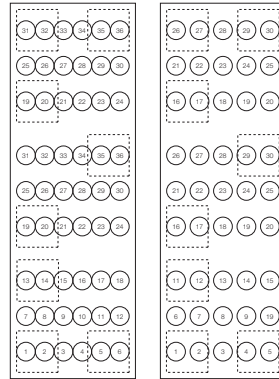
Distance between centres 50 mm



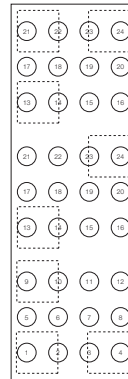
Distance between centres 60 mm



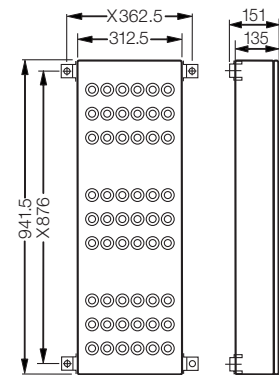
Type 449 33



Distance between centres 40 mm 50 mm



Distance between centres 60 mm



Type 447 33

X = fixing dimension

Dimensions in mm

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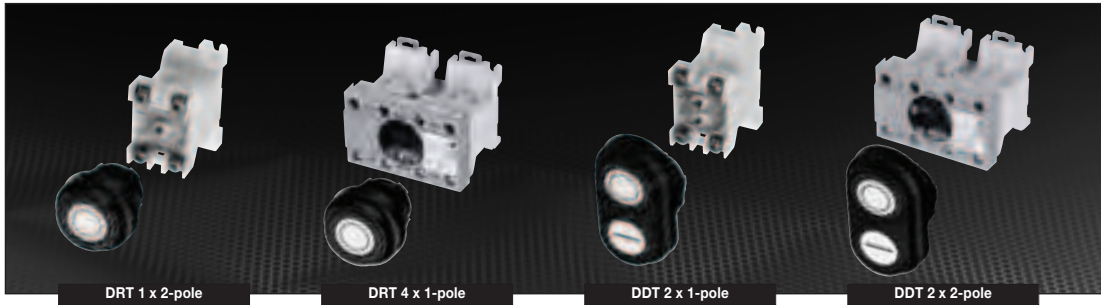
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## Built-in Components



### Technical data

#### Ex-Pushbutton DRT and Double pushbutton DDT

Marking to 94/9/EC	⊕ II 2 G Ex de ia/ib IIC / ⊕ I M 2 Ex de ia/ib I
EC-Type Examination Certificate	PTB 97 ATEX 1081 U
Application temperature	-20 °C to +40 °C -55 °C to +55 °C (option)
Rated voltage	500 V AC
Rated current	16 A
Rated current gold contacts	0.4 A
Rated making-/rated breaking capacity accd. EN 60947-5-1	AC-15: U <sub>e</sub> 250 V / I <sub>e</sub> 6 A U <sub>e</sub> 500 V / I <sub>e</sub> 4 A DC-13: U <sub>e</sub> 24 V / I <sub>e</sub> 6 A U <sub>e</sub> 220 V / I <sub>e</sub> 1 A
Degree of protection accd. EN 60529	IP66
Type of mounting	DIN rail mounting
Enclosure colour	grey
Gasket material	Neoprene (Standard), Fluoric Silicone or Viton on request

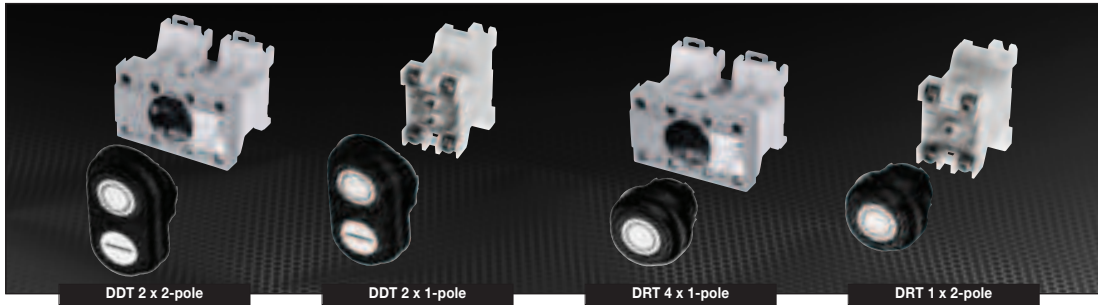
#### 2-pole Version

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

#### 4-pole Version<sup>1)</sup>

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

<sup>1)</sup> 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)**

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

Code	Contact system	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

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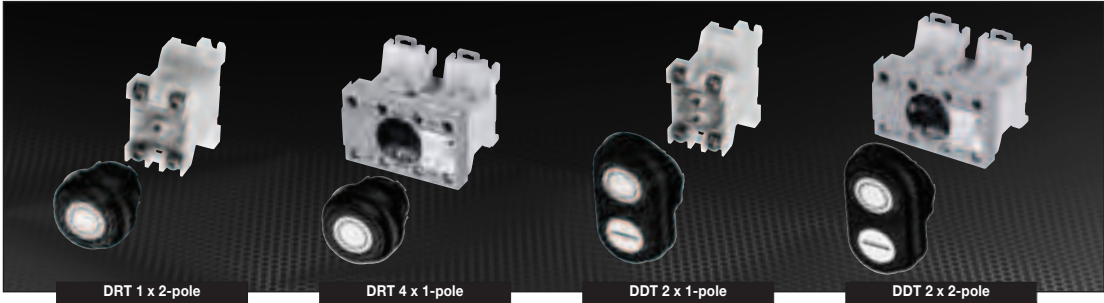
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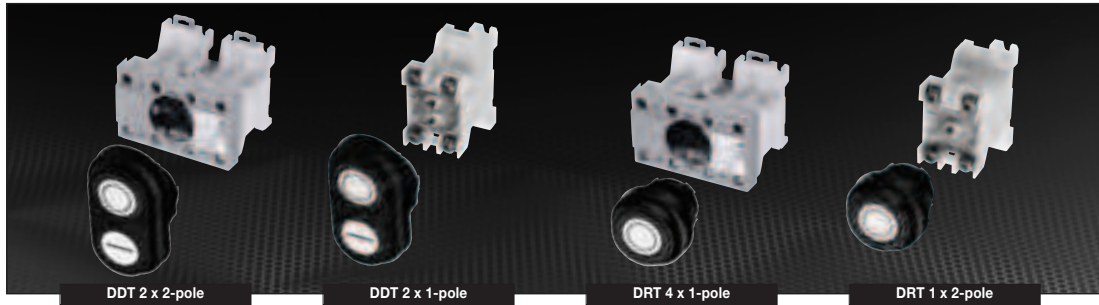
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**| Built-in Components |**



**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	NOT-AUS	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 red	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	



**Example for ordering code (Code 2)**

Version	Contact arrangement	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

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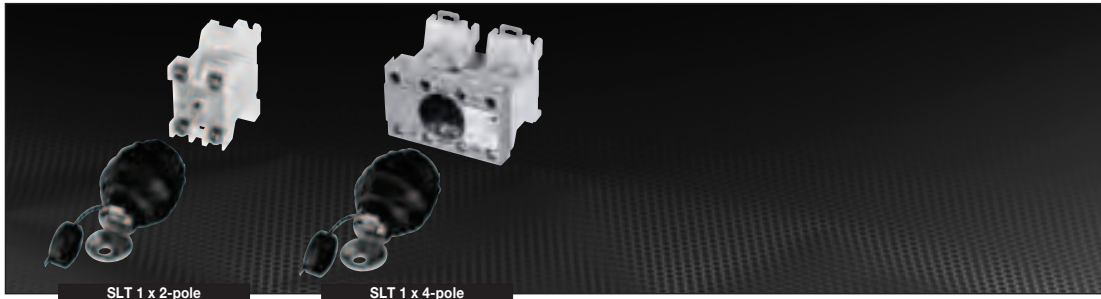
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## Built-in Components



SLT 1 x 2-pole

SLT 1 x 4-pole

### Technical data

#### Ex-Key operated pushbutton SLT

Marking to 94/9/EC	⊕ II 2 G Ex de ia/ib IIC / ⊕ I M 2 Ex de ia/ib I
EC-Type Examination Certificate	PTB 97 ATEX 1081 U
Application temperature	-20 °C to +40 °C -55 °C to +55 °C (option)
Rated voltage	500 V AC
Rated current	16 A
Rated current gold contacts	0.4 A
Rated making-/rated breaking capacity	AC-15: U <sub>b</sub> 250 V / I <sub>b</sub> 6 A U <sub>b</sub> 500 V / I <sub>b</sub> 4 A DC-13: U <sub>b</sub> 24 V / I <sub>b</sub> 6 A U <sub>b</sub> 220 V / I <sub>b</sub> 1 A
accd. EN 60947-5-1	
Degree of protection accd. EN 60529	IP66
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 <sup>2</sup>
Dimensions (L x W x H)	59 x 31 x 45 mm
Weight	0.15 kg

#### 4-pole Version<sup>1)</sup>

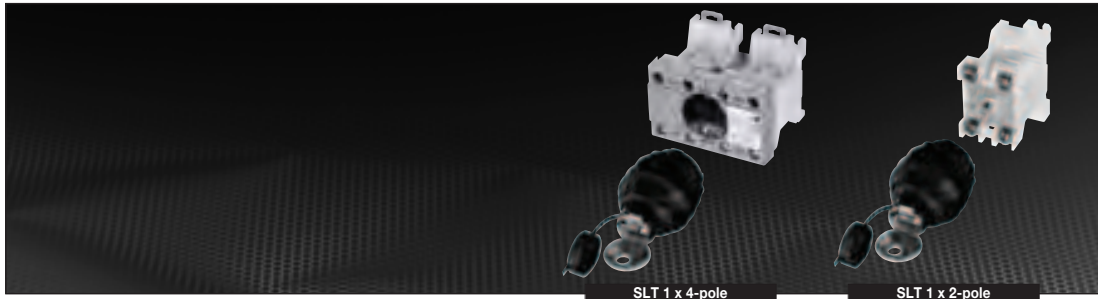
Connecting terminals	4 x 2.5 mm <sup>2</sup>
Dimensions (L x W x H)	59 x 73 x 45 mm
Weight	0.35 kg

<sup>1)</sup> The 4-pole pushbutton needs two mounting areas. The actuator will be in the middle of the two mounting areas.

### Example for ordering code (Code 2)

Version	Contact arrangement	Code	Ordering Code			
			A	B	C	D
Key switch with silver contact points						
Version with contact function: lockable/removeable/lockable/removeable (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 switch with gold contact points						
Version with contact function: lockable/removeable/lockable/removeable (code 10)						
2 NO + 2 NC	2 NO + 2 NC	27	SLT	0	27	10
4 NC	4 NC	25	SLT	0	25	10
4 NO	4 NO	29	SLT	0	29	10
3 NO + 1 NC	3 NO + 1 NC	26	SLT	0	26	10
1 NO + 3 NC	1 NO + 3 NC	28	SLT	0	28	10





SLT 1 x 4-pole

SLT 1 x 2-pole

**Ordering code for Component (Code 2)**

Code	Component	Code
A	Key operated pushbutton	SLT

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

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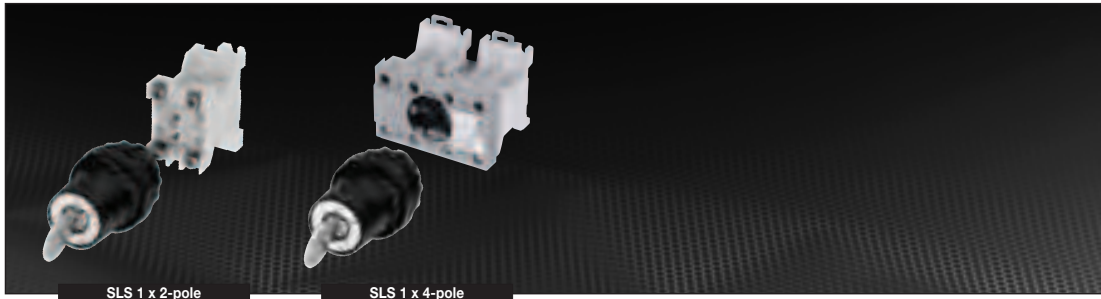
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## Built-in Components



SLS 1 x 2-pole

SLS 1 x 4-pole

### Technical data

#### Ex-Key operated switch SLS

Marking to 94/9/EC	⊕ II 2 G Ex de ia/ib IIC / ⊕ I M 2 Ex de ia/ib I
EC-Type Examination Certificate	PTB 97 ATEX 1081 U
Application temperature	-20 °C to +40 °C -55 °C to +55 °C (option)
Rated voltage	500 V AC
Rated current	16 A
Rated current gold contacts	0.4 A
Rated making-/rated breaking capacity accd. EN 60947-5-1	AC-15: U <sub>o</sub> 250 V / I <sub>o</sub> 6 A U <sub>o</sub> 500 V / I <sub>o</sub> 4 A DC-13: U <sub>o</sub> 24 V / I <sub>o</sub> 6 A U <sub>o</sub> 60 V / I <sub>o</sub> 0,8 A U <sub>o</sub> 110 V / I <sub>o</sub> 0,5 A
Switching system	engaging – engaging – engaging
Degree of protection accd. EN 60529	IP66
Type of mounting	DIN rail mounting
Enclosure colour	grey
Latch point	CEAG 1 (others on request)

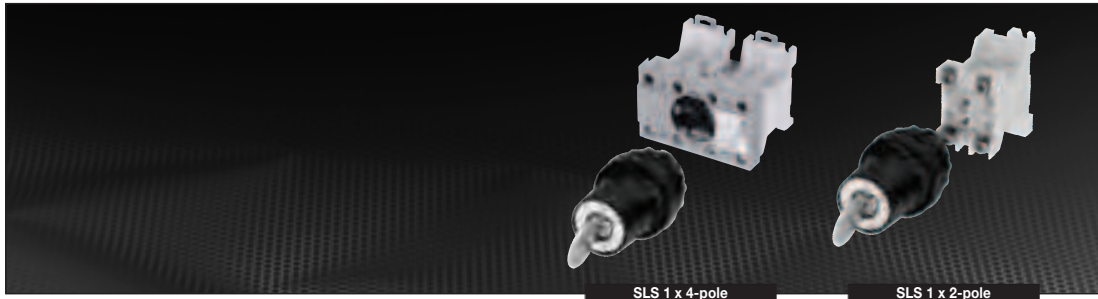
#### 2-pole Version

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

#### 4-pole Version<sup>1)</sup>

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

<sup>1)</sup> 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)**

Code	Component	Code
A	Key switch	SLS 5

Code	Contact system	Contacts	Code silver contact points	gold contact points
C	2 NO		04	14
	2 NO		05	15
	4 NO		24	34
	2 NO + 2 NC		23	33
	4 NO		25	35

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

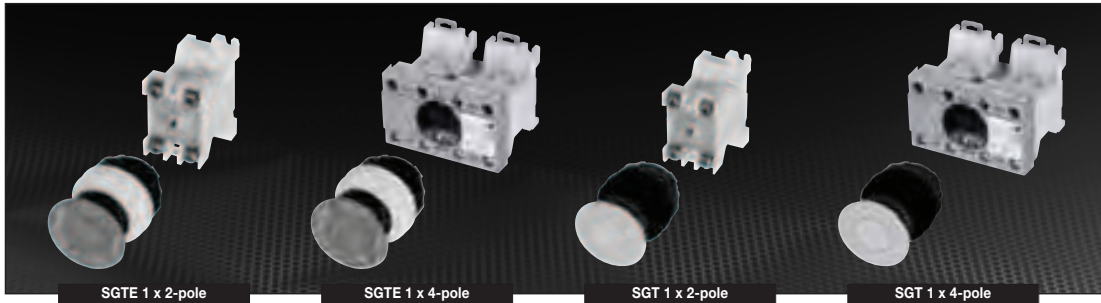
Other labels on request

**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

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

## Built-in Components



SGTE 1 x 2-pole

SGTE 1 x 4-pole

SGT 1 x 2-pole

SGT 1 x 4-pole

### Technical data

#### Ex-Mushroom Head Pushbutton (Emergency Stop „SGTE“ and Normal Version „SGT“)

Marking to 94/9/EC	⊕ II 2 G Ex de ia/ib IIC / ⊕ I M 2 Ex de ia/ib I
EC-Type Examination Certificate	PTB 97 ATEX 1081 U
Application temperature	-20 °C to +40 °C -55 °C to +55 °C (option)
Rated voltage	500 V AC
Rated current	16 A
Rated current gold contacts	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 $U_e$ 220 V / $I_e$ 1 A
Degree of protection accd. EN 60529	IP66
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 <sup>2</sup>
Dimensions (L x W x H)	59 x 31 x 45 mm
Weight	0.15 kg

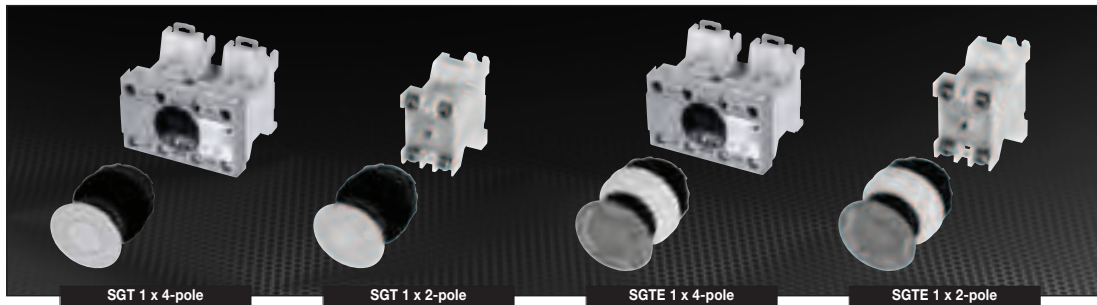
#### 4-pole Version<sup>1)</sup>

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

<sup>1)</sup> 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.



**Ordering code for Component (Code 2)**

Code	Component	Code
A	Mushroom head pushbutton	SGT
	Mushroom head pushbutton (Emergency Stop)	SGTE

Code	Contact system	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
	3 NO + 1 NC		21	26
	2 NO + 2 NC		22	27
	1 NO + 3 NC		23	28
	4 NO		24	29

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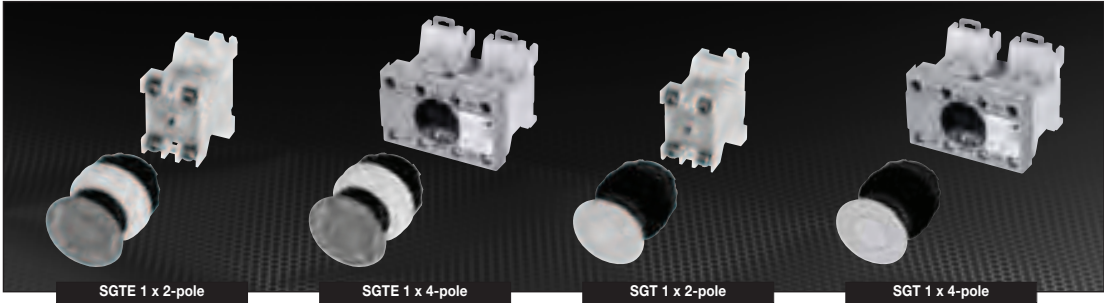
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**| Built-in Components |**



**Ordering code for Component (Code 2)**

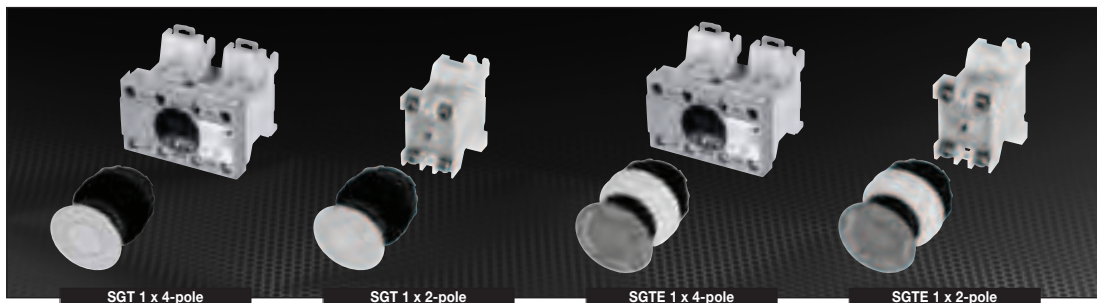
Code	Mushroom head inscription	Inscription	Code
D		Emergency Stop (German - Englisch) <sup>1)</sup>	1
		Emergency Stop (German - French) <sup>1)</sup>	4
		0, I, START, STOP	01
		0	02
		I	03
		II	04
			05
		STOP	06
		START	07
		LANGSAM	09
		SCHNELL	10
		-	12
		ARRET	14
		MARCHE	15
		0, I, Arret, Marche	20
		UP	24
		DOWN	25
ZU	26		
ON	27		
OFF	28		
+	30		
-	31		

Code	Mushroom head inscription	Colour	Code
E		red	1
		yellow <sup>2)</sup>	2
		black <sup>2)</sup>	3

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

<sup>1)</sup> only SGTE

<sup>2)</sup> only SGT



**Example for ordering code (Code 2)**

Contact system	Ordering Code				
	A	C	D	E	F
<b>EMERGENCY STOP mushroom-head pushbutton red, with silver contact points</b>					
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

<b>Mushroom-head pushbutton with silver contact points, without locking, mushroom head, black</b>					
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

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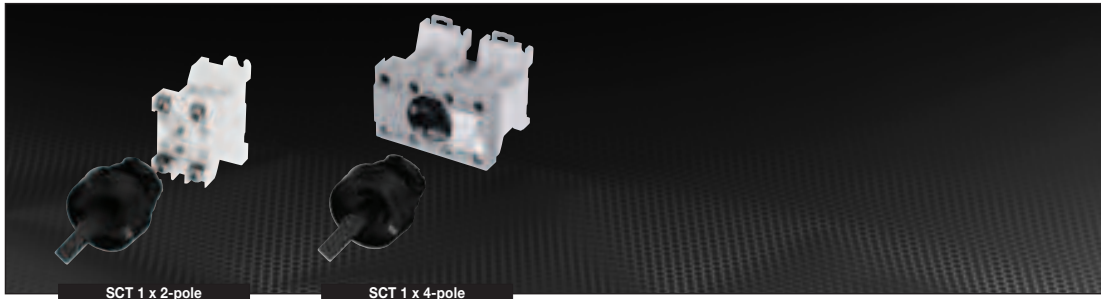
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## Built-in Components



### Technical data

#### Ex-Mini-control switch SCT

Marking to 94/9/EC	Ⓔ II 2 G Ex de ia/ib IIC / Ⓔ I M 2 Ex de ia/ib I
EC-Type Examination Certificate	PTB 97 ATEX 1081 U
Application temperature	-20 °C to +40 °C -55 °C to +55 °C (option)
Rated voltage	500 V AC
Rated current	16 A
Rated current gold contacts	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 $U_e$ 220 V / $I_e$ 1 A
Degree of protection accd. EN 60529	IP66
Type of mounting	DIN rail mounting
Enclosure colour	grey

#### 2-pole Version

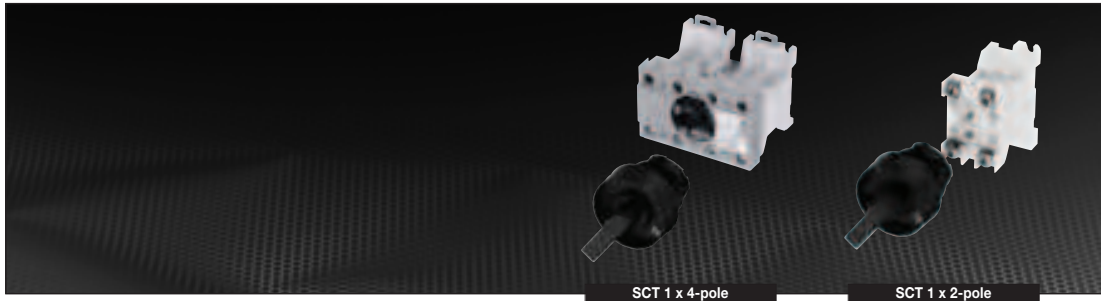
Connecting terminals	2 x 2.5 mm <sup>2</sup>
Dimensions in mm (L x W x H)	59 x 31 x 45
Weight	0.15 kg

#### 4-pole Version<sup>1)</sup>

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

<sup>1)</sup> The 4-pole pushbutton needs two mounting areas.  
The actuator will be in the middle of the two mounting areas.





SCT 1 x 4-pole

SCT 1 x 2-pole

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

Code	Component	Code
A	Mini-control switch	SCT

Code	Switching mechanism	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



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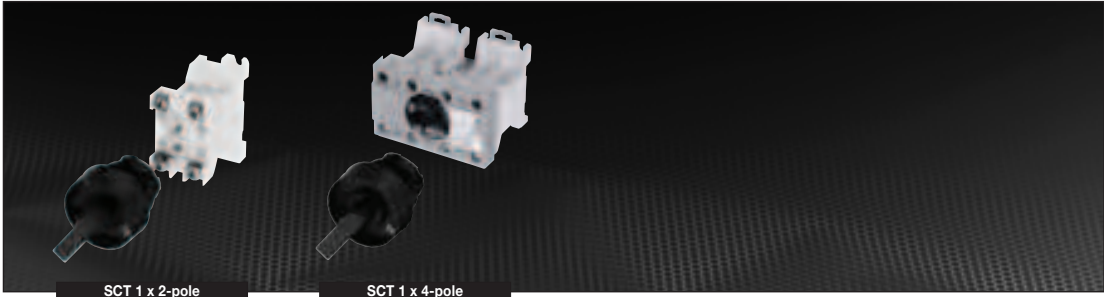
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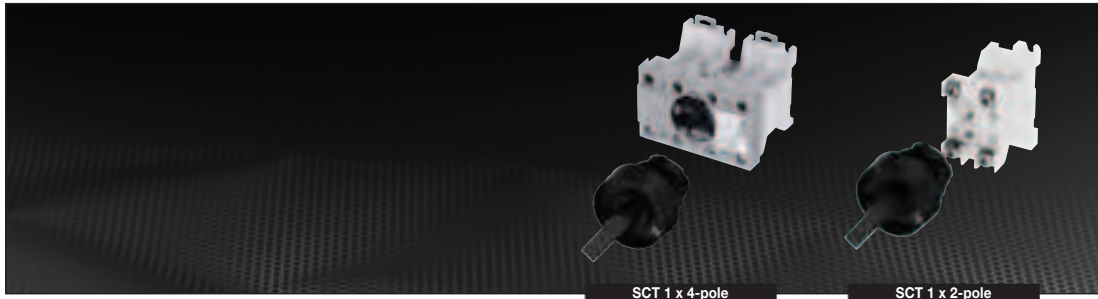
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**| Built-in Components |**



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

Code	Contact system	Contacts	Code silver contact points	Code gold contact points
D	<p>13 21 45° 135° 14 22</p>	<p>21/13 45° 135° 22 14</p>	01	11
	<p>13 21 45° 135° 14 22</p>	<p>13 21 45° 135° 14 22</p>	02	12
	<p>13 23 45° 135° 14 24</p>	<p>13 23 45° 135° 14 24</p>	03	13
	<p>13 23 45° 90° 135° 14 24</p>	<p>13 23 45° 90° 135° 14 24</p>	04	14
	<p>13 23 45° 90° 135° 14 24</p>	<p>13 23 45° 90° 135° 14 24</p>	05	15
	<p>13 21 45° 90° 135° 14 22</p>	<p>13 21 45° 90° 135° 14 22</p>	07	17
	<p>12 22 34 44 45° 135° 11 21 33 43</p>	<p>12 22 34 44 45° 135° 11 21 33 43</p>	22	32
	<p>14 24 34 44 45° 135° 13 23 33 43</p>	<p>14 24 34 44 45° 135° 13 23 33 43</p>	23	33
	<p>14 24 34 44 45° 135° 13 23 33 43</p>	<p>14 24 34 44 45° 135° 11 21 31 41</p>	21	31
	<p>14 24 34 44 45° 135° 13 23 33 43 13 23 33 43</p>	<p>14 24 34 44 45° 135° 11 21 31 41</p>	26	36
	<p>14 24 34 44 45° 90° 135° 14 24 34 44 13 23 33 43</p>	<p>14 24 34 44 45° 90° 135° 13 23 33 43</p>	25	35
	<p>13 21 33 41 45° 90° 135° 14 22 34 42 13 23 33 43</p>	<p>13 21 33 41 45° 90° 135° 11 21 31 41</p>	27	37
	<p>13 23 33 43 45° 90° 135° 14 24 34 44</p>	<p>13 23 33 43 45° 90° 135° 14 24 34 44</p>	24	34
	<p>14 24 34 44 45° 90° 135° 14 24 34 44</p>	<p>14 24 34 44 45° 90° 135° 14 24 34 44</p>		



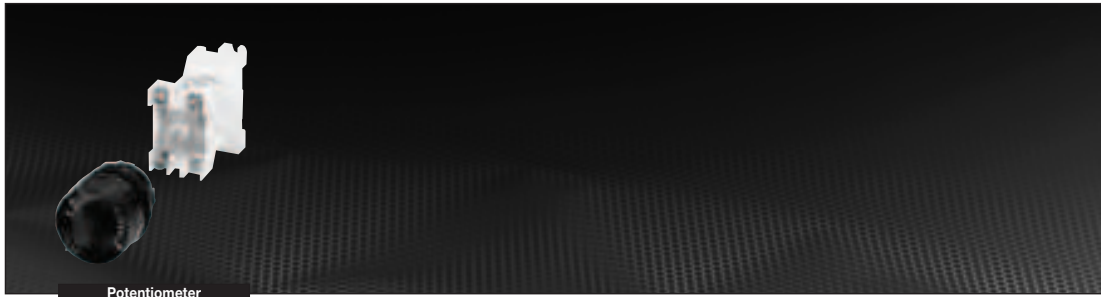
**Ordering code for Component (Code 2) Code A - C - D - E**

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

Other labels on request

**Example for ordering code (Code 2)**

Contact system	Switch mechanism	Contact 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



**Technical data**

Ex-Potentiometer POT	
Marking to 94/9/EC	⊕ II 2 G Ex de ia/ib IIC / ⊕ I M 2 Ex de ia/ib I
EC-Type Examination Certificate	PTB 97 ATEX 1081 U
Application temperature	-20 °C to +40 °C -55 °C to +55 °C (option)
Rated voltage	up to 250 V
Power consumption	max. 1 W
Resistance range	100 – 10000 Ohm
Tolerance	± 20 %
Connecting terminals	2 x 2.5 mm <sup>2</sup>
Degree of protection accd. 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
Angle of rotation	270°
Scale	0 - 100 %

**Ordering code for Component (Code 2) Code A - C**

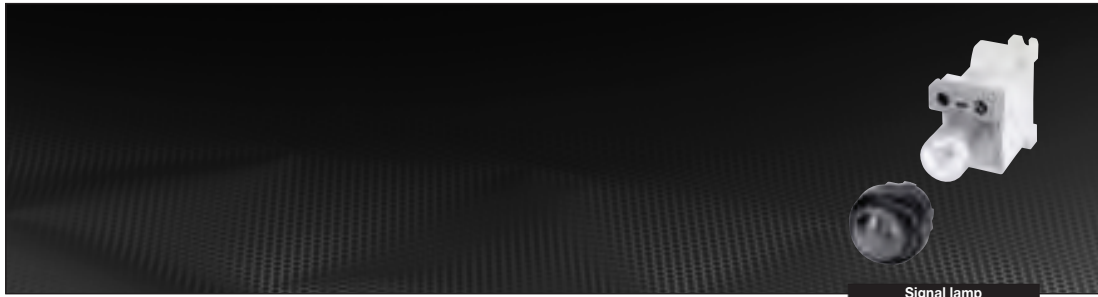
Code	Component	Code
A	Potentiometer	POT

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)**

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



**Technical data**

**Ex-Signal lamp SIL**

Marking to 94/9/EC	⊕ II 2 G Ex ed IIC / ⊕ II 2 G Ex d ia IIC
EC-Type Examination Certificate	PTB 98 ATEX 1040 U
Application temperature	-20 °C to +40 °C -55 °C to +55 °C (option)
Rated voltage (Ex ed IIC)	20 V to 250 V AC/DC
(Ex d ia IIC)	18 V to 30 V DC
(Ex ed IIC)	12 V to 30 V AC/DC
Rated current (20 V to 250 V)	approx. 4 - 15 mA
(10 V to 28 V Ex d ia IIC)	max. 25 mA
12 V to 30 V	max. 24 mA
Connecting terminals	2 x 2.5 mm <sup>2</sup>
Degree of protection accd. 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

**Ordering code for Component (Code 2) Code A - C - D**

Code	Component	Code
A	Signal lamp	SIL

Code	Colour of lens	Code
C	white	1
	yellow	2
	red	3
	blue	4
	green	5

Code	Voltage	Code
D	20 V - 250 V AC/DC	10
	18 V - 30 V DC (Ex-i <sup>1</sup> )	34
	12 V - 24 V AC/DC	11

<sup>1</sup>) Supply by valve-driver components, e.g., with data:

U<sub>0</sub> = 20 V - 18 V DC with R<sub>i</sub> = 200 Ω - 500 Ω or

U<sub>0</sub> = 10 V - 18 V DC with R<sub>i</sub> = 100 Ω - 200 Ω

No effective C<sub>i</sub> and L<sub>i</sub> values.

**Example for ordering code (Code 2)**

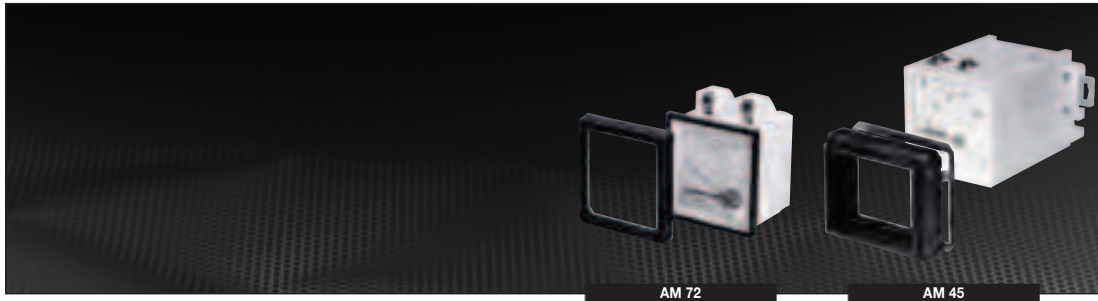
Version	Ordering Code		
	A	C	D
<b>Signal lamp SIL (examples)</b>			
Universal voltage 20 V - 250 V AC/DC white	SIL	1	10
For intrinsically safe circuits 18 V up to 30 V DC blue	SIL	4	34
Low voltage 12 V up to 24 V AC/DC red	SIL	3	11

## Built-in Components



### Technical data

Ex-Measuring instrument AM 45/AM 72	moving iron	moving coil
Marking to 94/9/EC	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 to +40 °C -55 °C to +55 °C (option)	
Rated voltage	up to 420 V (AM 45) up to 750 V (AM 72)	
Power consumption	max. 0.31 A	
Overload range	10 fold - 25 sec. 25 fold - 4 sec. 50 fold - 1 sec. indicated 1 : 1.5	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
Short circuit current max. Ii		150 mA
Accuracy	Class 2.5	Class 1.5
Movement	moving iron	moving coil
Connecting terminals	2 x 1.5 - 4 mm <sup>2</sup>	
Degree of protection accd. EN 60529	IP66	
Display size	50 x 45 mm (AM 45) 72 x 72 mm (AM 72)	
Weight	0.35 kg	
Type of mounting	DIN rail mounting	
Enclosure material	grey	



**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 1 /A	2
	Ct connection n/5 A	3
	Port 0 - 20/24 mA (scale 0-100% / 120%) 1)	5
	Port 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 <sup>2)</sup>	03	0 - 100 / 150 A	14
	0 - 5 / 7.5 A <sup>2)</sup>	04	0 - 150 / 225 A	15
	0 - 10 / 15 A <sup>2)</sup>	05	0 - 200 / 300 A	16
	0 - 15 / 22.5 A	06	0 - 250 / 375 A	17
	0 - 20 / 30 A <sup>2)</sup>	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

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

<sup>2)</sup> Version for direct connection (standard: CT connection n/1A) possible

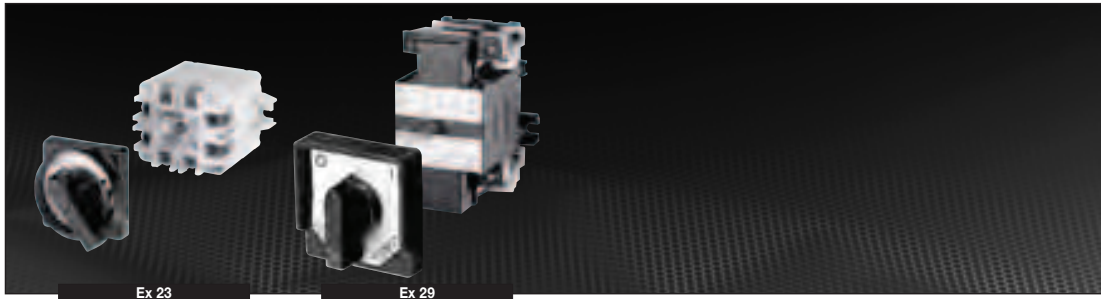
<sup>3)</sup> Moving coil only for Ex-i or Ex-d flameproof applications

Other interchangeable scales available on request

**Example for ordering code (Code 2)**

Movement	Measuring range	Ordering Code		
		A	C	D
<b>Measuring instrument AM 45</b>				
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
<b>Moving iron measuring instrument AM 72</b>				
Version with CT connection n/1A				
Converter n / 1A	0 - 100% / 150%	AM72	2	33
<b>Moving-coil measuring instrument AM 45 (Ex-i application only)</b>				
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

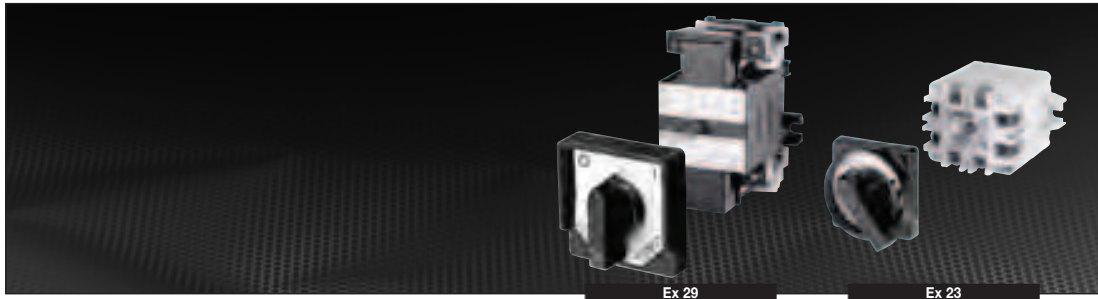


### Technical data

Ex-built-in Components for individual control stations		
Control switch Ex 23 and Ex 29	Ex 23	Ex 29
Marking to 94/9/EC	$\text{Ex}$ II 2 G Ex de IIC / $\text{Ex}$ I M 2 Ex de I	$\text{Ex}$ II 2 G Ex de IIC / $\text{Ex}$ I M 2 Ex de I
EC-Type Examination Certificate	PTB 98 ATEX 1116 U	PTB 98 ATEX 1118 U
Application temperature	-20 °C to +40 °C -55 °C to +45 °C (option)	-20 °C to +40 °C -55 °C to +55 °C (option)
Rated voltage	up to 500 V	up to 500 V
Rated current	10 A	16 A <sup>1)</sup>
Rated current gold contacts	0.4 A	0.4 A
Rated making-/rated breaking capacity accd. EN 60947-5-1	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	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 <sup>2</sup>	2 x 0.5 - 2.5 mm <sup>2</sup> or 1 x 1.0 - 6.0 mm <sup>2</sup>
Weight	1 tier: approx. 0.2 kg 2 tiers: approx. 0.35 kg 3 tiers: -	approx. 0.25 kg approx. 0.40 kg approx. 0.55 kg
Type of mounting	DIN rail mounting	
Enclosure colour	grey	black

<sup>1)</sup> 12 A cable section must be 2.5 mm<sup>2</sup>





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

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

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

Code	Label (Contact label)	Code	Label (Contact label)	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

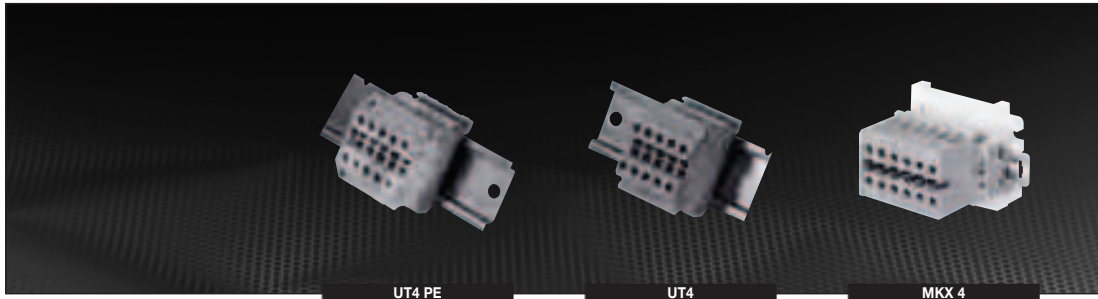
Code	Locking facility	Code
F	None <input type="checkbox"/>	0
	Centre <input type="checkbox"/>	1
	Left <input type="checkbox"/>	2
	Right <input type="checkbox"/>	3

**| Built-in Components |**



**Example for ordering code (Code 2)**

Version A	Movement B	Contact C	Label D	Locking facility E	Ordering code				
					A	B	C	D	E
Ex 23			060 I - II 02	none 0 <input type="checkbox"/>	Ex 23	6	060	02	0
Ex 23			034 I - 0 - II07	Centre 1 <input type="checkbox"/>	Ex 23	5	034	07	1
Ex 29			060 I - II 02	none 0 <input checked="" type="checkbox"/>	Ex 29	6	060	02	0
Ex 29			065 0 - I 01	Left 2 <input checked="" type="checkbox"/>	Ex 29	6	065	01	2



**Technical data**

**Ex-built-in Components for individual control stations**

**Terminals**

	MXK 4-Ex	UT 4 / UT 4 PE
Marking to 94/9/EC	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 to +55 °C	-50 °C 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 <sup>2</sup>	0.14 mm <sup>2</sup> - 4 mm <sup>2</sup> multi-wire 0.14 mm <sup>2</sup> - 6 mm <sup>2</sup> single-wire
	4 mm <sup>2</sup>	0.14 mm <sup>2</sup> - 4 mm <sup>2</sup> multi-wire 0.14 mm <sup>2</sup> - 6 mm <sup>2</sup> single-wire
Dimensions (L x B 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 mounted	NS 35 DIN rail mounted
Enclosure colour	grey	grey

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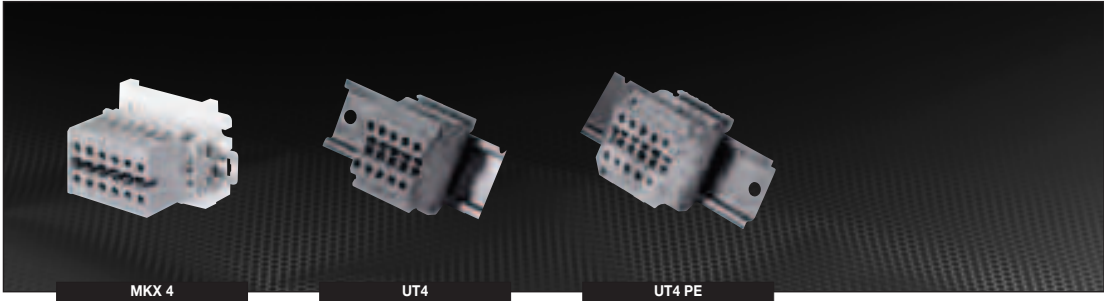
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**| Built-in Components |**



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

Code	Component	Code
A	KLM	KLM

Code	Version	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
	Terminal UT 4 / UT 4 PE	A

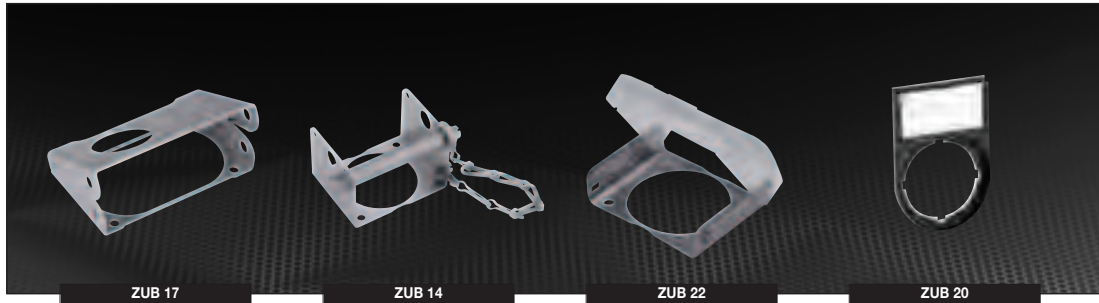
  

Code	Number of terminals	Code
E	1	001
	2	002
	3	003
	ect.	ect.

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

**Example for ordering code (Code 2)**

Version	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 terminal UT 4 + 2 PE-terminal Ex-e terminal		12	KLM	1	A	012 02



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

Code	Label	Code
A	52.0 x 13 mm 37.0 x 17 mm with holder	ZUB 19 ZUB 20

Code	Inscription	Code
B	Text to be determined	1 ... 4

Code	Mounting area	Code
C		1 ... 4

Code	Locking facility	for operating element	Material	Code
A	with flap (blank)	Pushbutton	Stainless steel	ZUB 12
	with flap (red)	Pushbutton	Stainless steel	ZUB 13
	with flap without „0“ activation	Double pushbutton	Stainless steel	ZUB 16
	with flap with „0“ activation	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, activated	Pushbutton	Plastic	ZUB 24	
with flap, not activated	Mushroom-head pushbutton	Plastic	ZUB 22	
with flap, activated	Mushroom-head pushbutton	Plastic	ZUB 21	

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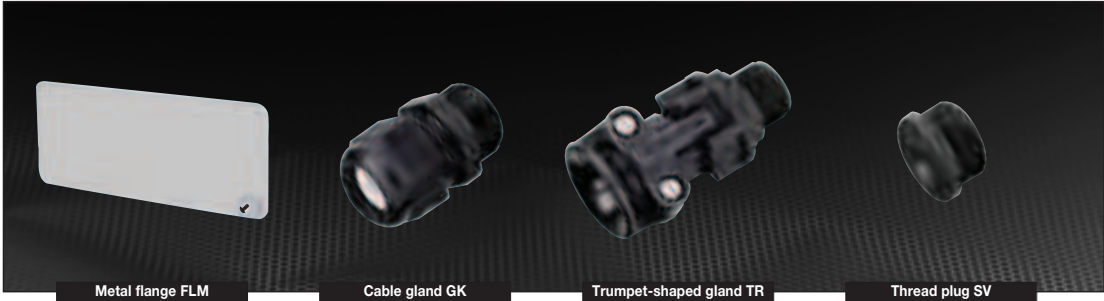
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**| Built-in Components |**



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

Code	Version	Component	Code
A	Entry type	Entry direct in enclosure	GEH
		Entry via plastic flange	FLK
		Entry via metal flange	FLM
Code	Version	Component	Code
B	Entry side Position	Entry side on bottom (left or right)	1, 2
		Entry side on top (left or right)	3, 4
Code	Version	Component	Code
C	Entry element	Only entry	OE
		Threaded entry	BO
		Threaded plug	SV
		Cable plastic gland	GK
		Cabel metal* gland	GM*
		Cable entry with plastic plug	GV
		Trumpet-shaped plastic gland	TR
Code	Version	Component	Code
D	Size	M12, M16, M20, M25, M32, M40, M50, M63 Ø21, Ø26	M.. d..
Code	Version	Component	Code
E	Number	Number of entries	..

\*For metal glands, the type of cable/entry must be stated in plain language in the order.  
Other versions on request.

**Example for ordering code**

Version	Number	Ordering Code				
		A	B	C	D	E
2 cable entries M25 moulded plastic Version without plug direct from below into the enclosure	X	GEH	3	GK	M25	02

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## EX - CONTROL AND SIGNAL UNITS

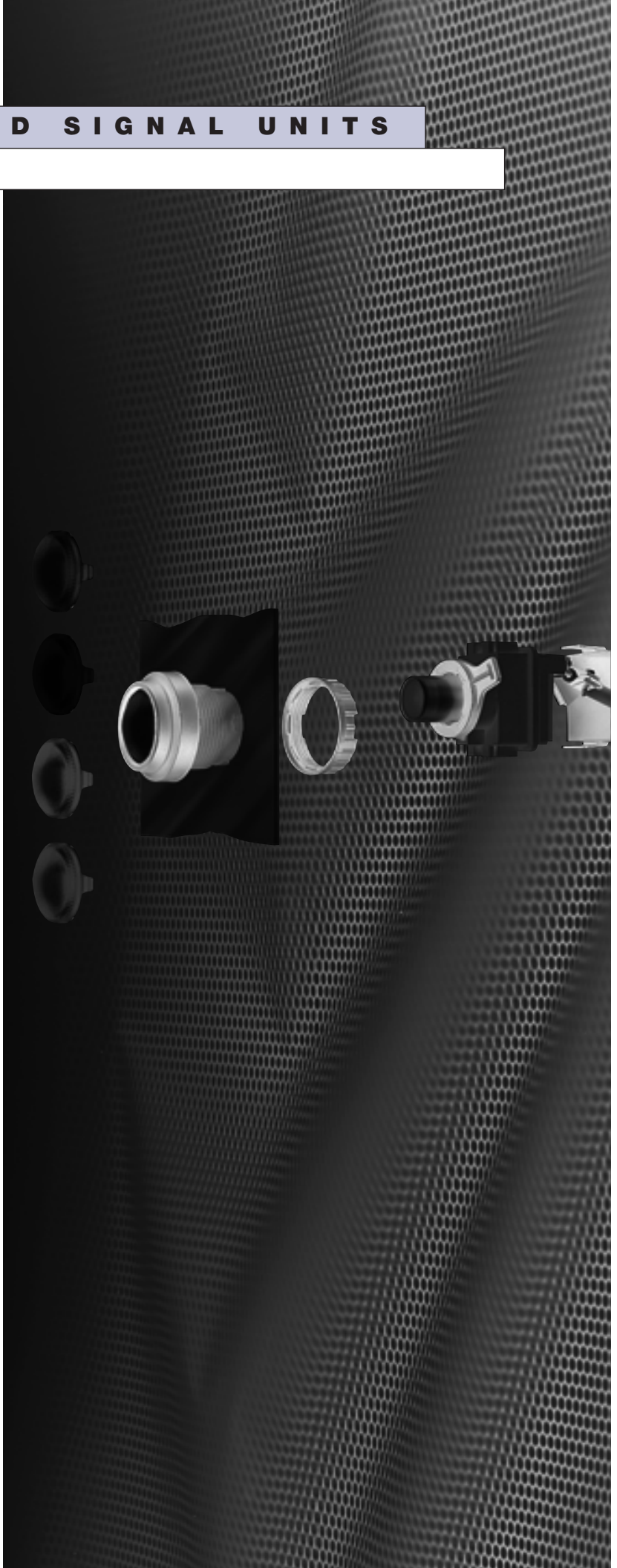
### For panel mounting

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 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.



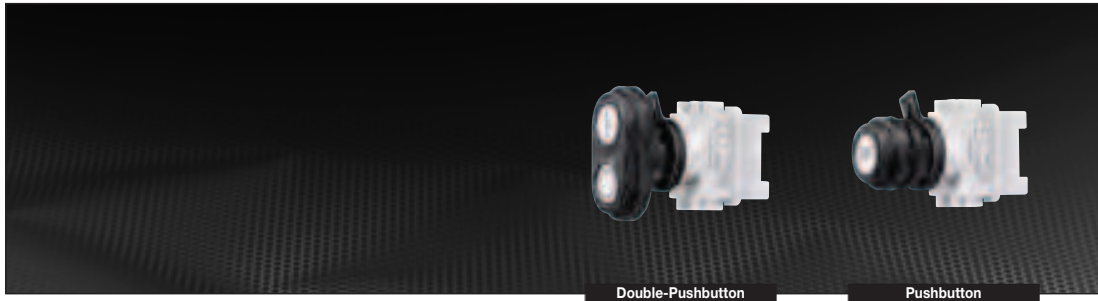
Bayonet-ring catch for quick one-hand mounting

Complete certification of built-in apparatus

Connection terminals for variable, low-cost wiring

Standard actuator-element size of  $\varnothing$  30.5 mm





### Technical data

#### Pushbutton Type 418 811 and double pushbutton Type 418 814

Marking to 94/9/EC	II 2 G Ex ed IIC T6 / I M 2 Ex de I
EC-Type Examination Certificate	PTB 97 ATEX 1081 U PTB 99 ATEX 1034 <sup>1)</sup>
Permissible ambient temperature	-20 °C to +40 °C -55 °C to +55 °C (option)
Rated voltage	500 V AC
Rated current	16 A
Rated current gold contacts	0.4 A
Rated making-/rated breaking capacity accd. EN 60947-5-1	AC-15: U <sub>e</sub> 250 V / I <sub>e</sub> 6 A U <sub>e</sub> 500 V / I <sub>e</sub> 4 A DC-13: U <sub>e</sub> 24 V / I <sub>e</sub> 6 A U <sub>e</sub> 220 V / I <sub>e</sub> 1 A
Connecting terminals	2 x 2.5 mm <sup>2</sup>
Degree of protection accd. EN 60529	IP66 <sup>1)</sup>
Dimensions (L x W x H)	approx. 59 x 31 x 45 mm
Weight	0.20 kg
Type of mounting	Ø 30.5 mm fixing hole
Enclosure colour	grey
Gasket material	Neoprene (Standard), Fluoric silicone or viton on request

<sup>1)</sup> If protective covers are used

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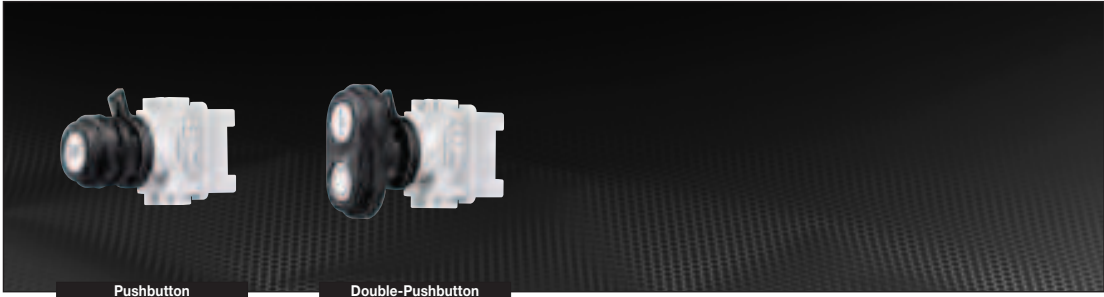
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**Ex-Control and signal units for panel mounting**



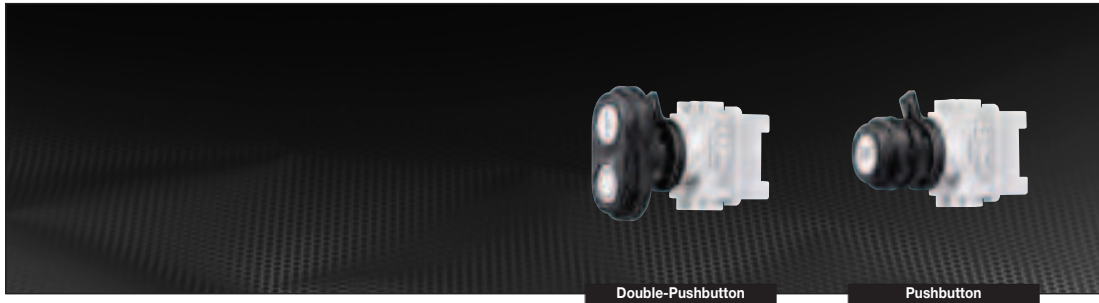
**Ordering code for Component (Code 2) Code A - B - C1 - (C2)**

A GHG 418 81_	B _	C2 R	C1 _
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Code	Component	Code
A	Pushbutton	GHG 418 811
	Double pushbutton	GHG 418 814

Code	Contact system	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	Code	Inscription	Code
C1, C2	0, I, Start, Stop	01	0	02
	I	03	II	04
		05	STOP	06
	START	07	NOT-AUS	08
	LANGSAM	09	SCHNELL	10
	EMERG.STOP	11		12
		13	ARRET	14
	MARCHE	15	AUF	16
	AB	17	Neutral white	18
	Neutral green	19	0, I, Arret, Marche	20
	UP	24	DOWN	25
	ZU	26	ON	27
	OFF	28	+	30
	-	31	Neutral red	33
	Neutral yellow	34	EIN	36
	AUS	37	Neutral black	38
	AUTO	39	Neutral blue	40
	HAND	50	SENKEN	51
	HEBEN	52	LINKS	53
	RECHTS	54	FAST	55
	SLOW	56	RESET	57
	OPEN	58		



**Example for ordering code (Code 2)**

Version	Label	Ordering code			
		A	B	C1	C2
Pushbutton without protective cover, silver contact points					
2 NC	(0, I, START, STOP)	<b>GHG 418 811</b>	<b>3</b>	<b>R0001</b>	-
2 NO	(0, I, START, STOP)	<b>GHG 418 811</b>	<b>4</b>	<b>R0001</b>	-
1 NO + 1 NC	(0, I, START, STOP)	<b>GHG 418 811</b>	<b>5</b>	<b>R0001</b>	-
Double-pushbutton without protective cover, with gold contact points					
2 NC	(0, I, START, STOP)	<b>GHG 418 814</b>	<b>6</b>	<b>R01</b>	<b>01</b>
2 NO	(0, I, START, STOP)	<b>GHG 418 814</b>	<b>7</b>	<b>R01</b>	<b>01</b>
1 NO + 1 NC	(0, I, START, STOP)	<b>GHG 418 814</b>	<b>8</b>	<b>R01</b>	<b>01</b>

**Accessories**

Type	OU	Order No.
Protective cover to meet IP66	5	<b>GHG 410 1939 R0002</b>

Please note that we can only deliver in the ordering units (OU) stated in the tables above

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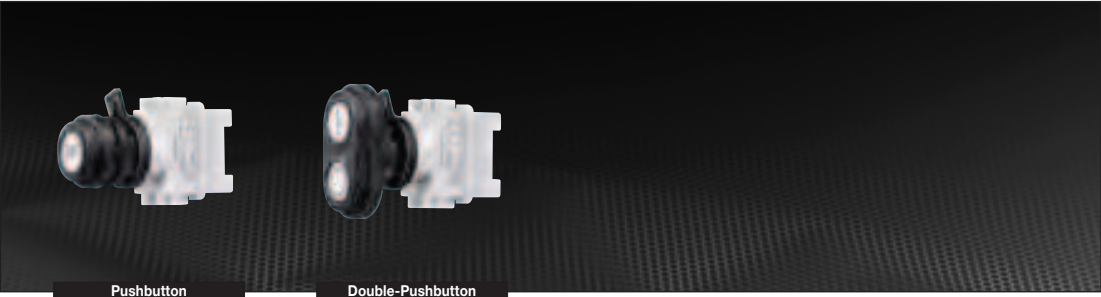
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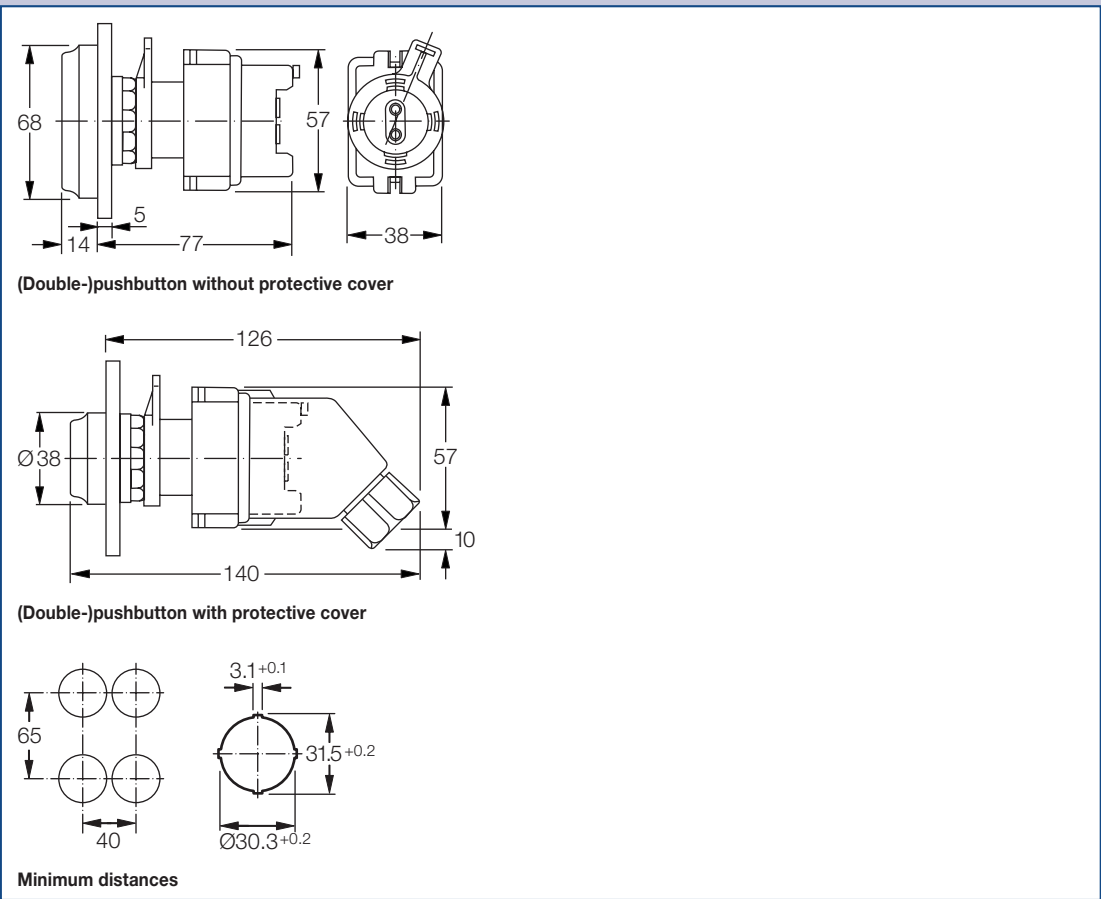
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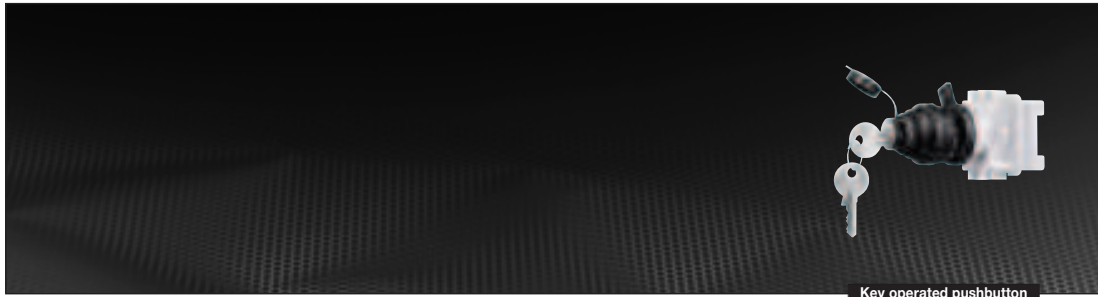
**| Ex-Control and signal units for panel mounting |**



**Dimension drawing**



Dimensions in mm



Key operated pushbutton

### Technical data

#### Key operated pushbutton Type 418 812

Marking to 94/9/EC	II 2 G Ex ed IIC T6 / I M 2 Ex de I
EC-Type Examination Certificate	PTB 97 ATEX 1081 U PTB 99 ATEX 1034 <sup>1)</sup>
Permissible ambient temperature	-20 °C to +40 °C -55 °C to +55 °C (option)
Rated voltage	500 V AC
Rated current	16 A
Rated current gold contacts	0.4 A
Rated making-/rated breaking capacity accd. EN 60947-5-1	AC-15: U <sub>e</sub> 250 V / I <sub>e</sub> 6 A U <sub>e</sub> 500 V / I <sub>e</sub> 4 A DC-13: U <sub>e</sub> 24 V / I <sub>e</sub> 6 A U <sub>e</sub> 220 V / I <sub>e</sub> 1 A
Connecting terminals	2 x 2.5 mm <sup>2</sup>
Degree of protection accd. EN 60529	IP66 <sup>1)</sup>
Dimensions (L x W x H)	approx. 59 x 31 x 45 mm
Weight	0.15 kg
Type of mounting	Ø 30.5 mm fixing hole
Enclosure colour	grey
Gasket material	Neoprene (Standard), Fluoric silicone or viton on request
Latch point	CEAG 1 (others on request)

<sup>1)</sup> If protective covers are used

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**Ex-Control and signal units for panel mounting**



Key operated pushbutton

**Ordering code for Component (Code 2) Code A - B - C**

A GHG 418 812	B _ R00	C _
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Code	Component	Code
A	Key operated pushbutton	GHG 41 812

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

Code	Pushbutton not pressed	Key	pushbutton pressed	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	auto lockable	removable	15

**Example for ordering code (Code 2)**

Version	Label		Ordering code		
	pushbutton not pressed	pushbutton pressed	A	B	C

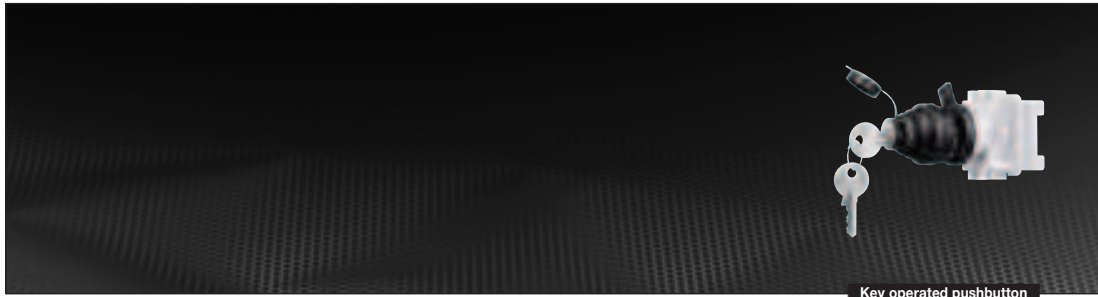
Key switch with silver contact points, without protective cover					
1 NO + 1 NC	lockable	lockable	<b>GHG 418 812</b>	<b>5 R00</b>	<b>10</b>
	Key removable	Key removable			
2 NC	lockable	lockable	<b>GHG 418 812</b>	<b>3 R00</b>	<b>11</b>
	Key removable	Key removable			
2 NO	lockable	not lockable	<b>GHG 418 812</b>	<b>4 R00</b>	<b>12</b>
	Key removable	Key not removable			

Key switch with gold contact points, without protective cover					
1 NO + 1 NC	lockable	lockable	<b>GHG 418 812</b>	<b>8 R00</b>	<b>10</b>
	Key removable	Key removable			
2 NC	lockable	lockable	<b>GHG 418 812</b>	<b>6 R00</b>	<b>11</b>
	Key removable	Key removable			
2 NO	lockable	not lockable	<b>GHG 418 812</b>	<b>7 R00</b>	<b>12</b>
	Key removable	Key not removable			

**Accessories**

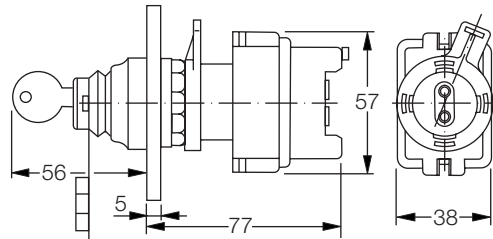
Type	OU	Order No.
Protective cover to meet IP66	5	<b>GHG 410 1939 R0002</b>

Please note that we can only deliver in the ordering units (OU) stated in the tables above

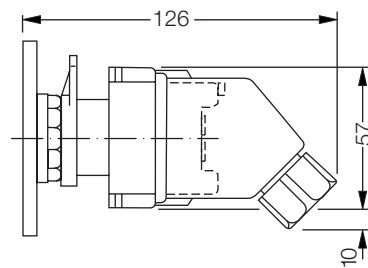


Key operated pushbutton

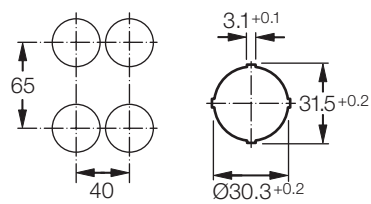
Dimension drawing



Key switch without protective cover



Key switch with protective cover



Minimum distances

Dimensions in mm

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Key-operated pushbutton

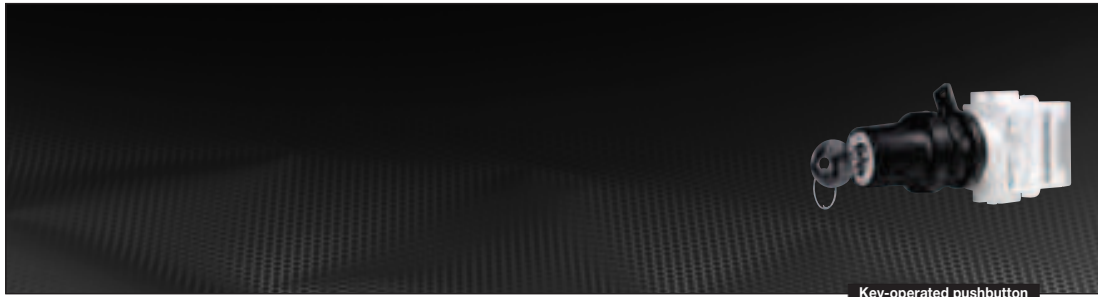
## Technical data

### Key operated switch Type 418 8195

Marking to 94/9/EC	II 2 G Ex ed IIC T6 / I M 2 Ex de I
EC-Type Examination Certificate	PTB 97 ATEX 1081 U PTB 99 ATEX 1034 <sup>1)</sup>
Permissible ambient temperature	-20 °C to +40 °C -55 °C to +55 °C (option)
Rated voltage	500 V AC
Rated current	16 A
Rated current gold contacts	0.4 A
Rated making-/rated breaking capacity accd. EN 60947-5-1	AC-15: U <sub>e</sub> 250 V / I <sub>e</sub> 6 A U <sub>e</sub> 500 V / I <sub>e</sub> 4 A DC-13: U <sub>e</sub> 24 V / I <sub>e</sub> 6 A U <sub>e</sub> 220 V / I <sub>e</sub> 1 A
Connecting terminals	2 x 2.5 mm <sup>2</sup>
Degree of protection accd. EN 60529	IP66 <sup>1)</sup>
Switching system	engaging - engaging - engaging
Dimensions (L x W x H)	approx. 59 x 31 x 45 mm
Weight	0.15 kg
Type of mounting	Ø 30.5 mm fixing hole
Enclosure colour	grey
Latch point	CEAG 1 (others on request)

<sup>1)</sup> If protective covers are used





Key-operated pushbutton

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

A	C	D
GHG 418 8195 R5	-	-

Code	Component	Code
A	Key switch	GHG 418 8195

Code	Contact system	Contacts	Code	
			silver contact points	gold contact points
C	2 NC		4	7
	2 NO		5	8

Code	Inscription	Code
D	I 0 II	07
	Fern 0 Ort	08
	Hand 0 Auto	09

other labels on request

Example for ordering code (Code 2)

Switch mechanism	Contact system	Label	Order No.			
			A	C	D	
Key switch with silver contacts, 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 switch with gold contacts, without protective cover						
7		I 0 II	GHG 418 8195	R 5	7	07
7		FERN 0 ORT	GHG 418 8195	R 5	7	08
7		HAND 0 AUTO	GHG 418 8195	R 5	7	09
8		I 0 II	GHG 418 8195	R 5	8	07
8		FERN 0 ORT	GHG 418 8195	R 5	8	08
8		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

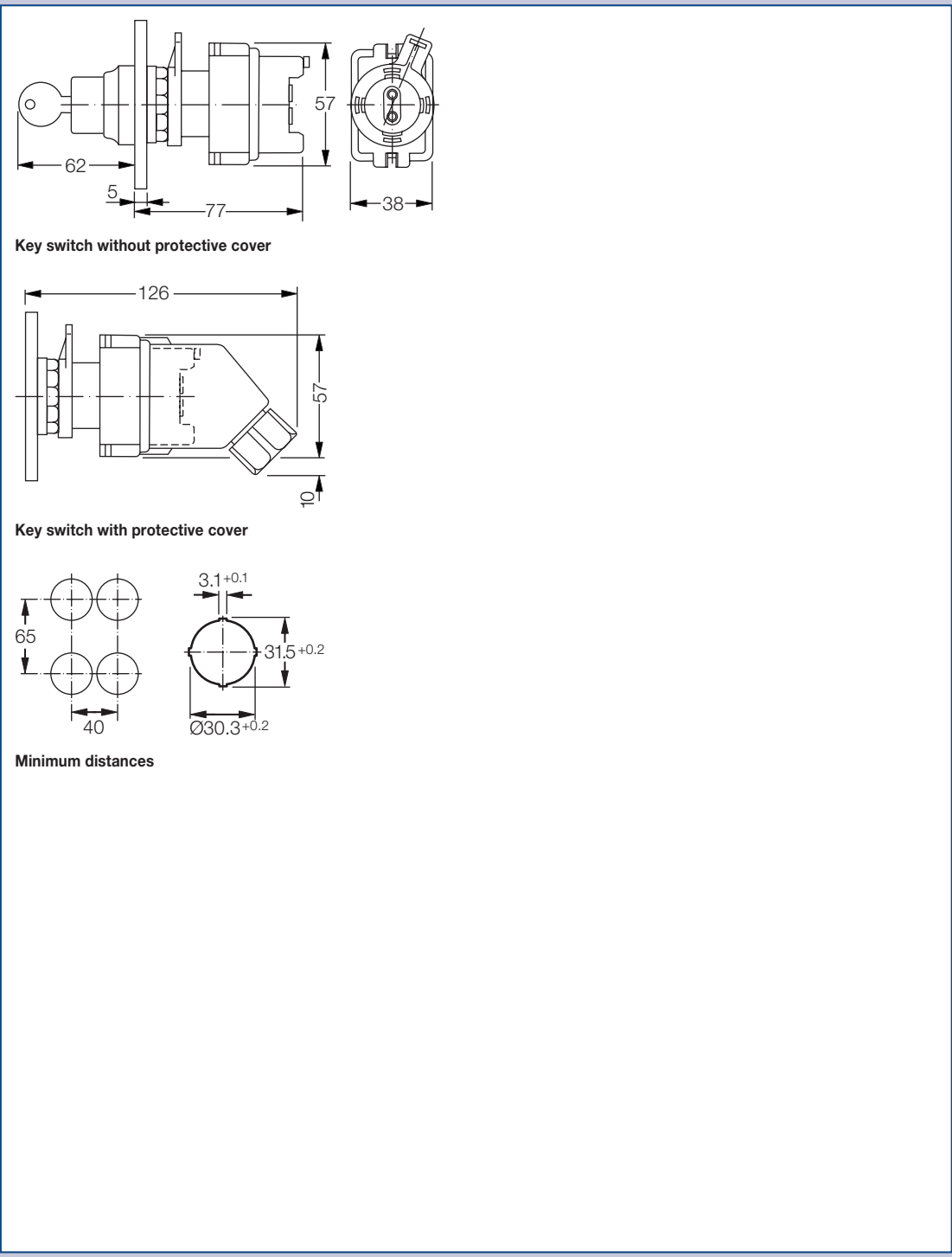
Please note that we can only deliver in the ordering units (OU) stated in the tables above

**| Ex-Control and signal units for panel mounting |**

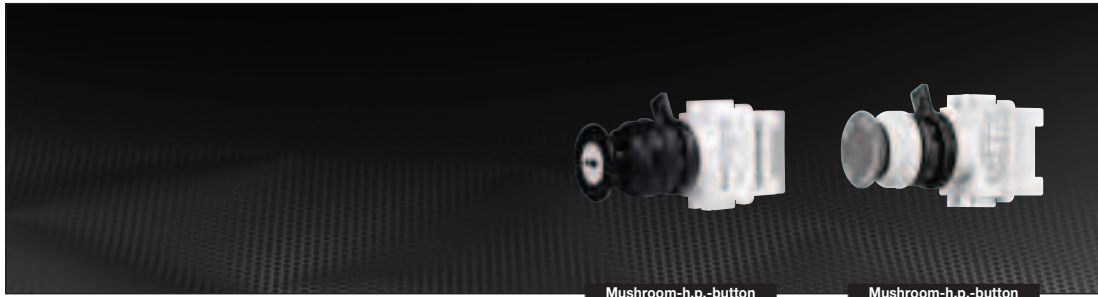


Key-operated pushbutton

**Dimension drawing**



Dimensions in mm



### Technical data

#### Mushroom head pushbutton (Emergency stop and normal version)

Marking to 94/9/EC	⊕ II 2 G Ex ed IIC T6 / ⊕ I M 2 Ex ed I
EC-Type Examination Certificate	PTB 97 ATEX 1081 U PTB 99 ATEX 1034 <sup>1)</sup>
Permissible ambient temperature	-20 °C to +40 °C -55 °C to +55 °C (option)
Rated voltage	500 V AC
Rated current	16 A
Rated current gold contacts	0.4 A
Rated making-/rated breaking capacity accd. EN 60947-5-1	AC-15: U <sub>e</sub> 250 V / I <sub>e</sub> 6 A U <sub>e</sub> 500 V / I <sub>e</sub> 4 A DC-13: U <sub>e</sub> 24 V / I <sub>e</sub> 6 A U <sub>e</sub> 220 V / I <sub>e</sub> 1 A
Connecting terminals	2 x 2.5 mm <sup>2</sup>
Degree of protection accd. EN 60529	IP66 <sup>1)</sup>
Dimensions (L x W x H)	approx. 59 x 31 x 45 mm
Weight	0.15 kg
Type of mounting	Ø 30.5 mm fixing hole
Enclosure colour	grey
Gasket material	Neoprene (Standard), fluoric silicone or viton on request

<sup>1)</sup> If protective covers are used

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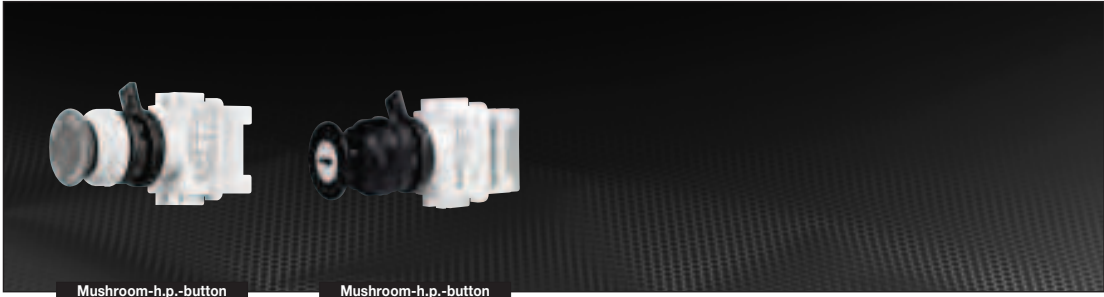
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**Ex-Control and signal units for panel mounting**



Mushroom-h.p.-button

Mushroom-h.p.-button

**Ordering code for Component (Code 2) Code A - B - C - D - E**

A	B	C	D	E
GHG 418 815	- R	-	-	-

Code	Component	Code
A	Mushroom head pushbutton	GHG 418 815

Code	Contact system	Contacts hand released	key released	Code silver contact points	gold contact points
B	2 NC			3	6
	2 NO			4	7
	1 NO + 1 NC			5	8

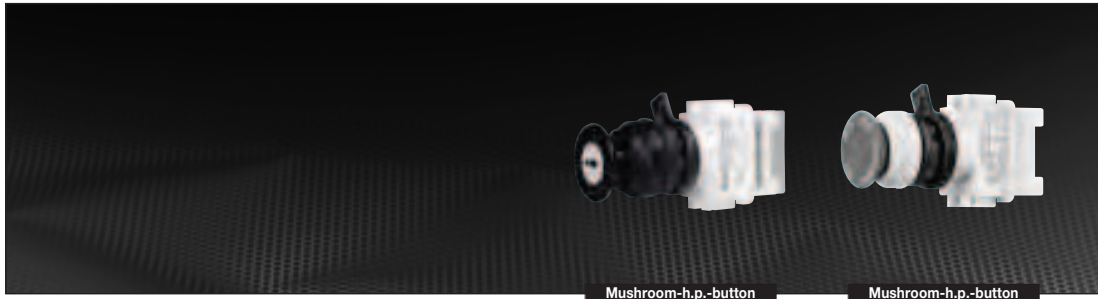
Code	Mushroom head inscription and color	Code
C	NOT-AUS EMERGENCY STOP (German - English) <sup>1)</sup>	1
	NOT-AUS ARRET D'URGENCE (German - French) <sup>1)</sup>	4
	Red	1
	Yellow <sup>1)</sup>	2
	Black <sup>2)</sup>	3

Code	released	engaged	unlocking	Code
D	not lockable	not lockable	n/a (pushbutton function)	1 <sup>2)</sup>
	not lockable	lockable	hand released	2 <sup>1)</sup>
	not lockable	lockable	key released	3 <sup>1)</sup>

Code	Inscription (contact label)	Code	Inscription (contact label)	Code
E	0, I, Start, Stop	01	0	02
	I	03	I I	04
		05	STOP	06
	START	07	NOT-AUS <sup>1)</sup>	08

<sup>1)</sup> only Emergency stop mushroom head pushbutton

<sup>2)</sup> only Mushroom head pushbutton normal version



Mushroom-h.p.-button

Mushroom-h.p.-button

Example for ordering code (Code 2)

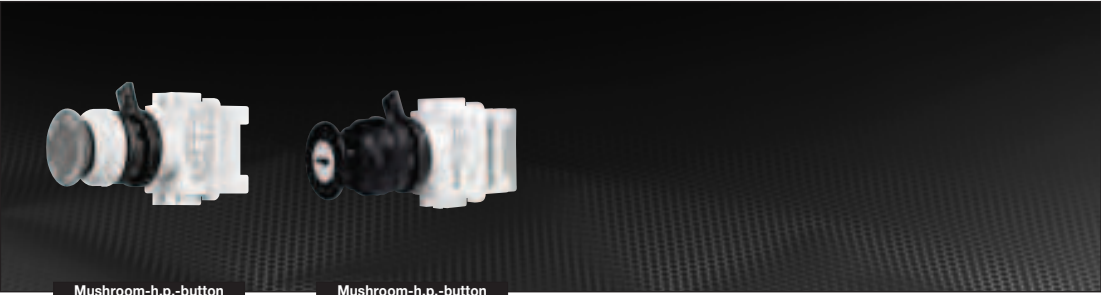
Contact system	Mushroom head colour	Inscription	Order No.				
			A	B	C	D	E
EMERGENCY STOP mushroom-head pushbutton red, with silver contact points, without protective cover							
Version with inscription D/E, hand released							
2 NC	red	German/English	<b>GHG 418 815</b>	3	R 1	2	00
2 NC	red	German/French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

Accessories

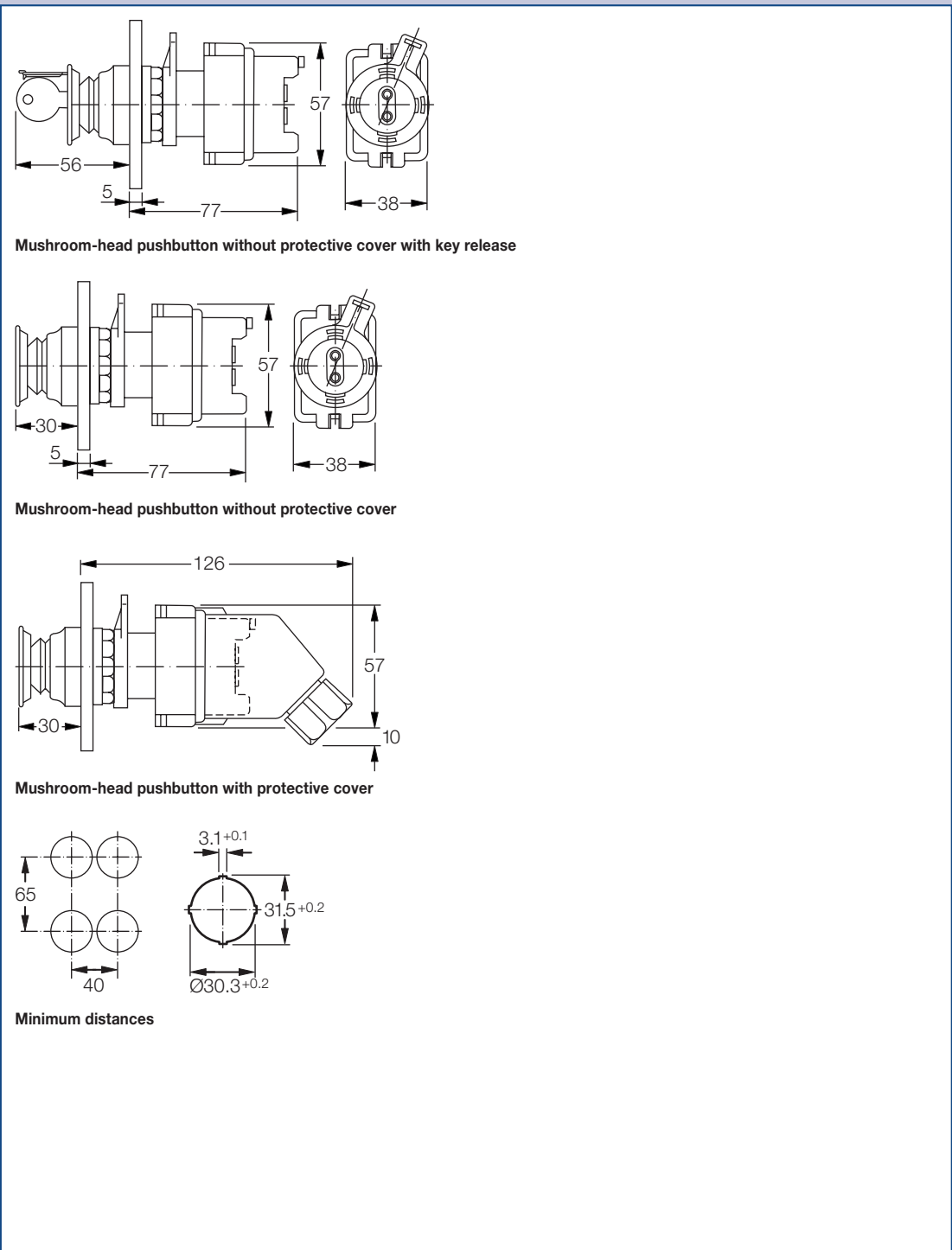
Type	OU	Order No.
Protective cover to meet IP66	5	<b>GHG 410 1939 R0002</b>

Please note that we can only deliver in the ordering units (OU) stated in the tables above

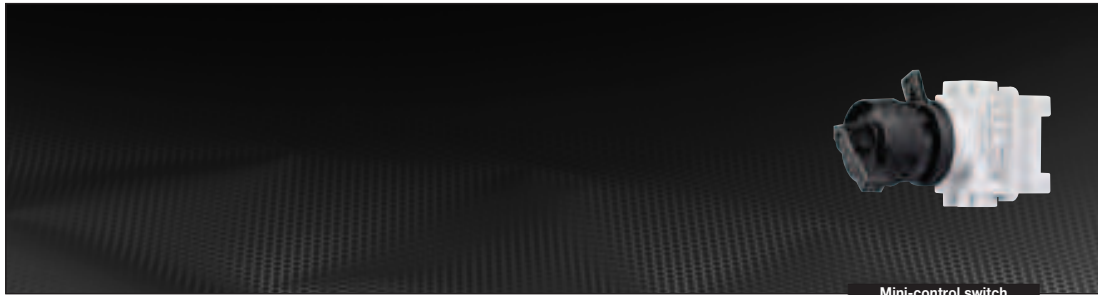
**| Ex-Control and signal units for panel mounting |**



**Dimension drawing**



Dimensions in mm



Mini-control switch

### Technical data

#### Mini-Control switch Type 418 8190

Marking to 94/9/EC	II 2 G Ex ed IIC T6 / I M 2 Ex de I
EC-Type Examination Certificate	PTB 97 ATEX 1081 U PTB 99 ATEX 1034 <sup>1)</sup>
Permissible ambient temperature	-20 °C to +40 °C -55 °C to +55 °C (option)
Rated voltage	500 V AC
Rated current	16 A
Rated current gold contacts	0.4 A
Rated making-/rated breaking capacity accd. EN 60947-5-1	AC-15: U <sub>e</sub> 250 V / I <sub>e</sub> 6 A U <sub>e</sub> 500 V / I <sub>e</sub> 4 A DC-13: U <sub>e</sub> 24 V / I <sub>e</sub> 6 A U <sub>e</sub> 220 V / I <sub>e</sub> 1 A
Connecting terminals	2 x 2.5 mm <sup>2</sup>
Degree of protection accd. EN 60529	IP66 <sup>1)</sup>
Dimensions (L x W x H)	approx. 59 x 31 x 45 mm
Weight	0.15 kg
Type of mounting	Ø 30.5 mm fixing hole
Enclosure colour	grey

<sup>1)</sup> If protective covers are used

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**| Ex-Control and signal units for panel mounting |**



Mini-control switch

**Ordering code for Component (Code 2) Code A - B - C - D - E**

A	B	C	D	E
GHG 418 819	-	R	-	-

Code	Component	Code
A	Mini-Control Switch	GHG 418 819

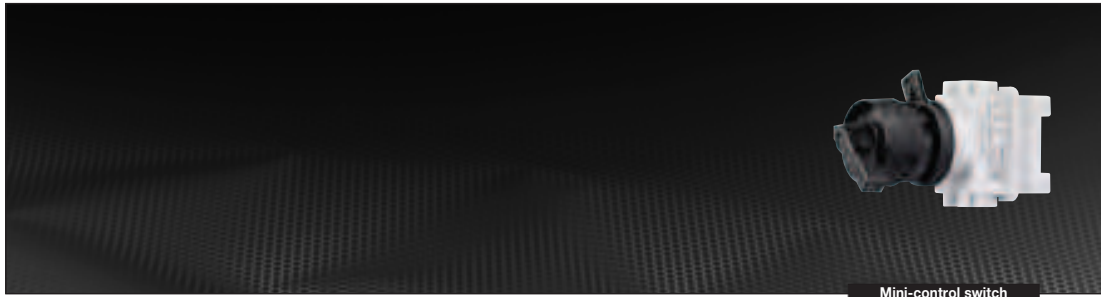
Code	Contact material	Code
B	silver	0
	gold	1

Code	Switch mechanism	Code
C	spring - engaging - engaging	4
	engaging - engaging - engaging	5
	engaging - engaging	6
	spring - engaging - engaging	7
	engaging - engaging - spring	8

Code	Contact system	Contacts	Code
D			0
			1
			2
			3
			5
			7

Code	Inscription (Contact label)	Code	Inscription (Contact label)	Code
E	0	I	HAND	0
	I	II	AUF	AUS
	STOP	START	HAND	AUS
	HAND	AUTO	0	I
	SENKEN	HEBEN	AUS	AUTO
	REMOTE	LOCAL	AUS	HAND
	I	0	ÖRTLICH	AUS
	AUS	BETRIEB	START	NORMAL
	AUS	0	OFF	0
	AUF	0	HAND	OFF
	STOP	0	0	IN
		II	AUTO	ZU
		03	AUTO	AUTO
		04	II	18
		05	EIN	19
		06	AUTO	20
		07	FERN	21
		08	STOP	22
		09	ON	23
		10	AUTO	24
		14	START	25





Mini-control switch

Example for ordering code (Code 2)

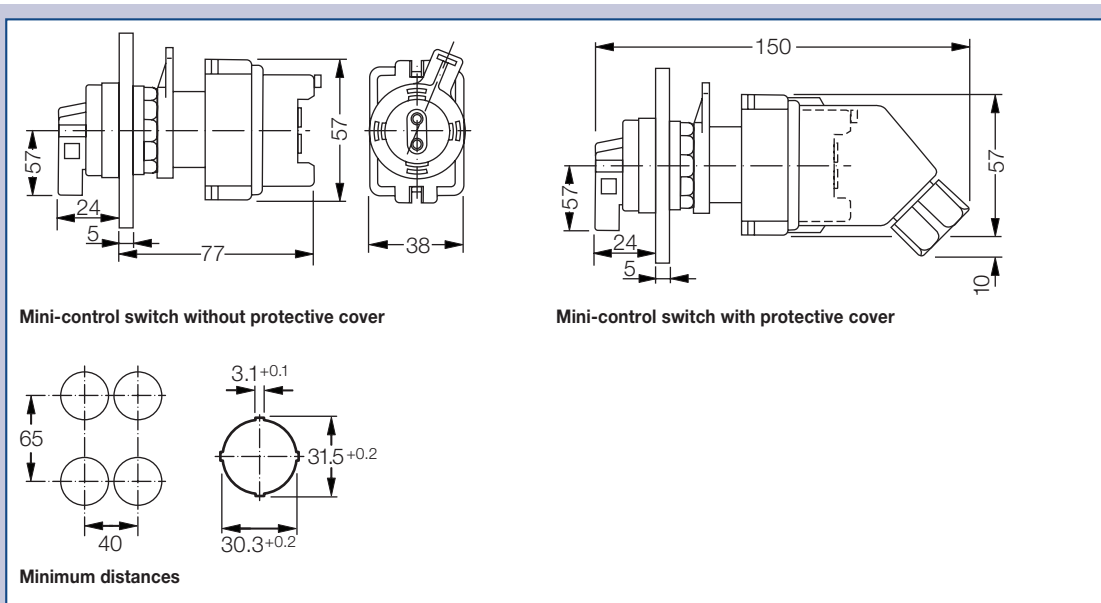
Switching mechanism	Code	Contact system	Code	Label schild	Order No.				
					A	B	C	D	E
Control switch with silver contact points, without protective cover									
Switch can be locked in all positions									
	6		0	I II	<b>GHG 418 819</b>	<b>0 R 6</b>	<b>0</b>	<b>02</b>	
	6		2	0 I	<b>GHG 418 819</b>	<b>0 R 6</b>	<b>2</b>	<b>01</b>	
	6		1	I II	<b>GHG 418 819</b>	<b>0 R 6</b>	<b>1</b>	<b>02</b>	
	5		3	I 0 II	<b>GHG 418 819</b>	<b>0 R 5</b>	<b>3</b>	<b>07</b>	
	5		5	I 0 II	<b>GHG 418 819</b>	<b>0 R 5</b>	<b>5</b>	<b>07</b>	
	8		7	0 I	<b>GHG 418 819</b>	<b>0 R 8</b>	<b>7</b>	<b>01</b>	

Accessories

Type	OU	Order No.
Protective cover to meet IP66	5	<b>GHG 410 1939 R0002</b>

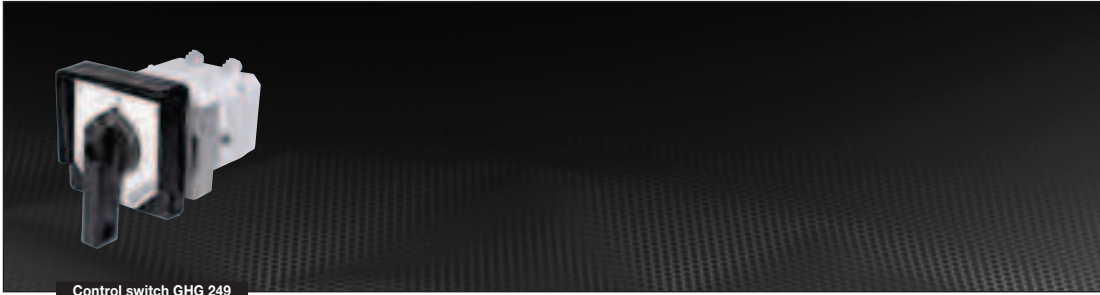
Please note that we can only deliver in the ordering units (OU) stated in the tables above

Dimension drawing



Dimensions in mm

1  
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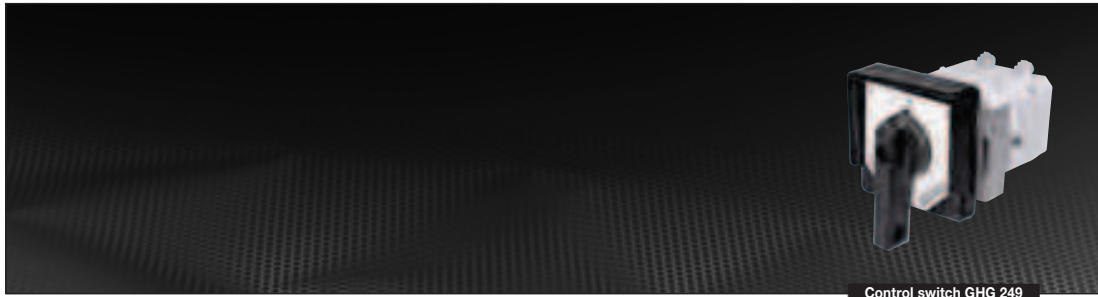


Control switch GHG 249

## Technical data

Control switch GHG 249	
Marking to 94/9/EC	II 2 G Ex ed IIC T6 / I M 2 Ex de I
EC-Type Examination Certificate	PTB 98 ATEX 1117 U <sup>1)</sup>
Permissible ambient temperature	-20 °C to +40 °C
	-55 °C to +45 °C (option)
Rated voltage	up to 690 V AC
Rated current	up to 20 A
Rated current gold contacts	up to 0.4 A
Rated marking- / rated breaking capacity accd. to EN 60947-5-1	AC-3: U <sub>b</sub> 230 V / I <sub>b</sub> 8 A
	U <sub>b</sub> 400 V / I <sub>b</sub> 6 A
	AC-11: U <sub>b</sub> 24 V / I <sub>b</sub> 6 A U <sub>b</sub> 230 V / I <sub>b</sub> 0.4 A
Connecting terminals	2 x 2.5 mm <sup>2</sup> multi wire, 6 mm <sup>2</sup> single wire
Weight	0.55 kg
Type of mounting	Ø 30.5 mm fixing hole
Enclosure colour	grey

<sup>1)</sup> Must be installed in a certified enclosure



Control switch GHG 249

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

A	B	C	D 1)
249	-	-	-

Code	Component	Code
A	Control switch GHG 249	249

Code	Switch mechanism	Code
B	spring - engaging - spring	4
	engaging - engaging - engaging	5
	engaging - engaging	6
	spring - engaging - engaging	7
	engaging - engaging - spring	8

Code	Contacts	Code	Silver contact points
C			019
			033
			024
			021
			049
			037
			039
			038

Code	Inscription (Contact label)	Code	Inscription (Contact label)	Code
D	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	II III	33

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

**| Ex-Control and signal units for panel mounting |**

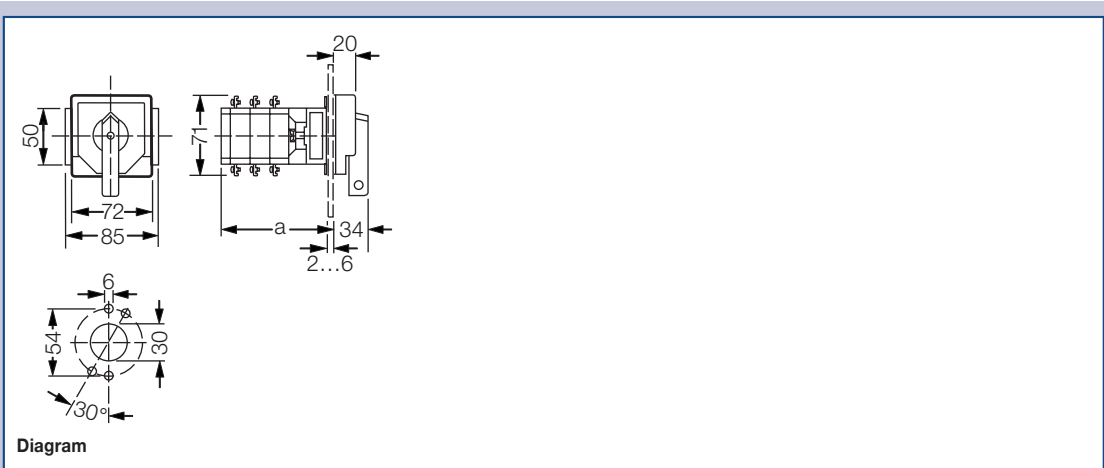


Control switch GHG 249

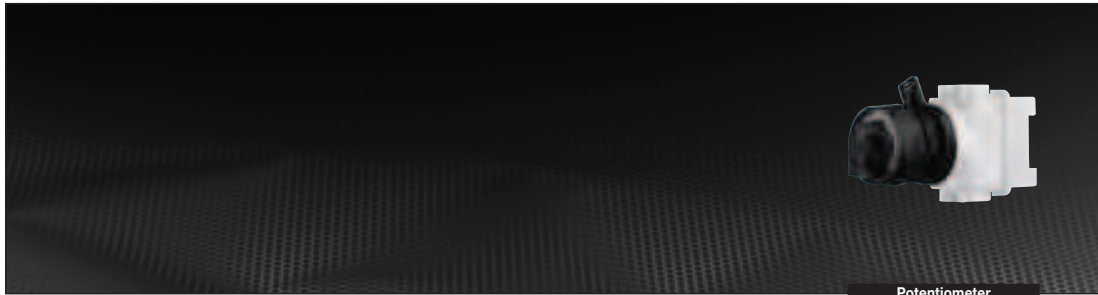
**Example for ordering code (Code 2)**

Version	Switching mechanism	Code	Contact	Code	Label	Code	Order Code
A	B		C		D		
GHG 249		6		019	0 - I	01	<b>GHG 249 6 01901</b>
GHG 249		6		037	STOP - 0 - START	14	<b>GHG 249 6 03714</b>
GHG 249		6		033	I - II	02	<b>GHG 249 6 03302</b>

**Dimension drawing**



Dimensions in mm



Potentiometer

### Technical data

#### Potentiometer Type 418 8131

Marking to 94/9/EC	II 2 G Ex ed IIC T6 / I M 2 Ex de I
EC-Type Examination Certificate	PTB 97 ATEX 1081 U PTB 99 ATEX 1034 <sup>1)</sup>
Permissible ambient temperature	-20 °C to +40 °C -55 °C to +55 °C (option)
Rated voltage	up to 250 V AC
Power consumption	max. 1 W
Resistance range	100 - 10000 Ω
Tolerance	± 20 %
Connecting terminals	2 x 2.5 mm <sup>2</sup>
Degree of protection accd. EN 60529	IP66 <sup>1)</sup>
Dimensions (L x W x H)	approx. 59 x 31 x 45 mm
Weight	0.15 kg
Type of mounting	Ø 30.5 mm fixing hole
Enclosure colour	grey
Angle of rotation	270°
Scale	0 - 100 %

<sup>1)</sup> If protective covers are used

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**| Ex-Control and signal units for panel mounting |**



Potentiometer

**Ordering code for Component (Code 2) Code A - B**

A	B
GHG 418 8131 R00	—

Code	Component	Code
A	Potentiometer	GHG 418 8131

Code	Resistance	Code
B	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)**

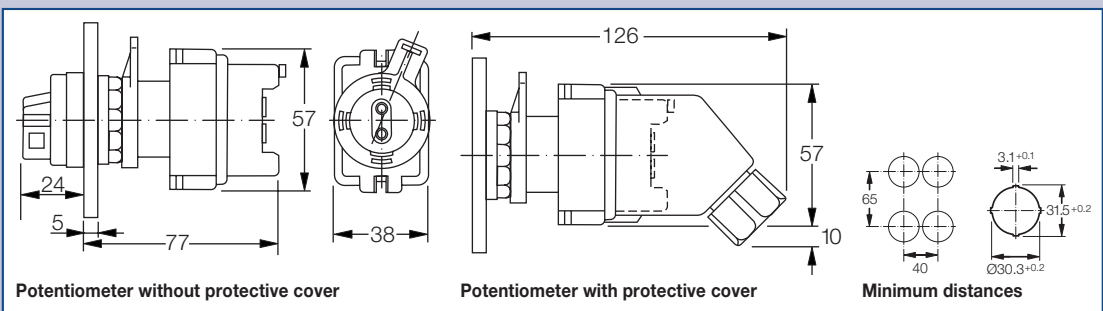
Version	Order No.	
	A	B
Potentiometer 1 W 25 % tolerance, without protective cover		
0 - 100 Ohm	GHG 418 8131	R 0011
0 - 220 Ohm	GHG 418 8131	R 0012
0 - 470 Ohm	GHG 418 8131	R 0013
0 - 1000 Ohm	GHG 418 8131	R 0014
0 - 2200 Ohm	GHG 418 8131	R 0017
0 - 4700 Ohm	GHG 418 8131	R 0015
0 - 10000 Ohm	GHG 418 8131	R 0016

**Accessories**

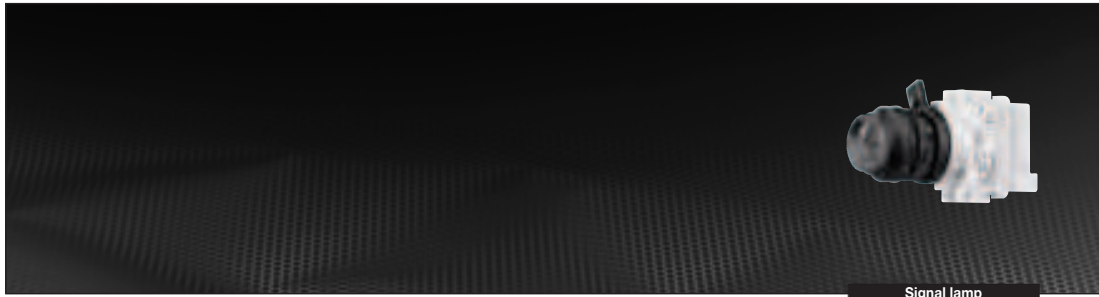
Type	OU	Order No.
Protective cover to meet IP66	5	GHG 410 1939 R0002

Please note that we can only deliver in the ordering units (OU) stated in the tables above

**Dimension drawing**



Dimensions in mm



Signal lamp

### Technical data

#### Signal lamp Type 418 8170

Marking to 94/9/EC		⊕ II 2 G Ex ed IIC / ⊕ II 2 G Ex d ia IIC
EC-Type Examination Certificate		PTB 98 ATEX 1040 U PTB 99 ATEX 1034 <sup>1)</sup>
Permissible ambient temperature		-20 °C to +40 °C -55 °C to +55 °C (option)
Rated voltage	(Ex ed IIC) (LED)	20 V to 250 V AC/DC
	(Ex d ia IIC)	10 V to 28 V DC
	(Ex ed IIC)	12 V to 30 V AC/DC
Rated current	(20 V to 250 V) (LED)	approx. 4 - 15 mA
	(10 V to 28 V Ex d ia IIC)	max. 25 mA
	(12 V to 30 V) DC	max. 24 mA
Connecting terminals		2 x 2.5 mm <sup>2</sup>
Degree of protection accd. EN 60529		IP66 <sup>1)</sup>
Dimensions (L x W x H)		approx. 59 x 31 x 45 mm
Weight		0.15 kg
Type of mounting		Ø 30.5 mm fixing hole
Enclosure colour		grey

<sup>1)</sup> If protective covers are used

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**| Ex-Control and signal units for panel mounting |**



**Ordering code for Component (Code 2) Code A - B**

A	B
GHG 418 8170 R00	—

Code	Component	Code
A	Signal lamp	GHG 418 8170

Code	Resistance	Code
B	20 V - 250 V AC/DC	51
	18 V - 30 V DC (Ex-i <sup>1</sup> )	52
	12 V - 30 V AC/DC	53

**Example for ordering code (Code 2)**

Version	Order Code	
	A	B
Version without protective cover with lens cover yellow, red, green and white		
Universal voltage 20V - 250 V AC/DC	<b>GHG 418 81 70</b>	<b>R0051</b>
For intrinsically safe circuits (18 V up to 30 V DC1)	<b>GHG 418 81 70</b>	<b>R0052</b>
Low voltage 12 V up to 24 V AC/DC	<b>GHG 418 81 70</b>	<b>R0053</b>

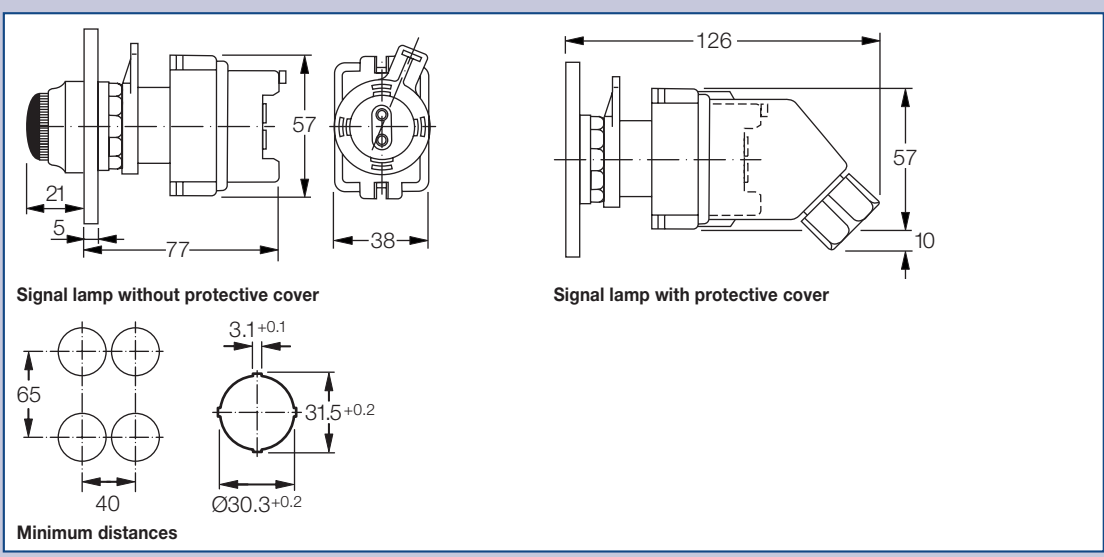
<sup>1</sup> Supply by valve-driver components, e.g., with data:  
 $U_o = 20\text{ V} - 28\text{ V DC}$  with  $R_i = 200\ \Omega - 500\ \Omega$  or  $U_o = 10\text{ V} - 18\text{ V DC}$  with  $R_i = 100\ \Omega - 200\ \Omega$   
 No effective  $C_i$  and  $L_i$  values.

**Accessories**

Type	OU	Order No.
Protective cover to meet IP66	5	<b>GHG 410 1939 R0002</b>

Please note that we can only deliver in the ordering units (OU) stated in the tables above

**Dimension drawing**







Interchangeable scales

Measuring instrument

## Technical data

### Type 412 82 with measuring instrument AM 72

	Moving iron	Moving coil
Marking to 94/9/EC	II 2 G Ex e II / I M 2 Ex e I	II 2 G Ex ib IIC / I M 2 Ex ib I
EC-Type Examination Certificate	PTB 00 ATEX 3117	
Permissible ambient temperature	-20 °C to +40 °C -55 °C to +55 °C (option)	
Rated voltage	up to 690 V	
Power consumption	max. 0.31 VA	
Overload range	10 fold - 25 sec. 25 fold - 4 sec. 50 fold - 1 sec. indicated 1 : 1.5	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 Ii		≤ 150 mA
Accuracy	Class 2.5	Class 1.5
Connecting terminals	2 x 1.5 - 4 mm <sup>2</sup>	
Degree of protection accd. EN 60529	IP66	
Cable glands/Gland plates/Enclosure drilling	1 x M25 (Ø 8 - 17 mm)	
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	

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**Ex-Control and signal units**



**Ordering code for Component (Code 2) Code A - B - C**

A GHG 412 828	B —	C R0
------------------	--------	---------

Code	Component	Code A
A	Measuring instrument AM 72	GHG 412 828

Code	Movement	Code B
B	Direct connection	1
	Ct connection 1 /A	2
	Port 0 - 20/24 mA (scale 0-100% / 120%) <sup>1)</sup>	5
	Port 4 - 20/24 mA (scale 0-100% / 120%) <sup>1)</sup>	6
	Moving-coil connection 0 - 20/24 mA (scale 0-100% / 120%) <sup>1) 3)</sup>	7
	Moving-coil connection 4 - 20/24 mA (scale 0-100% / 120%) <sup>1) 3)</sup>	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 <sup>2)</sup>	003	0 - 100 / 150 A	014
	0 - 5 / 7.5 A <sup>2)</sup>	004	0 - 150 / 225 A	015
	0 - 10 / 15 A <sup>2)</sup>	005	0 - 200 / 300 A	016
	0 - 15 / 22.5 A	006	0 - 250 / 375 A	017
	0 - 20 / 30 A <sup>2)</sup>	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

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

<sup>2)</sup> Version for direct connection (standard: CT connection n/1A) possible.

<sup>3)</sup> Moving coil only for Ex-i of Ex-d flameproof applications

Other interchangeable scales available on request.



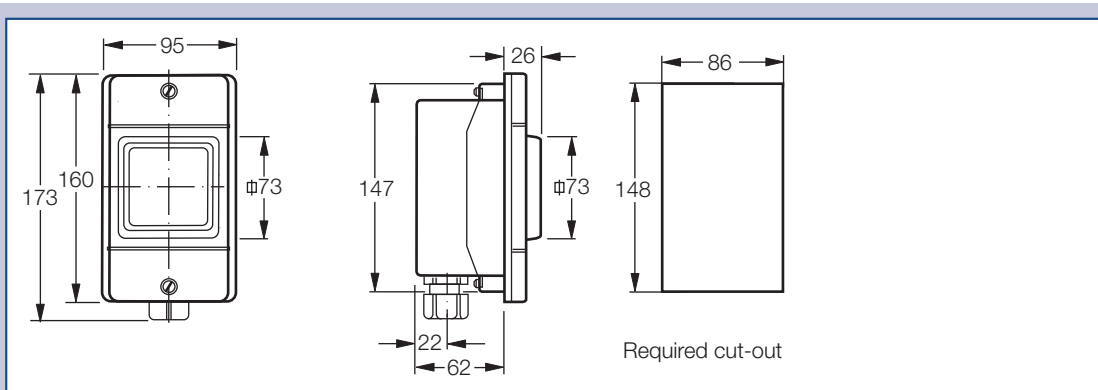
Interchangeable scales

Measuring instrument

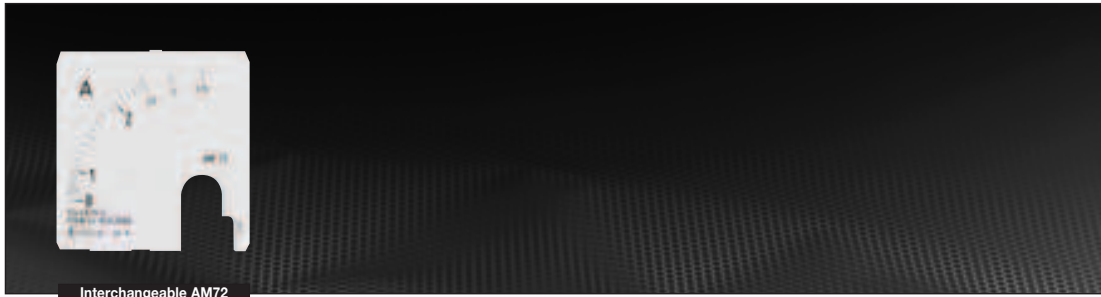
Example for ordering code (Code 2)

Measuring range	Movement	Ordering code
Measuring instrument AM 72, direct measurement		
Version with 1 x cable entry 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 entry 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



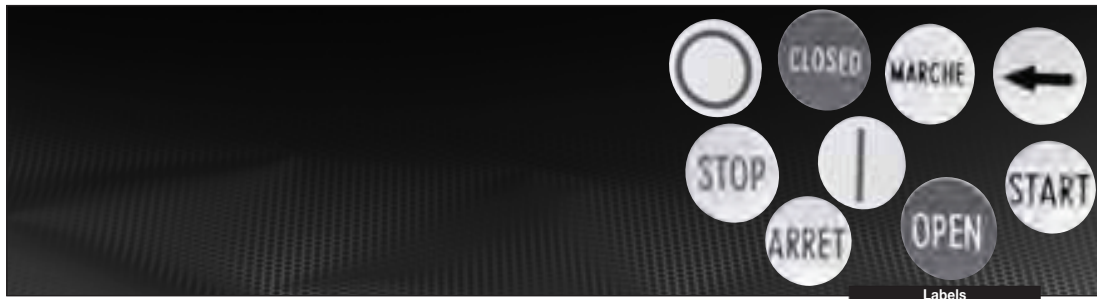
Dimensions in mm



## Ordering details

Interchangeable scales for measuring instrument , CT connection n/1A for AM 45/AM 72			
Scale	Order unit	Order No. AM45	Order No. AM72
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 pushbuttons**

Inscription	Code	Inscription	Code
0, I, Start, Stop	001	0	002
I	003	II	004
D	005	STOP	006
START	007	NOT-AUS	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 red	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	III	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

Further labels are available on request.

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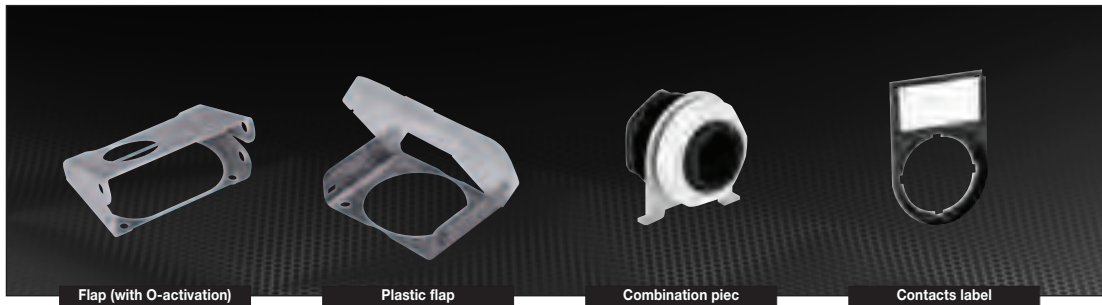
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## Accessories



Flap (with O-activation)

Plastic flap

Combination piec

Contacts label

## Ordering code

### Locking facilities

Version	Operating element	OU	Order No.
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)* 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)	Pushbutton	1	GHG 410 1901 R0132
with flap (red)	Pushbutton	1	GHG 410 1901 R0133
with flap without „0“-activation (blank)	Double pushbutton	1	GHG 410 1901 R0134
with flap with „0“-activation (blank)	Double pushbutton	1	GHG 410 1901 R0135
with bracket (1 Set)	Switch GHG 23/28	5	GHG 440 1917 R0001

\* released when window is broken – select appropriate activation element.

Please note that we can only deliver in the ordering units (OU) stated in the tables above.

### Labels and tools for control switches

Content	Type	OU	Order No.
Label with label holder	Blank (can be engraved)	10	GHG 410 1953 R0001
Combination piece for Control station Typ 411	incl. twist protection and seal	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 note that we can only deliver in the ordering units (OU) stated in the tables above.

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# EX - CONTROL SWITCHES

## With and without Measuring instruments

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 mm<sup>2</sup> 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.



- Decisive cost saving with the CEAG mounting system
- Easily accessible connection terminals
- Degree of protection IP66
- Cable connection range up to 6 mm<sup>2</sup>
- Integrated locking facility
- Optional forced contact on request





**Technical data**

Ex-Control switch Type 292 without and Type 293 with measuring instrument		
	with GHG 29 switch	with GHG 28 switch
Marking to 94/9/EC	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 BK1 07.0011	IECEX BK1 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 to +40 °C -55 °C to +47 °C (T6) ... +55 °C (T5) option	
Rated voltage	max. 500 V	max. 690 V
Rated current	16 A	20 A
Rated current gold contacts	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 / 1 A	
Accuracy (Type 293 only)	Class 2.5	
Circuit (Type 293 only)	moving iron	
Rated marking- / rated breaking capacity accd. to EN 60947-5-1	AC-15: U <sub>e</sub> 230 V / I <sub>e</sub> 6 A U <sub>e</sub> 400 V / I <sub>e</sub> 4 A DC-13: U <sub>e</sub> 24 V / I <sub>e</sub> 2 A U <sub>e</sub> 230 V / I <sub>e</sub> 0.3 A	AC-15: U <sub>e</sub> 230 V / I <sub>e</sub> 8 A U <sub>e</sub> 400 V / I <sub>e</sub> 6 A DC-13: U <sub>e</sub> 24 V / I <sub>e</sub> 6 A U <sub>e</sub> 230 V / I <sub>e</sub> 0.4 A
Connecting terminals	2 x 0.5 - 2.5 mm <sup>2</sup> or 1 x 1.0 - 6.0 mm <sup>2</sup>	
Degree of protection accd. EN 60529	IP66	
Cable glands/Gland plates/Enclosure drilling	1 x M25 (Ø 8 - 17 mm) <sup>1)</sup>	
Dimensions (L x W x H)	170 x 110 x 129 mm	225 x 110 x 129 mm
Weight	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	

<sup>1)</sup> Brass flange for metal entries available on request (except for II D at date of publication).

**| Ex-Control switches |**



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

A	B1	B2	C	D	E	E2	F 1)
GHG 29_	-	-	-	-	-	-	-

Code	Component	Code
A	Control switch	GHG 292
	Control switch with measuring instrument	GHG 293

Code	Switch mechanism	Code
B1	spring - engaging - spring	4
	engaging - engaging - engaging	5
	engaging - engaging	6
	spring - engaging - engaging	7
	engaging - engaging - spring	8

Code	Contact	Silver contact points	Code	Silver contact points
B2		060		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 (Contact label)	Code	Inscription (Contact label)	Code			
C	0	I	0	I	II	018	
	I	II	AUS	AUTO	EIN	019	
	STOP	START	AUS	HAND	AUTO	020	
	HAND	AUTO	ÖRTLICH	AUS	FERN	021	
	SENKEN	HEBEN	START	NORMAL	STOP	022	
	REMOTE	LOCAL	OFF	0	ON	023	
	I	0	II	HAND	OFF	AUTO	024
	AUS	BETRIEB	EIN	0	IN	START	025
	AUS	0	EIN	MAN	AUTO	026	
	AUF	0	AB	START	STOP	027	
	Entriegelt	0	Verriegelt	HEBEN	SENKEN	028	
	OUT	OF	HAND	OFF	ON	029	
	LOCAL	REMOTE	AUTO	AUS	EIN	030	
	STOP	0	START	HAND	AUTO	031	
	HAND	0	AUTO	ON	OFF	032	
	AUF	AUS	ZU	I	II	III	033
	HAND	AUS	AUTO				



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

Code	Locking facility	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	Mesasuring range/scale	Code	Mesasuring range/scale	Code
E2	0 - 1	002	0 - 75 /112.5 A	013
	0 - 2.5 / 3.75 A <sup>2)</sup>	003	0 - 100 / 150 A	014
	0 - 5 / 7.5 A <sup>2)</sup>	004	0 - 150 / 225 A	015
	0 - 10 / 15 A <sup>2)</sup>	005	0 - 200 / 300 A	016
	0 - 15 / 22.5 A	006	0 - 250 / 375 A	017
	0 - 20 / 30 A <sup>2)</sup>	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	Buil-in components designation		
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
		Threaded plug	SV
		Cable entry moulded plastic	GK
		Cable entry metal*	GM*
		Cable entry with plug	GV
F3	Size	M12, M16, M20, M25, M32, M40	M1 Ø ..
		Ø21, Ø26	
F4	Number	No. of entries	..

<sup>1)</sup> The code will represent only a selected part of configuration.

**| Ex-Control switches |**



**Example for ordering code (Code 2)**

Control switch with silver contact points, Switch mechanism „5“, Contact arrangement „063“,  
 Label „HAND-0-AUTO“, can be locked at „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 293 /	5 /	063 /	015 /	1 /	2 /	011 /	GEH /	BO /	M25 /	1

**Ordering details**

Switching mechanism	Contact system	Code	Label inscription	Order No.
Control switch Type 292 with silver contacts Version with locking facility in „0“-, or position „right (Code 3)“, cable entry 1 x M25 on bottom.				
6		062	0 I	<b>GHG 292 1000 R0001</b>
6		065	0 I	<b>GHG 292 1000 R0002</b>
4		067	0 I	<b>GHG 292 1000 R0003</b>
8		067	0 I	<b>GHG 292 1000 R0004</b>
4		037	0 I	<b>GHG 292 2000 R0002</b>
8		037	0 I	<b>GHG 292 2000 R0003</b>
5		024	I 0 II	<b>GHG 292 2000 R0004</b>
5		023	HAND OFF AUTO	<b>GHG 292 2001 R0001</b>

Switching mechanism	Contact system	Code	Label inscription	Order No.
Control switch with measuring instrument Type 293 with silver contacts Version with locking facility in „0“-, or "left" position, Measuring instrument AM 72 for CT connection n/1A, Scale 0 - 100/150 %. 1 x M32 on bottom.				
6		062	0 I	<b>GHG 293 1000 R0001</b>
6		065	0 I	<b>GHG 293 1000 R0002</b>



**Accessories**

**Mounting plate for type 292**

Type	Application	Mounting technique	OU	Order No.
Size 2	Wall mounting	snap-on	1	GHG 610 1953 R0104
Size 2	Pipe mounting	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 mounting	snap-on *	1	GHG 610 1953 R0132

**Mounting plate for type 293**

Type	Application	Mounting technique	OU	Order No.
Size 3	Wall mounting	snap-on	1	GHG 610 1953 R0118
Size 3	Pipe mounting	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 mounting	snap-on *	1	GHG 610 1953 R0132
Snap-on mounting for CEAG apparatus 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

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# EX - CONTROL SWITCHES

## Light alloy Version for Zone 1

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.

**Internationally approved.**



High mechanical, chemical and thermal resistance

Impact-resistant plastic powder coating

Snap-on switch holder

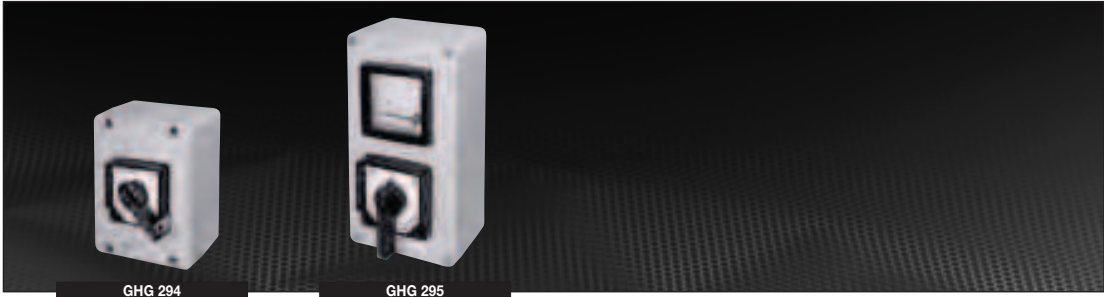


**Technical data**

Ex-Control switch Type 294 without and Type 295 with measuring instrument		
	with GHG 29 switch	with GHG 28 switch
Marking to 94/9/EC	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 BK1 07.0011	IECEX BK1 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 to +40 °C -55 °C to +47 °C (T6) ... +55 °C (T5) option	
Rated voltage	max. 500 V	max. 690 V
Rated current	16 A	20 A
Rated current gold contacts	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 marking- / rated breaking capacity accd. to EN 60947-5-1	AC-15: U <sub>e</sub> 230 V / I <sub>e</sub> 6 A U <sub>e</sub> 400 V / I <sub>e</sub> 4 A DC-13: U <sub>e</sub> 24 V / I <sub>e</sub> 2 A U <sub>e</sub> 230 V / I <sub>e</sub> 0.3 A	
Connecting terminals	2 x 0.5 - 2.5 mm <sup>2</sup> or 1 x 1.0 - 6.0 mm <sup>2</sup>	
Degree of protection accd. EN 60529	IP66	
Cable glands/Gland plates/Enclosure drilling	1 x M25 (Ø 8 - 17 mm) <sup>1)</sup>	
Dimensions (L x W x H)	170 x 130 x 129 mm	260 x 160 x 90 mm
Weight	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 (AlSi)	
Enclosure colour	grey RAL 7031	

<sup>1)</sup> 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 switches |**



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

A	B1	B2	C	D	E	E2	F 1)
GHG 29_	-	-	-	-	-	-	-

Code	Component	Code
A	Control switch	GHG 294
	Control switch with measuring instrument	GHG 295

Code	Switch mechanism	Code
B1	spring - engaging - spring	4
	engaging - engaging - engaging	5
	engaging - engaging	6
	spring - engaging - engaging	7
	engaging - engaging - spring	8

Code	Contact	Silver contact points	Code	Silver contact points
B2		060		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 (contact label)	Code	Inscription (contact label)	Code
C	0	I	0	I
	I	II	AUS	AUTO
	STOP	START	AUS	HAND
	HAND	AUTO	ÖRTLICH	AUS
	SENKEN	HEBEN	START	NORMAL
	REMOTE	LOCAL	OFF	0
	I	0	HAND	OFF
	AUS	BETRIEB	0	IN
	AUS	0	MAN	AUTO
	AUF	0	START	STOP
	Enriegelt	0	HEBEN	SENKEN
	OUT	OF	OFF	ON
	LOCAL	REMOTE	AUS	EIN
	STOP	0	HAND	AUTO
	HAND	0	ON	OFF
	AUF	AUS	I	II
	HAND	AUS	AUTO	III





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

Code	Locking facility	Code
D	None <input type="checkbox"/>	0
	Centre <input type="checkbox"/>	1
	Left <input type="checkbox"/>	2
	Right <input type="checkbox"/>	3

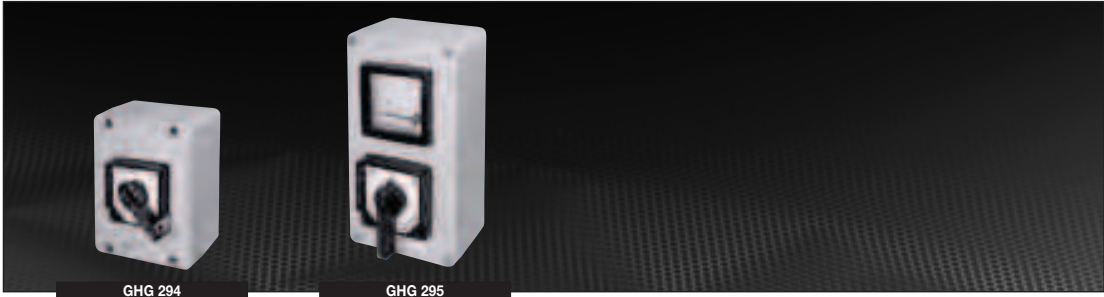
Code	Movement	Code
E1	Direct connection	01
	Ct connection 1 /A	02
	Connection 0 - 20/24 mA (scale 0-100% / 120%)	05
	Connection 4 - 20/24 mA (scale 0-100% / 120%)	06
	Moving-coil connection 0 - 20/24 mA (scale 0-100% / 120%)	07
	Moving-coil connection 4 - 20/24 mA (scale 0-100% / 120%)	08

Code	Mesasuring range/scale	Code	Mesasuring range/scale	Code
E2	0 - 1	002	0 - 75 /112.5 A	013
	0 - 2.5 / 3.75 A <sup>2)</sup>	003	0 - 100 / 150 A	014
	0 - 5 / 7.5 A <sup>2)</sup>	004	0 - 150 / 225 A	015
	0 - 10 / 15 A <sup>2)</sup>	005	0 - 200 / 300 A	016
	0 - 15 / 22.5 A	006	0 - 250 / 375 A	017
	0 - 20 / 30 A <sup>2)</sup>	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	Buil-in components designation		
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
		Threaded plug	SV
		Cable entry moulded plastic	GK
		Cable entry metal*	GM*
		Cable entry with plug	GV
F3	Size	M12, M16, M20, M25, M32, M40	M1 Ø ..
		Ø21, Ø26	
F4	Number	No. of entries	..

<sup>1)</sup> The code will represent only a selected part of configuration.

**| Ex-Control switches |**



**Example for ordering code (Code 2)**

Control switch with silver contact points, Switch mechanism „5“, Contact arrangement „063“,  
 Label „HAND-0-AUTO“, can be locked at „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 mechanism	Contact system	Code	Label inscription	Order No.
Control switch Type 294 with silver contacts				
Version with locking facility in „0“-, or position „right (Code 3)“, cable entry 1 x M25 on bottom.				
6		062	0 I	<b>GHG 294 1000 R0001</b>
6		065	0 I	<b>GHG 294 1000 R0002</b>
4		067	0 I	<b>GHG 294 1000 R0003</b>
8		067	0 I	<b>GHG 294 1000 R0004</b>
4		037	0 I	<b>GHG 294 2000 R0002</b>
8		037	0 I	<b>GHG 294 2000 R0003</b>
5		024	I 0 II	<b>GHG 294 2000 R0004</b>
5		023	HAND OFF AUTO	<b>GHG 294 2001 R0001</b>

Switching mechanism	Contact system	Code	Label inscription	Order No.
Control switch with measuring instrument Type 295 with silver contacts				
Version with locking facility in „0“-, or „left“ position, Measuring instrument AM 72 for CT connection n/1A, Scale 0 - 100/150 %.				
1 x M32 on bottom.				
6		062	0 I	<b>GHG 295 1000 R0001</b>
6		065	0 I	<b>GHG 295 1000 R0002</b>

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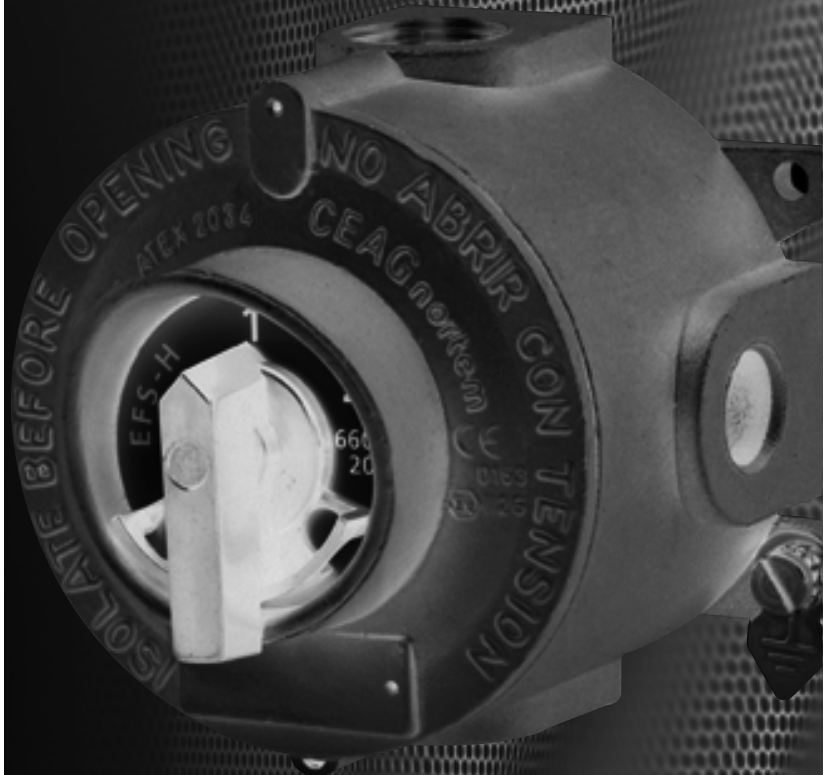
# LIGHT ALLOY CONTROL STATIONS

## Ex-d pushbutton and control switches

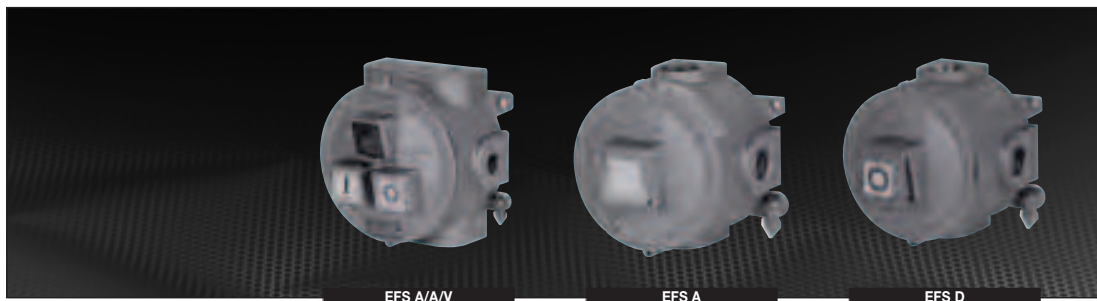
Ex-d explosion-protected control stations made of light alloy metal are equipped with up to three components to switch and control processes in areas of Zone 1, 2, 21 and 22 at no risk of explosion.

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.



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



**Technical data**

**Ex-d control stations Type EFS**

Marking to 94/9/EC	⊕ 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 to +55 °C
Rated voltage	max. 660 V AC
Rated current	max. 20 A
PE connecting terminals	2 x 2.5 mm <sup>2</sup> / PE ext.: 2 x 6 mm <sup>2</sup>
Insulation class	I
Incandescent lamp	230 V 3 W
Degree of protection accd. EN 60529	IP67
Cable glands/Gland plates/Enclosure drilling	1 x 3/4" ISO 7/1 or 2 x 3/4" ISO 7/1, one plugged
Enclosure material	Light alloy
Enclosure colour	natural finish

Other versions available on request

**Ordering details**

Type	Version	Weight	Order No.
<b>Control units</b>			
EFS A	1 x pushbutton, 1 NO + 1 NC, label "White"	0.75 kg	<b>NOR 000 114 110 511</b>
EFS A/A	2 x pushbutton, 1 NO + 1 NC, label "I - 0"	0.85 kg	<b>NOR 000 114 110 553</b>
EFS D	1 x mushroom head pushbutton, 1 NO + 1 NC, label "0"	0.80 kg	<b>NOR 000 114 110 587</b>
EFS A/D	1 x pushbutton 1 NO, 1 x mushroom head pushbutton NC, label "I - 0"	0.85 kg	<b>NOR 000 114 110 540</b>
EFS L	1 x alarm pushbutton, 1 NO + 1 NC, with windows	0.85 kg	<b>NOR 000 114 110 595</b>
EFS A/A/A	3 x pushbutton, 1 NO + 1 NC, label "0 - I - II"	1.50 kg	<b>NOR 000 114 110 747</b>
EFS A/A/V	2 x pushbutton, 1 NO + 1 NC, label "0 - I - II", 1 x green signal lamp	1.50 kg	<b>NOR 000 114 110 748</b>
EFS 72	With measuring instruments 72 mm x 72 mm	1.20 kg	<b>NOR 000 114 110 740</b>

<b>Control switches</b>			
EFS I	0 - 1		0.90 kg <b>NOR 000 003 110 945</b>
EFS H	1 - 2		0.90 kg <b>NOR 000 003 110 937</b>
EFS J	1 - 0 - 2		0.90 kg <b>NOR 000 003 110 953</b>
EFS P	0 - 1		0.90 kg <b>NOR 000 003 110 995</b>
EFS P40	0 - 1		0.90 kg <b>NOR 000 114 110 738</b>