

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 Ø 30.5 mm



Double pushbutton

Pushbutton

Technical data

Pushbutton Typ 418 811 and double pushbutton Typ 418 814		
	Complete certificate ¹⁾	Component certificate
Marking accd. to 94/9/EC	II 2 G Ex de IIC T6	II 2 G Ex de IIC/IIB Gb I M2 Ex de I Mb
EC-Type Examination Certificate	PTB 99 ATEX 1034	IBExU 14 ATEX 1030 U
IECEX Certificate of Conformity		IECEX IBE 14.0005 U
Marking accd. to IECEx		Ex de IIC/IIB Gb Ex de I Mb
Operating temperature range	-55°C up to + 80 °C	-45 °C up to +80 °C (IIC) -60 °C up to +80 °C (IIB)
Permissible ambient temperature	-55 °C up to + 50 °C	
Application temperature ²⁾		-45 °C up to +55 °C (IIC) -60 °C up to +55 °C (IIB)
Rated voltage	400 V AC	500 V AC
Rated current	16 A	16 A
Rated current with gold contact points	0.4 A	0.4 A
Rated making-/rated breaking capacity	AC-15: U _e 250 V / I _e 6 A	AC-15: U _e 250 V / I _e 6 A
accd. EN 60947-5-1	U _e 400 V / I _e 4 A	U _e 500 V / I _e 4 A
	DC-13: U _e 24 V / I _e 6 A	DC-13: U _e 24 V / I _e 6 A
	U _e 220 V / I _e 1 A	U _e 220 V / I _e 1 A
Connecting terminals	2 x 2.5 mm ²	2 x 2.5 mm ²
Degree of protection accd. to EN 60529	IP66 ¹⁾ / IP65 ¹⁾ (double pushbutton)	IP00
Dimensions (L x W x H)	approx. 140 x 38 x 67 mm	approx. 91 x 38 x 57 mm
Weight	0.25 kg	0.20 kg
Cable gland	M25x1.5 for cable Ø 6- 15 mm	–
Type of mounting	Ø 30.3 mm fixing hole	Ø 30.3 mm fixing hole
Enclosure colour	grey	grey
Gasket material	Neoprene (standard), Fluoric Silicone or Viton on request	

¹⁾ with protective cover IP66 / IP65

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

Ex-control and signal units for panel mounting



Pushbutton



Double pushbutton

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

A B C2 C1
GHG 418 81_ _ R _ _

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

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

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



Double pushbutton

Pushbutton

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Example for ordering code (Code 2)

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

Accessories

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

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



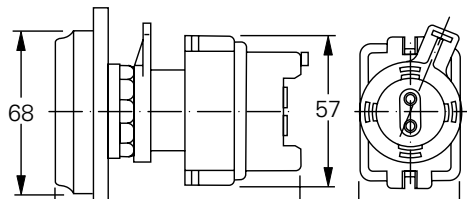
Pushbutton



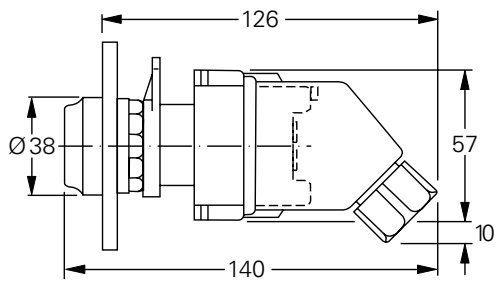
Double pushbutton

4

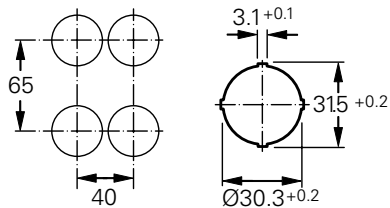
Dimension drawing



(Double-)pushbutton without protective cover



(Double-)pushbutton with protective cover



Minimum distances



Key-operated pushbutton

Technical data

Key-operated pushbutton Typ 418 812

	Complete certificate ¹⁾	Component certificate
Marking accd. to 94/9/EC	II 2 G Ex de IIC T6	II 2 G Ex de IIC/IIB Gb I M2 Ex de I Mb
EC-Type Examination Certificate	PTB 99 ATEX 1034	IBExU 14 ATEX 1030 U
IECEX Certificate of Conformity		IECEX IBE 14.0005 U
Marking accd. to IECEx		Ex de IIC/IIB Gb Ex de I Mb
Operating temperature range	-55°C up to + 80 °C	-45 °C up to +80 °C (IIC) -60 °C up to +80 °C (IIB)
Permissible ambient temperature	-55 °C up to + 50 °C	
Application temperature ²⁾		-45 °C up to +55 °C (IIC) -60 °C up to +55 °C (IIB)
Rated voltage	400 V AC	500 V AC
Rated current	16 A	16 A
Rated current with gold contact points	0.4 A	0.4 A
Rated making-/rated breaking capacity accd. EN 60947-5-1	AC-15: U _b 250 V / I _b 6 A U _b 400 V / I _b 4 A DC-13: U _b 24 V / I _b 6 A U _b 220 V / I _b 1 A	AC-15: U _b 250 V / I _b 6 A U _b 500 V / I _b 4 A DC-13: U _b 24 V / I _b 6 A U _b 220 V / I _b 1 A
Connecting terminals	2 x 2.5 mm ²	2 x 2.5 mm ²
Degree of protection accd. to EN 60529	IP66 ¹⁾	IP00
Dimensions (L x W x H)	approx. 182 x 38 x 67 mm	approx. 133 x 38 x 57 mm
Weight	0.30 kg	0.3 kg
Cable gland	M25x1.5 for cable Ø 6- 15 mm	–
Type of mounting	Ø 30.3 mm fixing hole	Ø 30.3 mm fixing hole
Enclosure colour	grey	grey
Gasket material	Neoprene (standard), Fluoric Silicone or Viton on request	

¹⁾ with protective cover IP66

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

Ex-control and signal units for panel mounting



Key-operated pushbutton

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

A B C
GHG 418 812 _ R00 _

Code	Component	Code
A	Key-operated pushbutton	GHG 41 812

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

Code	released	Key	engaged	Key	Code
C	lockable	removable	lockable	removable	10
	lockable	removable	lockable	not removable	11
	lockable	removable	not lockable	not removable	12
	lockable	not removable	lockable	removable	13
	not lockable	not removable	lockable	removable	14
	not lockable	removable	autom. lockable	removable	15

Example for ordering code (Code 2)

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

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

Accessories

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

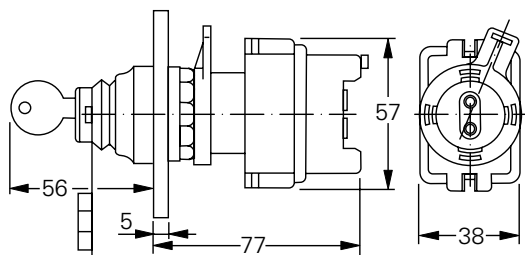
Please pay attention that only order units (OU) according to the ordering details can be delivered.



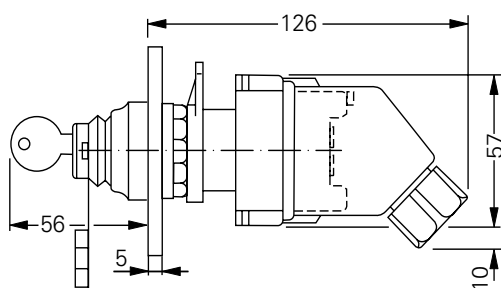
Key-operated pushbutton

4

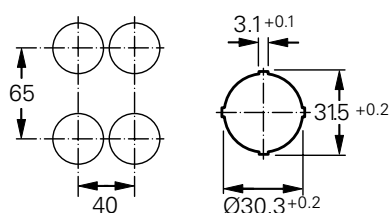
Dimension drawing



Key-operated switch without protective cover



Key-operated switch with protective cover



Minimum distances



Key-operated switch

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Technical data

Key-operated switch Type 418 8195

	Complete certificate ¹⁾	Component certificate
Marking accd. to 94/9/EC	II 2 G Ex de IIC T6	II 2 G Ex de IIC/IIB Gb I M2 Ex de I Mb
EC-Type Examination Certificate	PTB 99 ATEX 1034	IBExU 14 ATEX 1030 U
IECEX Certificate of Conformity		IECEX IBE 14.0005 U
Marking accd. to IECEx		Ex de IIC/IIB Gb Ex de I Mb
Operating temperature range	-55°C up to + 80 °C	-45 °C up to +80 °C (IIC) -60 °C up to +80 °C (IIB)
Permissible ambient temperature	-25 °C up to + 50 °C	
Application temperature ²⁾		-45 °C up to +55 °C (IIC) -60 °C up to +55 °C (IIB)
Rated voltage	400 V AC	500 V AC
Rated current	16 A	16 A
Rated current with gold contact points	0.4 A	0.4 A
Rated making-/rated breaking capacity accd. EN 60947-5-1	AC-15: U _e 250 V / I _e 6 A U _e 400 V / I _e 4 A DC-13: U _e 24 V / I _e 6 A U _e 220 V / I _e 1 A	AC-15: U _e 250 V / I _e 6 A U _e 500 V / I _e 4 A DC-13: U _e 24 V / I _e 6 A U _e 220 V / I _e 1 A
Connecting terminals	2 x 2.5 mm ²	2 x 2.5 mm ²
Degree of protection accd. to EN 60529	IP66 ¹⁾	IP00
Dimensions (L x W x H)	approx. 188 x 38 x 67 mm	approx. 139 x 38 x 57 mm
Weight	0.30kg	0.25 kg
Cable gland	M25x1.5 for cable Ø 6- 15 mm	–
Type of mounting	Ø 30.3 mm fixing hole	Ø 30.3 mm fixing hole
Enclosure colour	grey	grey
Gasket material	Neoprene (standard), Fluoric Silicone or Viton on request	

¹⁾ with protective cover IP66

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



Key-operated switch

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

A	B	C
GHG 418 8195	R5	—

Code	Component	Code
A	Key-operated switch	GHG 418 8195

Code	Circuit	Contacts	Code silver contact points	gold contact points
B	2 NC		4	7
	2 NO		5	8

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

Further Inscription labels on request.

Example for ordering code (Code 2)

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

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

Key-operated switch with gold contact points, without protective cover					
4		I 0 II	GHG 418 8195	R 5	7 07
4		FERN 0 ORT	GHG 418 8195	R 5	7 08
4		HAND 0 AUTO	GHG 418 8195	R 5	7 09
5		I 0 II	GHG 418 8195	R 5	8 07
5		FERN 0 ORT	GHG 418 8195	R 5	8 08
5		HAND 0 AUTO	GHG 418 8195	R 5	8 09

Accessories

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

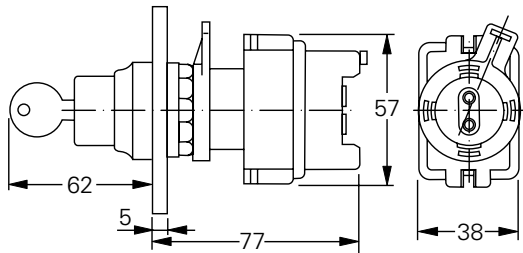
Please pay attention that only order units (OU) according to the ordering details can be delivered.



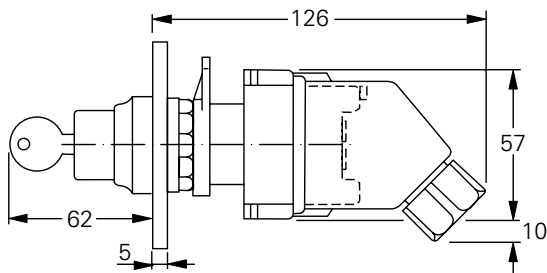
Key-operated switch

4

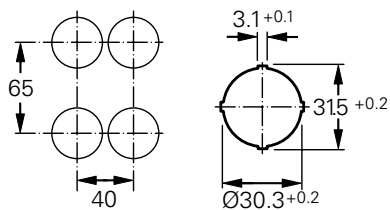
Dimension drawing



Key-operated switch without protective cover



Key-operated switch with protective cover



Minimum distances



Mushroom-head pushbutton



Emergency-Stop pushbutton

Technical data

Mushroom-head pushbutton (Emergency stop and normal version)

	Complete certificate ¹⁾	Component certificate
Marking accd. to 94/9/EC	II 2 G Ex de IIC T6	II 2 G Ex de IIC/IIB Gb I M2 Ex de I Mb
EC-Type Examination Certificate	PTB 99 ATEX 1034	IBExU 14 ATEX 1030 U
IECEx Certificate of Conformity		IECEx IBE 14.0005 U
Marking accd. to IECEx		Ex de IIC/IIB Gb Ex de I Mb
Operating temperature range	-55°C up to + 80 °C	-45 °C up to +80 °C (IIC) -60 °C up to +80 °C (IIB)
Permissible ambient temperature	-25 °C up to + 50 °C	
Application temperature ²⁾		-45 °C up to +55 °C (IIC) -60 °C up to +55 °C (IIB)
Rated voltage	400 V AC	500 V AC
Rated current	16 A	16 A
Rated current with gold contact points	0.4 A	0.4 A
Rated making-/rated breaking capacity accd. EN 60947-5-1	AC-15: U _e 250 V / I _e 6 A U _e 400 V / I _e 4 A DC-13: U _e 24 V / I _e 6 A U _e 220 V / I _e 1 A	AC-15: U _e 250 V / I _e 6 A U _e 500 V / I _e 4 A DC-13: U _e 24 V / I _e 6 A U _e 220 V / I _e 1 A
Connecting terminals	2 x 2.5 mm ²	2 x 2.5 mm ²
Degree of protection accd. to EN 60529	IP66 ¹⁾	IP00
Dimensions (L x W x H)	approx. 156 x 38 x 67 mm	approx. 139 x 38 x 57 mm
Weight	0.30 kg	0.25 kg
Cable gland	M25x1.5 for cable Ø 6- 15 mm	–
Type of mounting	Ø 30.3 mm fixing hole	Ø 30.3 mm fixing hole
Enclosure colour	grey	grey
Gasket material	Neoprene (standard), Fluoric Silicone or Viton on request	

¹⁾ with protective cover IP66

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

Ex-control and signal units for panel mounting



Emergency-Stop pushbutton



Mushroom-head pushbutton

4

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

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

Code	Component	Code
A	Mushroom-head pushbutton	GHG 418 815

Code	Circuit	Contacts durch Ziehen des Pushbuttones	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 pushbutton inscription and colour	Code
C	emergency stop EMERGENCY STOP (German - English) ¹⁾	1
	emergency stop ARRET D'URGENCE (German - French) ¹⁾	4
	red	1
	yellow ¹⁾	2
	black ²⁾	3

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

Code	Inscription (label)	Code	Inscription	Code
E	0, I, Start, Stop	01	0	02
	I	03	I I	04
		05	STOP	06
	START	07	NOT-AUS ¹⁾	00

¹⁾ only emergency stop mushroom head pushbutton

²⁾ only mushroom-head pushbutton normal version



Mushroom-head pushbutton



Emergency-Stop pushbutton

Example for ordering code (Code 2)

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

Accessories

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

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

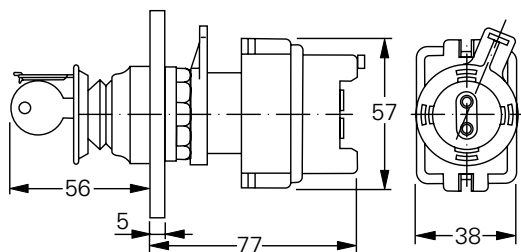


Mushroom-head pushbutton

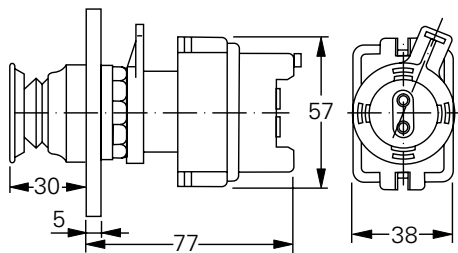
Mushroom-head pushbutton

4

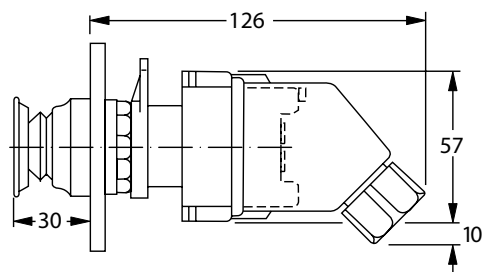
Dimension drawing



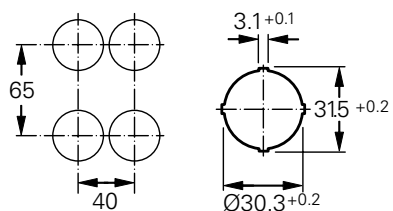
Mushroom-head pushbutton without protective cover with key release



Mushroom-head pushbutton without protective cover



Mushroom-head pushbutton with protective cover



Minimum distances

Dimensions in mm



Mini-control switch

Technical data

Mini-control switch Type 418 8190		
	Complete certificate ¹⁾	Component certificate
Marking accd. to 94/9/EC	II 2 G Ex de IIC T6	II 2 G Ex de IIC/IIB Gb I M2 Ex de I Mb
EC-Type Examination Certificate	PTB 99 ATEX 1034	IBExU 14 ATEX 1030 U
IECEX Certificate of Conformity		IECEX IBE 14.0005 U
Marking accd. to IECEx		Ex de IIC/IIB Gb Ex de I Mb
Operating temperature range	-55°C up to + 80 °C	-45 °C up to +80 °C (IIC) -60 °C up to +80 °C (IIB)
Permissible ambient temperature	-55 °C up to + 50 °C	
Application temperature ²⁾		-45 °C up to +55 °C (IIC) -60 °C up to +55 °C (IIB)
Rated voltage	400 V AC	500 V AC
Rated current	16 A	16 A
Rated current with gold contact points	0.4 A	0.4 A
Rated making-/rated breaking capacity accd. EN 60947-5-1	AC-15: U _e 250 V / I _e 6 A	AC-15: U _e 250 V / I _e 6 A
	U _e 400 V / I _e 4 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	DC-13: U _e 24 V / I _e 6 A U _e 220 V / I _e 1 A
Connecting terminals	2 x 2.5 mm ²	2 x 2.5 mm ²
Degree of protection accd. to EN 60529	IP66 ¹⁾	IP00
Dimensions (L x W x H)	approx. 150 x 38 x 67 mm	approx. 101 x 38 x 57 mm
Weight	0.25 kg	0.20kg
Cable gland	M25x1.5 for cable Ø 6- 15 mm	–
Type of mounting	Ø 30.3 mm fixing hole	Ø 30.3 mm fixing hole
Enclosure colour	grey	grey
Gasket material	Neoprene (standard), Fluoric Silicone or Viton on request	

¹⁾ with protective cover IP66

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

Ex-control and signal units for panel mounting



Mini-control switch

4

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	Switching system	Code
C	spring – engaging – spring	4
	engaging – engaging – engaging	5
	engaging – engaging	6
	spring – engaging – engaging	7
	engaging – engaging – spring	8

Code	Contacts	Code
D		0
		1
		2
		3
		5
		7

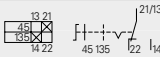
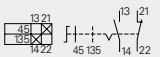
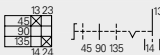
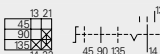
Code	Inscription (label)	Code	Inscription (label)	Code
E	0	I	01	HAND 0 AUTO 15
	I	II	02	AUF AUS ZU 16
	STOP	START	03	HAND AUS AUTO 17
	HAND	AUTO	04	0 I II 18
	SENKEN	HEBEN	05	AUS AUTO EIN 19
	REMOTE	LOCAL	06	AUS HAND AUTO 20
	I 0 II		07	ÖRTLICH AUS FERN 21
	AUS BETRIEB EIN		08	START NORMAL STOP 22
	AUS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



Mini-control switch

4

Example for ordering code (Code 2)

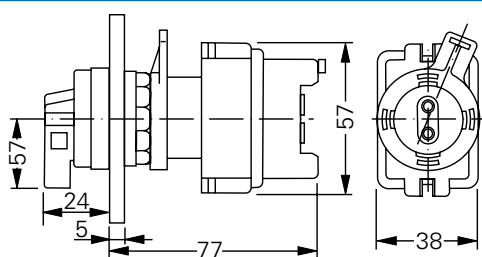
Switching system	Code	Circuit	Code	Label-	Order No.				
					A	B	C	D	E
Control switch with silver contact points, without protective cover									
Switch can be locked in all positions									
	6		0	I II	GHG 418 819	0 R	6	0	02
	6		2	0 I	GHG 418 819	0 R	6	2	01
	6		1	I II	GHG 418 819	0 R	6	1	02
	5		3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

Accessories

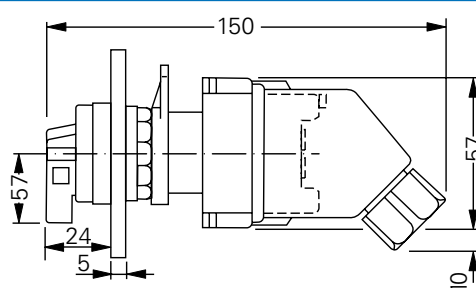
Type	OU	Order No.
Protective cover to meet IP66	5	GHG 410 1939 R0002

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

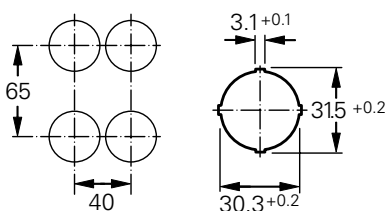
Dimension drawing



Mini-control switch without protective cover



Mini-control switch with protective cover



Minimum distances

Dimensions in mm



Control switch GHG 249

4

Technical data

Control switch GHG 249

Marking accd. to 94/9/EC	II 2 G Ex de IIC/IIB Gb II G Ex de ib [ia/ib] IIC/IIB Gb
EC-Type Examination Certificate	BVS 14 ATEX E 076 U ¹⁾
Operating temperature range	-45 °C up to +80 °C (IIC) -55 °C up to +80 °C (IIB)
Application temperature ²⁾	-45 °C up to +80 °C (IIC) -55 °C up to +80 °C (IIB)
IECEX Certificate of Conformity	IECEX BVS 14.0047 U
Marking accd. to IECEx	Ex de IIC Gb Ex de IIB Gb
Rated voltage	up to 690 V AC
Rated current	up to 20 A
Rated current with gold contact points	up to 0.4 A
Rated making-/rated breaking capacity accd. EN 60947-5-1	AC-3: U _e 230 V / I _e 8 A U _e 400 V / I _e 6 A AC-11: U _e 24 V / I _e 6 A U _e 230 V / I _e 0.4 A
Connecting terminals	2 x 2.5 mm ² flexibel, 6 mm ² starr
Weight	0.55 kg
Type of mounting	Ø 30.3 mm fixing hole
Enclosure colour	grey

¹⁾ Must be installed in a certified enclosure

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



Control switch GHG 249

4

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	Switching system	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 (label)	Code	Inscription (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



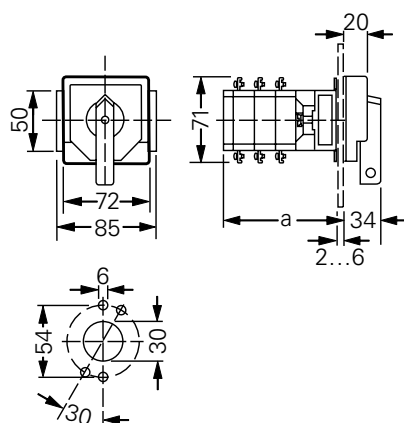
Control switch GHG 249

4

Example for ordering code (Code 2)

Content	Switching system	Code	Contact	Code	Label	Code	Order code
A		B		C		D	
GHG 249		6		019	0 - I	01	GHG 249 0004 R 0056
GHG 249		6		037	STOP - 0 - START	14	GHG 249 0004 R 0039
GHG 249		6		033	I - II	02	GHG 249 0004 R 0084

Dimension drawing



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



Potentiometer

Technical data

Potentiometer Type 418 8131		
	Complete certificate ¹⁾	Component certificate
Marking accd. to 94/9/EC	II 2 G Ex de IIC T6	II 2 G Ex de IIC/IIB Gb I M2 Ex de I Mb
EC-Type Examination Certificate	PTB 99 ATEX 1034	IBExU 14 ATEX 1030 U
IECEX Certificate of Conformity		IECEX IBE 14.0005 U
Marking accd. to IECEX		Ex de IIC/IIB Gb Ex de I Mb
Operating temperature range	-55°C up to + 80 °C	-45 °C up to +80 °C (IIC) -60 °C up to +80 °C (IIB)
Permissible ambient temperature	-55 °C up to + 50 °C	
Application temperature ²⁾		-45 °C up to +55 °C (IIC) -60 °C up to +55 °C (IIB)
Rated voltage	up to 250 V AC	up to 250 V AC
Power consumption (VA)	max. 1 W	max. 1 W
Resistance range	100 - 10000 Ω	100 - 10000 Ω
Tolerance	± 20 %	± 20 %
Connecting terminals	2 x 2.5 mm ²	2 x 2.5 mm ²
Degree of protection accd. to EN 60529	IP66 ¹⁾	IP00
Dimensions (L x W x H)	101 x 38 x 57 mm	150 x 38 x 57 mm
Weight	0.20 kg	0.15 kg
Type of mounting	Ø 30.3 mm fixing hole	Ø 30.3 mm fixing hole
Enclosure colour	grey	grey
Angle of rotation	270°	270°
Scale	0 - 100 %	0 - 100 %

¹⁾ with protective cover IP66

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

Ex-control and signal units for panel mounting



Potentiometer

4

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

A
GHG 418 8131 R00

B
—

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)

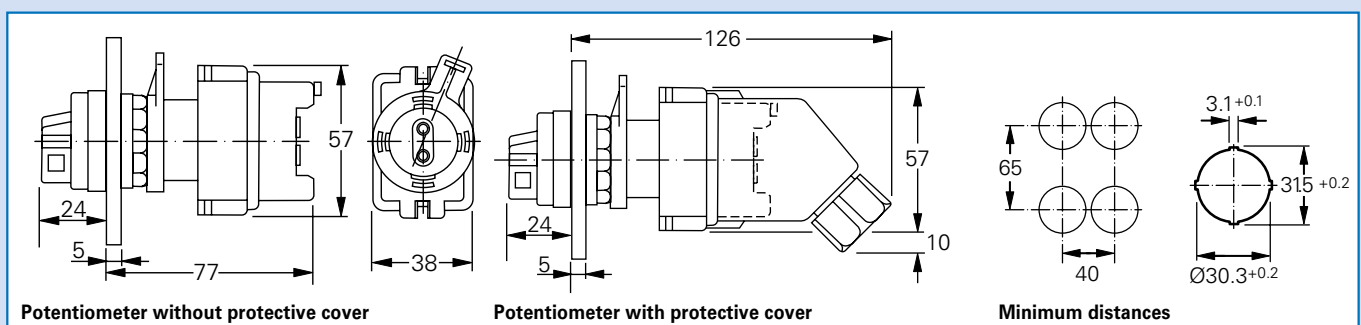
Content	Order No.	
	A	B
Potentiometer 1 W 25 % tolerance, without protective cover		
0 - 100 Ohm	GHG 418 8131	R 0011
0 - 220 Ohm	GHG 418 8131	R 0012
0 - 470 Ohm	GHG 418 8131	R 0013
0 - 1000 Ohm	GHG 418 8131	R 0014
0 - 2200 Ohm	GHG 418 8131	R 0017
0 - 4700 Ohm	GHG 418 8131	R 0015
0 - 10000 Ohm	GHG 418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

Accessories

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

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

Dimension drawing



Dimensions in mm



Signal lamp

4

Technical data

Signal lamp Type 418 8170			
		Complete certificate ¹⁾	Component certificate
Marking accd. to 94/9/EC		II 2 G Ex de IIC T6 II 2G Ex d ia IIC/IIB Gb	II 2 G Ex de IIC/IIB Gb I M2 Ex d e IIC/IIB Gb
EC-Type Examination Certificate		PTB 99 ATEX 1034	IBExU 12 ATEX 1047 U
IECEX Certificate of Conformity			IECEX IBE 14.0005 U
Marking accd. to IECEx		Ex de IIC/IIB Gb Ex de I Mb	
Operating temperature range			-45 °C up to +68 °C (IIC) -60 °C up to +68 °C (IIB)
Permissible ambient temperature		-55 °C up to + 50 °C	
Application temperature ²⁾		-45 °C up to +60 °C (IIC)	
			-60 °C up to +60 °C (IIB)
Rated voltage	Ex ed IIC) (LED)	20 V up to 254 V AC/DC	20 V up to 254 V AC/DC
	(Ex d ia IIC)	10 V up to 30 V DC	10 V up to 30 V DC
	(Ex ed IIC)	12 V up to 24 V AC/DC	12 V up to 24 V AC/DC
Rated current	(20 V up to 250 V) (LED)	approx. 4 - 15 mA	
	(10 V up to 30 V Ex d ia IIC)	max. 25 mA	max. 25 mA
	(12 V up to 24 V) DC	max. 24 mA	max. 24 mA
max. value for Ex ia		Ui = 30 V DC, li = 100 mA, Pi = 750 mW	Ui = 30 V DC, li = 100 mA, Pi = 750 mW
Connecting terminals		2 x 2.5 mm ²	2 x 2.5 mm ²
Degree of protection accd. to EN 60529		IP66 ¹⁾	IP00
Dimensions (L x W x H)		147 x 38 x 67 mm	99 x 38 x 57 mm
Weight		0.20 kg	0.15 kg
Type of mounting		Ø 30.3 mm fixing hole	Ø 30.3 mm fixing hole
Enclosure colour		grey	grey
Angle of rotation		270°	270°
Scale		0 - 100 %	0 - 100 %

¹⁾ with protective cover IP66

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



Signal lamp

4

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

A
GHG 418 8170 R00

B
—

Code	Component	Code
A	Signal lamp	GHG 418 8170

Code	Resistance	Code
B	20 V - 254 V AC/DC	51
	10 V - 30 V DC (Ex- ¹⁾)	52
	12 V - 24 V AC/DC	53

Example for ordering code (Code 2)

Content	Order code	
	A	B
Version without protective cover with lens cover yellow, red, green and white		
Universal voltage 20 V - 254 V AC/DC	GHG 418 81 70	R0051
For intrinsically safe circuits (10 V up to 30 V DC) ¹⁾	GHG 418 81 70	R0052
Low voltage 12 V up to 24 V AC/DC	GHG 418 81 70	R0053

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

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

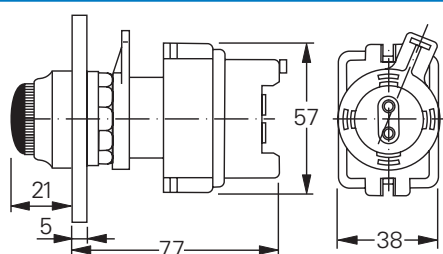
No effective Ci and Li values.

Accessories

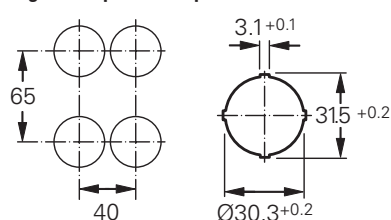
Type	OU	Order No.
Protective cover to meet IP66	5	GHG 410 1939 R0002

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

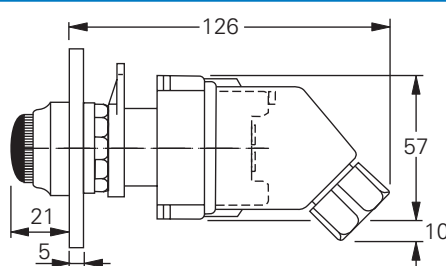
Dimension drawing



Signal lamp without protective cover



Minimum distances



Signal lamp with protective cover

Dimensions in mm



Interchangeable scales



Measuring instrument

Technical data

Type 412 82 with measuring instrument AM 72

	Moving iron	Moving coil
Marking accd. to 94/9/EC	II 2 G Ex e II / II 2 G Ex e mb II	II 2 G Ex ib IIC
EC-Type Examination Certificate	PTB 00 ATEX 3117	PTB 00 ATEX 3117
Permissible ambient temperature	-20 °C up to +40 °C -55 °C up to +55 °C (option)	-20 °C up to +40 °C -55 °C up to +55 °C (option)
Rated voltage	up to 690 V AC	up to 690 V AC
Power consumption (VA)	max. 0.31 VA	max. 0.31 VA
Overload range	10 fold - 25 sec. 25 fold - 4 sec. 50 fold - 1 sec. indicated 1 : 1.5, optional 1:6	10-fold - 5 sec.
Measuring range	max. 0 - 25 A direct / n / 1A	0/4 - 24 mA
Winding specification of moving coil		26.5 windings
Internal resistance		2.5 Ω ± 30 %
Inductance Li		< 0.1 mH
Capacitance Ci		< 0.1 nF
Open circuit voltage Ui		≤ 30 V
Short circuit current max. Ii		≤ 150 mA
Accuracy	Class 2.5	Class 1.5
Connecting terminals	2 x 1.5 - 4 mm ²	
Degree of protection accd. to EN 60529	IP66	
Cable glands/Gland plates/Enclosure drilling	1 x M25 (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	

Ex-control and signal units



Measuring instrument



Interchangeable scales

4

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

A	B	C
GHG 412 828	—	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
	Power connection 0 - 20/24 mA (Scale 0-100% / 120%) ¹⁾	5
	Power connection 4 - 20/24 mA (Scale 0-100% / 120%) ¹⁾	6
	Moving-coil connection 0 - 20/24 mA (Scale 0-100% / 120%) ^{1) 3)}	7
	Moving-coil connection 4 - 20/24 mA (Scale 0-100% / 120%) ^{1) 3)}	8

Code	Measuring range/Scale	Code C	Measuring range/Scale	Code C
C	0 - 1	002	0 - 75 /112.5 A	013
	0 - 2.5 / 3.75 A ²⁾	003	0 - 100 / 150 A	014
	0 - 5 / 7.5 A ²⁾	004	0 - 150 / 225 A	015
	0 - 10 / 15 A ²⁾	005	0 - 200 / 300 A	016
	0 - 15 / 22.5 A	006	0 - 250 / 375 A	017
	0 - 20 / 30 A ²⁾	008	0 - 300 / 450 A	018
	0 - 30 / 45 A	009	0 - 400 / 600 A	019
	0 - 40 / 60 A	010	0 - 500 / 750 A	020
	0 - 50 / 75 A	011	0 - 600 / 900 A	021
	0 - 60 / 90 A	012	0 - 100% / 150%	033

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

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

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

Other interchangeable scales available on request.



Interchangeable scales



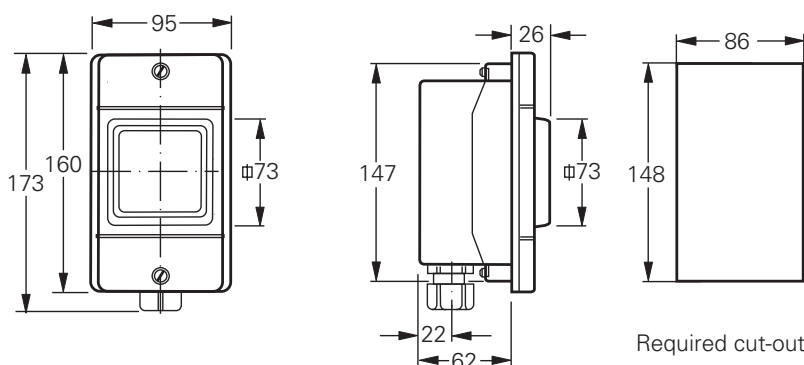
Measuring instrument

Example for ordering code (Code 2)

Measuring range	Movement	Ordering code
Measuring instrument AM 72, direct measurement		
Version with 1 x cable gland M25		
0 - 1 / 1.5 A	Moving iron	GHG 412 8281 R0002
0 - 2.5 / 3.75 A	Moving iron	GHG 412 8281 R0003
0 - 5 / 7.5 A	Moving iron	GHG 412 8281 R0004
0 - 10 / 15 A	Moving iron	GHG 412 8281 R0005
0 - 16 / 24 A	Moving iron	GHG 412 8281 R0007
0 - 20 / 24 mA 0-100% / 120% ($R_i = 320 \Omega$)	Moving iron	GHG 412 8285 R0033
4 - 20 / 24 mA 0-100% / 120% ($R_i = 320 \Omega$)	Moving iron	GHG 412 8286 R0035

Measuring instrument AM 72, CT connection n/1A		
Version with 1 x cable gland M25		
0 - 1 / 1.5 A	Moving iron	GHG 412 8282 R0002
0 - 2.5 / 3.75 A	Moving iron	GHG 412 8282 R0003
0 - 5 / 7.5 A	Moving iron	GHG 412 8282 R0004
0 - 10 / 15 A	Moving iron	GHG 412 8282 R0005
0 - 15 / 22.5 A	Moving iron	GHG 412 8282 R0006
0 - 20 / 30 A	Moving iron	GHG 412 8282 R0008
0 - 30 / 45 A	Moving iron	GHG 412 8282 R0009
0 - 40 / 60 A	Moving iron	GHG 412 8282 R0010
0 - 50 / 75 A	Moving iron	GHG 412 8282 R0011
0 - 60 / 90 A	Moving iron	GHG 412 8282 R0012
0 - 75 / 112.5 A	Moving iron	GHG 412 8282 R0013
0 - 100 / 150 A	Moving iron	GHG 412 8282 R0014
0 - 150 / 225 A	Moving iron	GHG 412 8282 R0015
0 - 200 / 300 A	Moving iron	GHG 412 8282 R0016
0 - 250 / 375 A	Moving iron	GHG 412 8282 R0017
0 - 300 / 450 A	Moving iron	GHG 412 8282 R0018
0 - 400 / 600 A	Moving iron	GHG 412 8282 R0019
0 - 500 / 750 A	Moving iron	GHG 412 8282 R0020
0 - 600 / 900 A	Moving iron	GHG 412 8282 R0021
0 - 100% / 150%	Moving iron	GHG 412 8282 R0031

Dimension drawing




Interchangeable scales
4
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

4

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

Further labels are available on request.


Flap with 0-activation

Plastic flap

Combination piece

Labels
4

Ordering code

Padlocking facility

Content	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) ¹⁾ with hammer	Mushroom-head pushbutton	1	GHG 410 1901 R0128
Fire alarm (red) with hammer	Mushroom-head pushbutton	1	GHG 410 1901 R0141
with plastic flap	Mushroom-head pushbutton activated		GHG 410 1994 R0001
with plastic flap	Mushroom-head pushbutton non-activated		GHG 410 1994 R0002
with plastic flap	Pushbutton activated		GHG 410 1994 R0003
with plastic flap	Pushbutton non-activated		GHG 410 1994 R0004
with plastic flap	Emergency Stop		GHG 410 1994 R0005
with flap (blank)		1	GHG 410 1901 R0132
with flap (red)	Pushbutton Pushbutton	1	GHG 410 1901 R0133
with lap without „0“-activation (blank)	Double pushbutton	1	GHG 410 1901 R0134
with lap with „0“-activation (blank)	Double pushbutton	1	GHG 410 1901 R0135
with bracket (1 set)	Switch GHG 23/28	5	GHG 440 1917 R0001

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

Protective collar

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

Labels and tools for control switches

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

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