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	⟨Ex⟩ II 2 G Ex de IIC T6	⟨Ex⟩ II 2 G Ex de IIC/IIB Gb
		⟨Ex⟩ 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 mm²	2 x 2.5 mm²
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.



Pushbutton



Double pushbutton

4

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

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



Double pushbutton



Pushbutton

Example for 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.



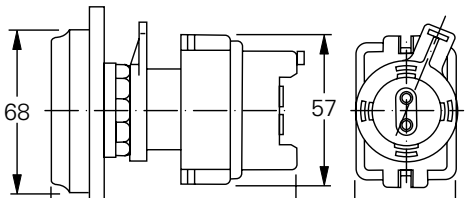
Pushbutton



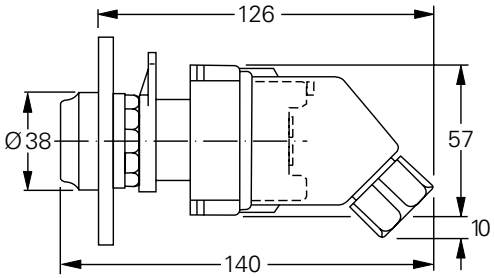
Double pushbutton

4

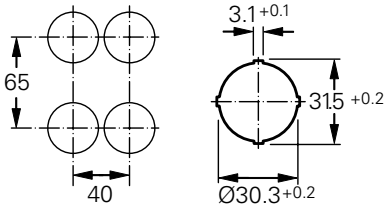
Dimension drawing



(Double-)pushbutton without protective cover



(Double-)pushbutton with protective cover



Minimum distances

Dimensions in mm



Key-operated pushbutton

Technical data

Key-operated pushbutton Typ 418 812		
	Complete certificate[1]	Component certificate
Marking accd. to 94/9/EC	⟨Ex⟩ II 2 G Ex de IIC T6	⟨Ex⟩ II 2 G Ex de IIC/IIB Gb ⟨Ex⟩ I M2 Ex de I Mb
EC-Type Examination Certificate	PTB 99 ATEX 1034	IBExU 14 ATEX 1030 U
IECEx Certificate of Conformity		IECEx IBE 14.0005 U
Marking accd. to IECEx		Ex de IIC/IIB Gb Ex de I Mb
Operating temperature range	-55°C up to + 80 °C	–45 °C up to +80 °C (IIC) –60 °C up to +80 °C (IIB)
Permissible ambient temperature	-55 °C up to + 50 °C	
Application temperature[2]		–45 °C up to +55 °C (IIC) –60 °C up to +55 °C (IIB)
Rated voltage	400 V AC	500 V AC
Rated current	16 A	16 A
Rated current with gold contact points	0.4 A	0.4 A
Rated making-/rated breaking capacity accd. EN 60947-5-1	AC-15: U_e 250 V / I_e 6 A U_e 400 V / I_e 4 A DC-13: U_e 24 V / I_e 6 A U_e 220 V / I_e 1 A	AC-15: U_e 250 V / I_e 6 A U_e 500 V / I_e 4 A DC-13: U_e 24 V / I_e 6 A U_e 220 V / I_e 1 A
Connecting terminals	2 x 2.5 mm²	2 x 2.5 mm²
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.

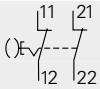
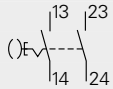
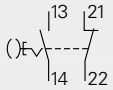


Key-operated pushbutton

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

Accessories

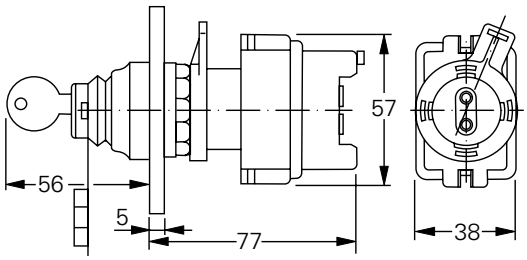
Type	OU	Order No.
Protective cover to meet IP66	5	**GHG 410 1939 R0002**

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

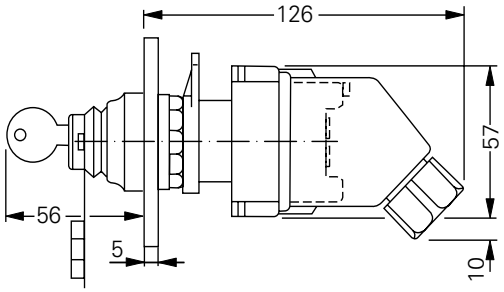


Key-operated pushbutton

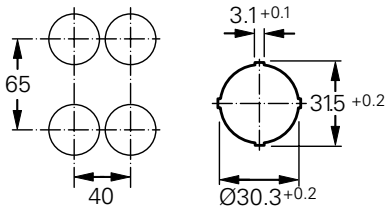
Dimension drawing



Key-operated switch without protective cover



Key-operated switch with protective cover



Minimum distances

Dimensions in mm



Key-operated switch

Technical data

Key-operated switch Type 418 8195		
	Complete certificate[1]	Component certificate
Marking accd. to 94/9/EC	⟨Ex⟩ II 2 G Ex de IIC T6	⟨Ex⟩ II 2 G Ex de IIC/IIB Gb ⟨Ex⟩ 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 mm²	2 x 2.5 mm²
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.

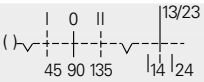
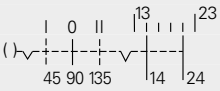


Key-operated switch

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

A		B	C
GHG 418 8195	R5	_	__

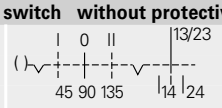
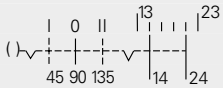
Code	Component	Code
A	Key-operated switch	GHG 418 8195

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

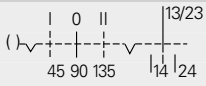
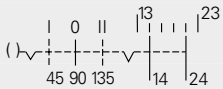
Code	Inscription			Code
C	I	0	II	07
	Fern	0	Ort	08
	Hand	0	Auto	09

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

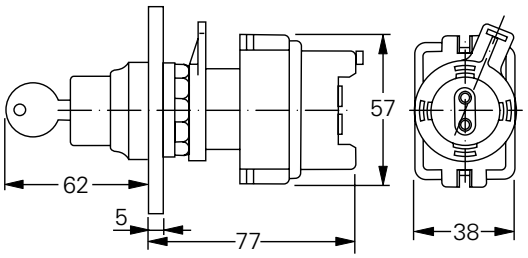
Type	OU	Order No.
Protective cover to meet IP66	5	**GHG 410 1939 R0002**

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

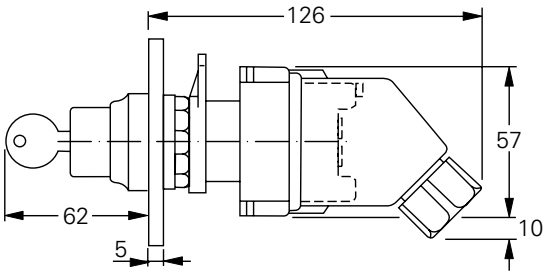


Key-operated switch

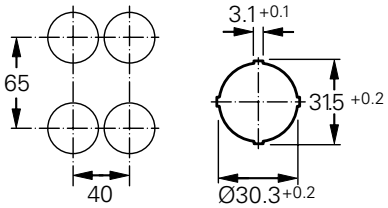
Dimension drawing



Key-operated switch without protective cover



Key-operated switch with protective cover



Minimum distances

Dimensions in mm



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	⟨Ex⟩ II 2 G Ex de IIC T6	⟨Ex⟩ II 2 G Ex de IIC/IIB Gb ⟨Ex⟩ 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 mm²	2 x 2.5 mm²
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.



Emergency-Stop pushbutton

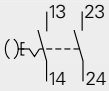
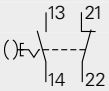


Mushroom-head pushbutton

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	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.



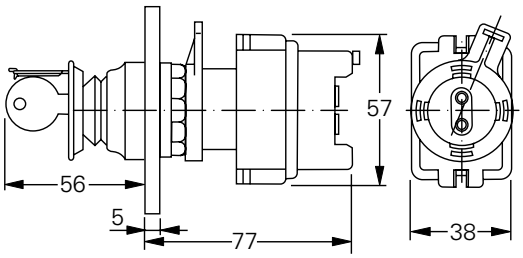
Mushroom-head pushbutton



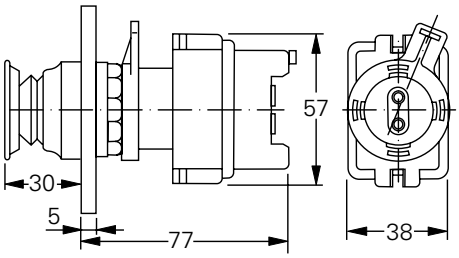
Mushroom-head pushbutton

4

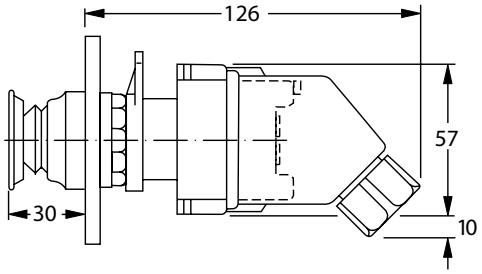
Dimension drawing



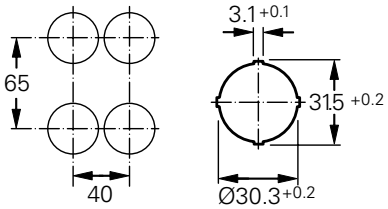
Mushroom-head pushbutton without protective cover with key release



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	⟨Ex⟩ II 2 G Ex de IIC T6	⟨Ex⟩ II 2 G Ex de IIC/IIB Gb ⟨Ex⟩ I M2 Ex de I Mb
EC-Type Examination Certificate	PTB 99 ATEX 1034	IBExU 14 ATEX 1030 U
IECEx Certificate of Conformity		IECEx IBE 14.0005 U
Marking accd. to IECEx		Ex de IIC/IIB Gb Ex de I Mb
Operating temperature range	-55°C up to + 80 °C	–45 °C up to +80 °C (IIC) –60 °C up to +80 °C (IIB)
Permissible ambient temperature	-55 °C up to + 50 °C	
Application temperature[2]		–45 °C up to +55 °C (IIC) –60 °C up to +55 °C (IIB)
Rated voltage	400 V AC	500 V AC
Rated current	16 A	16 A
Rated current with gold contact points	0.4 A	0.4 A
Rated making-/rated breaking capacity accd. EN 60947-5-1	AC-15: U_e 250 V / I_e 6 A U_e 400 V / I_e 4 A DC-13: U_e 24 V / I_e 6 A U_e 220 V / I_e 1 A	AC-15: U_e 250 V / I_e 6 A U_e 500 V / I_e 4 A DC-13: U_e 24 V / I_e 6 A U_e 220 V / I_e 1 A
Connecting terminals	2 x 2.5 mm²	2 x 2.5 mm²
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.



Mini-control switch

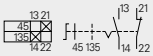
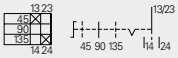
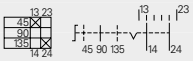
Ordering code for component (Code 2) Code A - B - C - D - E

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	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

Example for ordering code (Code 2)

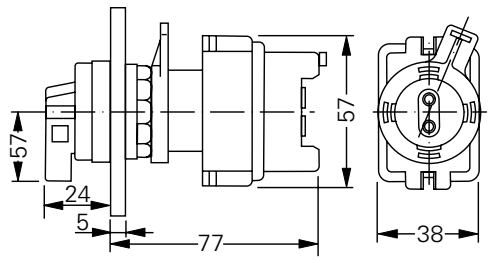
Switching system	Code	Circuit	Code	Label-	Order No. A	B	C	D	E
Control switch with silver contact points, without protective cover Switch can be locked in all positions									
	6		0	I II	**GHG 418 819**	**0 R**	**6**	**0**	**02**
	6		2	0 I	**GHG 418 819**	**0 R**	**6**	**2**	**01**
	6		1	I II	**GHG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

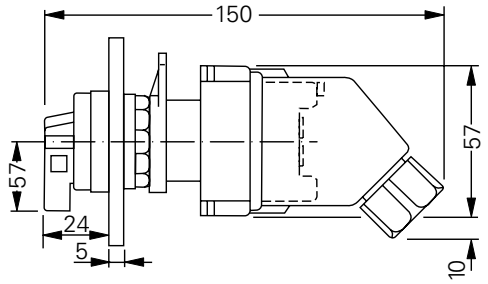
Type	OU	Order No.
Protective cover to meet IP66	5	**GHG 410 1939 R0002**

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

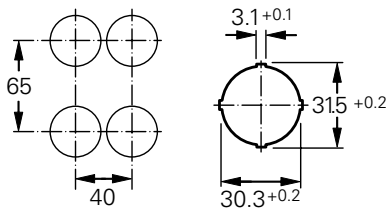
Dimension drawing



Mini-control switch without protective cover



Mini-control switch with protective cover



Minimum distances

Dimensions in mm



Control switch GHG 249

Technical data

Control switch GHG 249	
Marking accd. to 94/9/EC	⟨Ex⟩ II 2 G Ex de IIC/IIB Gb
	⟨Ex⟩ 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 mm² flexibel, 6 mm² starr
Weight	0.55 kg
Type of mounting	Ø 30.3 mm fixing hole
Enclosure colour	grey

[1] Must be installed in a certified enclosure

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



Control switch GHG 249

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

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

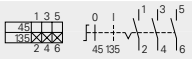
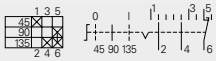
[1] The code will represent only a selected part of configuration.



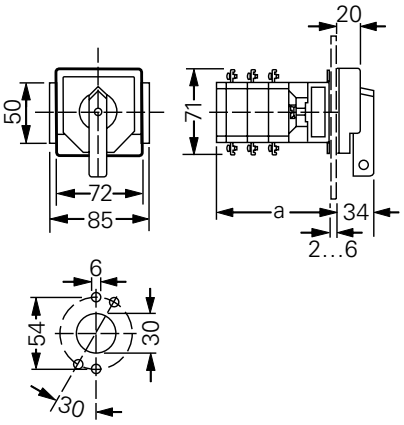
Control switch GHG 249

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

Dimensions in mm



Potentiometer

Technical data

Potentiometer Type 418 8131		
	Complete certificate[1]	Component certificate
Marking accd. to 94/9/EC	⟨Ex⟩ II 2 G Ex de IIC T6	⟨Ex⟩ II 2 G Ex de IIC/IIB Gb ⟨Ex⟩ 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 mm²	2 x 2.5 mm²
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.



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)

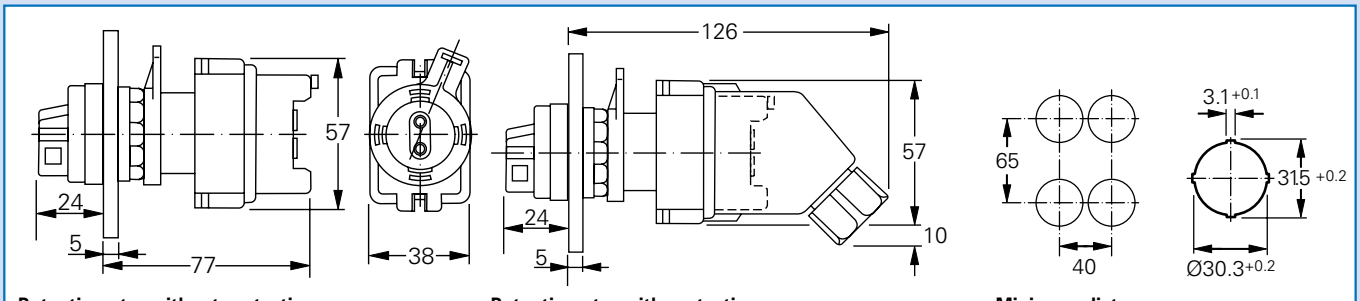
Content	Order No.	
	A	B
Potentiometer 1 W 25 % tolerance, without protective cover		
0 - 100 Ohm	**GHG 418 8131**	**R 0011**
0 - 220 Ohm	**GHG 418 8131**	**R 0012**
0 - 470 Ohm	**GHG 418 8131**	**R 0013**
0 - 1000 Ohm	**GHG 418 8131**	**R 0014**
0 - 2200 Ohm	**GHG 418 8131**	**R 0017**
0 - 4700 Ohm	**GHG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



Potentiometer without protective cover | Potentiometer with protective cover | Minimum distances

Dimensions in mm



Signal lamp

Technical data

Signal lamp Type 418 8170			
		Complete certificate[1]	Component certificate
Marking accd. to 94/9/EC		⟨Ex⟩ II 2 G Ex de IIC T6	⟨Ex⟩ II 2 G Ex de IIC/IIB Gb
		⟨Ex⟩ II 2G Ex d ia IIC/IIB Gb	⟨Ex⟩ 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, Ii = 100 mA, Pi = 750 mW	Ui = 30 V DC, Ii = 100 mA, Pi = 750 mW
Connecting terminals		2 x 2.5 mm²	2 x 2.5 mm²
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

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 - 254 V AC/DC	51
	10 V - 30 V DC (Ex-i[1])	52
	12 V - 24 V AC/DC	53

Example for ordering code (Code 2)

Content	Order code A	Order code 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**

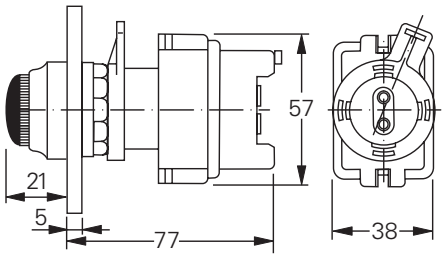
[1] Supply by valve-driver components, e.g., with data
U_o = 20 V – 28 V DC with R_i = 200 Ω – 500 Ω or U_o = 10 V – 18 V DC with R_i = 100 Ω – 200 Ω
No effective Ci and Li values.

Accessories

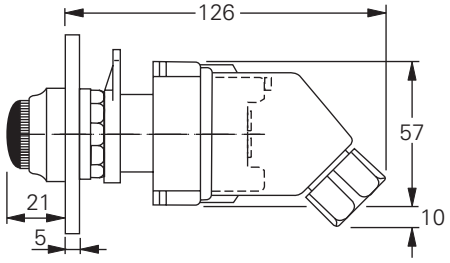
Type	OU	Order No.
Protective cover to meet IP66	5	**GHG 410 1939 R0002**

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

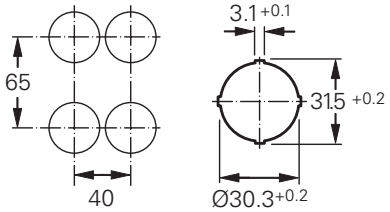
Dimension drawing



Signal lamp without protective cover



Signal lamp with protective cover



Minimum distances

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	⟨Ex⟩ II 2 G Ex e II / ⟨Ex⟩ II 2 G Ex e mb II	⟨Ex⟩ 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	



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 avilable 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

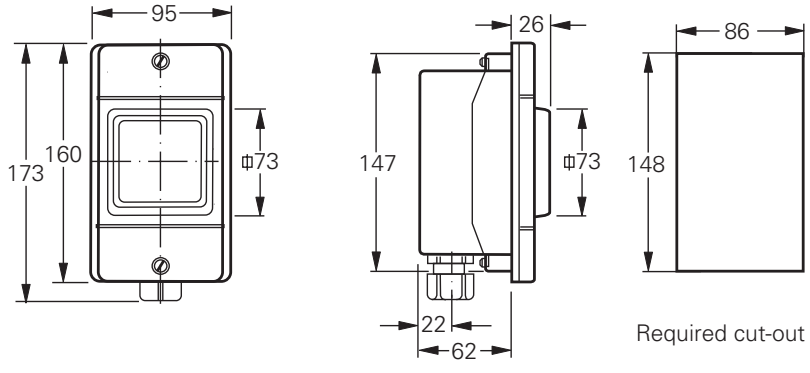


Measuring instrument

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% (Ri = 320 Ω)	Moving iron	**GHG 412 8285 R0033**
4 - 20 / 24 mA 0-100% / 120% (Ri = 320 Ω)	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



Dimensions in mm



Interchangeable scales

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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.



Labels

Ordering code

Labels for pushbutton

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

Further labels are available on request.



Flap with 0-activation



Plastic flap



Combination piece



Labels

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.