

Energy

Technical characteristics



90 AM

Modular accessories

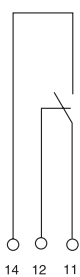
GEWISS

ACCESSORIES AND AUXILIARIES FOR MODULAR CIRCUIT BREAKER

Auxiliary contacts

TECHNICAL DATA				
Code:		GW96001 - GW96006 - GW96009 GWD6002 - GWD6007 - GWD6010	GW96003 - GW96004	GW96008
Suitable for:		MTC - MT - MTHP - MDC IDP - Switch disconnectors	IDP 4P in 3 modules	IDP 125A
DIN modules:		0.5	0.5	0.5
Rated operating voltage (Ue):	(V)	230 ÷ 400 ac 24 ÷ 250 dc	230 ÷ 400 ac 24 ÷ 110 dc	230 ÷ 400 ac 24 ÷ 220 dc
Insulation voltage (Ui):	(V)	500	-	400
Rated impulse withstand voltage (Uimp):	(kV)	4	-	4
Overvoltage category:		III	-	III
Minimum operating current:	(mA)	5	-	5 (>24 V)
Conditional short-circuit current:	(A)	1000 (Gg fuse 6A 10.3x38 500V)	-	6000 (Gg fuse 6A 10.3x38 500V)
Rated frequency:	(Hz)	50	50	50/60
Aux contact type:		1 changeover	1 NO + 1 NC	1 NO + 1 NC
Rated operating current (Ie):	AC12 - 230V	(A)	6	6
	AC12 - 400V	(A)	3	2
	DC12 - 24V	(A)	6	4
	DC12 - 60V	(A)	2	1
	DC12 - 110V	(A)	1.5	1
	DC12 - 250V	(A)	1	-
Max cable section (flexible/rigid):	(mm²)	2.5	2.5	2.5
Beam stripping cable recommended:	(mm)	6	6	7
Rated tightening torque:	(Nm)	0.6	0.6	0.8
Screwdriver suggested:		Phillips 1	Phillips 1	PZ1
Pollution degree:		2	2	2
Operating temperature:	(°C)	-25...+60	-25...+60	-25...+55

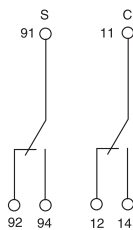
Circuit diagrams



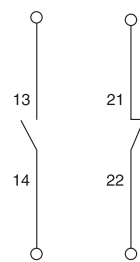
GW 96 001
GW D6 002



GW 96 006
GW D6 007



GW 96 009
GW D6 010



GW 96 003
GW 96 004
GW 96 008

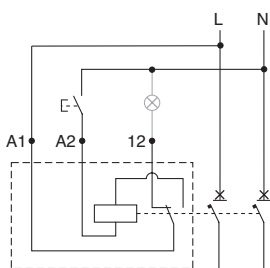


S = auxiliary contact set as fault indicator switch
C = auxiliary contact set as open/closed position

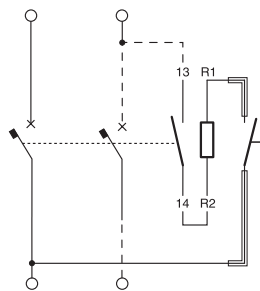
Shunt trip releases

TECHNICAL DATA					
Code:		GW96011 GWD6013	GW96012 GWD6015	GW96014	GW96015
Suitable for:		MTC - MT - MTHP - MDC IDP - Switch disconnectors (access. option)	MTC - MT - MTHP - MDC IDP - Switch disconnectors (access. option)	ReStart TOP and CM	IDP 4P in 3 modules
DIN modules:		1	1	1	0.5
Rated operating voltage (Ue):	(V)	12 ÷ 48 ac/dc	110 ÷ 415 ac 110 ÷ 125 dc	230 ac	230 ac
Minimum operating voltage (Ue min):	(V)	8.4 ac/dc	77 ac/dc	161 ac	170 ac
Maximum operating voltage (Ue max):	(V)	52.8 ac/dc	456.5 ac 137.5 dc	253 ac	440 ac
Pick-up current:	(A)	1.6 at 12V ac/dc 3.2 at 24V ac/dc 6.4 at 48V ac/dc	0.22 at 110V ac/dc 0.25 at 125V dc 0.46 at 230V ac 0.84 at 415V ac	0.46 at 230V ac	-
Pick-up power:	(VA in AC - W in DC)	19.2 at 12V ac/dc 76.8 at 24V ac/dc 307 at 48V ac/dc	24.4 at 110V ac/dc 31.6 at 125V dc 106 at 230V ac 348 at 415V ac	106 at 230V ac	-
Rated frequency:	(Hz)	50	50	50	50
Duration of impulse command:	(ms)	< 10	< 10	< 10	< 10
Tripping time:	(ms)	< 10	< 10	< 10	< 10
Coil resistance:	(Ω)	7.5	495	495	360
Aux contact type for tripping warning:		1 NO	1 NO	1 NO	-
Rated operating current of aux contact for tripping warning (In):	AC12 - 230V	(A) 6	6	6	-
	AC12 - 400V	(A) 3	3	3	-
	DC12 - 24V	(A) 6	6	6	-
	DC12 - 60V	(A) 2	2	2	-
	DC12 - 110V	(A) 1.5	1.5	1.5	-
DC12 - 250V	(A) 1	1	1	1	-
Max cable section (flexible/rigid):	(mm ²)	2.5	2.5	2.5	2.5
Beam stripping cable recommended:	(mm)	6	6	6	6
Rated tightening torque:	(Nm)	0.6	0.6	0.6	0.06
Screwdriver suggested:		Phillips 1	Phillips 1	Phillips 1	Phillips 1
Operating temperature:	(°C)	-5...+55	-5...+55	-5...+55	-5...+55

Circuit diagrams



GW 96 011
GW 96 012
GW D6 013
GW 96 014
GW D6 015



GW 96 015

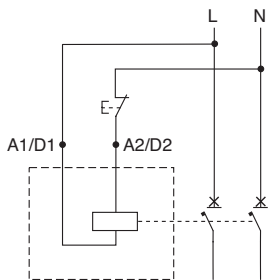


Note: It is not necessary to connect the terminal 12 to carry out the tripping. The terminal 12 is used only in order to know the tripping of circuit breaker caused by release (for example by an indicator light)

Undervoltage releases

TECHNICAL DATA				
Code:		GW96016 GWD6019	GW96017 GWD6020	GW96018 GWD6021
Suitable for:		MTC - MT - MTHP - MDC Switch disconnectors (access. option)	MTC - MT - MTHP - MDC Switch disconnectors (access. option)	MTC - MT - MTHP - MDC Switch disconnectors (access. option)
Standard:		EN 60947-5-1	EN 60947-5-1	EN 60947-5-1
DIN modules:		1	1	1
Rated operating voltage (Ue):	(V)	230 ac	24 ac/dc	48 ac/dc
Overvoltage category:		III	III	III
Minimum operating voltage (Ue min):	(V)	0.35 Un	0.35 Un	0.35 Un
Maximum operating voltage (Ue max):	(V)	0.7 Un	0.7 Un	0.7 Un
Minimum reset voltage:	(V)	≥ 0.85 Un	≥ 0.85 Un	≥ 0.85 Un
Tripping delay:	(ms)	300	300	300
Holding current:	(mA)	12	10	12
Holding power:	(VA)	2.8	0.28	0.57
Rated frequency:	(Hz)	50	50	50
Max cable section (flexible/rigid):	(mm²)	2.5	2.5	2.5
Beam stripping cable recommended:	(mm)	6	6	6
Rated tightening torque:	(Nm)	0.6	0.6	0.6
Screwdriver suggested:		Phillips 1	Phillips 1	Phillips 1
Pollution degree:		2	2	2
Operating temperature:	(°C)	-5...+55	-5...+55	-5...+55
Stocking temperature:	(°C)	-25...+70	-25...+70	-25...+70

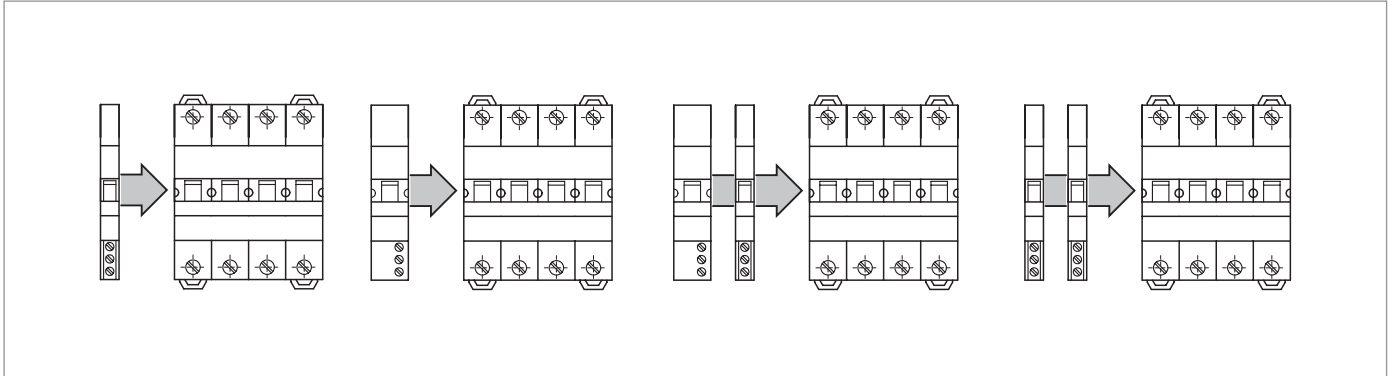
Circuit diagrams



GW 96 016
 GW 96 017
 GW 96 018
 GW D6 019
 GW D6 020
 GW D6 021

ACCESSORIES AND AUXILIARIES FOR MODULAR CIRCUIT BREAKERS MTC - MT - MTHP - MDC

For each circuit breaker it's possible to fit up to max 2 accessories. The shunt trip releases or under voltage releases must be positioned to the left of the accessories, as shown in the figure.



If 2 auxiliary contacts are used, it is necessary to observe the connection rules shown in the table below.

1

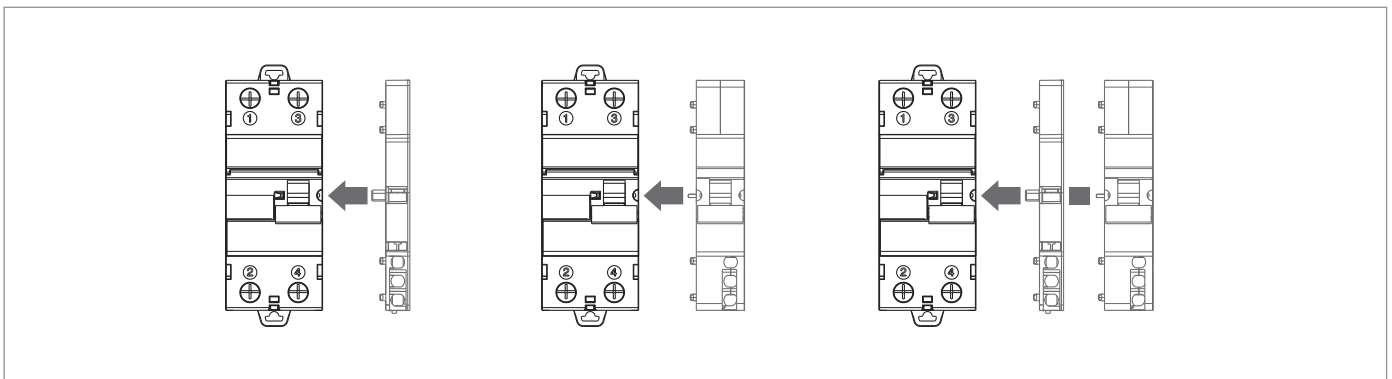
2

POS. 2	POS. 1
GW 96 001 GW 96 009c	GW 96 001 GW 96 009c
GW 96 001	GW 96 006 GW 96 009s
GW 96 009c	
GW 96 006 GW 96 009s	

GW 96 009c: open/closed auxiliary contact set
GW 96 009s: tripped relay auxiliary contact set

AUXILIARIES FOR SWITCH DISCONNECTORS WITH ACCESSORIES OPTION

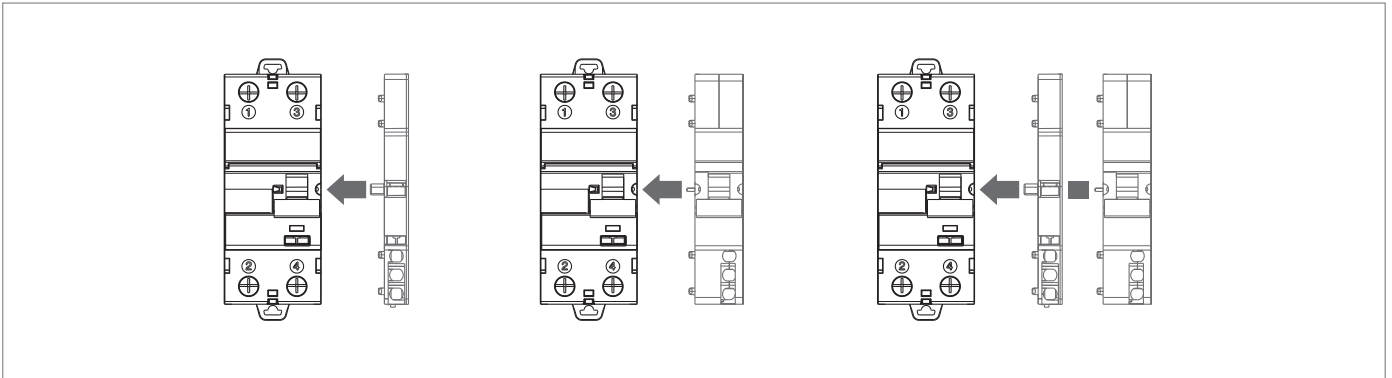
For each switch disconnecter it's possible to fit up to max 2 accessories. The shunt trip releases or under voltage releases must be positioned to the right of the accessories, as shown in the figure.



ACCESSORIES AND AUXILIARIES FOR RCCB'S IDP

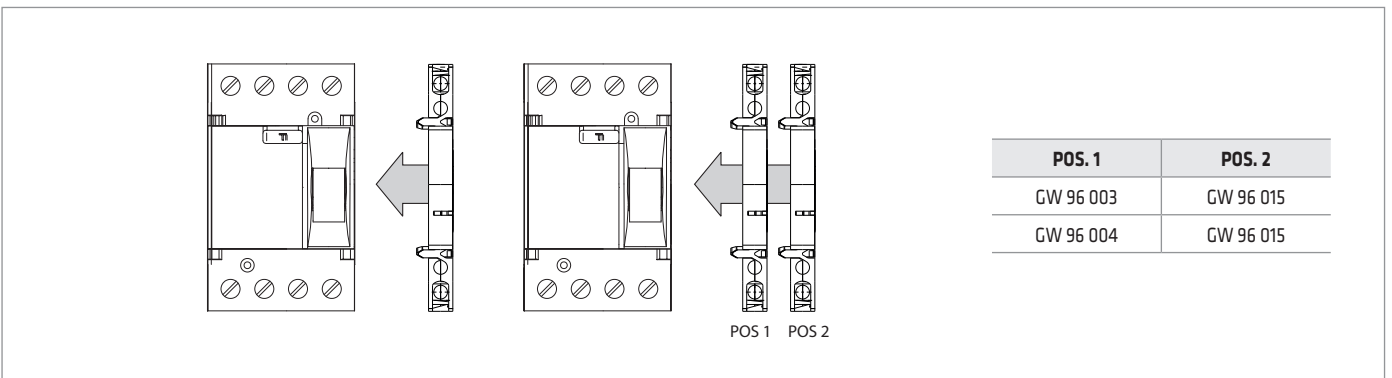
RCCB's IDP

It is possible to couple until 2 accessories for each RCCB. The shunt trip releases must be set at the right end of accessories as shown in the figure below.



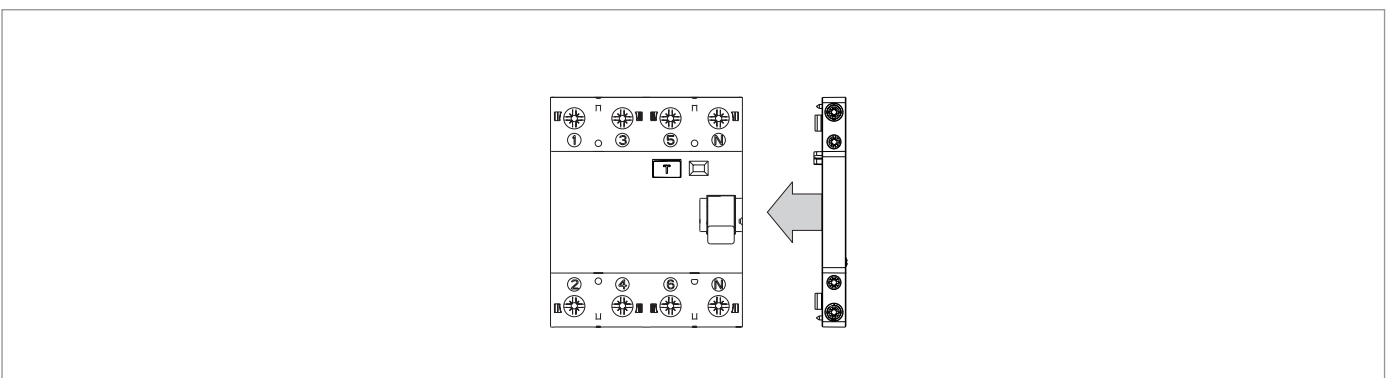
RCCB's 4P 3 modules

It is possible to couple until 2 accessories for each RCCB. The shunt trip release must be set at the right end of accessories as shown in the figure below.

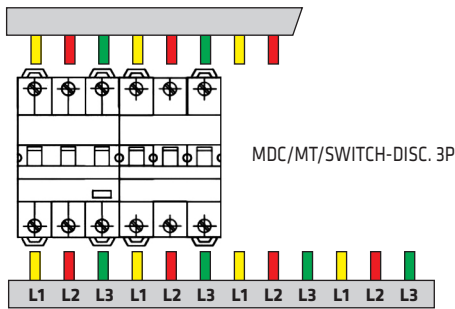


RCCBS's 125A

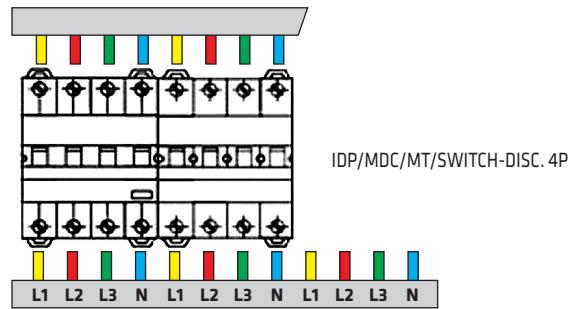
It is possible to couple until 1 accessory for each RCCB 125A.



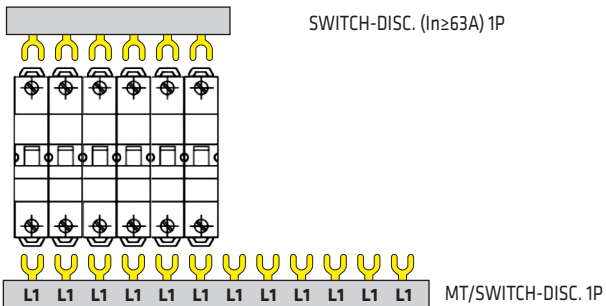
GW 96 986 - 12 MOD. - 63A
GW 96 990 - 1 MT. - 63A



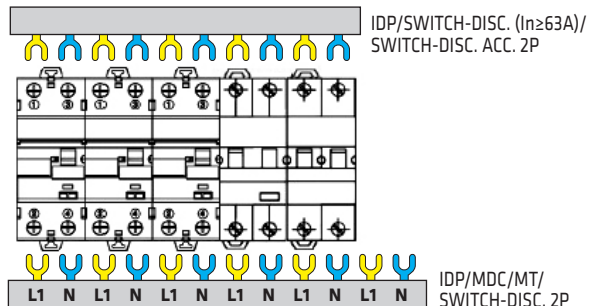
GW 96 987 - 12 MOD. - 80A
GW 96 991 - 1 MT. - 80A



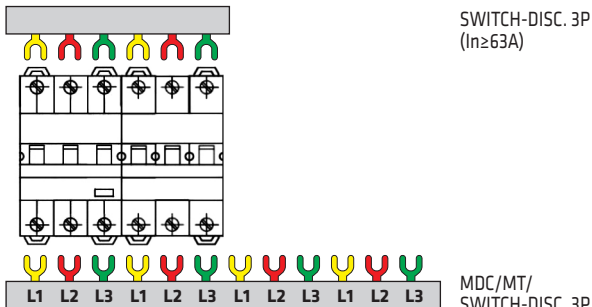
GW 96 992 - 12 MOD. - 63A
GW 96 996 - 1 MT. - 63A



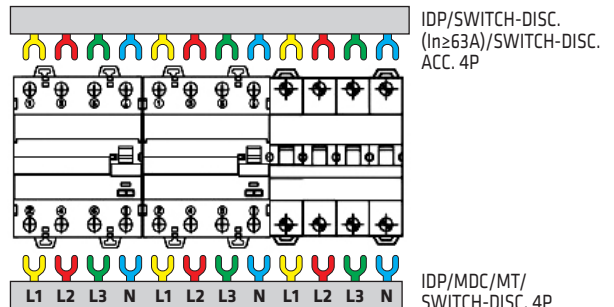
GW 96 993 - 12 MOD. - 63A
GW 96 997 - 1 MT. - 63A



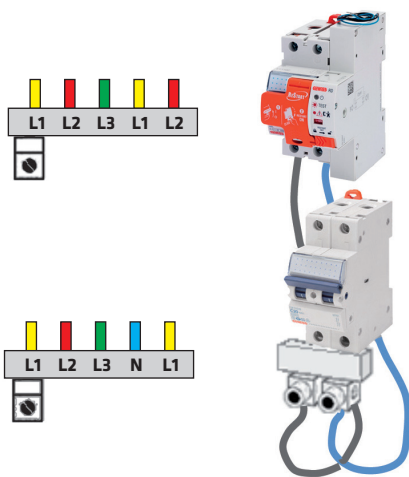
GW 96 994 - 12 MOD. - 63A
GW 96 998 - 1 MT. - 63A



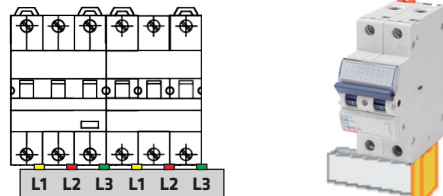
GW 96 995 - 12 MOD. - 80A
GW 96 999 - 1 MT. - 80A



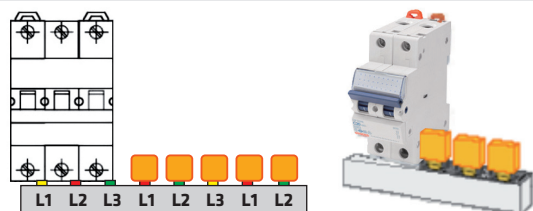
GW 96 961 FOR WIRING BUSBARS 1P/2P/3P
GW 96 962 FOR WIRING BUSBARS 4P



GW 96 963 FOR WIR. BUSBARS 1P - GW 96 964 FOR WIR. BUSBARS 2P
GW 96 965 FOR WIR. BUSBARS 3P - GW 96 966 FOR WIR. BUSBARS 4P



GW 96 967

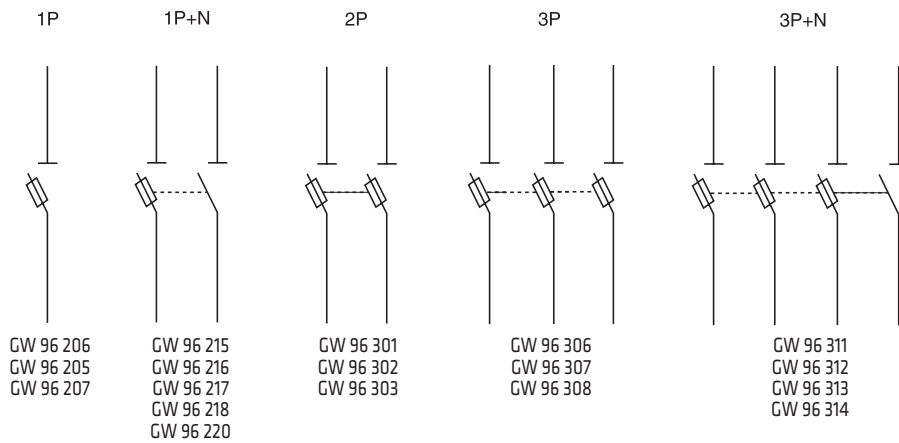


PROTECTION

AC disconnectable fuse holders

TECHNICAL DATA					
Fuse dimension:		8.5x31.5	10.3x38	14x51	22x58
Standard:		EN 60947-3	EN 60947-3	EN 60947-3	EN 60947-3
Rated current (In):	(A)	20	32	50	100
Rated operating voltage (Ue):	(V)	400 ac	690 ac	690 ac	690 ac
Rated insulation voltage (Ui):	(V)	400 ac	690 ac	690 ac	690 ac
Rated impulse withstand voltage (Uimp):	(kV)	8	8 4 (only for GW 96 220)	8	8
Category of use:		AC-22B	AC-22B	AC-22B	AC-21B
Rated conditional short-circuit current (Icc):	(kA)	50	200	100	100
Max power loss:	(W)	2.5	3	5	9.5
Degree of protection:		IP20	IP20	IP20	IP20
Operating temperature:	(°C)	-10...+40	-10...+40	-10...+40	-10...+40
Max cable section:	(mm ²)	25	25 10 (only for GW 96 220)	35	50

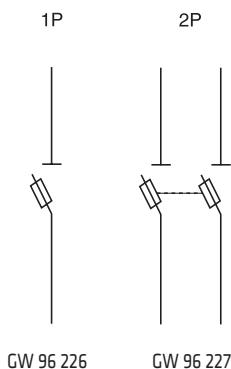
Circuit diagram



DC disconnectable fuse holders

TECHNICAL DATA	
Fuse dimension:	10.3x38
Standard:	EN 60947-3
Rated current (In):	(A) 20
Rated operating voltage (Ue):	(V) 1000 dc
Category of use:	DC-20B
Max power loss:	(W) 3
Max cable section:	(mm ²) 10

Circuit diagram

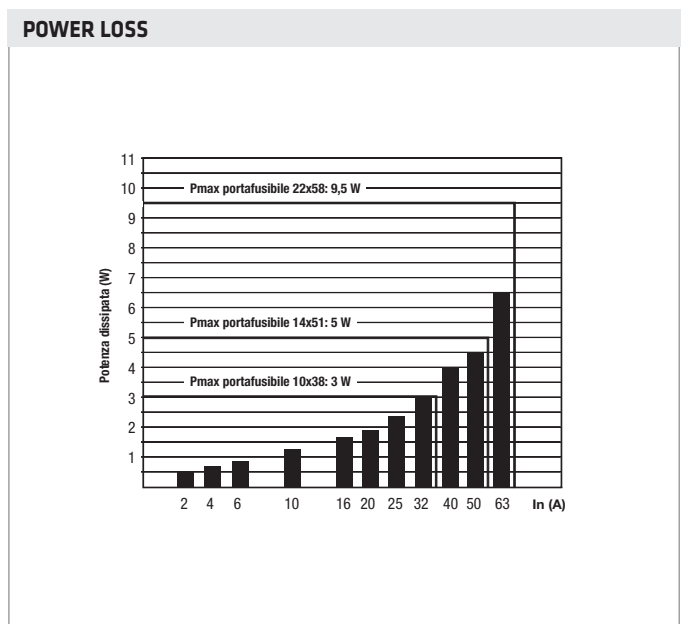
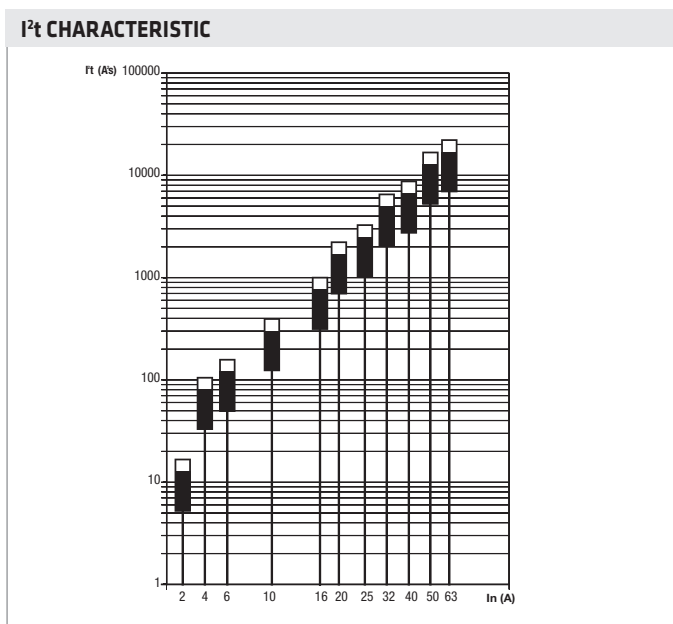
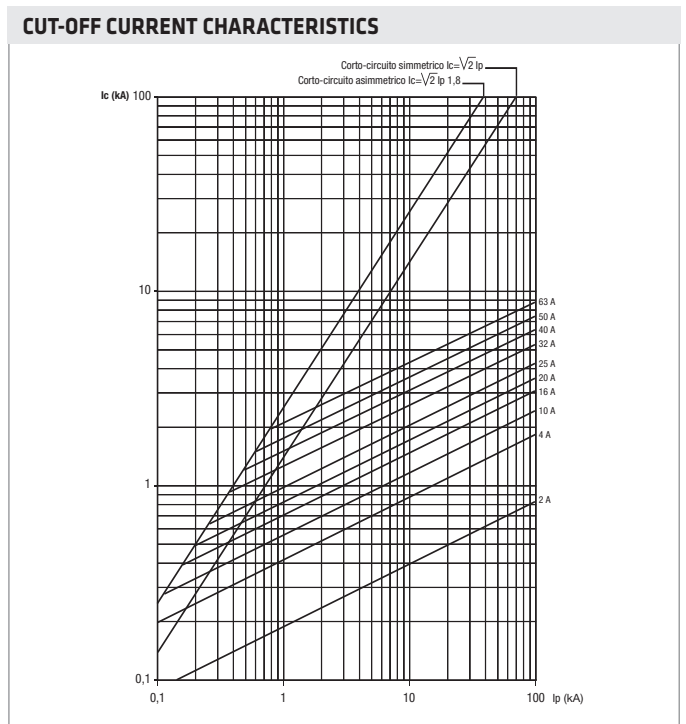
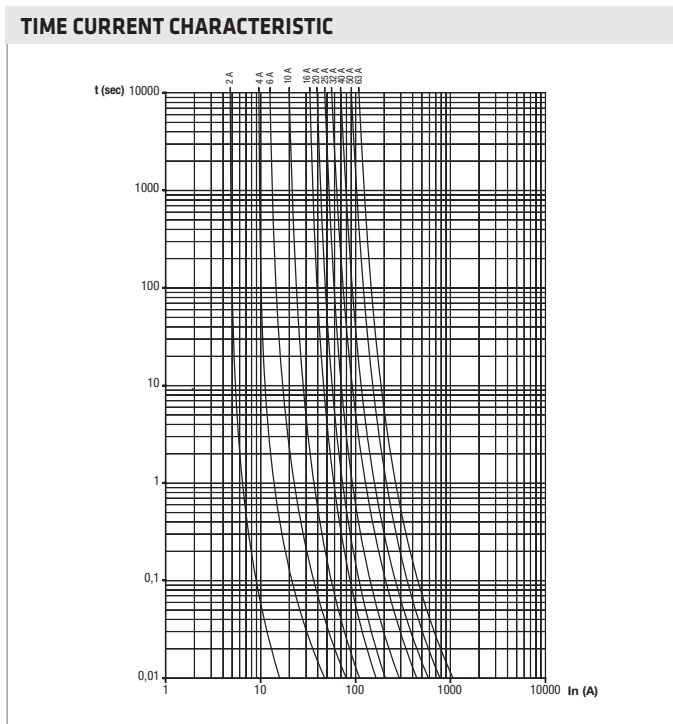


For technical information contact the Technical Assistance Service or visit gewiss.com

AC cylindrical fuses

TECHNICAL DATA					
Standard:	EN 60269-1, HD 60269-3				
Type:	gG				
Characteristic:	fast				
Dimensions:	(mm)	8.5x31.5	10.3x38	14x51	22x58
Rated current (In):	(A)	2÷25	2÷32	25÷50	63
Rated operating voltage (Ue):	(Vac)	400	400-500	400-500-690	690
Breaking capacity:	(kA)	50	120	80	80

Characteristic curves

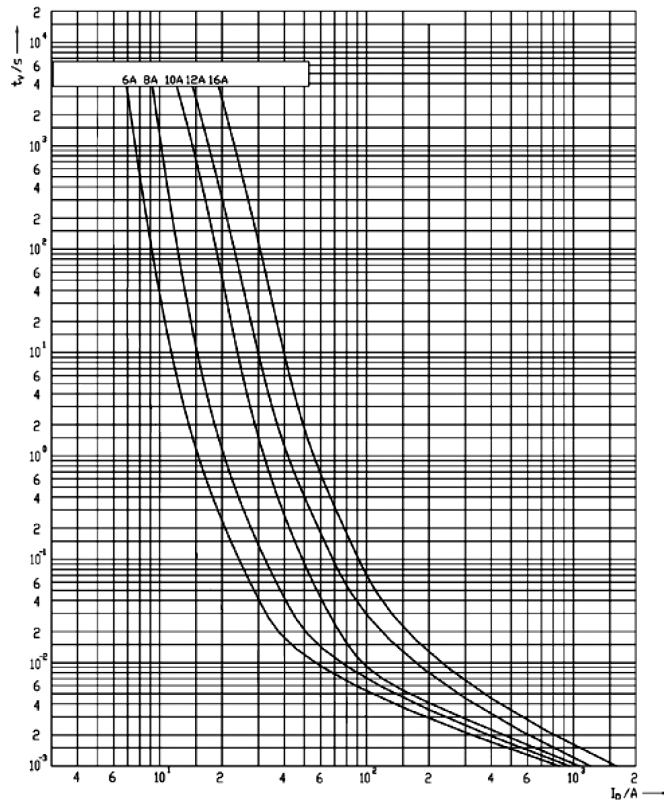


DC cylindrical fuses

TECHNICAL DATA							
Standard:		IEC 60269-4					
Type:		gPV					
Dimensions:	(mm)	10.3x38					
Rated operating voltage (Ue):	(V DC)	1000					
Breaking capacity:	(kA)	30					
Weight:	(g)	10					
Rated current (In):	(A)	6	8	10	12	16	20
Power loss at In:	(W)	1.65	1.9	2.3	2.4	2.5	3.25
Specific let-through energy at In:	(A ² s)	45	62	88	180	270	430

Characteristic curves

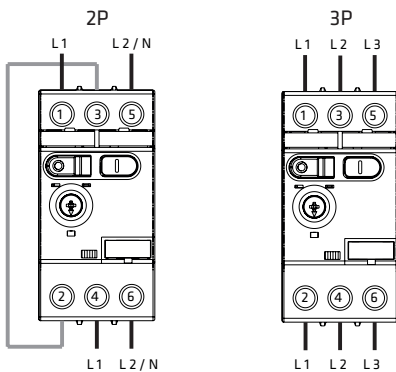
TIME CURRENT CHARACTERISTIC



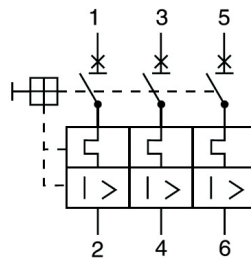
Motor protection circuit breakers SMT

TECHNICAL DATA		
Standard:		IEC/EN 60947-2
N° of poles:		3
Rated operating voltage (Ue):	(V)	220 ... 690 ac
Insulation voltage (Ui):	(V)	690
Rated impulse withstand voltage (Uimp):	(kV)	6
Overtoltage category:		III
Rated frequency:	(Hz)	50/60
Rated operating current (Ie):	(A)	0.16 ÷ 32A
Mechanical endurance (number of O-C cycles):		100000
Electrical endurance (number of O-C cycles):		100000 (AC-3)
Phase loss protection:		yes
Power loss per pole:	(W)	2.5
Degree of protection:		IP20
Pollution degree:		3
Maximum rigid cable section:	(mm ²)	10
Maximum flexible cable section:	(mm ²)	6
Maximum cable beam stripping:	(mm)	10
Rated tightening torque:	(Nm)	2
Operating temperature:	(°C)	-25...+60
Storage temperature:	(°C)	-25...+70
Mounting position:		any
N° of modules:		2.5

Wiring



Circuit diagram



Selection table according to the power of the motor

Type	Adjustment range of the current (A)	Rated power of the motor					
		Single-phase	Three-phase				
		220 V 230 V 240 V	220 V 230 V 240 V	380 V 400 V 415 V	440 V	550 V	660 V 690 V
GW D6 501	0.1 ... 0.16	-	-	-	-	-	0.06
GW D6 502	0.16 ... 0.25	-	-	0.06	0.06	0.06 ... 0.9	0.06 ... 0.12
GW D6 503	0.25 ... 0.4	-	0.06	0.09	0.12	0.09 ... 0.12	0.18
GW D6 504	0.4 ... 0.63	-	0.09	0.12 ... 0.18	0.18	0.18	0.25
GW D6 505	0.63 ... 1	0.06 ... 0.09	0.09 ... 0.12	0.18 ... 0.25	0.25 ... 0.37	0.25 ... 0.37	0.37 ... 0.55
GW D6 506	1 ... 1.6	0.12	0.18 ... 0.25	0.37 ... 0.55	0.37 ... 0.55	0.55 ... 0.75	0.75 ... 1.1
GW D6 507	1.6 ... 2.5	0.18 ... 0.25	0.37	0.75	0.75 ... 1.1	1.1	1.5
GW D6 508	2.5 ... 4	0.37	0.55 ... 0.75	1.1 ... 1.5	1.5	1.5 ... 2.2	2.2 ... 3
GW D6 509	4 ... 6.3	0.55 ... 0.75	1.1 ... 1.5	2.2	2.2 ... 3	2.2 ... 3	4
GW D6 510	6.3 ... 10	1.1 ... 1.5	1.5 ... 2.2	3 ... 4	4	4 ... 5.5	5.5 ... 7.5
GW D6 511	9 ... 14	2.2	2.2 ... 3	5.5	5.5 ... 7.5	5.5 ... 7.5	9 ... 11
GW D6 512	13 ... 18	3	4	7.5	7.5 ... 9	9 ... 11	15
GW D6 513	17 ... 23	-	5.5	9 ... 11	11	11	15 ... 18.5
GW D6 514	20 ... 27	-	5.5 ... 7.5	11	11	15	18.5 ... 22
GW D6 515	25 ... 32	-	7.5	15	15	18.5	22

Short-circuit performance of motor protection circuit breakers and back-up protections

Type	Magnetic tripping current (A)	Rated breaking capacity I_{cu} and rated service short-circuit breaking capacity I_{cs} (kA)								Max back-up gL fuse current (A), if $I_{cc} > I_{cu}$			
		230 V		400 V		500 V		690 V		230 V	400 V	500 V	690 V
		I_{cu}	I_{cs}	I_{cu}	I_{cs}	I_{cu}	I_{cs}	I_{cu}	I_{cs}				
GW D6 501	2	100	100	100	100	100	100	100	100				
GW D6 502	3	100	100	100	100	100	100	100	100				
GW D6 503	5	100	100	100	100	100	100	100	100				
GW D6 504	8	100	100	100	100	100	100	100	100				
GW D6 505	13	100	100	100	100	100	100	100	100				
GW D6 506	22	100	100	100	100	100	100	100	100				
GW D6 507	33	100	100	100	100	100	100	5	5				16
GW D6 508	55	100	100	100	100	100	100	3	3				25
GW D6 509	75	100	100	100	100	6	4.5	3	2			35	35
GW D 6510	126	100	100	100	100	6	4.5	3	2			50	35
GW D6 511	170	25	12.5	25	12.5	6	4.5	3	2	80	63	50	50
GW D6 512	230	25	12.5	25	12.5	6	4.5	3	2	80	63	50	50
GW D6 513	270	25	12.5	25	12.5	4	3	3	2	80	63	50	50
GW D6 514	360	25	12.5	25	12.5	4	3	3	2	80	63	50	50
GW D6 515	400	25	12.5	25	12.5	4	3	3	2	80	63	50	50

TECHNICAL DATA FOR AUXILIARY CONTACTS

Standard:	IEC/EN 60947-4-1, IEC/EN 60947-5-1	
Insulation voltage (Ui):	(V)	500
Rated impulse withstand voltage (Uimp):	(kV)	6
Thermal current (Ith):	(A)	5
Rated operating current AC-15 (240V):	(A)	1.5
Rated operating current DC-13 (250V):	(A)	0.1
Type of contacts:	<p style="text-align: center;">1NO + 1NC</p>	
Mechanical endurance (number of O-C cycles):	100000	
Electrical endurance (number of O-C cycles):	100000	
Cable section:	(mm²)	2.5
Maximum cable beam stripping:	(mm)	8
Rated tightening torque:	(Nm)	0.6
N° of modules:	0.5	

TECHNICAL DATA FOR SHUNT TRIP RELEASES

Standard:	IEC/EN 60947-4-1, IEC/EN 60947-5-1	
Control voltage (Uc):	(V)	230 - 400 ac
Rated frequency:	(Hz)	50
Minimum operating voltage:	85% Uc	
Duration of impulse command:	(ms)	> 50ms
Mechanical endurance (number of O-C cycles):	10000	
Electrical endurance (number of O-C cycles):	10000	
Maximum cable section:	(mm²)	2.5
Recommended cable beam stripping:	(mm)	11
Rated tightening torque:	(Nm)	1
N° of modules:	1	

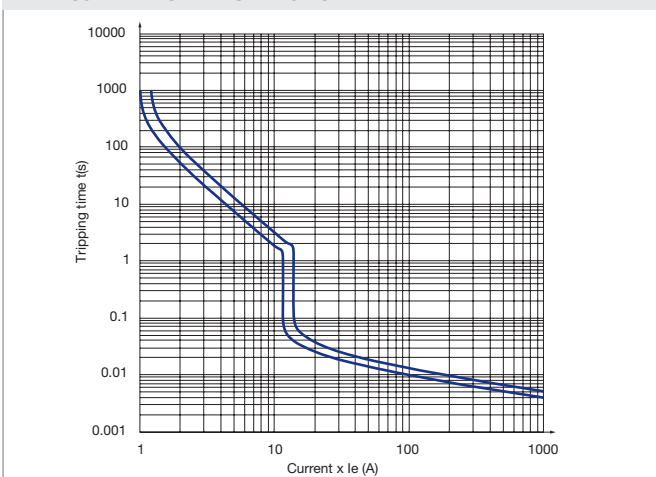
TECHNICAL DATA FOR UNDERVOLTAGE RELEASES

Standard:	IEC/EN 60947-4-1, IEC/EN 60947-5-1	
Control voltage (Uc):	(V)	230 - 400 ac
Rated frequency:	(Hz)	50
Release threshold:	0.7 - 0.85 Uc	
Recovery voltage:	≥ 0.85 Uc	
Power loss:	(VA)	3.3
Power loss on recovery:	(VA)	7.9
Mechanical endurance (number of O-C cycles):	10000	
Electrical endurance (number of O-C cycles):	10000	
Maximum cable section:	(mm²)	2.5
Recommended cable beam stripping:	(mm)	11
Rated tightening torque:	(Nm)	1
N° of modules:	1	

Up to a maximum of two accessories consisting of 1 auxiliary contact and 1 open release (shunt trip or overvoltage release) can be assembled on each motor protection circuit breaker.

Characteristic curves

TIME CURRENT CHARACTERISTIC



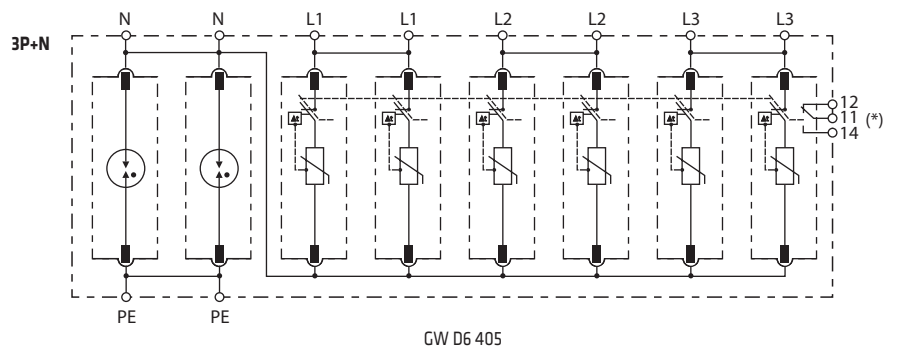
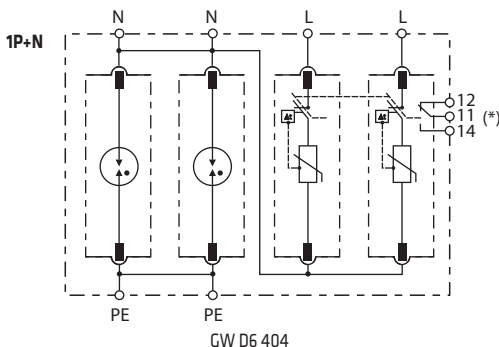
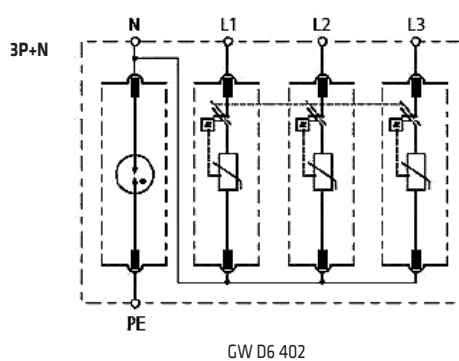
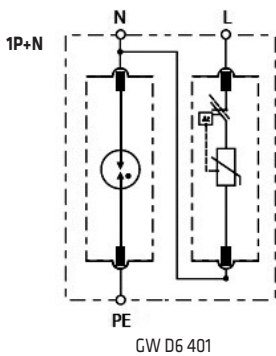
For technical information contact the Technical Assistance Service or visit gewiss.com

Surge protective devices LST type 1+2 and type 2

		TECHNICAL DATA				
Standard:		IEC 61643-1, EN 61643-11				
Type:		1+2 (10/350µs and 8/20µs)		2 (8/20µs)		
Maximum discharge current 8/20µs (Imax):	(kA)	65	100	20	40	
Impulse current 10/350µs (Iimp):	(kA)	12.5	25	-	-	
Rated discharge current 8/20µs (In):	(kA)	20	25	10	20	
Network:		TT - TNS	TT - TNS	TT - TNS	TT - TNS - TNC - IT	
Rated operational voltage (Un):	(V)	230 / 400	230 / 400	230 / 400	230 / 400	
Max continuous operating voltage (Uc):	(V)	275 (L - N) 255 (N - PE)	275 (L - N) 255 (N - PE)	320 (L - N) 255 (N - PE)	275 (L - N); 265 (N - PE) 440 (L - N) (GW D6 413)	
Voltage protection level at In (Up):	(kV)	< 1.3 (L - N) < 1.5 (N - PE)	< 1.5 (L - N) < 1.5 (N - PE)	< 1.4 (L - N) < 1.5 (N - PE)	< 1.3 (L - N) < 1.5 (N - PE) < 2 (L - N/PE) (GW D6 413)	
Residual voltage Ures per I_{in}	5 kA	-	-	-	< 0.9	
	10 kA	-	-	< 1.4 (L-N) - < 1.5 (N-PE)	< 1.1	
	12.5 kA	-	-	-	< 1.15	
	15 kA	-	-	-	< 1.2	
Rated frequency:	(Hz)	50/60	50/60	50/60	50/60	
Response time (ta):	(ns)	25 (L - N) 100 (N - PE)	25 (L - N) 100 (N - PE)	25 (L - N) 100 (N - PE)	25 (L - N) 100 (N - PE)	
Follow current interrupting rating (Ifi):	(A)	100	100	100	100	
Short circuit withstand (Icc):	(kA)	25	25	25	25	
State indicator:		yes	yes	yes	yes	
Auxiliary contact type:		no	changeover	no	changeover	
Maximum operating voltage for auxiliary contact:	(V)	-	250 ac - 125 dc	-	250 ac - 125 dc	
Maximum operating current for auxiliary contact:	(A)	-	1 ac - 0.2 dc	-	1 ac - 0.2 dc	
Rated tightening torque:	(Nm)	3	3	3	3	
Cable cross sections:	rigid	(mm ²)	min 6 max 35	min 6 max 35	min 6 max 35	min 6 max 35
	flexible	(mm ²)	min 6 max 25	min 6 max 25	min 6 max 25	min 6 max 25
Degree of protection:		IP20	IP20	IP20	IP20	
Operating temperature:	(°C)	-40...+80	-40...+80	-40...+80	-40...+80	

Type 1+2 LST circuit diagrams

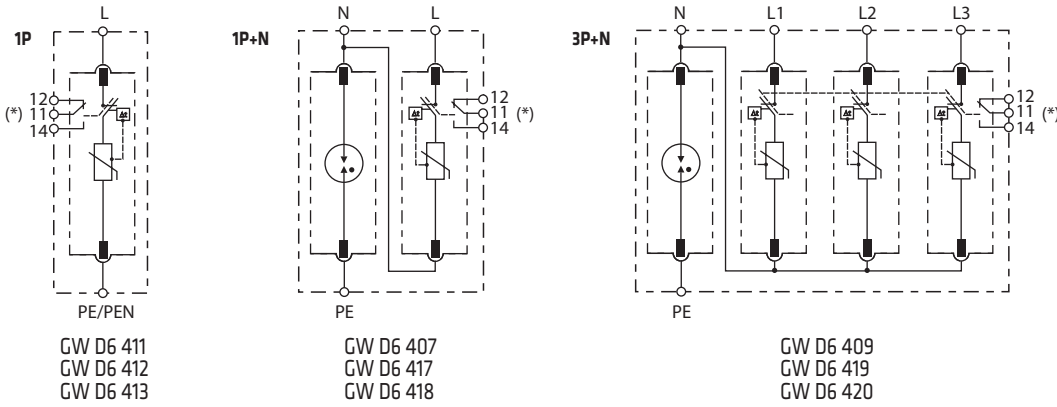
SPDs 1+2 type protect electrical equipment from overvoltages due to the direct and indirect effects of lightning strikes or due to manoeuvres on electrical network supply. They provide protection for installations in areas with a high frequency of lightning strikes and are typically installed in primary distribution panels.



(*) Only for version with auxiliary contact

Type 2 LST circuit diagrams

SPDs 2 type protect electrical equipment from overvoltages due to the indirect effects of lightning strikes or due to manoeuvres on electrical network supply. They are suitable for installation at the beginning of electrical system, in the middle boards and next to electrical loads.

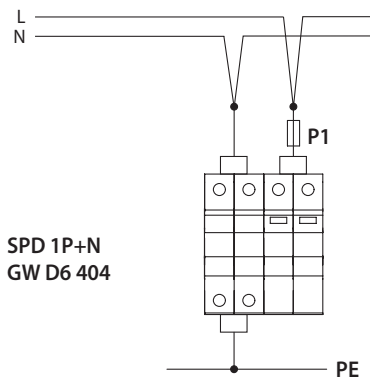
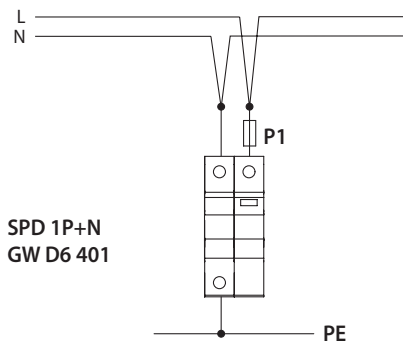


(*) Only for version with auxiliary contact

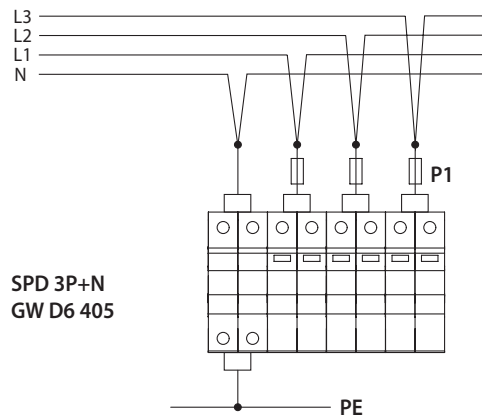
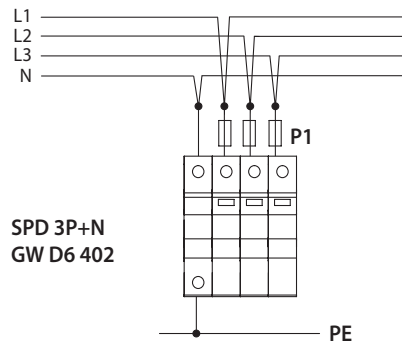
Type 1+2 LST connection

TT NETWORK - TNS NETWORK

Single-phase system



Three-phase system



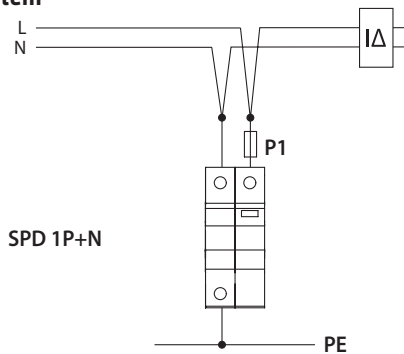
P1 = fuse or miniature circuit breaker

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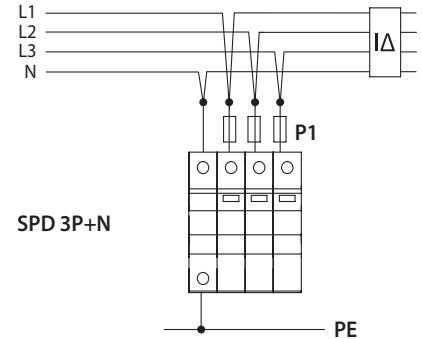
Type 2 LST connection

TT NETWORK

Single-phase system

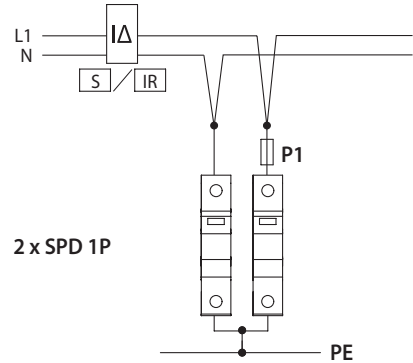
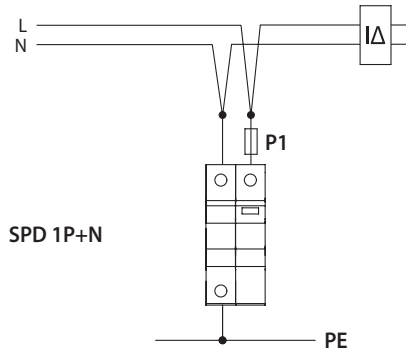


Three-phase system

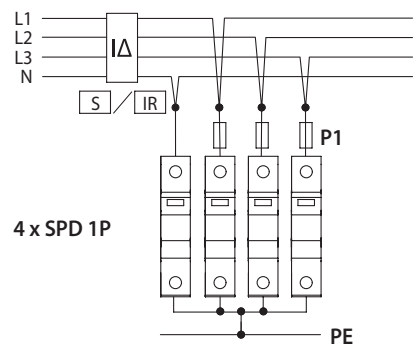
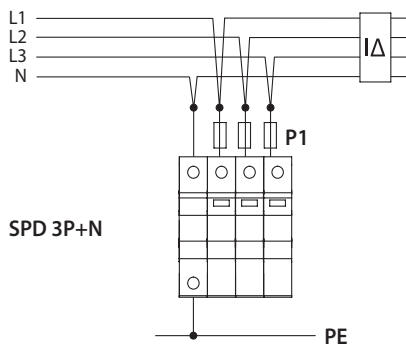


TNS NETWORK

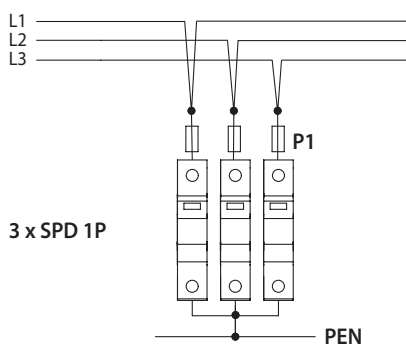
Single-phase system



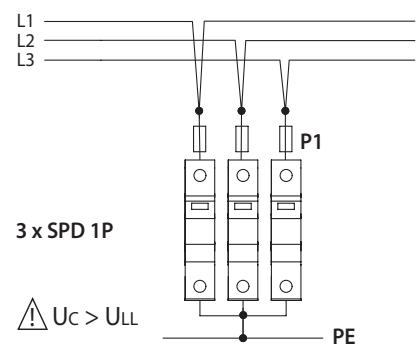
Three-phase system



TNC NETWORK



IT NETWORK



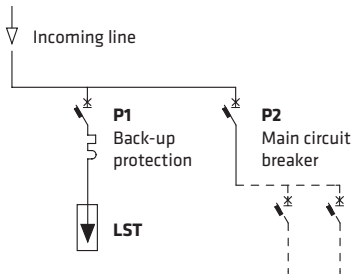
P1 = fuse or miniature circuit breaker

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Back-up protection

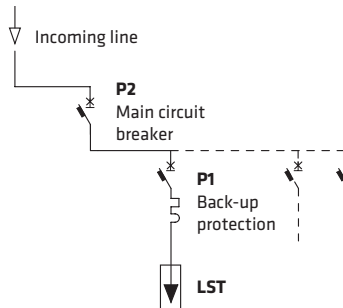
LST type 1+2

Service continuity priority



	$P1 \leq 125A \text{ gG}$
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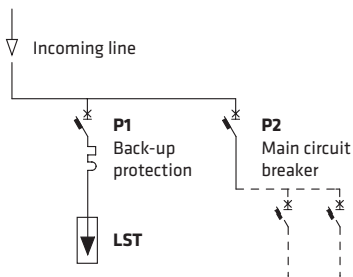
Protection priority



	$\text{if } P2 > 125A \Rightarrow P1 \leq 125A \text{ gG}$ $\text{if } P2 \leq 125A \Rightarrow \text{NO protection P1}$
--	---

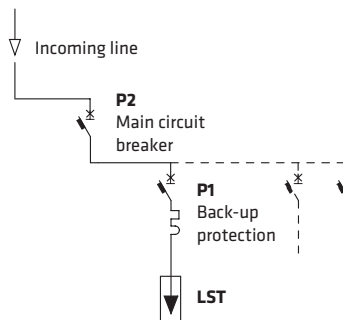
LST type 2

Service continuity priority



	LST $I_{max}=20kA$	LST $I_{max}=40kA$
	$P1 \leq 63A \text{ gG}$	$P1 \leq 80A \text{ gG}$
	$P1 \leq 40A \text{ curve C}$	$P1 \leq 50A \text{ curve C}$

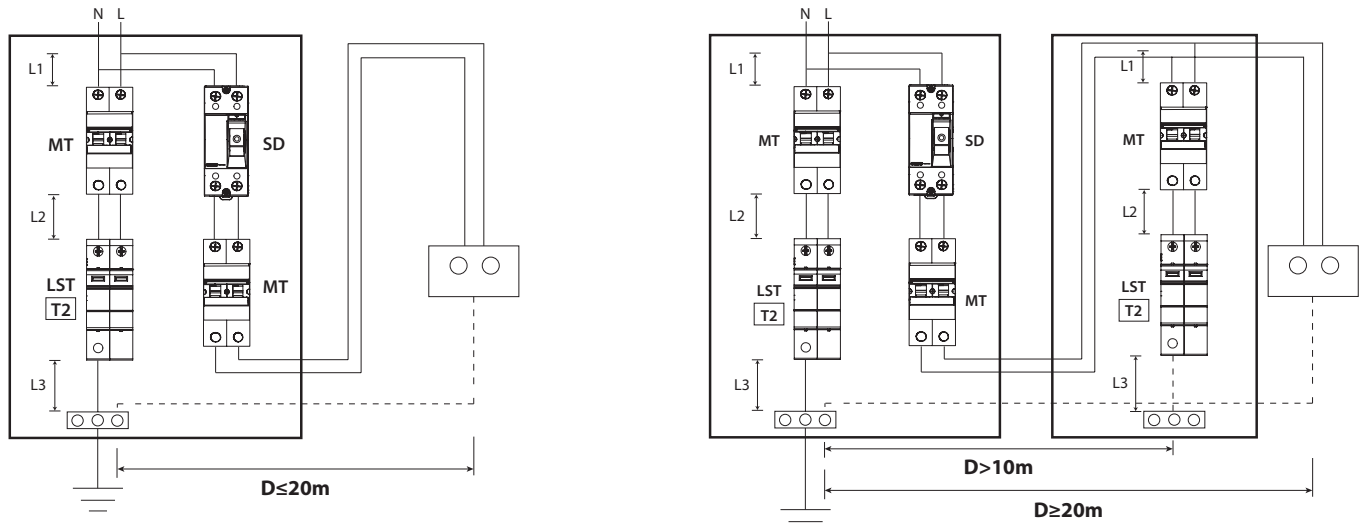
Protection priority



	LST $I_{max}=20kA$	LST $I_{max}=40kA$
	$\text{if } P2 > 63A \Rightarrow P1 \leq 63A \text{ gG}$ $\text{if } P2 \leq 63A \Rightarrow \text{NO protection P1}$	$\text{if } P2 > 80A \Rightarrow P1 \leq 80A \text{ gG}$ $\text{if } P2 \leq 80A \Rightarrow \text{NO protection P1}$
	$\text{if } P2 > 40A \Rightarrow P1 \leq 40A \text{ curve C}$ $\text{if } P2 \leq 40A \Rightarrow \text{NO protection P1}$	$\text{if } P2 > 50A \Rightarrow P1 \leq 50A \text{ curve C}$ $\text{if } P2 \leq 50A \Rightarrow \text{NO protection P1}$

Installation rules

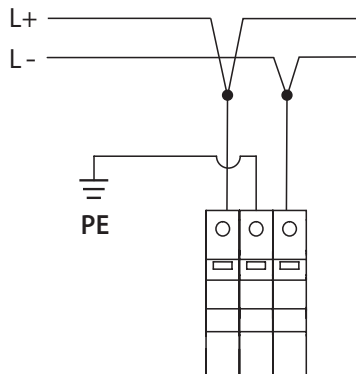
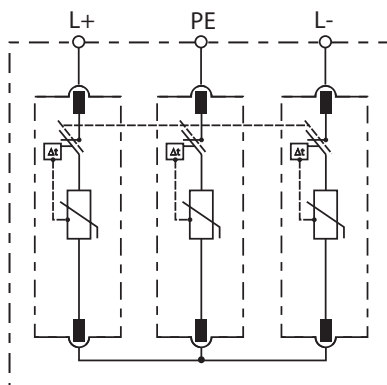
The length of the wiring of SPD ($L1 + L2 + L3$) must be as short as possible ($L1+L2+L3 \leq 0.5$ m). The surge protective devices LST can protect an electrical load placed at a maximum distance of 20m, if the load is further away, it's necessary to install an additional SPD. The minimum installation distance between two LST must be 10m.



Surge protective devices LST for PV applications

TECHNICAL DATA				
Standard:	EN 50539-11, EN 61643-11			
Type:	1 + 2 (10/350µs and 8/20µs) Photovoltaic		2 (8/20µs) Photovoltaic	
Rated operating voltage (Un):	(V)	1000 dc	600 dc	1000 dc
impulse current 10/350µs (Iimp):	(kA)	5	-	-
Maximum discharge current 8/20µs (Imax):	(kA)	40	40	
Maximum continuous operating voltage (Uc_{pv}):	(V)	1060 dc	660 dc	1060 dc
Voltage protection level at In (Up):	(kV)	< 4 (1000V)	< 2.6 (600V)	< 4 (1000V)
Short circuit DC current withstand (Isc_{pv}):	(kA)	10	10	
State indicator:		yes	yes	
Auxiliary contact type:		no	no	
Rated tightening torque:	(Nm)	3	3	
Cable cross sections	rigid	(mm²)	min 6 max 25	min 6 max 35
	flexible	(mm²)	min 6 max 25	min 6 max 25
Degree of protection:		IP20	IP20	
Operating temperature:	(°C)	-40...+85	-40...+85	

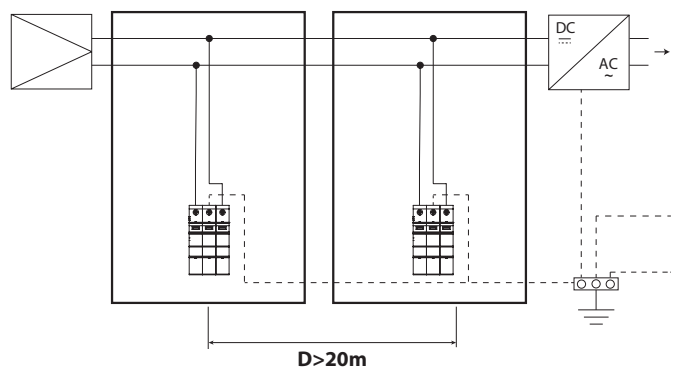
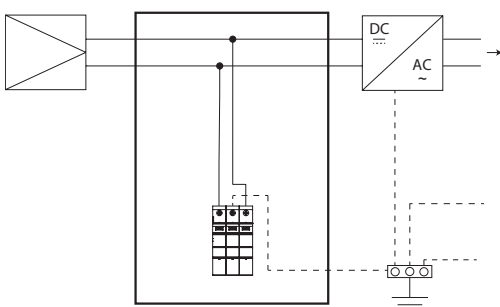
LST connection for PV applications



Installation rules

The SPDs LST for PV applications are installed near the inverter on the DC side to protect the inverter and the photovoltaic modules.

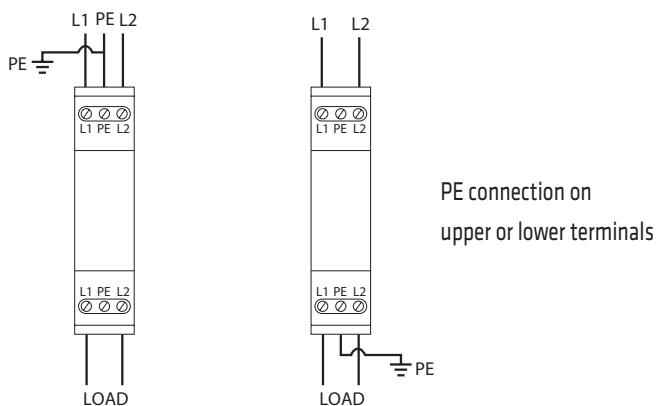
The SPDs LST for PV applications can protect the PV modules placed at a maximum distance of 20m, if they are further away, it's necessary to install an additional SPD.



Surge protective devices LST for telecom and dataline

TECHNICAL DATA			
Standard		IEC 61643-1, EN 61643-11	
Type		2 (8/20µs) Telecom / Dataline	
Maximum discharge current 8/20µs (Imax):	(kA)	10	
Rated discharge current 8/20µs (In):	(kA)	5	
Rated operational voltage (Un):	(V)	50	
Max continuous operating voltage (Uc):	(V)	180	
Voltage protection level at In (Up):	(kV)	< 0.2	
Band width (fg):	(MHz)	3	
State indicator:		no	
Auxiliary contact type:		no	
Rated tightening torque:	(Nm)	2	
Cable cross sections	rigid	(mm ²)	2.5
	flexible	(mm ²)	2.5
Degree of protection:		IP20	
Operating temperature:	(°C)	-40...+60	

Circuit diagrams



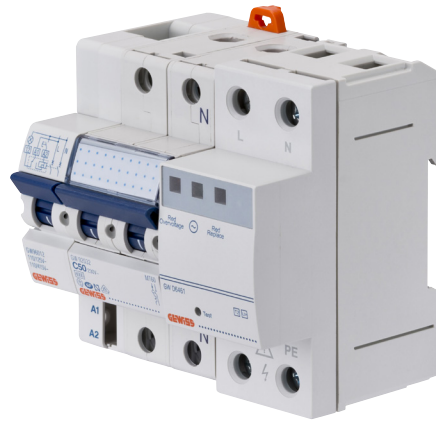
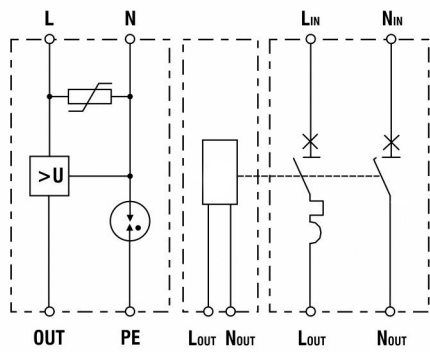
Permanent and transient surge protective devices POP

TECHNICAL DATA			
Standard:	IEC 61643-1 (SPD), EN 61643-11 (SPD) - EN 50550 (POP)		
SPD technical data			
SPD type:	2 (8/20 μ s)		
Maximum discharge current 8/20 μs (I_{max}):	(kA)	15	
Rated discharge current 8/20μs (I_n):	(kA)	3	
System:	TT - TN		
Rated operational voltage (U_n):	(V)	230	
Maximum continuous operating voltage (U_c):	(V)	400 (L-N) 254 (N-PE)	
Voltage protection level at I_n (U_p):	(kV)	≤ 1.5 (L-N) ≤ 1.5 (N-PE)	
Rated frequency:	(Hz)	50	
Response time (t_a):	(ns)	25 (L-N) 100 (N-PE)	
Follow current interrupting rating (I_{fi}):	(A)	100	
State indicator:	yes		
Auxiliary contact type:	no		
Extractable cartridges:	no		
POP technical data			
Maximum operating time (t_a):	(s)		
	at 255 V	No operating	
	at 275 V	15	
	at 300 V	5	
	at 350 V	0.75	
	at 400 V	0.2	
Maximum no operating time (t_a):	(s)		
	at 255 V	No operating	
	at 275 V	3	
	at 300 V	1	
	at 350 V	0.25	
	at 400 V	0.07	
Other features			
DIN N. modules:	2		
Rated tightening torque:	(Nm)	4	
Cable cross sections	Rigid	(mm²)	min 6 max 35
	Flexible	(mm²)	min 6 max 25
Degree of protection:	IP20		
Operating temperature:	(°C)	-40...+60	

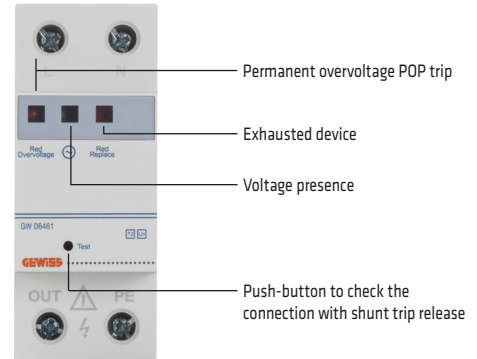
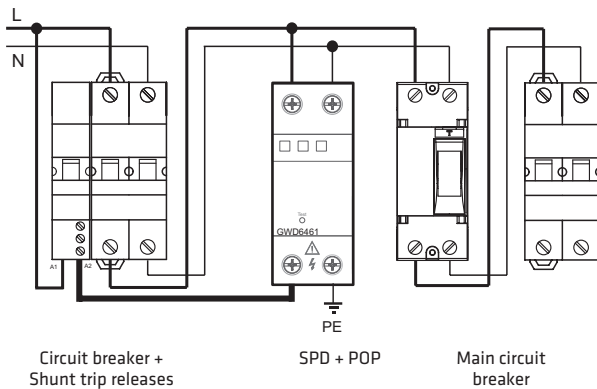
Circuit diagrams

SPD+POP devices protect electrical system both from voltage transients indirect (produced by discharges from lightning or switching operations on the network) to permanent overvoltages (produced by instable networks or neutral loss). When permanent overvoltages occurs, SPD+POP devices use release coil to open circuit breaker.

Instead, when transient overvoltages occurs, SPD+POP devices work as a common surge protective device without opening the circuit breaker.



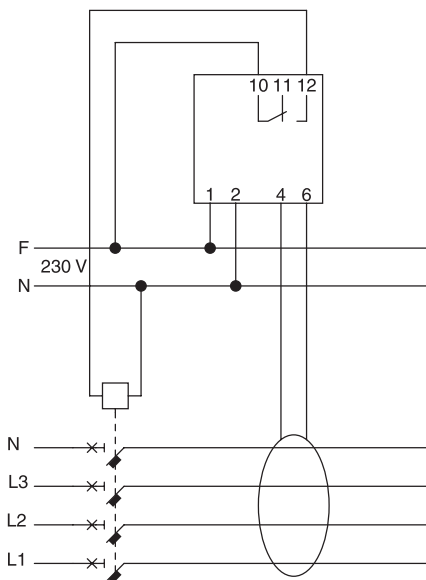
Connection



A-type residual current relay with separate toroid

TECHNICAL DATA	
Standards:	EN 60947-2 Appendix M
Rated operating voltage (Ue): (V)	230 ac Phase-Neutral / 230 ac Phase-Phase
Test voltage: (kV)	2 at 50Hz (1kV per measurement circuit)
Rated frequency: (Hz)	40-60
Type:	A
Setting IΔn:	30 - 100 - 300 - 500mA 1 - 1.5 - 2 - 3 - 5 - 10 - 20 - 30A
Delay time setting Δt: (s)	0 - 0.25 - 0.5 - 1 - 2 - 3 - 4 - 5 - 6 - 7 - 8 - 10
Output contact type:	1 changeover, 10A - 250V
Insulation class:	II
Power loss: (VA)	4
Degree of protection:	IP20
Operating temperature: (°C)	0...+55
Storage temperature: (°C)	-20...+80
Maximum cable section (rigid/flexible): (mm ²)	6
Sealing:	yes

Circuit diagram



ON (green LED): relay ON

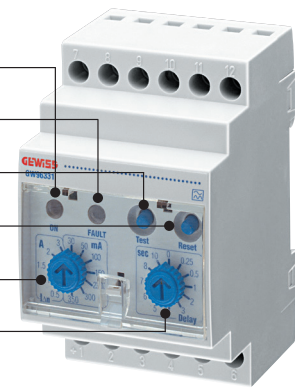
FAULT (red LED): relay tripping

TEST: relay test-button

RESET: anomaly resetting

I Δ n: sensitivity setting

DELAY: delay time setting



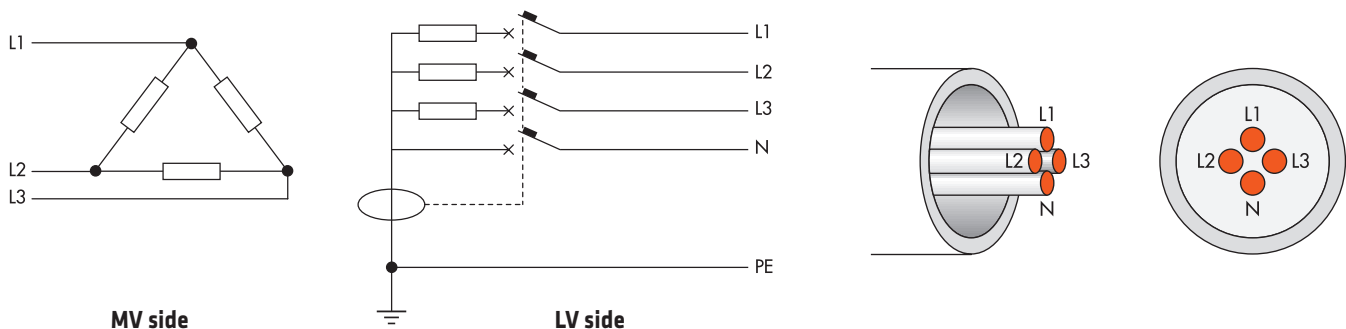
In order to obtain the residual current protection, it is necessary the use of all these following components:

- earth leakage relay GW 96 331 (installation on EN 50022 rail)
- solid or split core current transformer (GW 96 332 ÷ GW 96 337)
- one release (shunt trip or under voltage release) to be used an accessory to the MCB or MCCB.

The distance between earth leakage relay and the core current transformer must be less than 20m.

Guide for using the earth leakage relay with separate toroid

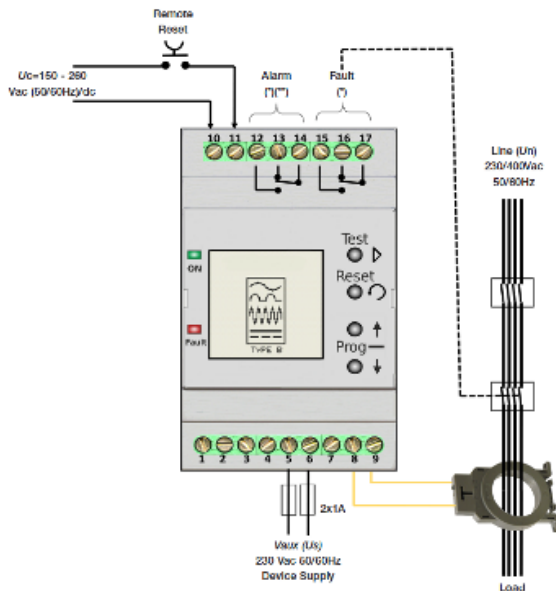
In the case of power centers with large cable-section, it is possible to place the core current transformer directly on the cable which connect the star point of the MV/LV transformer to earth. Special attention must be paid for core current transformer wiring. In fact, the cables must be as centred as possible inside the core current transformer, to prevent untimely tripping of the relay when there are high rated currents circulating in the cables (because these currents could cause localised magnetic saturations).



B-type residual current relay with separated toroid

TECHNICAL DATA	
Standard:	EN 60947-2 Annex M
N° of DIN modules:	3
Rated operating voltage (Ue):	230 ac
Operating voltage range:	0.85 x Ue ÷ 1.1 x Ue
Rated frequency:	50/60
Type:	B
Setting IΔn:	0.03 - 0.1 - 0.3 - 0.5 - 1 - 3 - 5 - 10
Delay time setting Δt:	0.1 - 0.2 - 0.3 - 0.4 - 0.5 - 0.75 - 1 - 5 - 10
Insulation class:	II
Rated operating voltage with reference to the controlled circuit (Un):	400 ac
Rated insulation voltage with reference to the controlled circuit (Ui):	0.72
Rated impulse withstand voltage with reference to the controlled circuit (Uimp):	4 (Cat. III)
Rated insulation voltage with reference to the voltage source (Ui):	300 ac
Rated impulse withstand voltage with reference to the voltage source (Uimp):	4 (Cat. III)
Rated short-time withstand current (Icw):	40 (0.5 s)
Signalling - red LED:	Exceeding the IΔn threshold after the IΔt delay time
Signalling - green LED:	Device properly powered
Signalling - flashing green LED:	Exceeding the IΔn pre-alarm threshold
Local reset:	yes
Remote reset:	yes
Local test:	yes
Alarm output contact:	changeover (250 V - 10 A - AC1)
Fault output contact:	changeover (250 V - 10 A - AC1)
Minimum switchable load of output contact:	300 (5 V - 5 mA)
Maximum cable section (rigid/flexible):	2.5
Tightening torque:	0.5
Operating temperature:	-5...+40 (average ≤ 35 °C / 24 h)
Storage temperature:	-25...+55 (+70 °C < 24 h)
Humidity:	5 % ÷ 90 %
Maximum installation altitude:	2,000

Circuit diagram



Toroid for B-type residual current relay

TECHNICAL DATA				
Internal diameter (mm)	Maximum rated current (Imax) (A)	Minimum threshold IΔn (A)	Maximum threshold IΔn (A)	Maximum cable section (3P+N) (mm ²)
35	170	0.03	3	16
80	330	0.03	3	70
110	450	0.1	5	100
210	720	0.3	10	2 x 185

NOTE: Imax operating current means the maximum current value that can flow through the toroid when the set of cables is positioned at its center, perpendicularly and occupies less than 60% of the diameter of the toroid.

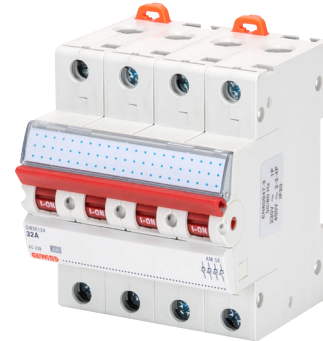
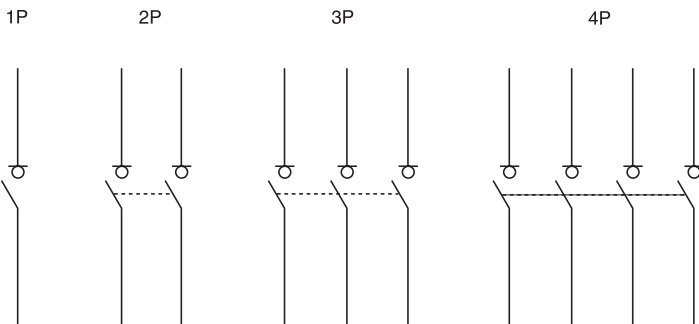
For technical information contact the Technical Assistance Service or visit gewiss.com

COMMAND

AC switch disconnectors without accessories option

TECHNICAL DATA							
		In ≤ 63A			In > 63A		
Standard:		EN 60947-3			EN 60947-3		
Rated operating voltage (Ue):	(V)	240 - 415 ac			240 - 415 ac		
Insulation voltage (Ui):	(V)	500 ac			500 ac		
Rated impulse withstand voltage (Uimp):	(kV)	4			4		
Rated frequency:	(Hz)	50 / 60			50 / 60		
Rated current (In):	(A)	32	40	63	80	100	125
Utilization category:		AC-23B			AC-22A		
Rated short-time current for 1s (Icw):	(A)	12 x In			12 x In		
Power loss per pole:	(W)	0.8	1.5	2	3.2	5	6
Electrical endurance:		5,000			3,000 (up to 100A) and 2,000 (for 125A)		
Mechanical endurance:		20,000			20,000		
Screwdriver suggested:		PZ2			Phillips		
Rated tightening torque:		(Nm) 2			2.5		
Connection:	cable	rigid			≤ 1x50 - ≤ 2x25 - ≤ 3x16		
	section (mm²)	flexible			≤ 1x70 - ≤ 2x35 - ≤ 2x25+1x16		
Degree of protection:		IP20			IP20		
Operating temperature:		(°C) -5...+40			-5...+40		
Suitable accessory:		GW 96 001 (position contact)			GW 96 001 (position contact)		
Upline/downline power supply:		yes			yes		
Double connection (cable + fork busbar):		yes (only downstream)			yes (upstream and downstream)		

Circuit diagrams



- | | | | |
|-----------|-----------|-----------|-----------|
| GW 96 104 | GW 96 114 | GW 96 124 | GW 96 134 |
| GW 96 105 | GW 96 115 | GW 96 125 | GW 96 135 |
| GW 96 146 | GW 96 156 | GW 96 166 | GW 96 176 |
| GW 96 147 | GW 96 157 | GW 96 167 | GW 96 177 |
| GW 96 148 | GW 96 158 | GW 96 168 | GW 96 178 |
| GW 96 149 | GW 96 159 | GW 96 169 | GW 96 179 |

Conditioned short-circuit current at 400V for switch disconnectors without accessories option

RANGE			SWITCH DISCONNECTORS WITHOUT ACCESSORIES OPTION					
	In	Icu (kA)	32A	40A	63A	80A	100A	125A
			Conditioned Icc (kA)					
MTC/MDC 45	6÷20A	4.5	4.5	4.5	4.5	4.5	4.5	4.5
	25A	4.5	4.5	4.5	4.5	4.5	4.5	4.5
	32A	4.5	4.5	4.5	4.5	4.5	4.5	4.5
MTC/MDC 60	6÷20A	6	6	6	6	6	6	6
	25A	6	6	6	6	6	6	6
	32A	6	6	6	6	6	6	6
MT 4/MT 6	6A	6	6	6	6	6	6	6
	10÷20A	6	6	6	6	6	6	6
	25A	6	6	6	6	6	6	6
	32A	6	6	6	6	6	6	6
	40A	6		6	6	6	6	6
	50÷63A	6			4.5	6	6	6
MT 60	6÷16A	10	10	10	10	10	10	10
	20A	10	8.5	8.5	8.5	10	10	10
	25A	10	7.5	7.5	7.5	9	9	9
	32A	10	6	6	6	7.5	7.5	7.5
	40A	10		6	6	7.5	7.5	7.5
	50÷63A	10			4.5	6	6	6
MT 100	6÷16A	15	10	10	10	12.5	12.5	12.5
	20A	15	8.5	8.5	8.5	10	10	10
	25A	15	7.5	7.5	7.5	9	9	9
	32A	12.5	6	6	6	7.5	7.5	7.5
	40A	12.5		6	6	7.5	7.5	7.5
	50÷63A	12.5			4.5	6	6	6
MT 250	6÷16A	25	10	10	10	12.5	12.5	12.5
	20A	25	8.5	8.5	8.5	10	10	10
	25A	20	7.5	7.5	7.5	9	9	9
	32A	15	6	6	6	7.5	7.5	7.5
	40A	15		6	6	7.5	7.5	7.5
	50÷63A	15			4.5	6	6	6
MTHP 160	50÷63A	16			5	5.5	5.5	5.5
	80÷100A	16					4.5	4.5
	125A	16						4.5
MTHP 250	20A	25	7	7	7	8	8	8
	25÷32A	25	5	5	5	6	6	6
	40A	25		5	5	6	6	6
	50÷63A	25				6	6	6

Conditioned short-circuit current at 230V for switch disconnectors without accessories option

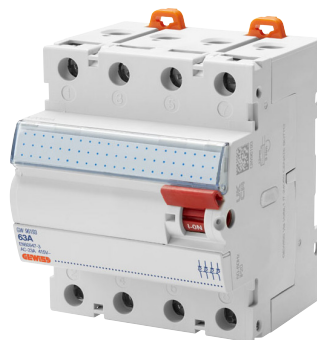
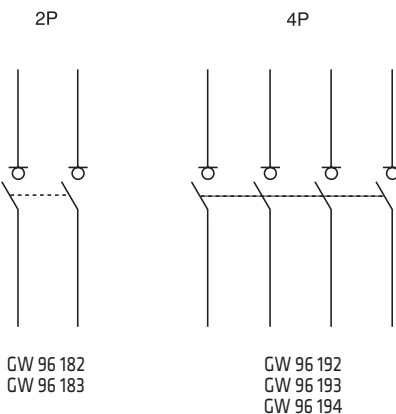
RANGE			SWITCH DISCONNECTORS WITHOUT ACCESSORIES OPTION					
	In		32A	40A	63A	80A	100A	125A
	Icu (kA)	Conditioned Icc (kA)						
MTC/MDC 45	6÷20A	6	6	6	6	6	6	6
	25A	6	6	6	6	6	6	6
	32A	6	6	6	6	6	6	6
MTC/MDC 60	6÷20A	10	10	10	10	10	10	10
	25A	10	8	8	8	10	10	10
	32A	10	7	7	7	8.5	8.5	8.5
MTC/MDC 100	6A	15	15	15	15	15	15	15
	10A	15	15	15	15	15	15	15
	13/16A	15	12.5	12.5	12.5	15	15	15
	20A	15	10	10	10	12.5	12.5	12.5
	25A	15	8	8	8	10	10	10
MT 4/MT 6	32A	15	7	7	7	8.5	8.5	8.5
	6A	6	6	6	6	6	6	6
	10÷16A	6	6	6	6	6	6	6
	20÷25A	6	6	6	6	6	6	6
	32A	6	6	6	6	6	6	6
MT 60	40A	6		6	6	6	6	6
	50÷63A	6			6	6	6	6
	6÷16A	20	12.5	12.5	12.5	15	15	15
	20A	20	12.5	12.5	12.5	15	15	15
	25A	20	9	9	9	10	10	10
	32A	20	7.5	7.5	7.5	9	9	9
MT 100	40A	20		7.5	7.5	9	9	9
	50÷63A	20			6.5	8	8	8
	6÷16A	30	12.5	12.5	12.5	15	15	15
	20A	30	12.5	12.5	12.5	15	15	15
	25A	30	9	9	9	10	10	10
	32A	25	7.5	7.5	7.5	9	9	9
MT 250	40A	25		7.5	7.5	9	9	9
	50÷63A	25			6.5	8	8	8
	6÷16A	50	12.5	12.5	12.5	15	15	15
	20A	50	12.5	12.5	12.5	15	15	15
	25A	40	9	9	9	10	10	10
	32A	30	7.5	7.5	7.5	9	9	9
MTHP 160	40A	30		7.5	7.5	9	9	9
	50÷63A	25			6.5	8	8	8
	50÷63A	16			5	5.5	5.5	5.5
MTHP 250	80÷100A	16					4.5	4.5
	125A	16						4.5
	20A	25	7	7	7	8	8	8
MTHP 250	25÷32A	25	5	5	5	6	6	6
	40A	25		5	5	6	6	6
	50÷63A	25				6	6	6

AC switch disconnectors with accessories option

TECHNICAL DATA		
Standard:	EN 60947-3	
Rated operating voltage (Ue):	(V) 415 ac	
Insulation voltage (Ui):	(V) 500 ac	
Rated impulse withstand voltage (Uimp):	(kV) 4	
Rated frequency:	(Hz) 50 / 60	
Rated current (In):	(A) 40 - 63 - 80	
Utilization category:	AC-23A (up to 63A) AC-22A (80A)	
Rated short-time current for 1s (Icw):	(A) 20 x In (up to 63A) 15 x In (80A)	
Power loss per pole:	(W) 2.8	
Electrical endurance:	5,000	
Mechanical endurance:	20,000	
Screwdriver suggested:	PZ2	
Rated tightening torque:	(Nm) 3	
Connection:	cable rigid	≤ 1x35 - ≤ 2x16 - ≤ 1x16+2x10
	section (mm ²) flexible	≤ 1x35 - ≤ 2x16 - ≤ 1x16+2x10
Degree of protection:	IP20	
Tropicalization:	55°C - RH 95%	
Operating temperature:	(°C) -25...+60 ⁽¹⁾	
Suitable accessory:	Auxiliary contact of open/closed position GWD6002 Shunt trip releases GWD6013 GWD6015 Undervoltage releases GWD6019 GWD6020 GWD6021	
Upline/downline power supply:	yes	
Double connection (cable + fork busbar):	yes (upstream and downstream)	
Lockable:	with GW96041 (padlocking lever block)	

(1) With temperatures greater than 40°C, derating of In rated current is expected according to following table

In (A)	Temperature			
	30°C	40°C	50°C	60°C
25	25	25	22.5	20
40	40	40	36	32
63	63	63	56.7	50.4
80	80	80	72	64



Conditioned short-circuit current at 400V for switch disconnectors with accessories option

400V (AC)	RANGE		SWITCH DISCONNECTORS WITH ACCESSORIES OPTION			
	In	Icu (kA)	40A	63A	80A	
			Conditioned Icc (kA)			
400V (AC)	MTC/MDC 45	6÷10A	4.5	4.5	4.5	
		20÷25A	4.5	4.5	4.5	
		32A	4.5	4.5	4.5	
	MTC/MDC 60	6÷10A	6	6	6	6
		20÷25A	6	6	6	6
		32A	6	6	6	6
	MT 4/MT 6	6÷16A	6	6	6	6
		20÷25A	6	6	6	6
		32÷40A	6	6	6	6
		50÷63A	6		6	6
	MT 60	6÷16A	10	10	10	10
		20÷25A	10	10	10	10
32÷40A		10	6	6	6	
50÷63A		10		6	6	
MT 100	6÷16A	15	12.5	12.5	12.5	
	20÷25A	15	10	10	10	
	32÷40A	12.5	6	6	6	
	50÷63A	12.5		6	6	
MT 250	6÷16A	25	12.5	12.5	12.5	
	20A	25	10	10	10	
	25A	20	10	10	10	
	32÷40A	15	6	6	6	
	50÷63A	15		6	6	
MTHP 160	50÷63A	16		6	6	
	80A	16			5	
	100÷125A	16				
MTHP 250	20A	25	10	10	10	
	25÷32A	25	6	6	6	
	40A	25		6	6	
	50÷63A	25			6	

Conditioned short-circuit current at 230V for switch disconnectors with accessories option

RANGE	SWITCH DISCONNECTORS WITH ACCESSORIES OPTION				
	In	Icu (kA)	40A	63A	80A
			Conditioned Icc (kA)		
MTC/MDC 45	6÷10A	6	6	6	6
	16÷25A	6	6	6	6
	32A	6	6	6	6
MTC/MDC 60	6÷20A	10	10	10	10
	25A	10	8	8	8
	32A	10	7	7	7
MTC/MDC 100	6÷10A	15	15	15	15
	13÷16A	15	12.5	12.5	12.5
	20A	15	10	10	10
	25A	15	8	8	8
	32A	15	7	7	7
MT 4/MT 6	6÷16A	6	6	6	6
	20÷25A	6	6	6	6
	32÷40A	6	6	6	6
	50÷63A	6		6	6
MT 60	6÷20A	20	15	15	15
	25A	20	12.5	12.5	12.5
	32÷40A	20	8	8	8
	50÷63A	20		7.5	7.5
MT 100	6÷20A	30	15	15	15
	25A	30	12.5	12.5	12.5
	32÷40A	25	8	8	8
	50÷63A	25		7.5	7.5
MT 250	6÷20A	50	15	15	15
	25A	40	12.5	12.5	12.5
	32÷40A	30	8	8	8
	50÷63A	25		7.5	7.5
MTHP 160	50÷63A	20		6	6
	80A	20			6
	100÷125A	20			
MTHP 250	20A	50	15	15	15
	25A	50	12.5	12.5	12.5
	32÷40A	50		10	10
	50÷63A	50			8.5

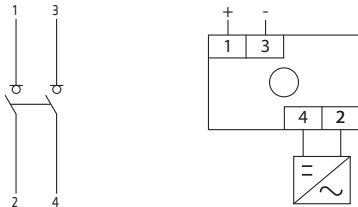
DC rotary switch disconnectors

TECHNICAL DATA						
Standard:	EN 60947-3					
Poles:	2		4			
Utilization category:	DC-21B	DC-22B	DC-21B	DC-22B		
Rated operating voltage (Ue):	Rated operational current (I_n)					
	2 poles in series		2 poles in series + 2 poles in parallel		4 poles in series	
	500 V dc	25 A	8 A	58 A	32 A	32 A
	600 V dc	25 A	6 A	50 A	32 A	27.5 A
	700 V dc	23 A	-	27 A	32 A	-
	800 V dc	20 A	2.5 A	23 A	32 A	12.5 A
	900 V dc	16 A	-	20 A	32 A	-
1000 V dc	11 A	1.5 A	13 A	32 A	10 A	
Rated short-time withstand current (I _{cw}):	(A)	900		1000		
Short circuit making capacity (I _{cm}):	(A)	900		1000		
Rated conditional short-circuit current with fuse (I _{cc}):	(kA)	5 (gL Gg max 63A)		5 (gL Gg max 80A)		
Rated insulation voltage (U _i):	(V)	1,500 dc				
Rated impulse withstand voltage (U _{imp}):	(kV)	8				
Mechanical life:	(N° operations)	10,000				
Rated tightening torque:	(Nm)	1.8				
Size of terminal screw:		M4				
Screwdriver:		Pz2				
Power loss per switch at I _n DC-21B:	(W)	5		16		
Operating temperature:	(°C)	-40...+65				
Upline/downline power supply:		yes				
Max cable cross section:	(mm ²)	10 (flexible) / 16 (rigid)				

NOTE: DC switch disconnectors cannot be accessorized or locked.

Circuit diagrams

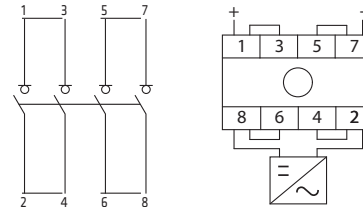
2 POLES IN SERIES



DC-21B					
500V	600V	700V	800V	900V	1000V
25A	25A	23A	25A	16A	11A

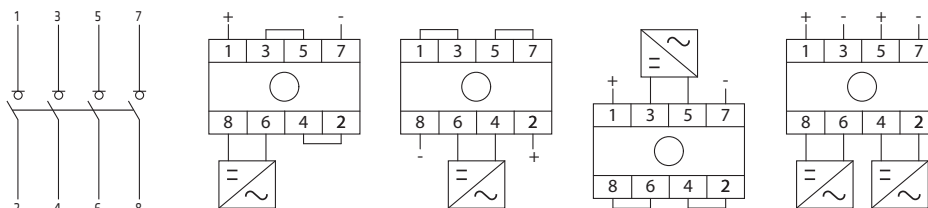
DC-22B					
500V	600V	-	800V	-	1000V
8A	6A	-	2.5A	-	1.5A

2 POLES IN SERIES + 2 POLES IN PARALLEL



DC-21B					
500V	600V	700V	800V	900V	1000V
58A	50A	27A	23A	20A	13A

4 POLES IN SERIES



DC-21B					
500V	600V	700V	800V	900V	1000V
32A	32A	32A	32A	32A	32A

DC-22B					
500V	600V	-	800V	-	1000V
32A	27.5A	-	12.5A	-	10A



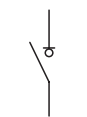
For technical information contact the Technical Assistance Service or visit gewiss.com

Isolating switches - On-off switches with indicator lamp

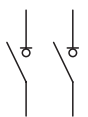
TECHNICAL DATA					
		Isolating switches		On-off switches with indicator lamp	
Standards:		EN 60669-2-4		EN 60669-1	
Rated operating voltage (Ue):	(V)	250 - 415 ac		230 ac	
Rated insulation voltage (Ui):	(V)			500 ac	
Rated frequency:	(Hz)			50/60	
Rated operating current (Ie):	(A)	16	32	16	32
Power loss per pole:	(W)	0.35	1.4	0.35*	1.4*
Indicator lamp supply voltage:	(V)	-		230 ac	230 ac
Lamp consumption:	(W)	-		0.8	0.8
Lamp duration:	(h)	-		100,000	100,000
Closing capacity:		1.25 Ie - 1.1 Ue - cosφ = 0.6			
Rated conditional short-circuit current (I_{nc}):	(A)	1,500			
Coordination with fuses gG:	(A)	16	32	16	32
Rated tightening torque:	(Nm)	0.8			
Operating temperature:	(°C)	5...40			
Maximum cable section:	(mm²)	6 (flexible) / 10 (rigid)			
Lockable:		with GW 96 041 (padlocking lever block)			

* The value does not include the power of the indicator lamp

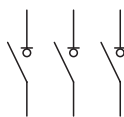
Circuit diagrams - Isolating switches



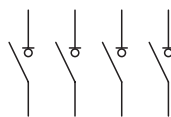
GW 96 531
GW 96 532



GW 96 533
GW 96 534



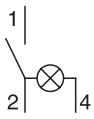
GW 96 535
GW 96 536



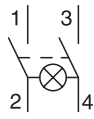
GW 96 537
GW 96 538



Circuit diagrams - On-off switch with indicator lamp



GW 96 539
GW 96 540



GW 96 541
GW 96 542



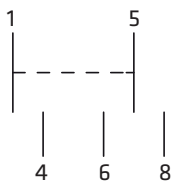
Lever switches

TECHNICAL DATA			
Standards:		EN 60669-1	
Rated operating voltage (Ue):	(V)	250 ac	
Rated frequency:	(Hz)	50/60	
Rated operating current (Ie):	(A)	16	32
Device power loss:	(W)		
	GW 96 551	0.4	-
	GW 96 552	0.8	-
	GW 96 553	0.4	-
	GW 96 554	0.8	-
	GW 96 555 - GW 96 556	0.4	2.8
Rated tightening torque:		0.8	
Operating temperature:	(°C)	5...40	
Maximum cable section:	(mm²)	6 (flexible) / 10 (rigid)	
Lockable:		with GW 96 041 (padlocking lever block)	

Circuit diagrams



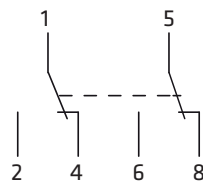
GW 96 553



GW 96 554



GW 96 551



GW 96 552



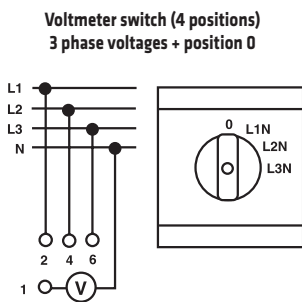
GW 96 555
GW 96 556



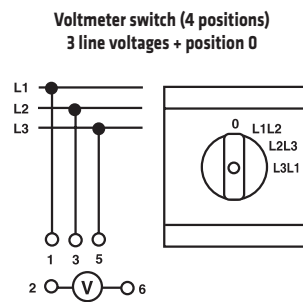
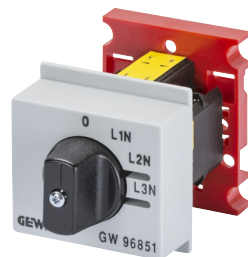
Rotary switches

TECHNICAL DATA			
Standards:		EN 60947-3	
Rated operating current (Ie):	(A)	16	
Rated operating voltage (Ue):	(V)	230 - 690 ac	
Category of use:		AC3 (for line switches only)	
Rated power in AC3:	(kW)	230V	3
		400V	5.5

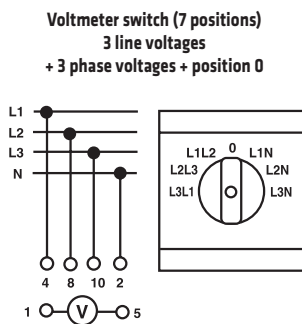
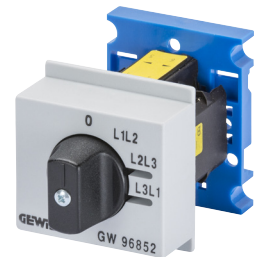
Circuit diagrams



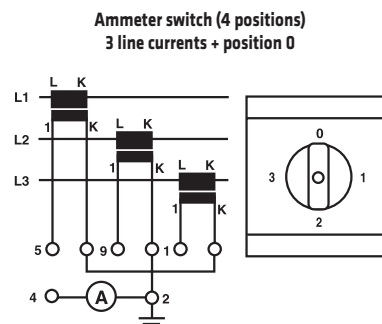
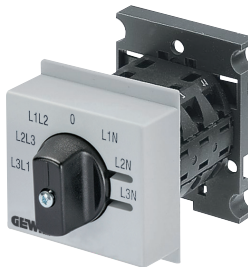
GW 96 851



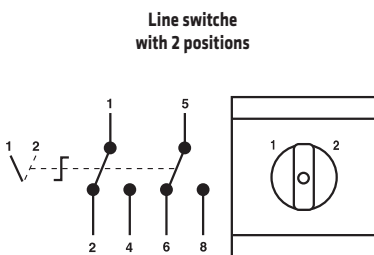
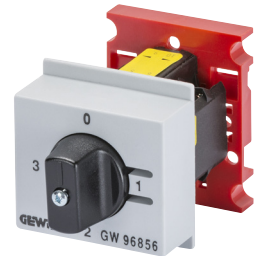
GW 96 852



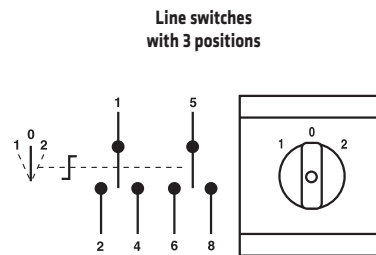
GW 96 853



GW 96 856



GW 96 951



GW 96 952 - GW 96 953



Contactors

ELECTRICAL CHARACTERISTICS					
Contactor type:	CTR 20 - CTRM 20	CTR 25 - CTRM 25	CTRM 32	CTR 40	CTR 63
Standard:	EN 61095, EN 60947-4-1, EN60947-5-1				
Rated current AC-1/AC-7a (In): (A)	20	25	32	40	63
Rated operational voltage (Ue): (V)	400 ac (230 ac only for 1NO)				
Rated insulation voltage (Ui): (V)	440 ac				
Rated impulse withstand voltage (Uimp): (kV)	4				
Rated conditional short-circuit current with fuse: (kA)	3 (gL 20)	3 (gL 25)	3 (gL 32)	3 (gL 63)	3 (gL 80)
Rated frequency: (Hz)	50/60				
No. of modules:	1 (1NO - 2NO - 1NO+1NC - 2NC) 2 (3NO - 4NO)	2		3	
Power loss per pole (AC-1 / AC-7a): (W)	1.7	2.2	2.5	4	8
Mechanical endurance (no. of operations):	3 x 10 ⁵				
Operating temperature: (°C)	-15 ... +70 (1NA - 3NA) -25 ... +70 (2NA - 4NA) -15 ... +55 (1NO+1NC - 2NC)	-25...+70 (2NO - 4NO) -15...+70 (3NO - 3NO+1NC - 1NO+1NC) -15...+55 (2NO+2NC - 4NC)			
Storage temperature: (°C)	-40...+80				
Max number of contactors (side-by-side) ⁽¹⁾ :	3 (≤ 40 °C) 2 (40 - 55 °C) 1 (55 - 70 °C)				
Rated tightening torque: (Nm)	1.2			3.5	
Terminal screw type:	M3.5			M5	
Screwdriver suggested:	PZ1			PZ2	
Cable section:	rigid (mm ²)	1...10			1.5...25
	flexible (mm ²)	1...6			1.5...16
Weight (g)	130	250	420		
CONTROL COIL CHARACTERISTICS					
Control coil voltage (Uc): (V)	24 - 230 AC		12- 24 - 230 ac / 12- 24 - 220 dc		
Min operating coil voltage: (V)	85% Uc				
Max operating coil voltage: (V)	110% Uc				
Frequency: (Hz)	50/60 ⁽²⁾				
Switch-on coil consumption: (VA / W)	12 / 10	2.6 / 2.6 ⁽³⁾ 3.8 / 3.8 ⁽⁴⁾		5 / 5	
Operation coil consumption: (VA / W)	2.8 / 1.2	2.6 / 2.6 ⁽³⁾ 3.8 / 3.8 ⁽⁴⁾		5 / 5	
Rated tightening torque: (Nm)	0.6				
Terminal screw type:	M3				
Screwdriver suggested:	PZ1				
Cable section:	rigid (mm ²)	1...2.5			
	flexible (mm ²)	1...2.5			
AUXILIARY CONTACT CHARACTERISTICS					
Rated operational voltage (Ue): (V)	230 - 400 ac				
Rated insulation voltage (Ui): (V)	500				
Rated impulse withstand voltage (Uimp): (kV)	4				
Rated current AC-15 (In): (A)	6 (230V) - 4 (400V)				
No. of modules:	0.5				
Power loss per pole (AC-15): (W)	0.3				
Mechanical endurance (no. of operations):	3 x 10 ⁶				
Electrical endurance (no. of operations):	50,000				
Rated tightening torque: (Nm)	0.8				
Terminal screw type:	M3				
Screwdriver suggested:	PZ1				
Cable section:	rigid (mm ²)	1...2.5			
	flexible (mm ²)	1...2.5			
Weight (g)	35				

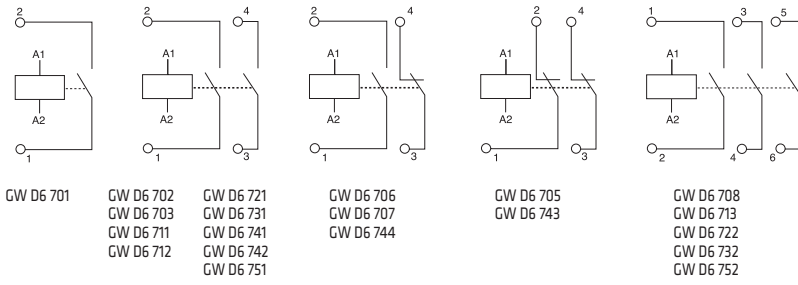
⁽¹⁾ It's suggested the use of a spacer insert (GWD6766) to limit the heating between the max number of adjacent contactors written in the table.

⁽²⁾ The contactors' coils for 25, 32, 40 and 63A versions can be controlled by AC voltage with frequency from 40 to 500Hz

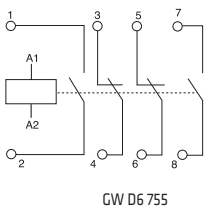
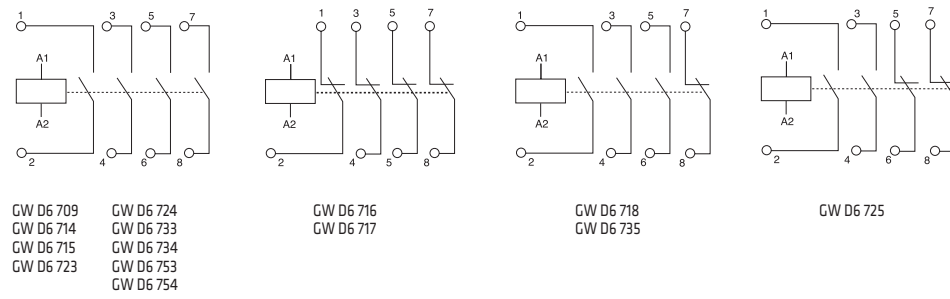
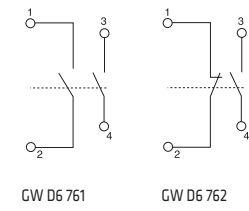
⁽³⁾ For 2NO - 3NO - 4NO - 3NO+1NC - 2NO+2NC versions

⁽⁴⁾ For 4NC versions

Circuit diagrams - Contactors



Circuit diagrams - Auxiliary contacts



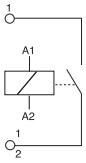
Installation relays

ELECTRICAL CHARACTERISTICS		
Contactor type:		RLM
Standard:		EN 61095, EN 60947-4-1, EN60947-5-1
Rated current AC-1/AC-7a (In):	(A)	16
Rated operational voltage (Ue):	(V)	230 ac (1NO) 400 ac (1NO+NC - 1CO - 2CO - 4NO)
Rated insulation voltage (Ui):	(V)	440 ac
Rated impulse withstand voltage (Uimp):	(kV)	4
Rated conditional short-circuit current with fuse:	(kA)	3 (gL 20)
Rated frequency:	(Hz)	50/60
No. of modules:		1 (1NO - 2NO - 1NO+1NC - 1CO) 2 (4NO - 2CO)
Power loss per pole (AC-1 / AC-7a):	(W)	1.2
Mechanical endurance (no. of operations):		3 x 10 ⁶
Operating temperature:	(°C)	-15...+55 (1NO - 1CO - 2CO - 1NO+NC) -25...+55 (2NO - 4NO)
Storage temperature:	(°C)	-30...+80
Max number of contactors (side-by-side):		3 (≤ 40 °C) 2 (40 - 55 °C)
Rated tightening torque:	(Nm)	1.2
Terminal screw type:		M3.5
Screwdriver suggested:		PZ1
Cable section:	rigid (mm ²) flexible (mm ²)	1...10 1...6
Weight	(g)	130 (1NO - 2NO - 1NO+1NC - 1CO) 240 (4NO - 2CO)
CONTROL COIL CHARACTERISTICS		
Control coil voltage (Uc):	(V)	8 - 230 ac 12 - 24 dc
Min operating coil voltage:	(V)	85% Uc
Max operating coil voltage:	(V)	110% Uc
Frequency:	(Hz)	50/60
Switch-on coil consumption:	(VA / W)	12 / 10 (AC Coil: 1NO - 2 NO - 1NO+1NC - 1CO) 33 / 25 (AC Coil: 4NO, 2CO) 2.1 / 2.1 (AC/DC Coil: 1CO) 2.6 / 2.6 (AC/DC Coil: 2CO)
Operation coil consumption:	(VA / W)	2.8 / 1.2 (ac coil: 1NO - 2 NO - 1NO+1NC - 1CO) 5.5 / 1.6 (AC Coil: 4NO, 2CO) 2.1 / 2.1 (AC/DC Coil: 1CO) 2.6 / 2.6 (AC/DC Coil: 2CO)
Rated tightening torque:	(Nm)	0.6
Terminal screw type:		M3
Screwdriver suggested:		PZ1
Cable section:	rigid (mm ²) flexible (mm ²)	1...2.5 1...2.5
AUXILIARY CONTACT CHARACTERISTICS		
Rated operational voltage (Ue):	(V)	230 - 400 ac
Rated insulation voltage (Ui):	(V)	500
Rated impulse withstand voltage (Uimp):	(kV)	4
Rated current AC-15 (In):	(A)	6 (230V) - 4 (400V)
No. of modules:		0.5
Power loss per pole (AC-15):	(W)	0.3
Mechanical endurance (no. of operations):		3 x 10 ⁶
Electrical endurance (no. of operations):		50,000
Rated tightening torque:	(Nm)	0.8
Terminal screw type:		M3
Screwdriver suggested:		PZ1
Cable section:	rigid (mm ²) flexible (mm ²)	1...2.5 1...2.5
Weight	(g)	35

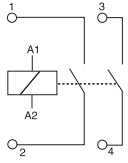
⁽¹⁾ It's suggested the use of a spacer insert (GW D6 766) between adjacent groups of relays to ensure heat dissipation.

⁽²⁾ Not available for relays with AC/DC coil

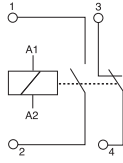
Circuit diagrams - Contactors



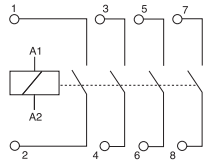
GW D6 601
GW D6 602
GW D6 603
GW D6 604



GW D6 624

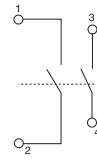


GW D6 706
GW D6 707
GW D6 744

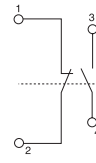


GW D6 632
GW D6 633
GW D6 634

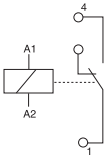
Circuit diagrams - Auxiliary contacts



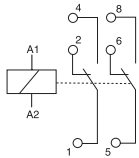
GW D6 761



GW D6 762



GW D6 606
GW D6 608
GW D6 610
GW D6 611



GW D6 626
GW D6 627
GW D6 629
GW D6 630



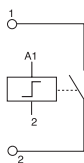
Latching relays

ELECTRICAL CHARACTERISTICS			
Relay type:		RLB	
Contact type:		1NO - 2NO - 1NO+1NC - 1CO	4NO - 2CO
Standard:		EN 60669-2-2	
Rated current AC-1/AC-7a (In):	(A)	16	
Rated operational voltage (Ue):	(V)	440 ac	
Rated insulation voltage (Ui):	(V)	440 ac	
Rated impulse withstand voltage (Uimp):	(kV)	4	
Rated conditional short-circuit current with fuse:	(kA)	3 (gL 20)	
Rated frequency:	(Hz)	50/60	
No. of modules:		1	2
Power loss per pole (AC-1 / AC-7a):	(W)	1	1
Mechanical endurance (no. of operations):		1 x 10 ⁶	
Operating temperature: ⁽²⁾	(°C)	AC Coil (-25...+70) DC Coil (-25...+55)	
Storage temperature:	(°C)	-30...+80	
Max number of contactors (side-by-side): ⁽¹⁾	T (≤ 40 °C)	AC Coil: No limitation DC Coil: No limitation	AC Coil: No limitation DC Coil: No limitation
	T (40 - 55 °C)	AC Coil: No limitation DC Coil: 3	AC Coil: 3 DC Coil: 3
	T (55 - 70 °C)	AC Coil: 3 DC Coil: 0	AC Coil: 1 DC Coil: 0
Rated tightening torque:	(Nm)	1.2	
Terminal screw type:		M4	
Screwdriver suggested:		PZ2	
Cable section:	rigid (mm ²)	1...10	
	flexible (mm ²)	1...10	
Weight	(g)	135	195
CONTROL COIL CHARACTERISTICS			
Control coil voltage (Uc):	(V)	8 - 230 ac 24 dc	
Min operating coil voltage:	(V)	90% Uc	
Max operating coil voltage:	(V)	110% Uc	
Frequency:	(Hz)	50/60	
Switch-on coil consumption:	(VA / W)	AC 18 / 13 DC 9 / 9	
Operation coil consumption:	(VA / W)	AC 9 / 4 DC 9 / 9	
Rated tightening torque:	(Nm)	0.6	
Terminal screw type:		M3	
Screwdriver suggested:		PZ1	
Cable section:	rigid (mm ²)	1...4	
	flexible (mm ²)	1...4	
AUXILIARY CONTACT CHARACTERISTICS			
Rated operational voltage (Ue):	(V)	250 ac	
Rated insulation voltage (Ui):	(V)	440 ac	
Rated impulse withstand voltage (Uimp):	(kV)	4	
Rated current AC-15 (In):	(A)	4 (250V)	
No. of modules:		0.5	
Power loss per pole (AC-15):	(W)	0.3	
Mechanical endurance (no. of operations):		1 x 10 ⁶	
Electrical endurance (no. of operations):		100,000	
Rated tightening torque:	(Nm)	0.8	
Terminal screw type:		M3	
Screwdriver suggested:		PZ1	
Cable section:	rigid (mm ²)	1...4	
	flexible (mm ²)	1...4	
Weight	(g)	30	

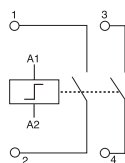
⁽¹⁾ It's suggested the use of a spacer insert (GW D6 766) between adjacent groups of relays to ensure heat dissipation.

⁽²⁾ The maximum endurance of impulse for relays with AC coil at temperature > 55°C and relays with DC coil, is 1 minute

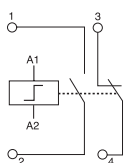
Circuit diagrams - Contactors



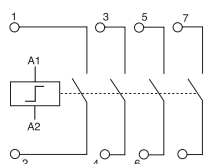
GW D6 641
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GW D6 644



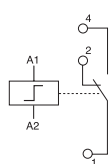
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GW D6 659



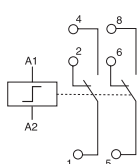
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GW D6 667
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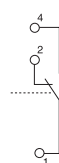


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GW D6 649
GW D6 650

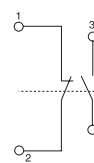


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GW D6 664

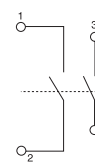
Circuit diagrams - Auxiliary contacts



GW D6 761



GW D6 762



GW D6 762



UTILIZATION CATEGORIES

The table below shows a brief description of each utilization category according to EN 61095. For the performance of the Gewiss contactors and relays according to the utilization category, please see the application note.






CURRENT TYPE	CATEGORY	TYPICAL APPLICATIONS	
AC 	AC-1	Resistive, non-inductive or slightly inductive loads: resistance furnaces	
	AC-2	Slip-ring motors: starting, switching off	
	AC-3	Squirrel-cage motors: starting, switching off motors during running ⁽¹⁾	
	AC-4	Squirrel-cage motors: starting, plugging, inching	
	AC-5a	Switching of discharge lamps	
	AC-5b	Switching of incandescent lamps	
	AC-6a	Switching of transformers	
	AC-6b	Switching of capacitor banks	
	AC-7a	Slightly inductive loads in household appliances and similar applications	
	AC-7b	Motor-loads for household applications ⁽¹⁾	
	AC-8a	Hermetic refrigerant compressor motor ⁽²⁾ control with manual resetting of overload releases	
	AC-8b	Hermetic refrigerant compressor motor (2) control with automatic resetting of overload releases	
DC 	DC-1	Resistive, non-inductive or slightly inductive loads: resistance furnaces	
	DC-3	Shunt-motors: starting, plugging, inching Dynamic breaking of dc motors	
	DC-5	Series-motors: starting, plugging, inching Dynamic breaking of dc motors	
	DC-6	Switching of incandescent lamps	

⁽¹⁾ AC-3 and AC-7b categories may be used for occasional inching (jogging) or plugging for limited time periods such as machine set-up; during such limited time periods, the number of such operations should not exceed five per minute or more than ten in a 10-min period.

⁽²⁾ A hermetic refrigerant compressor motor is a combination consisting of a compressor and a motor, both of which are enclosed in the same housing, with no external shaft or shaft seals, the motor operating in the refrigerant.

APPLICATION NOTE

In general, the technical data of Gewiss contactors and relays refer to the AC-1 or AC-7a utilization category. If the type of electrical load doesn't belong to these categories, the current and as a consequence the power of the load, must be derated according the following table.

AC APPLICATION 								
Contactor type	CTR20 - CTRM 20	CTR25 - CTRM 25	CTRM 32	CTR40	CTR63	RLM	RLB	
Utilization category:	AC-1 / AC-7a Resistive, non-inductive or slightly inductive loads 							
Rated operational current (A):	20	25	32	40	63	16	16	
Max operational power (kW):	230V single-phase	4	5.4	7	8.7	13.3	3.5	3.5
	230V three-phase	6	9	12	16	24	6	6
	400V three-phase	13	16	21	26	40	10.5	10.5
Electrical endurance (opening-closing)	200000		150000	100000		200000	100000	
Max operating frequency (opening-closing per hour)	600							
Utilization category:	AC-3 / AC-7b Starting and switching off 							
Rated operational current (A):	NO contacts: 9 NC contacts: 6	8.5		22	30	NO contacts: 7 NO contacts: 4	5	
Max operational power (kW):	230V single-phase	NO contacts: 1.3 NC contacts: 0.75	1.3	3.7	5	NO contacts: 1.1 NO contacts: 0.55	0.37	
	230V three-phase	-	2.2	5.5	8.5	1.5	1.1	
	400V three-phase	-	4	11	15	3	2.2	
Electrical endurance (opening-closing)	300000	500000		150000		300000	100000	
Max operating frequency (opening-closing per hour)	600							
Utilization category:	AC-5 Switching of lamps 							
Max operational power (kW):	See specific table regarding switching of lamps							
Utilization category:	AC-6b Switching of capacitor banks 							
Max operational capacity (µF):	230 V	30	36	40	220	330	30	80
Electrical endurance (opening-closing)	100000							
Max operating frequency (opening-closing per hour)	600							

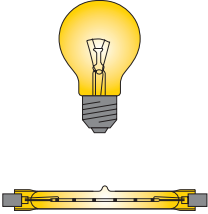
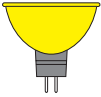
GEWISS contactors and relays can be also used for DC applications. The following table shows the values of the rated operational current depending on the rated operational voltage and the utilization category.

DC APPLICATION									
Utilization category	Nr. poles	Contactor type							
		CTR 20 - CTRM 20	CTR 25 - CTRM 25	CTRM 32	CTR 40	CTR 63	RLM	RLB	
Max operating frequency (DC-1):		300 switching per hour							
Electrical endurance (DC-1/DC-3/DC-5):		100.000							
Rated operational current (A)									
RATED OPERATIONAL VOLTAGE: 24V DC									
	DC-1 (L/R ≤ 1ms)	1	20	25	32	40	63	16	16
	2 in series		20	25	32	40	63	16	16
	3 in series		-	25	32	40	63	16	16
	4 in series		-	25	32	40	63	16	16
	DC-3 (L/R ≤ 2ms)	1	10	15	20	22	25	10	9
	2 in series		20	25	32	40	45	16	16
	3 in series		-	25	32	40	63	16	16
	4 in series		-	25	32	40	63	16	16
	DC-5 (L/R ≤ 7.5ms)	1	10	15	18	20	25	10	9
	2 in series		20	25	32	40	45	16	16
	3 in series		-	25	32	40	63	16	16
	4 in series		-	25	32	40	63	16	16
RATED OPERATIONAL VOLTAGE: 48V DC									
	DC-1 (L/R ≤ 1ms)	1	15	20	25	24	26	12	12
	2 in series		18	25	32	38	42	15	15
	3 in series		-	25	32	40	63	16	16
	4 in series		-	25	32	40	63	16	16
	DC-3 (L/R ≤ 2ms)	1	5	8	10	10	11	5	4
	2 in series		10	16	18	20	22	10	9
	3 in series		-	25	32	40	45	16	16
	4 in series		-	25	32	40	63	16	16
	DC-5 (L/R ≤ 7.5ms)	1	4	5	6	8	10	4	3
	2 in series		8	15	16	18	20	8	7
	3 in series		-	25	28	40	44	16	16
	4 in series		-	25	32	40	63	16	16
RATED OPERATIONAL VOLTAGE: 60V DC									
	DC-1 (L/R ≤ 1ms)	1	10	15	15	18	20	8	8
	2 in series		15	20	20	32	34	12	14
	3 in series		-	25	32	40	60	16	16
	4 in series		-	25	32	40	63	16	16
	DC-3 (L/R ≤ 2ms)	1	2	4	4	5	5	2	2
	2 in series		8	12	12	16	18	8	7
	3 in series		-	25	25	32	35	16	16
	4 in series		-	25	25	40	63	16	16
	DC-5 (L/R ≤ 7.5ms)	1	1	3	3	4	5	1	1
	2 in series		6	10	10	14	15	6	5
	3 in series		-	20	20	28	30	12	15
	4 in series		-	25	25	40	60	16	16

DC APPLICATION									
Utilization category	Nr. poles	Contactor type							
		CTR 20 - CTRM 20	CTR 25 - CTRM 25	CTRM 32	CTR 40	CTR 63	RLM	RLB	
Max operating frequency (DC-1):		300 switching per hour							
Electrical endurance (DC-1/DC-3/DC-5):		100.000							
Rated operational current (A)									
RATED OPERATIONAL VOLTAGE: 110V DC									
	DC-1 (L/R ≤ 1ms)	1	6	6	6	4	4	4	4
	2 in series		10	10	10	10	10	8	7
	3 in series		-	20	20	30	35	12	16
	4 in series		-	20	20	40	63	12	16
	DC-3 (L/R ≤ 2ms)	1	1	1.3	1.3	1.5	1.5	1	1
	2 in series		4	5.5	5.5	5	5	4	3
	3 in series		-	15	15	15	18	10	8
	4 in series		-	20	20	40	63	12	13
	DC-5 (L/R ≤ 7.5ms)	1	0.3	0.5	0.5	1	1	0.3	0.3
	2 in series		2	4	4	5	5	2	1.5
	3 in series		-	12	12	12	15	8	6
	4 in series		-	15	15	35	45	12	10
RATED OPERATIONAL VOLTAGE: 220V DC									
	DC-1 (L/R ≤ 1ms)	1	0.6	0.6	0.6	1.2	1.2	0.5	0.4
	2 in series		6	6	6	8	8	4	3
	3 in series		-	15	15	20	30	12	10
	4 in series		-	15	15	40	63	14	13
	DC-3 (L/R ≤ 2ms)	1	0.1	0.2	0.2	0.3	0.3	0.1	0.1
	2 in series		0.4	0.6	0.6	1	1	0.4	0.3
	3 in series		-	3	3	4	5	2	1
	4 in series		-	8	8	10	10	6	4
	DC-5 (L/R ≤ 7.5ms)	1	0.06	0.1	0.1	0.2	0.2	0.06	0.05
	2 in series		0.2	0.4	0.4	0.8	0.8	0.2	0.1
	3 in series		-	2	2	3	4	1	0.5
	4 in series		-	5	5	8	10	3	1.5

SWITCHING OF LAMPS

The following table shows the number of lamps per phase that can be commanded by each contactor and relay, according to the type of lamp and the rated power. The values refer to a rated voltage of 230 V 50 Hz.

MAX NUMBER OF LAMPS PER POLE AT 230 V, 50 HZ							
Lamp type	Power (W)	CONTACTORS				INSTALLATION RELAYS	LATCHING RELAYS
		CTR 20 CTRM 20	CTR 25 CTRM 25 / 32	CTR 40	CTR 63	RLM	RLB
INCANDESCENT AND HALOGEN							
	11	182	200	364	455	182	182
	15	133	147	267	333	133	133
	18	111	122	222	278	111	111
	20	100	110	200	250	100	100
	25	80	88	160	200	80	80
	28	71	79	143	179	71	71
	30	67	73	133	167	67	67
	33	61	67	121	152	61	61
	35	57	63	114	143	57	57
	40	50	55	100	125	50	50
	42	48	52	95	119	48	48
	46	43	48	87	109	43	43
	48	42	46	83	104	42	42
	50	40	44	80	100	40	40
	53	38	42	75	94	38	38
	57	35	39	70	88	35	35
	60	33	37	67	83	33	33
	70	29	31	57	71	29	29
	75	27	29	53	67	27	27
	77	26	29	52	65	26	26
	80	25	28	50	63	25	25
	100	20	22	40	50	20	20
	116	17	19	34	43	17	17
	120	17	18	33	42	17	17
	150	13	15	27	33	13	13
	160	13	14	25	31	13	13
200	10	11	20	25	10	10	
205	10	11	20	24	10	10	
230	9	10	17	22	9	9	
300	7	7	13	17	7	7	
400	5	6	10	13	5	5	
500	4	4	8	10	4	4	
750	3	3	5	7	3	3	
1000	2	2	4	5	2	2	
1500	1	1	3	3	1	1	
2000	1	1	2	3	1	1	
LOW-PRESSURE HALOGEN (WITH ELECTROMAGNETIC OR ELECTRONIC BALLAST)							
	10	100	120	270	430	100	100
	20	50	60	135	215	50	50
	30	33	40	90	143	33	33
	40	25	30	68	108	25	25
	50	20	24	54	86	20	20
	60	17	20	45	72	17	17
	70	14	17	39	61	14	14
	80	13	15	34	54	13	13
	90	11	13	30	48	11	11
	100	10	12	27	43	10	10
	150	7	8	18	29	7	7
	200	5	6	14	22	5	5
	300	3	4	9	14	3	3
	400	3	3	7	11	3	3

MAX NUMBER OF LAMPS PER POLE AT 230 V, 50 HZ

Lamp type	Power (W)	CONTACTORS				INSTALLATION RELAYS	LATCHING RELAYS
		CTR 20 CTRM 20	CTR 25 CTRM 25 / 32	CTR 40	CTR 63	RLM	RLB
COMPACT FLUORESCENT WITH BALLAST INSIDE (ENERGY SAVING)							
	3	150	200	550	700	133	133
	5	90	120	330	420	80	80
	6	75	100	275	350	67	67
	7	64	86	236	300	57	57
	8	56	75	206	263	50	50
	9	50	67	183	233	44	44
	10	45	60	165	210	40	40
	11	41	55	150	191	36	36
	12	38	50	138	175	33	33
	13	35	46	127	162	31	31
	14	32	43	118	150	29	29
	15	30	40	110	140	27	27
	16	28	38	103	131	25	25
	17	26	35	97	124	24	24
	18	25	33	92	117	22	22
	20	23	30	83	105	20	20
	21	21	29	79	100	19	19
	22	20	27	75	95	18	18
	23	20	26	72	91	17	17
	24	19	25	69	88	17	17
	25	18	24	66	84	16	16
	26	17	23	63	81	15	15
	27	17	22	61	78	15	15
	30	15	20	55	70	13	13
	33	14	18	50	64	12	12
	35	13	17	47	60	11	11
	40	11	15	41	53	10	10
	50	9	12	33	42	8	8
	70	6	9	24	30	6	6



COMPACT FLUORESCENT WITH EXTERNAL ELECTROMAGNETIC BALLAST

	UNCORRECTED	IN PARALLEL	UNCORRECTED	IN PARALLEL	UNCORRECTED	IN PARALLEL	UNCORRECTED	IN PARALLEL	UNCORRECTED	IN PARALLEL	UNCORRECTED	IN PARALLEL
5	84	15 (2 µF)	106	18 (2 µF)	190	110 (2 µF)	294	165 (2 µF)	70	15 (2 µF)	70	40 (2 µF)
2x5	60	15 (2 µF)	76	18 (2 µF)	136	110 (2 µF)	210	165 (2 µF)	50	15 (2 µF)	50	40 (2 µF)
7	84	15 (2 µF)	106	18 (2 µF)	190	110 (2 µF)	294	165 (2 µF)	70	15 (2 µF)	70	40 (2 µF)
2x7	60	15 (2 µF)	76	18 (2 µF)	136	110 (2 µF)	210	165 (2 µF)	50	15 (2 µF)	50	40 (2 µF)
9	70	15 (2 µF)	88	18 (2 µF)	158	110 (2 µF)	245	165 (2 µF)	58	15 (2 µF)	58	40 (2 µF)
2x9	53	15 (2 µF)	66	18 (2 µF)	119	110 (2 µF)	184	165 (2 µF)	44	15 (2 µF)	44	40 (2 µF)
10	60	15 (2 µF)	76	18 (2 µF)	136	110 (2 µF)	210	165 (2 µF)	50	15 (2 µF)	50	40 (2 µF)
11	53	15 (2 µF)	66	18 (2 µF)	119	110 (2 µF)	184	165 (2 µF)	44	15 (2 µF)	44	40 (2 µF)
13	53	15 (2 µF)	66	18 (2 µF)	119	110 (2 µF)	184	165 (2 µF)	44	15 (2 µF)	44	40 (2 µF)
16	42	15 (2 µF)	53	18 (2 µF)	95	110 (2 µF)	147	165 (2 µF)	35	15 (2 µF)	35	40 (2 µF)
18	35	7 (4.5 µF)	44	8 (4.5 µF)	79	49 (4.5 µF)	123	73 (4.5 µF)	29	7 (4.5 µF)	29	18 (4.5 µF)
2x18	20	7.5 (4 µF)	25	9 (4 µF)	45	55 (4 µF)	70	82.5 (4 µF)	17	7.5 (4 µF)	17	20 (4 µF)
21	35	10 (3 µF)	44	12 (3 µF)	79	73 (3 µF)	123	110 (3 µF)	29	10 (3 µF)	29	27 (3 µF)
22	21	7 (4.5 µF)	27	8 (4.5 µF)	48	49 (4.5 µF)	74	73 (4.5 µF)	18	7 (4.5 µF)	18	18 (4.5 µF)
24	28	7 (4.5 µF)	35	8 (4.5 µF)	63	49 (4.5 µF)	98	73 (4.5 µF)	23	7 (4.5 µF)	23	18 (4.5 µF)
26	28	7 (4.5 µF)	35	8 (4.5 µF)	63	49 (4.5 µF)	98	73 (4.5 µF)	23	7 (4.5 µF)	23	18 (4.5 µF)
28	28	9 (4.5 µF)	35	10 (3.5 µF)	63	63 (3.5 µF)	98	94 (3.5 µF)	23	9 (3.5 µF)	23	23 (3.5 µF)
32	19	7.5 (4 µF)	24	9 (4 µF)	43	55 (4 µF)	67	83 (4 µF)	16	7.5 (4 µF)	16	20 (4 µF)
36	20	7 (4.5 µF)	25	8 (4.5 µF)	45	49 (4.5 µF)	70	73 (4.5 µF)	17	7 (4.5 µF)	17	18 (4.5 µF)
38	20	7 (4.5 µF)	25	8 (4.5 µF)	45	49 (4.5 µF)	70	73 (4.5 µF)	17	7 (4.5 µF)	17	18 (4.5 µF)
40	20	7 (4.5 µF)	25	8 (4.5 µF)	45	49 (4.5 µF)	70	73 (4.5 µF)	17	7 (4.5 µF)	17	18 (4.5 µF)
58	13	4 (7 µF)	17	5 (7 µF)	30	31 (7 µF)	46	47 (7 µF)	11	4 (7 µF)	11	11 (7 µF)



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MAX NUMBER OF LAMPS PER POLE AT 230 V, 50 HZ							
Lamp type	Power (W)	CONTACTORS				INSTALLATION RELAYS	LATCHING RELAYS
		CTR 20 CTRM 20	CTR 25 CTRM 25 / 32	CTR 40	CTR 63	RLM	RLB
COMPACT FLUORESCENT WITH EXTERNAL ELECTRONIC BALLAST							
	5	75	105	300	417	67	100
	7	56	79	225	313	50	75
	9	45	63	180	250	40	60
	2x9	25	35	100	139	22	33
	10	45	63	180	250	40	60
	2x10	25	35	100	139	22	33
	11	32	45	129	179	29	43
	2x11	19	26	75	104	17	25
	13	32	45	129	179	29	43
	2x13	19	26	75	104	17	25
	14	28	39	113	156	25	38
	2x14	15	21	60	83	13	20
	16	32	45	129	179	29	43
	17	23	32	90	125	20	30
	2x17	13	18	50	69	11	17
	18	25	35	100	139	22	33
	2x18	13	19	53	74	12	18
	22	17	24	69	96	15	23
	2x22	11	15	43	60	10	14
	24	19	26	75	104	17	25
	2x24	10	14	39	54	9	13
	3x24	7	10	28	39	6	9
	4x24	5	7	21	29	5	7
	26	19	26	75	104	17	25
	2x26	9	13	38	52	8	13
	28	16	23	64	89	14	21
	32	14	20	56	78	13	19
	2x32	7	10	29	40	6	10
	36	14	20	56	78	13	19
	2x36	7	10	29	40	6	10
	38	13	19	53	74	12	18
	2x38	6	9	26	36	6	9
	40	11	16	45	63	10	15
	2x40	6	8	23	32	5	8
	42	11	16	45	63	10	15
	2x42	5	8	22	30	5	7
	55	8	12	33	46	7	11
	2x55	4	6	17	24	4	6
	57	8	11	32	45	7	11
	2x57	4	6	16	22	4	5
	60	7	10	29	40	6	10
	2x60	4	5	15	20	3	5
	70	7	9	26	37	6	9
	80	6	8	24	33	5	8
	2x80	3	4	12	16	3	4
	85	5	8	21	30	5	7
	100	5	7	20	27	4	7
	120	4	5	16	22	3	5
	150	3	5	13	18	3	4



MAX NUMBER OF LAMPS PER POLE AT 230 V, 50 HZ

Lamp type	Power (W)	CONTACTORS								INSTALLATION RELAYS		LATCHING RELAYS	
		CTR 20 CTRM 20		CTR 25 CTRM 25 / 32		CTR 40		CTR 63		RLM		RLB	
COMPACT FLUORESCENT WITH EXTERNAL ELECTROMAGNETIC BALLAST													
		UNCORRECTED	IN PARALLEL	UNCORRECTED	IN PARALLEL	UNCORRECTED	IN PARALLEL	UNCORRECTED	IN PARALLEL	UNCORRECTED	IN PARALLEL	UNCORRECTED	IN PARALLEL
4	52	15 (2 µF)	66	18 (2 µF)	118	110 (2 µF)	188	165 (2 µF)	52	15 (2 µF)	94	40 (2 µF)	
6	55	15 (2 µF)	70	18 (2 µF)	125	110 (2 µF)	200	165 (2 µF)	55	15 (2 µF)	100	40 (2 µF)	
8	59	15 (2 µF)	75	18 (2 µF)	133	110 (2 µF)	213	165 (2 µF)	59	15 (2 µF)	107	40 (2 µF)	
10	52	15 (2 µF)	66	18 (2 µF)	118	110 (2 µF)	188	165 (2 µF)	52	15 (2 µF)	94	40 (2 µF)	
11	55	15 (2 µF)	70	18 (2 µF)	125	110 (2 µF)	200	165 (2 µF)	55	15 (2 µF)	100	40 (2 µF)	
13	52	15 (2 µF)	66	18 (2 µF)	118	110 (2 µF)	188	165 (2 µF)	52	15 (2 µF)	94	40 (2 µF)	
14	22	7 (4.5 µF)	28	8 (4.5 µF)	50	49 (4.5 µF)	80	73 (4.5 µF)	22	7 (4.5 µF)	40	18 (4.5 µF)	
15	27	7 (4.5 µF)	34	8 (4.5 µF)	61	49 (4.5 µF)	97	73 (4.5 µF)	27	7 (4.5 µF)	48	18 (4.5 µF)	
16	44	12 (2.5 µF)	56	14 (2.5 µF)	100	88 (2.5 µF)	160	132 (2.5 µF)	44	12 (2.5 µF)	80	32 (2.5 µF)	
18	24	7 (4.5 µF)	30	8 (4.5 µF)	54	49 (4.5 µF)	86	73 (4.5 µF)	24	7 (4.5 µF)	43	18 (4.5 µF)	
20	23	7 (4.5 µF)	29	8 (4.5 µF)	53	49 (4.5 µF)	84	73 (4.5 µF)	23	7 (4.5 µF)	42	18 (4.5 µF)	
22	24	6 (5 µF)	30	7 (5 µF)	54	44 (5 µF)	86	66 (5 µF)	24	6 (5 µF)	43	16 (5 µF)	
25	30	9 (3.5 µF)	39	10 (3.5 µF)	69	63 (3.5 µF)	110	94 (3.5 µF)	30	9 (3.5 µF)	55	23 (3.5 µF)	
30	24	7 (4.5 µF)	30	8 (4.5 µF)	54	49 (4.5 µF)	86	73 (4.5 µF)	24	7 (4.5 µF)	43	18 (4.5 µF)	
32	20	6 (5 µF)	26	7 (5 µF)	47	44 (5 µF)	74	66 (5 µF)	20	6 (5 µF)	37	16 (5 µF)	
36	20	7 (4.5 µF)	26	8 (4.5 µF)	47	49 (4.5 µF)	74	73 (4.5 µF)	20	7 (4.5 µF)	37	18 (4.5 µF)	
38	20	7 (4.5 µF)	26	8 (4.5 µF)	47	49 (4.5 µF)	74	73 (4.5 µF)	20	7 (4.5 µF)	37	18 (4.5 µF)	
40	20	7 (4.5 µF)	26	8 (4.5 µF)	47	49 (4.5 µF)	74	73 (4.5 µF)	20	7 (4.5 µF)	37	18 (4.5 µF)	
58	13	4 (7 µF)	17	5 (7 µF)	30	31 (7 µF)	48	47 (7 µF)	13	4 (7 µF)	24	11 (7 µF)	
65	13	4 (7 µF)	17	5 (7 µF)	30	31 (7 µF)	48	47 (7 µF)	13	4 (7 µF)	24	11 (7 µF)	
75	13	5 (6 µF)	17	6 (6 µF)	30	37 (6 µF)	48	55 (6 µF)	13	5 (6 µF)	24	13 (6 µF)	
80	11	4 (7 µF)	14	5 (7 µF)	25	31 (7 µF)	40	47 (7 µF)	11	4 (7 µF)	20	11 (7 µF)	
85	11	4 (8 µF)	14	5 (8 µF)	25	28 (8 µF)	40	41 (8 µF)	11	4 (8 µF)	20	10 (8 µF)	
100	9	3 (10 µF)	12	4 (10 µF)	21	22 (10 µF)	33	33 (10 µF)	9	3 (10 µF)	17	8 (10 µF)	
125	9	2 (18 µF)	12	2 (18 µF)	21	12 (18 µF)	34	18 (18 µF)	9	2 (18 µF)	17	4 (18 µF)	



SERIES CIRCUIT FOR TWO FLUORESCENT LAMPS WITH EXTERNAL ELECTROMAGNETIC BALLAST


	UNCORRECTED	IN PARALLEL	UNCORRECTED	IN PARALLEL	UNCORRECTED	IN PARALLEL	UNCORRECTED	IN PARALLEL	UNCORRECTED	IN PARALLEL	UNCORRECTED	IN PARALLEL
2x4	26	15 (2 µF)	33	18 (2 µF)	59	110 (2 µF)	94	165 (2 µF)	26	15 (2 µF)	47	40 (2 µF)
2x6	28	15 (2 µF)	35	18 (2 µF)	63	110 (2 µF)	100	165 (2 µF)	28	15 (2 µF)	50	40 (2 µF)
2x8	29	15 (2 µF)	37	18 (2 µF)	67	110 (2 µF)	107	165 (2 µF)	29	15 (2 µF)	53	40 (2 µF)
2x10	26	15 (2 µF)	33	18 (2 µF)	59	110 (2 µF)	94	165 (2 µF)	26	15 (2 µF)	47	40 (2 µF)
2x11	28	15 (2 µF)	35	18 (2 µF)	63	110 (2 µF)	100	165 (2 µF)	28	15 (2 µF)	50	40 (2 µF)
2x13	26	15 (2 µF)	33	18 (2 µF)	59	110 (2 µF)	94	165 (2 µF)	26	15 (2 µF)	47	40 (2 µF)
2x14	11	7 (4.5 µF)	14	8 (4.5 µF)	25	49 (4.5 µF)	40	73 (4.5 µF)	11	7 (4.5 µF)	20	18 (4.5 µF)
2x15	13	7 (4.5 µF)	17	8 (4.5 µF)	30	49 (4.5 µF)	48	73 (4.5 µF)	13	7 (4.5 µF)	24	18 (4.5 µF)
2x16	22	12 (2.5 µF)	28	14 (2.5 µF)	50	88 (2.5 µF)	80	132 (2.5 µF)	22	12 (2.5 µF)	40	32 (2.5 µF)
2x18	12	7 (4.5 µF)	15	8 (4.5 µF)	27	49 (4.5 µF)	43	73 (4.5 µF)	12	7 (4.5 µF)	22	18 (4.5 µF)
2x20	12	7 (4.5 µF)	15	8 (4.5 µF)	26	49 (4.5 µF)	42	73 (4.5 µF)	12	7 (4.5 µF)	21	18 (4.5 µF)
2x22	12	6 (5 µF)	15	7.2 (5 µF)	27	44 (5 µF)	43	66 (5 µF)	12	6 (5 µF)	22	16 (5 µF)
2x25	15	9 (3.5 µF)	19	10 (3.5 µF)	34	63 (3.5 µF)	55	94 (3.5 µF)	15	9 (3.5 µF)	28	23 (3.5 µF)
2x30	12	7 (4.5 µF)	15	8 (4.5 µF)	27	49 (4.5 µF)	43	73 (4.5 µF)	12	7 (4.5 µF)	22	18 (4.5 µF)
2x32	10	6 (5 µF)	13	7 (5 µF)	23	44 (5 µF)	37	66 (5 µF)	10	6 (5 µF)	19	16 (5 µF)
2x36	10	7 (4.5 µF)	13	8 (4.5 µF)	23	49 (4.5 µF)	37	73 (4.5 µF)	10	7 (4.5 µF)	19	18 (4.5 µF)
2x38	10	7 (4.5 µF)	13	8 (4.5 µF)	23	49 (4.5 µF)	37	73 (4.5 µF)	10	7 (4.5 µF)	19	18 (4.5 µF)
2x40	10	7 (4.5 µF)	13	8 (4.5 µF)	23	49 (4.5 µF)	37	73 (4.5 µF)	10	7 (4.5 µF)	19	18 (4.5 µF)
2x58	7	4 (7 µF)	8	5 (7 µF)	15	31 (7 µF)	24	47 (7 µF)	7	4 (7 µF)	12	11 (7 µF)
2x65	7	4 (7 µF)	8	5 (7 µF)	15	31 (7 µF)	24	47 (7 µF)	7	4 (7 µF)	12	11 (7 µF)
2x75	7	5 (6 µF)	8	6 (6 µF)	15	37 (6 µF)	24	55 (6 µF)	7	5 (6 µF)	12	13 (6 µF)
2x80	6	4 (7 µF)	7	5 (7 µF)	13	31 (7 µF)	20	47 (7 µF)	6	4 (7 µF)	10	11 (7 µF)
2x85	6	4 (8 µF)	7	5 (8 µF)	13	28 (8 µF)	20	41 (8 µF)	6	4 (8 µF)	10	10 (8 µF)
2x100	5	3 (10 µF)	6	4 (10 µF)	10	22 (10 µF)	17	33 (10 µF)	5	3 (10 µF)	8	8 (10 µF)
2x125	5	2 (18 µF)	6	2 (18 µF)	11	12 (18 µF)	17	18 (18 µF)	5	2 (18 µF)	9	4 (18 µF)



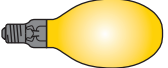
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MAX NUMBER OF LAMPS PER POLE AT 230 V, 50 HZ							
Lamp type	Power (W)	CONTACTORS				INSTALLATION RELAYS	LATCHING RELAYS
		CTR 20 CTRM 20	CTR 25 CTRM 25 / 32	CTR 40	CTR 63	RLM	RLB
LEAD-LAG CIRCUIT FOR FLUORESCENT LAMPS WITH EXTERNAL ELECTROMAGNETIC BALLASTS - SERIES CORRECTED							
	2x18	31 (2.7 µF)	40 (2.7 µF)	100 (2.7 µF)	150 (2.7 µF)	31 (2.7 µF)	62 (2.7 µF)
	2x36	17 (4.5 µF)	22 (4.5 µF)	54 (4.5 µF)	81 (4.5 µF)	17 (4.5 µF)	33 (4.5 µF)
	2x40	17 (4.5 µF)	22 (4.5 µF)	54 (4.5 µF)	81 (4.5 µF)	17 (4.5 µF)	33 (4.5 µF)
	2x58	10 (7 µF)	13 (7 µF)	54 (7 µF)	50 (7 µF)	10 (7 µF)	21 (7 µF)
	2x65	10 (7 µF)	13 (7 µF)	33 (7 µF)	50 (7 µF)	10 (7 µF)	21 (7 µF)
	2x80	8 (9 µF)	11 (9 µF)	27 (9 µF)	41 (9 µF)	8 (9 µF)	17 (9 µF)
	2x85	8 (9 µF)	11 (9 µF)	27 (9 µF)	41 (9 µF)	8 (9 µF)	17 (9 µF)
	2x125	7 (18 µF)	9 (18 µF)	22 (18 µF)	33 (18 µF)	6 (18 µF)	13 (18 µF)
FLUORESCENT WITH ELECTRONIC EXTERNAL BALLAST							
	4	117	158	417	600	67	100
	6	106	144	379	545	61	91
	2x6	58	79	208	300	33	50
	8	88	119	313	450	50	75
	2x8	44	59	156	225	25	38
	10	70	95	250	360	40	60
	2x10	39	53	139	200	22	33
	11	58	79	208	300	33	50
	13	50	68	179	257	29	43
	14	44	59	156	225	25	38
	2x14	23	32	83	120	13	20
	3x14	17	23	60	86	10	14
	4x14	13	17	45	64	7	11
	15	44	59	156	225	25	38
	2x15	27	37	96	138	15	23
	16	50	68	179	257	29	43
	2x16	25	34	89	129	14	21
	3x16	18	24	63	90	10	15
	4x16	13	17	45	64	7	11
	18	39	53	139	200	22	33
	2x18	21	28	74	106	12	18
	3x18	15	20	52	75	8	13
	4x18	11	15	40	58	6	10
	19	32	43	114	164	18	27
	2x19	16	22	57	82	9	14
	20	32	43	114	164	18	27
	2x20	16	22	57	82	9	14
	21	32	43	114	164	18	27
	2x21	16	22	57	82	9	14
	22	32	43	114	164	18	27
	2x22	15	21	54	78	9	13
	24	29	40	104	150	17	25
	2x24	16	22	57	82	9	14
	3x24	11	14	38	55	6	9
	4x24	8	11	29	42	5	7
25	23	32	83	120	13	20	
2x25	13	17	45	64	7	11	
28	25	34	89	129	14	21	
2x28	13	18	46	67	7	11	
30	25	34	89	129	14	21	
2x30	13	18	46	67	7	11	
32	21	28	74	106	12	18	
2x32	10	14	36	51	6	9	
34	21	28	74	106	12	18	
2x34	10	14	36	51	6	9	
35	21	28	74	106	12	18	

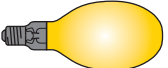
MAX NUMBER OF LAMPS PER POLE AT 230 V, 50 HZ

Lamp type	Power (W)	CONTACTORS				INSTALLATION RELAYS	LATCHING RELAYS
		CTR 20 CTRM 20	CTR 25 CTRM 25 / 32	CTR 40	CTR 63	RLM	RLB
	2x35	10	14	37	53	6	9
	36	22	30	78	113	13	19
	2x36	11	15	40	58	6	10
	3x36	8	10	27	39	4	7
	38	23	32	83	120	13	20
	2x38	11	15	40	58	6	10
	39	18	25	66	95	11	16
	2x39	10	13	35	50	6	8
	40	17	23	60	86	10	14
	2x40	8	11	30	43	5	7
	45	15	20	52	75	8	13
	2x45	8	10	27	39	4	7
	49	15	20	52	75	8	13
	2x49	8	10	27	39	4	7
	50	14	19	50	72	8	12
	2x50	7	10	26	38	4	6
	51	16	22	57	82	9	14
	2x51	8	11	30	43	5	7
	54	13	18	48	69	8	12
	2x54	7	9	24	35	4	6
	55	13	17	45	64	7	11
	2x55	6	9	23	33	4	5
	58	14	19	50	72	8	12
	2x58	7	10	26	38	4	6
	65	14	19	50	72	8	12
	2x65	7	10	26	38	4	6
	70	12	16	42	60	7	10
	2x70	6	8	22	32	4	5
	73	9	13	33	47	5	8
	2x73	5	7	18	26	3	4
	80	9	12	31	45	5	8
	2x80	5	6	16	24	3	4

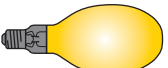

HIGH-PRESSURE MERCURY-VAPOR WITH EXTERNAL ELECTROMAGNETIC BALLAST

	UNCORRECTED		IN PARALLEL		UNCORRECTED		IN PARALLEL		UNCORRECTED		IN PARALLEL	
	Power (W)	Ballast (µF)	Power (W)	Ballast (µF)	Power (W)	Ballast (µF)	Power (W)	Ballast (µF)	Power (W)	Ballast (µF)	Power (W)	Ballast (µF)
	50	4 (7 µF)	18	5 (7 µF)	38	31 (7 µF)	55	47 (7 µF)	14	4 (7 µF)	17	11 (7 µF)
	80	4 (8 µF)	13	5 (8 µF)	29	27 (8 µF)	42	41 (8 µF)	10	4 (8 µF)	13	10 (8 µF)
	125	3 (10 µF)	9	4 (10 µF)	20	22 (10 µF)	29	33 (10 µF)	7	3 (10 µF)	8	8 (10 µF)
	250	1 (18 µF)	5	2 (18 µF)	10	12 (18 µF)	15	18 (18 µF)	4	1 (18 µF)	5	4 (18 µF)
	400	1 (25 µF)	3	1 (25 µF)	7	9 (25 µF)	10	13 (25 µF)	2	1 (25 µF)	3	3 (25 µF)
	700	1 (40 µF)	2	0 (40 µF)	4	5 (40 µF)	6	7 (40 µF)	1	0 (40 µF)	2	2 (40 µF)
	1000	1 (60 µF)	1	0 (60 µF)	3	4 (60 µF)	4	5 (60 µF)	1	0 (60 µF)	1	1 (60 µF)

HIGH-PRESSURE MERCURY-VAPOR WITHOUT BALLAST

	160	11	12	22	28	10	10
	250	7	8	15	18	6	6
	500	4	4	7	9	3	3

METAL HALIDE WITH EXTERNAL ELECTROMAGNETIC BALLAST

	UNCORRECTED		IN PARALLEL		UNCORRECTED		IN PARALLEL		UNCORRECTED		IN PARALLEL	
	Power (W)	Ballast (µF)	Power (W)	Ballast (µF)	Power (W)	Ballast (µF)	Power (W)	Ballast (µF)	Power (W)	Ballast (µF)	Power (W)	Ballast (µF)
	35	5 (6 µF)	22	6 (6 µF)	43	36 (6 µF)	60	50 (6 µF)	16	5 (6 µF)	16	13 (6 µF)
	70	2 (12 µF)	12	3 (12 µF)	23	18 (12 µF)	32	25 (12 µF)	8	2 (12 µF)	8	7 (12 µF)
	100	2 (12 µF)	10	3 (12 µF)	19	18 (12 µF)	26	25 (12 µF)	7	2 (12 µF)	7	7 (12 µF)
	150	1 (20 µF)	7	1 (20 µF)	12	11 (20 µF)	18	15 (20 µF)	4	1 (20 µF)	4	4 (20 µF)
	250	0 (32 µF)	4	1 (32 µF)	7	6 (32 µF)	10	9 (32 µF)	3	0 (32 µF)	3	3 (32 µF)
	400	0 (45 µF)	3	0 (45 µF)	6	5 (45 µF)	9	7 (45 µF)	2	0 (45 µF)	2	2 (45 µF)
	600	0 (65 µF)	2	0 (65 µF)	3	3 (65 µF)	4	5 (65 µF)	1	0 (65 µF)	1	1 (65 µF)
	1000	0 (85 µF)	1	0 (85 µF)	2	2 (85 µF)	3	3 (85 µF)	1	0 (85 µF)	1	0 (85 µF)
	2000	0 (125 µF)	0	0 (125 µF)	1	1 (125 µF)	2	2 (125 µF)	0	0 (125 µF)	0	0 (125 µF)

For technical information contact the Technical Assistance Service or visit gewiss.com

MAX NUMBER OF LAMPS PER POLE AT 230 V, 50 HZ													
Lamp type	Power (W)	CONTACTORS				INSTALLATION RELAYS	LATCHING RELAYS						
		CTR 20 CTRM 20	CTR 25 CTRM 25 / 32	CTR 40	CTR 63	RLM	RLB						
METAL HALIDE WITH EXTERNAL ELECTRONIC BALLAST													
	20	18	25	51	64	18	27						
	35	10	13	27	33	10	14						
	2x35	5	7	15	18	5	8						
	50	7	10	19	24	7	10						
	70	5	7	15	18	5	8						
	2x70	3	4	8	10	3	4						
	100	4	5	10	13	4	5						
	150	3	4	8	10	3	4						
	250	2	2	4	5	2	2						
	400	1	1	2	3	1	1						
	1000	0	0	1	1	0	0						
2000	0	0	0	1	0	0							
HIGH-PRESSURE SODIUM-VAPOR WITH EXTERNAL ELECTROMAGNETIC BALLAST													
		UNCORRECTED	IN PARALLEL	UNCORRECTED	IN PARALLEL	UNCORRECTED	IN PARALLEL	UNCORRECTED	IN PARALLEL	UNCORRECTED	IN PARALLEL	UNCORRECTED	IN PARALLEL
	35	15	5 (6 µF)	18	6 (6 µF)	55	36 (6 µF)	70	55 (6 µF)	15	5 (6 µF)	25	13 (6 µF)
	50	11	3 (8 µF)	12	4 (8 µF)	35	27 (8 µF)	45	41 (8 µF)	11	3 (8 µF)	16	10 (8 µF)
	70	9	2 (12 µF)	10	3 (12 µF)	30	18 (12 µF)	35	27 (12 µF)	9	2 (12 µF)	13	7 (12 µF)
	100	7	2 (12 µF)	8	3 (12 µF)	25	18 (12 µF)	30	27 (12 µF)	7	2 (12 µF)	11	7 (12 µF)
	150	5	1 (20 µF)	6	1 (20 µF)	17	11 (20 µF)	22	16 (20 µF)	5	1 (20 µF)	7	4 (20 µF)
	250	3	0 (32 µF)	4	1 (32 µF)	10	6 (32 µF)	13	10 (32 µF)	3	0 (32 µF)	4	3 (32 µF)
	400	2	0 (45 µF)	2	0 (45 µF)	6	4 (45 µF)	8	6 (45 µF)	2	0 (45 µF)	3	2 (45 µF)
	600	1	0 (65 µF)	1	0 (65 µF)	4	3 (65 µF)	5	5 (65 µF)	1	0 (65 µF)	2	1 (65 µF)
	1000	0	0 (100 µF)	1	0 (100 µF)	3	2 (100 µF)	3	3 (100 µF)	0	0 (100 µF)	1	0 (100 µF)
HIGH-PRESSURE SODIUM-VAPOR WITH EXTERNAL ELECTRONIC BALLAST													
	35	10	13	27	33	10	14						
	50	8	11	22	28	8	12						
	70	5	7	15	18	5	8						
	100	4	5	10	13	4	5						
	150	3	4	8	10	3	4						
	250	2	2	4	5	2	2						
	400	1	1	3	4	1	2						
	600	0	0	1	2	0	1						
	1000	0	0	1	1	0	0						
LOW-PRESSURE SODIUM-VAPOR WITH EXTERNAL ELECTROMAGNETIC BALLAST													
		UNCORRECTED	IN PARALLEL	UNCORRECTED	IN PARALLEL	UNCORRECTED	IN PARALLEL	UNCORRECTED	IN PARALLEL	UNCORRECTED	IN PARALLEL	UNCORRECTED	IN PARALLEL
	18	22	6 (5 µF)	27	7 (5 µF)	71	44 (5 µF)	90	66 (5 µF)	22	6 (5 µF)	25	16 (5 µF)
	35	7	1 (20 µF)	9	1 (20 µF)	23	11 (20 µF)	30	16 (20 µF)	7	1 (20 µF)	15	4 (20 µF)
	55	7	1 (20 µF)	9	1 (20 µF)	23	11 (20 µF)	30	16 (20 µF)	7	1 (20 µF)	15	4 (20 µF)
	90	4	1 (26 µF)	5	1 (26 µF)	14	8 (26 µF)	19	12 (26 µF)	4	1 (26 µF)	10	3 (26 µF)
	135	3	0 (40 µF)	4	0 (40 µF)	10	4 (40 µF)	13	7 (40 µF)	3	0 (40 µF)	10	2 (40 µF)
180	3	0 (40 µF)	4	0 (40 µF)	10	5 (40 µF)	13	8 (40 µF)	3	0 (40 µF)	10	2 (40 µF)	
LOW-PRESSURE SODIUM-VAPOR WITH EXTERNAL ELECTRONIC BALLAST													
	35	13	18	35	44	13	19						
	55	8	11	22	28	8	12						
LED LAMPS*													
	-	N = 2.4 / In	N = 3.8 / In	N = 11 / In	N = 18 / In	N = 1.5 / In	N = 2 / In						

* N = number of lamps
In = rated current of LED lamp

GUIDE - HOW TO MAKE SIMULTANEOUS COMMAND OF MORE GROUPS OF LATCHING RELAYS

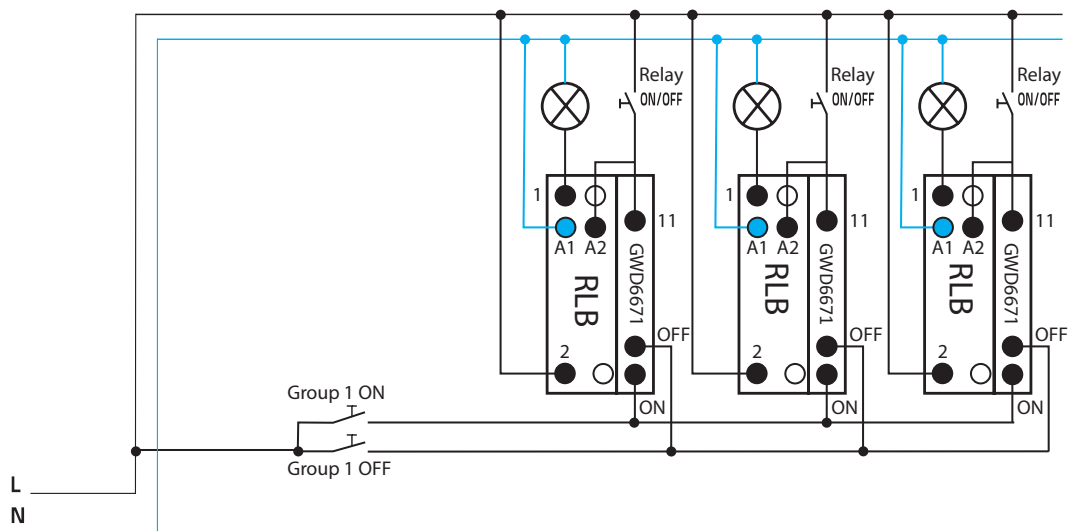
ACCESSORIES FOR CENTRAL COMMAND AND GROUP COMMAND			
Code:		GWD6671 ⁽¹⁾	GWD6672
Type of accessory:		It must be mounted on relay	Stand alone
Rated operating voltage (Ue):	(V)		250 ac
Rated insulation voltage (Ui):	(V)		440 ac
No. of modules:			0.5
Mechanical endurance (no. of operations):		1 x 10 ⁶	-
Rated tightening torque:	(Nm)		0.8
Terminal screw type			M3
Screwdriver suggested:			PZ1
Cable section:	rigid (mm ²)		1..4
	flexible (mm ²)		1..4
Weight	(g)		30

⁽¹⁾ Not available for relay with DC coil

The following codes are used to make a centralized command of one or more groups of relays

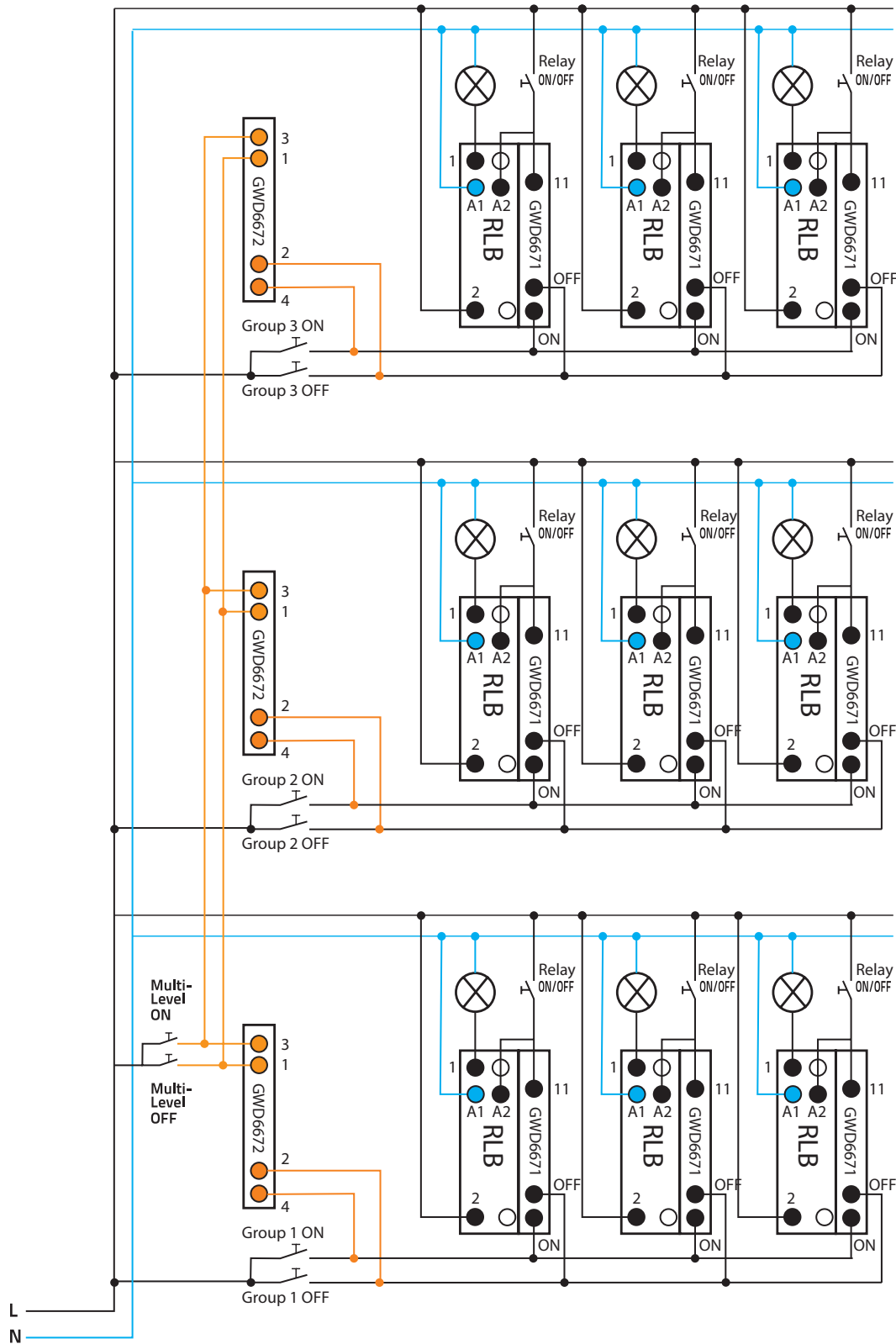
Code	Type	Number	Description
GW D6 671	Accessory that must be mounted on latching relay	1 for each latching relay of the group	Carry out the ON/OFF command of two or more relays from one point, independently from the status of each relay.
GW D6 672	Stand-alone accessory	1 for each group of relay	Carry out the simultaneously command of two or more groups of centralized relays independently from the status of each relay.

GW D6 671 - CENTRALIZED COMMAND OF 1 GROUP OF RELAY



- Legend:
- **Push-button relay:** local command of relay
 - **Push-button of group:** centralized command of all group's relays, independently from the status of each relay

GW D6 672 - CENTRALIZED COMMAND OF MORE GROUPS OF RELAYS



Legend:

- **Push-button relay:** local command of relay
- **Push-button of group:** centralized command of all group's relays, independently from the status of each relay
- **Multilevel Push-button:** centralized command for all relays of all the groups, independently from the status of each relay

Load management relay P-Comfort

TECHNICAL DATA		
Code:	GWD6916	GWA1916
Version:	Wire	Radio frequency ZigBee
Standards:	EN 60669-1 EN 60669-2-1	EN 60669-1 EN 60669-2-1 EN 301489-1 EN 301489-17
Rated operating voltage (Ue):	(Vac)	230
Rated current (In):	(A)	32
Rated frequency:	(Hz)	50
Type of contact:	1 CO (potential free contact)	
Rated current of contact:	16 A AC1 250 V	
No. of modules:	2	
Insulation voltage:	(V)	1000
Rated impulse withstand voltage:	(kV)	1
Power loss at In:	(VA)	2
Precision:	1%	
Measured values and shown on display:	Active power (absorbed and supplied)	Active power (absorbed and supplied) Active energy (absorbed and supplied) Current Voltage Power factor Frequency
Resetting of energy count:	yes	
Acoustic warning threshold exceeded:	yes	
Max outdoor distance of signal:	(m)	100
Radio protocol:	-	ZigBee/IEEE 802.15.4
Output power of signal:	(dBm)	+8
Max number of ZigBee devices can be connected:	-	10
Frequency of signal:	(GHz)	2.4
Flexible cable section for main terminals:	(mm ²)	max 4
Flexible cable section for contact terminals:	(mm ²)	max 2.5
Rigid cable section for main terminals:	(mm ²)	max 6
Rigid cable section for contact terminals:	(mm ²)	max 4
Rated tightening torque for main terminal:	(Nm)	max 0.6
Rated tightening torque for contact terminal:	(Nm)	max 0.4
Operating temperature:	(°C)	-5...+45
Storage temperature:	(°C)	-25...+70
Sound level at 10 cm:	(dB)	85

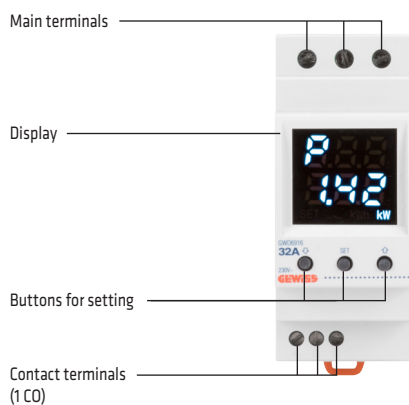
Wire version

In the event of overloading, due to the simultaneous switching ON of several electric loads, P-Comfort prevents electricity supply interruption disconnecting the non-preferential loads wired to the contact on the device.

After an adjustable time interval, P-Comfort automatically supplies non-preferential loads again.

The P-Comfort is suitable for single-phase installations with a contractual power up to 6 kW.

The device is already set with default values suit for 3 kW utilities but it is possible to change these values using the buttons placed on the front of device.



SdP: Non-priority load contact opening threshold

Adjustment power range: 0 ÷ 8 kW

Default: **3.80 kW**

ton: Contact opening delay when power threshold is exceeded and duration of the buzzer

Adjustment time range: 10 ÷ 120 seconds

Default: **45 seconds**

tof: Non-priority load contact opening time

Adjustment time range: 10 ÷ 255 seconds

Default: **90 seconds**

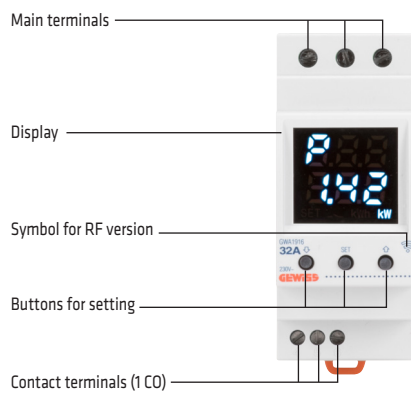
Radio frequency ZigBee version

In the event of overloading, due to the simultaneous switching ON of several electric loads, P-Comfort RF prevents electricity supply interruption disconnecting the non-preferential loads connected in radio frequency to the following devices:

- smart plug RF ZigBee (GWA1526)
 - RF ZigBee actuator for flush-mounting (GWA1523)
- or wired to the contact on the device.

The disconnection and connection of non-preferential loads can be set:

- by Priority (regardless of power consumption)
- by Power (depending on power consumption)



Smart plug RF ZigBee



RF ZigBee actuator
for flush-mounting

BIOCOMFORT (Main disconnection switch)

DESCRIPTION

Principle of operation

The main disconnection switch (also known as a "biocomfort switch") disconnects the alternating voltage from the electrical system downstream when all the loads in the sleeping area that are connected to it are switched off. It is not necessary to manually adjust the relay tripping threshold because the main disconnection switch, thanks to the innovative self-learning function, automatically learns the value of the current absorbed by the loads and applies it as the tripping threshold. While the main disconnection switch is functioning, the line downstream of the biocomfort switch (used for the sleeping area) is powered with a continuous monitoring voltage of (5 - 230V dc). This voltage is necessary in order to restore the mains voltage (230V ac) at any moment, if a load is switched on. It is then possible to deactivate the main disconnection switch using a manual command if any maintenance work needs to be carried out on the electrical system.

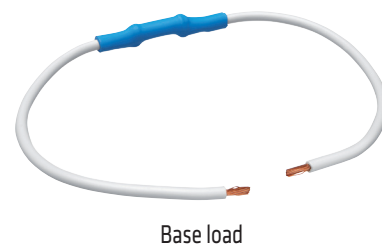
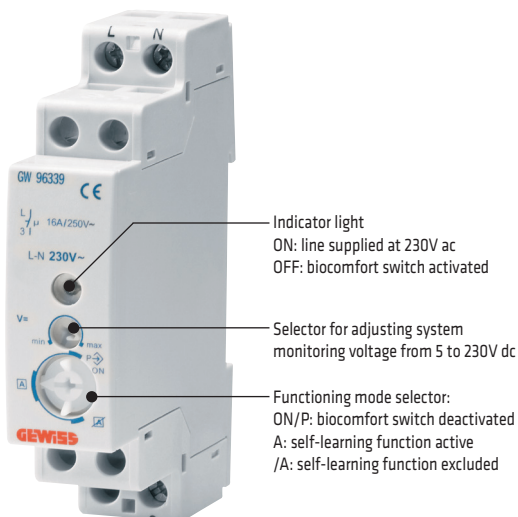
TECHNICAL DATA		
Standard:		EN 60669-2-1
Rated operating voltage (Ue):	(V)	230 ac ± 10%
Rated operating current (Ie):	(A)	16
Rated insulation voltage (Ui):	(V)	250 ac
Rated frequency:	(Hz)	50
Monitoring voltage:	(V)	5 - 230 dc
Maximum lamp load:	Incandescent lamps and halogen lamps (W)	2300
	Fluorescent lamps (VA)	1000
	Lamps with electronic ballast (VA)	1000
Power loss:	(W)	0.8
Max. operating cycles:		1,000/h
Closing time:	(ms)	10 - 20
Opening time:	(ms)	5 - 15
Operating temperature:	(°C)	-20...+50
Maximum cable section:	(mm²)	6

Base load

To be applied to fluorescent lamps, or loads with an absorption level less than 30 mA, according to the diagrams shown. Install directly on the load or in junction boxes. Other applications: fluorescent lamps, low consumption lamps, LED lamps, halogen lamps with transformer, dimmers and electronic transformers.

Notes

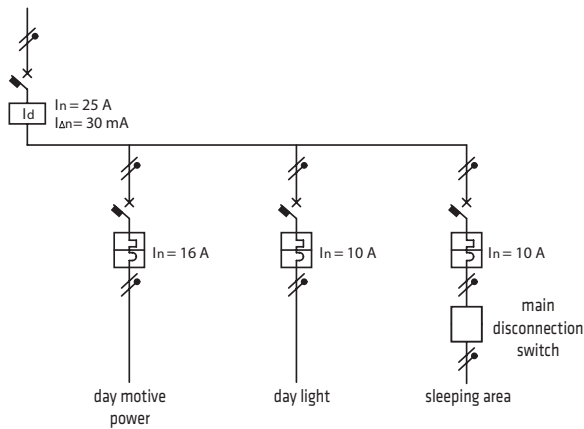
To facilitate the correct operation of the main disconnection switch, you are advised to install the minimum essential loads in the sleeping area. In fact, special attention must be paid before installing the biocomfort switch when there are dimmers or devices in standby in the sleeping area (e.g. TVs, alarm clocks, etc.): it is difficult for the main disconnection switch to pick up and disable these devices. For further information, refer to the circuit diagrams on the next page.



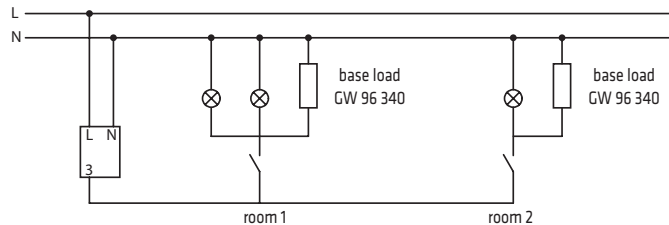
Circuit diagrams

Installation in the enclosure

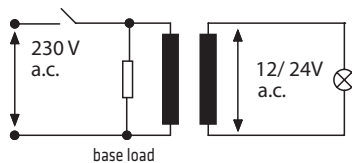
(requiring a dedicated line for the sleeping area)



Fluorescent lamps / Low consumption lamps



Halogen lamps with 12/24V transformer



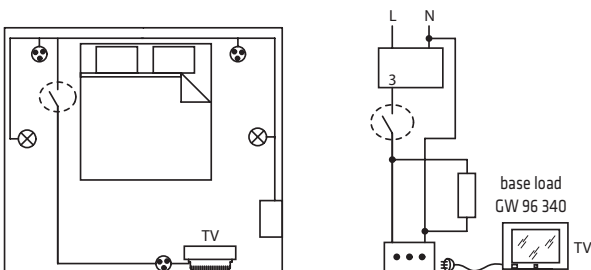
The biocomfort switch works correctly by adding the base load in parallel with the transformer, downstream from the command switch. The lamp command switch must be located upstream from the transformer (230V ac side).

Dimmers

The functioning of the biocomfort switch alongside circuits commanded by electronic dimmers is not guaranteed, but it will function with rotary dimmers (positioning the monitoring voltage selector on the maximum value). In addition, correct functioning is subject to the correct acquisition of the self-learning function by the biocomfort switch, with the minimum adjustment of the load managed by the dimmer. During normal use, load switch-on and switch-off operations must be performed in a decisive manner.

The functioning of the main disconnection switch with mechanical rotary dimmers not belonging to the Gewiss range is not guaranteed. For this reason, you are advised to install dimmers belonging to the Chorus range (GW 10 561, GW 12 561 and GW 14 561).

Loads in standby



In this case, the socket-outlet to which the load is connected must be commanded by a switch. In addition, the base load must be installed in parallel with the socket-outlet.

AC single-phase current control relay

TECHNICAL DATA		
Code:		GW 96 906
Input circuit		
Rated operating voltage (Un):	(V)	230 ac
Tolerance:	(% Un)	± 15
Controlled current:	(A)	10
Power loss:	(VA)	5
Rated frequency:	(Hz)	48 ÷ 63
Overload category (IEC 60664-1):		III
Rated impulse withstand voltage (Uimp):	(kV)	4
Output circuit		
Changeover contact free potential type:	(N°)	1
Rated operating voltage (Un):	(V)	250
Switchover capacity (5A/250V ac):	(VA)	1250
Fuse (quick type):	(A)	5
Mechanical endurance:	(N° Oper.)	20 x 10 ⁶
Electrical endurance (resistive load 1000VA):	(N° Oper.)	20 x 10 ⁵
Max switching frequency:	(N°/min)	60 ⁽¹⁾ 6 ⁽²⁾
Environmental conditions		
Operating temperature:	(°C)	-25...+55
Storage temperature:	(°C)	-25...+70
Transfer temperature:	(°C)	-25...+70
Relative humidity (IEC60721-3-3 class 3K3):	(%)	15 ÷ 85
Pollution degree (IEC 60664-1):		2

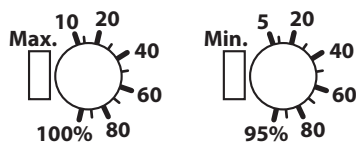
⁽¹⁾ 100VA resistive load

⁽²⁾ 1000VA resistive load

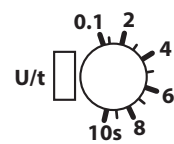
Undercurrent protection is needed, for example, in a electrical system when a load is switched-on automatically (motor, pump, etc.) but a fault doesn't allow the operation: since the value of the current is not correct, the starting of system can be quickly stopped to avoid any damage (e.g. on a line of conveyor belts). Instead overcurrent protection is needed when there is an irregular increase of power consumption that could be the consequence of the blockage of a conveyor belt motor or the jamming of a mixer.



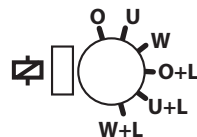
% Values adjustment



Delay time adjustment



Operation conditions

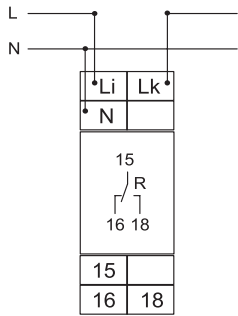


- O:** OVER - overcurrent monitoring
- U:** UNDER - undercurrent monitoring
- W:** WIN - monitoring the range between Min and Max
- O+L:** OVER+Latch - overcurrent monitoring with fault latch
- U+L:** UNDER+Latch - undercurrent monitoring with fault latch
- W+L:** WIN+Latch - monitoring the range between Min and Max with fault latch

Signalling

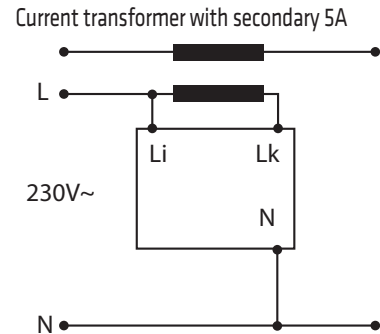
- U/t** green LED on: presence of power supply voltage
- U/t** red LED on: indication of failure of threshold
- U/t** green LED flashing: indication of delay time
- Yellow LED on/off: indication of output contact status

Circuit diagrams



Connection diagram when input current is greater than 10A

Using this connection diagram, the setting thresholds of GW96906 relay must be multiplied by the CT transformation ratio. For example, if CT with a 100/5A transformation ratio is installed, each relay setting threshold must be multiplied by 20 to obtain the exact MIN/MAX current value to be set.



Functions

Overcurrent monitoring (OVER, OVER+Latch)

When the supply voltage U is applied the output relay R switches into on-position, if the measured current is below the Max-value. When the measured current exceeds the Max-value, the output relay R switches into off-position after the interval of the tripping delay (Delay) has expired.

OVER

The output relay R switches into on-position again, if the current falls below the Min-value.

OVER+Latch

The output relay R switches only into on-position again by interrupting and reapplying of the supply voltage, provided that the measured current is below the Max-value.

Window function (WIN, WIN+Latch)

When the supply voltage U is applied, the output relay R switches into on-position, if the measured current is within the adjusted window. When the measured current leaves the window between Min and Max, the output relay R switches into off-position after the interval of the tripping delay (Delay) has expired.

WIN

The output relay R switches into on-position again, if the current re-enters the adjusted window.

WIN+Latch

The output relay R switches only into on-position again by interrupting and reapplying of the supply voltage, provided that the measured current is within the threshold values.

Undercurrent monitoring (UNDER, UNDER+Latch)

When the supply voltage U is applied, the output relay R switches into on-position, if the measured current is beyond the Min-value. When the measured current falls below the Min-value, the output relay R switches into off-position after the interval of the tripping delay (Delay) has expired.

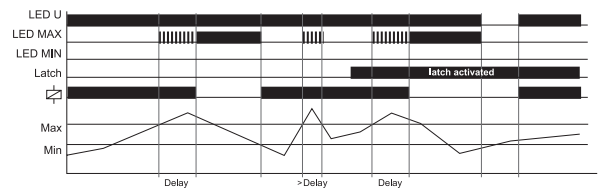
UNDER

The output relay R switches into on-position again, if the current exceeds the Max-value.

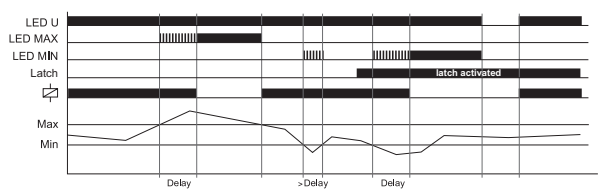
UNDER + Latch

The output relay R switches only into on-position again by interrupting and reapplying of the supply voltage, provided that the measured current is beyond the Min-value.

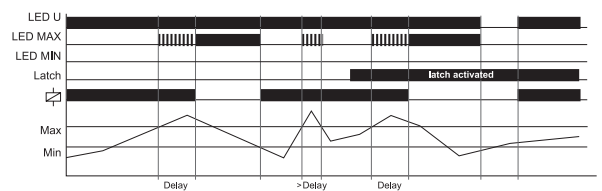
(OVER, OVER+latch)



(WIN)



(UNDER, UNDER + latch)



Phase control relay in a three-phase system

TECHNICAL DATA		
Code:		GW 96 907
Input circuit		
Rated operating voltage (Un):	(V)	230/400 ac
Tolerance:	(% Un)	± 30
Controlled voltage:	(V)	230/400 ac
Power loss:	(VA)	8
Rated frequency:	(Hz)	48 ÷ 63
Overload category (IEC 60664-1):		III
Rated impulse withstand voltage (Uimp):	(kV)	4
Output circuit		
Changeover contact free potential type:	(N°)	1
Rated operating voltage (Un):	(V)	250
Switchover capacity (5A/250V ac):	(VA)	1250
Fuse (quick type):	(A)	5
Mechanical endurance:	(N° Oper.)	20 x 10 ⁶
Electrical endurance (resistive load 1000VA):	(N° Oper.)	20 x 10 ⁵
Max switching frequency:	(N° /min)	6 ⁽¹⁾
Environmental conditions		
Operating temperature:	(°C)	-25...+55
Storage temperature:	(°C)	-25...+70
Transfer temperature:	(°C)	-25...+70
Relative humidity (IEC60721-3-3 class 3K3):	(%)	15 ÷ 85
Pollution degree (IEC 60664-1):		2

⁽¹⁾ 1000VA resistive load

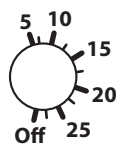
If the energy supplied by a three-phase system has phase imbalances due to uneven load distribution, the motor converts a part of the energy into reactive power that is lost and hence wasted, exposing the motor to big thermal stress.

Another critical condition happens with any alteration of the phase sequence during operation or from the incorrect sequence of the phases before start-up which change the direction of rotation for the devices connected as for example generators, pumps and fans.

Also the absence of a phase has a negative effect on the condition of the system, disturbing motor start-up for instance.



% values phase asymmetry adjustment

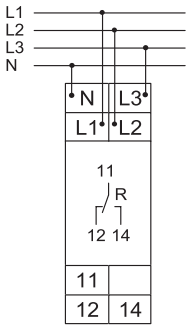


Signalling

U green LED on: presence of power supply voltage

Yellow LED on/off: indication of output contact status

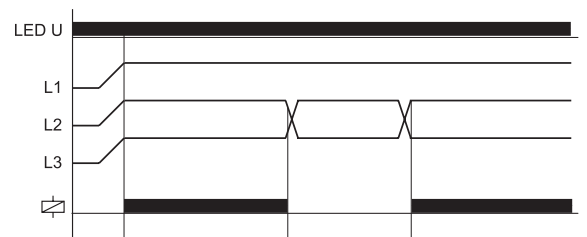
Circuit diagrams



Functions

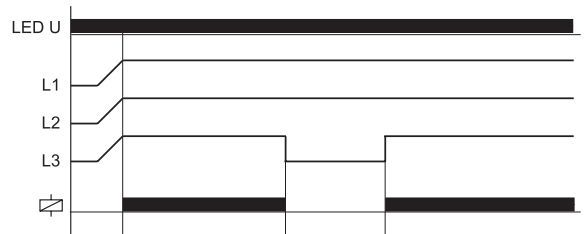
Phase sequence monitoring

When all the phases are connected in the correct sequence and the measured asymmetry is less than the fixed value, the output relay switches into on-position (yellow LED illuminated). When the phase sequence changes, the output relay switches into off-position (yellow LED not illuminated).



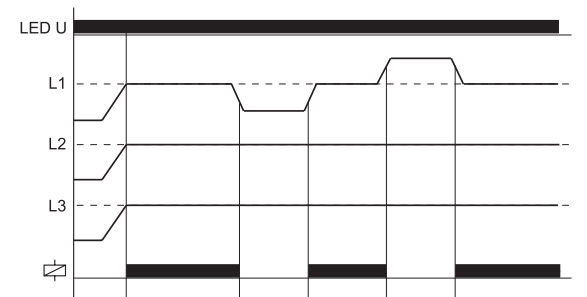
Phase absence monitoring

The output relay R switches into off-position (yellow LED not illuminated) if one of the three power supply phases is absent.



Asymmetry monitoring

The output relay R switches into off-position (yellow LED not illuminated) when the asymmetry exceeds the value set at the ASYM-regulator. Reverse voltages of a consumer (e.g. a motor which continues to run on two phases only) do not effect the disconnection.



AC/DC single-phase undervoltage control relay

TECHNICAL DATA		
Code:		GW 96 908
Input circuit		
Rated operating voltage (Un):	(V)	24 ac/dc 230 ac
Tolerance:	(% Un)	-25 / +20
Controlled voltage:	(V)	24 ac/dc - 230 ac
Power loss:	(VA)	10 (230V)
Rated frequency:	(Hz)	48 ÷ 63
Overload category (IEC 60664-1):		III
Rated impulse withstand voltage (Uimp):	(kV)	4
Output circuit		
Changeover contact free potential type:	(N°)	1
Rated operating voltage (Un):	(V)	250
Switchover capacity (5A/250V ac):	(VA)	1250
Fuse (quick type):	(A)	5
Mechanical endurance:	(N° Oper.)	20 x 10 ⁶
Electrical endurance (resistive load 1000VA):	(N° Oper.)	20 x 10 ⁵
Max switching frequency:	(N°/min)	60 ⁽¹⁾
		6 ⁽²⁾
Environmental conditions		
Operating temperature:	(°C)	-25...+55
Storage temperature:	(°C)	-25...+70
Transfer temperature:	(°C)	-25...+70
Relative humidity (IEC60721-3-3 class 3K3):	(%)	15 ÷ 85
Pollution degree (IEC 60664-1):		2

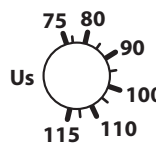
⁽¹⁾ 100VA resistive load

⁽²⁾ 1000VA resistive load

Electrical devices can suffer damage if they work continuously in networks with voltage levels higher or lower than the usual operating values. In case of undervoltage condition, safe start-up cannot be guaranteed or the position of the contacts of a contactor may be unsure, with the consequence that the all system becomes unstable.



% rated voltage adjustment

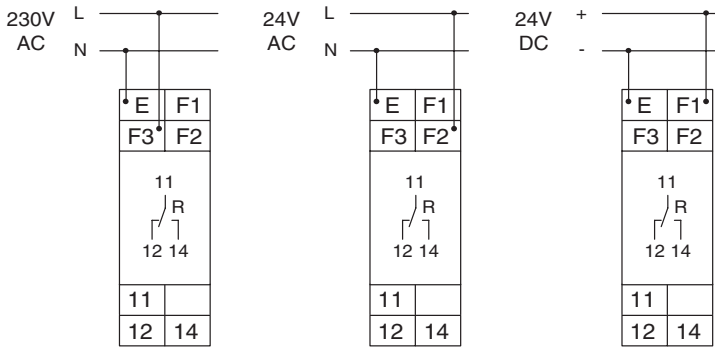


Signalling

U green LED on: presence of power supply voltage

Yellow LED on/off: indication of output contact status

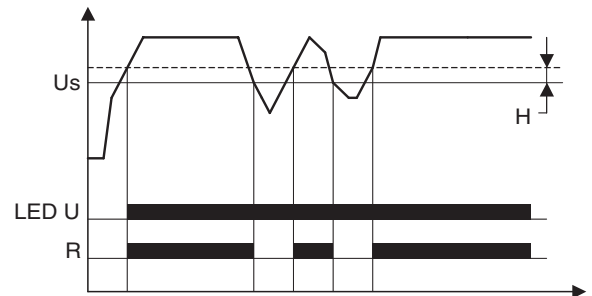
Circuit diagrams



Functions

Undervoltage monitoring (UNDER)

When the supply voltage U is applied, the output relay R switches into on-position, if the measured voltage is beyond the adjusted value. When the measured voltage falls below the adjusted value, the output relay R switches into off-position. The output relay R switches into on-position again, if the voltage exceeds the adjusted value plus the hysteresis.



AC three-phase undervoltage control relay

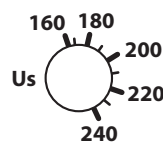
TECHNICAL DATA		
Code:		GW 96 909
Input circuit		
Rated operating voltage (Un):	(V)	230/400 ac
Tolerance:	(% Un)	-30 / +10
Controlled voltage:	(V)	230/400 ac
Power loss:	(VA)	8
Rated frequency:	(Hz)	48 ÷ 63
Overload category (IEC 60664-1):		III
Rated impulse withstand voltage (Uimp):	(kV)	4
Output circuit		
Changeover contact free potential type:	(N°)	1
Rated operating voltage (Un):	(V)	250
Switchover capacity (5A/250V ac):	(VA)	1250
Fuse (quick type):	(A)	5
Mechanical endurance:	(N° Oper.)	20 x 10 ⁶
Electrical endurance (resistive load 1000VA):	(N° Oper.)	20 x 10 ⁵
Max switching frequency:	(N° /min)	6 ⁽¹⁾
Environmental conditions		
Operating temperature:	(°C)	-25...+55
Storage temperature:	(°C)	-25...+70
Transfer temperature:	(°C)	-25...+70
Relative humidity (IEC60721-3-3 class 3K3):	(%)	15 ÷ 85
Pollution degree (IEC 60664-1):		2

⁽¹⁾ 1000VA resistive load

Electrical devices can suffer damage if they work continuously in networks with voltage levels higher or lower than the usual operating values. In case of undervoltage condition, safe start-up cannot be guaranteed or the position of the contacts of a contactor may be unsure, with the consequence that the all system becomes unstable.



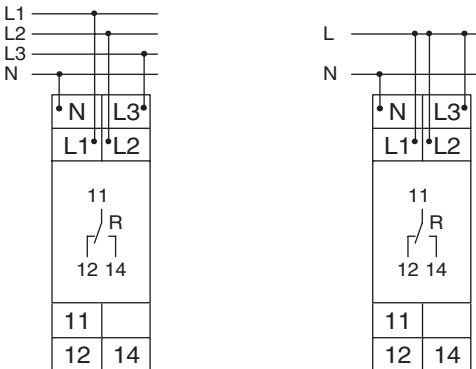
Rated voltage adjustment (160÷240V L-N)



Signalling

- L1** green LED on: presence of power supply voltage L1-N
- L2** green LED on: presence of power supply voltage L2-N
- L3** green LED on: presence of power supply voltage L3-N
- Yellow LED on/off: indication of output contact status

Circuit diagrams

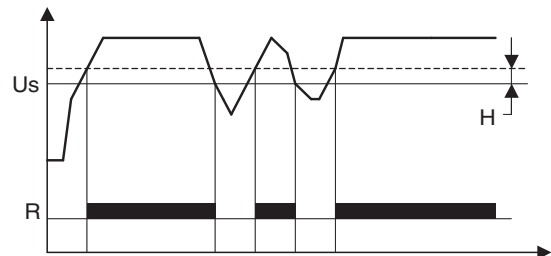


Functions

Undervoltage monitoring for 3-phase AC mains with fixed threshold voltage and fixed hysteresis. All measuring inputs (L1, L2 and L3) must be connected to phase voltage. If single or 2-phase monitoring is required, unused input terminals (L) must be connected to mains voltage to have proper L-N voltage on the terminals L1, L2 and L3. A phase failure can not be detected, if the reverse voltage coming from the load exceeds the threshold U_s .

Undervoltage monitoring

The output relay R switches into on-position (yellow LED illuminated), when the measuring voltage of all connected phases exceeds the fixed threshold U_s by more than the fixed hysteresis H . When the voltage of one of the connected phases (L1, L2 or L3) falls below the fixed threshold, the output relay R switches into off-position again (yellow LED not illuminated).



PROGRAMMING

Multifunction timer

TECHNICAL DATA		
Code:		GW 96 814
Control voltage:	(V)	24...240 ac/dc
Type of contact:		1 changeover
Switchover capacity:		8A - 250V ac
Rated frequency:	(Hz)	50-60
Timing:		0.05s...100h
Power loss:		4VA (1.5W)
Mechanical endurance:	(total N° of operations)	20,000,000
Electrical endurance:	(total N° of operations)	20,000
Switchover frequency:		max 6 per minute
Repetition precision:		< 0.5% σ \pm 5ms
Reset time:	(ms)	100
Degree of protection:		IP20
Operating temperature:	(°C)	-25...+55
Storage temperature:	(°C)	-25...+70
Maximum tightening torque:	(Nm)	1
Maximum cable section:	(mm ²)	1 x 0.5 up to 2.5 (cable with or without terminals) 1 x 4 (cable without terminals) 2 x 0.5 up to 1.5 (cable with or without terminals) 2 x 2.5 (flexible cable without terminals)

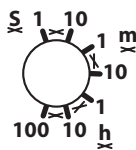
The multifunction timer allows to connect and disconnect a load for a set period of time (adjustable from 0.05s to 100h).



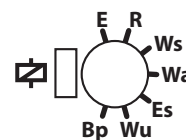
Precise delay time adjustment



Delay time adjustment



Operation conditions

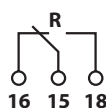
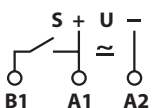


- E:** delay on activation with mains command
- R:** delay on deactivation with contact command
- Ws:** pulse on activation with contact command
- Wa:** pulse on deactivation with contact command
- Es:** delay on activation with contact command
- Wu:** single pulse on activation with mains command
- Bp:** symmetrical cycle, initial pause

Signalling

- U/t** green LED on: presence of power supply voltage
- U/t** green LED flashing: indication of delay time
- Yellow LED on/off: indication of output contact status

Circuit diagrams



- S:** control contact
- U:** relay supply
- R:** Output contact

Functions

Delay on activation with mains command (E)

When the supply voltage is applied, the time count t begins (U/t green LED flashing). After the delay time t has elapsed (green LED on), the output relay R switches over to the ON position (yellow LED on). This status remains until the supply voltage is interrupted. If the supply voltage is disconnected before the time t has elapsed, the count is cancelled and restarts when the supply voltage is reconnected.

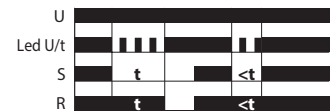
E



Delay on deactivation with contact command (R)

The supply voltage must always be applied to the device (green LED on). When the contact S is closed, the output relay R switches over to the ON position (yellow LED on). If the contact S is opened, the time t count begins (green LED flashing). After the delay time t has elapsed (green LED on), the output relay switches over to the OFF position (yellow LED off). If the contact S is closed before the delay time t has elapsed, the count is cancelled and restarts with the next cycle.

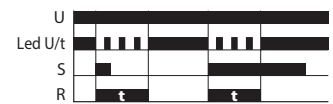
R



Pulse on activation with contact command (Ws)

The supply voltage must always be applied to the device (green LED on). When the contact S is closed, the output relay R switches over to the ON position (yellow LED on) and the time t count begins (green LED flashing). After the delay time t has elapsed (green LED on), the output relay switches over to the OFF position (yellow LED off). During the delay time t , the command contact can be enabled without the output relay switching over. The next cycle can only be activated when the first cycle is fully ended.

Ws



Pulse on deactivation with contact command (Wa)

The supply voltage must always be applied to the device (green LED on). The closure of the contact S has no effect on the output relay R. When the contact S is open, the output relay switches over to the ON position (yellow LED on) and the time t count begins (green LED flashing). After the delay time t has elapsed (green LED on), the output relay switches over to the OFF position (yellow LED off). During the delay time t , the command contact can be enabled without the output relay switching over. The next cycle can only be activated when the first cycle is fully ended.

Wa



Delay on activation with contact command (Es)

The supply voltage must always be applied to the device (green LED on). When the contact S is closed, the time t count begins (green LED flashing). After the delay time t has elapsed (green LED on), the output relay switches over to the ON position (yellow LED on). This status remains until the contact S is opened. If the contact S is opened before the delay time t has elapsed, the count is cancelled and restarts with the next cycle.

Es



Single pulse on activation with mains command (Wu)

When the supply voltage is applied, the output relay R switches over to the ON position (yellow LED on) and the time t count begins (green LED flashing). After the delay time t has elapsed (green LED on), the output relay switches over to the OFF position (yellow LED off). This status remains until the supply voltage is interrupted. If the supply voltage is disconnected before the delay time t has elapsed, the output relay switches over to the OFF position. The count is cancelled and restarts when the supply voltage is reconnected.

Wu



Symmetrical cycle, initial pause (Bp)

When the supply voltage is applied to the device, the time count t begins (green LED flashing). After the delay time t has elapsed, the output relay switches over to the ON position (yellow LED on) and the time t count restarts. After the time t has elapsed again, the output relay switches back to the OFF position (yellow LED off). The output relay continues to be tripped with the open/closed cycle equal to time t , as long as the supply voltage is present.

Bp



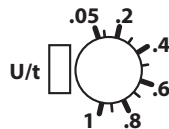
Asymmetrical timer

TECHNICAL DATA		
Code:		GW 96 815
Control voltage:	(V)	12...240 ac/dc
Type of contact:		1 changeover
Switchover contact:		8A - 250V ac
Rated frequency:	(Hz)	50-60
Timing:		0.05s...100h
Power loss:		4VA (1.5W)
Mechanical endurance:	(total no. of operations)	20,000,000
Electrical endurance:	(total no. of operations)	20,000
Switchover frequency:		max 6 per minute
Repetition precision:		< 0.5% or \pm 5ms
Reset time:	(ms)	100
Degree of protection:		IP20
Operating temperature:	(°C)	-25...+55
Storage temperature:	(°C)	-25...+70
Maximum tightening torque:	(Nm)	1
Maximum cable section:	(mm ²)	1 x 0.5 up to 2.5 (cable with or without terminals) 1 x 4 (cable without terminals) 2 x 0.5 up to 1.5 (cable with or without terminals) 2 x 2.5 (flexible cable without terminals)

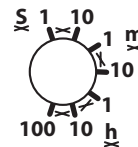
Asymmetrical timer allows to connect and disconnect a load according to a continuing cycle of ON-OFF periods of time with different settings (both adjustable from 0.05s to 100h).



Precise delay time adjustment



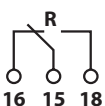
Delay time adjustment



Signalling

- U/t** green LED on: presence of power supply voltage
- U/t** green LED flashing slowly: indication of delay time 1
- U/t** green LED flashing quickly: indication of delay time 2
- Yellow LED on/off: indication of output contact status

Circuit diagrams



- U:** relay supply
- R:** output contact

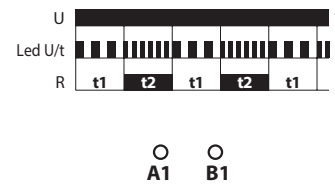
Functions

Asymmetric cycle, initial pause (Ip)

When the supply voltage is applied, the time count t1 begins (U/t green LED - slow flashing). After the delay time t1, the output relay R switches to ON (yellow LED ON) and the time count t2 begins (green LED - fast flashing). After the delay time t2, the output relay switches to OFF (yellow LED OFF). The output relay continues to trigger in the times set by t1 and t2, as long as there is a supply voltage.

The output relay continues to switch between ON and OFF with times t1 and t2 until the supply voltage is disconnected.

Ip

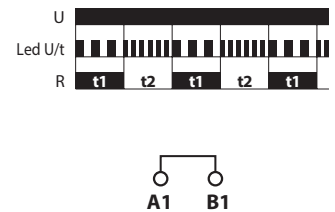


Asymmetric cycle, initial pulse (Ii)

When the supply voltage U is applied, the output relay R switches to ON (yellow LED ON) and the time count t1 begins (U/t green LED - slow flashing). After the delay time t1, the output relay switches to OFF (yellow LED OFF) and the time count t2 begins (U/t green LED - fast flashing). After the delay time t2, the output relay switches to ON (yellow LED ON). The output relay continues to trigger in the times set by t1 and t2, as long as there is a supply voltage.

The output relay continues to switch between ON and OFF with times t1 and t2 until the supply voltage is disconnected.

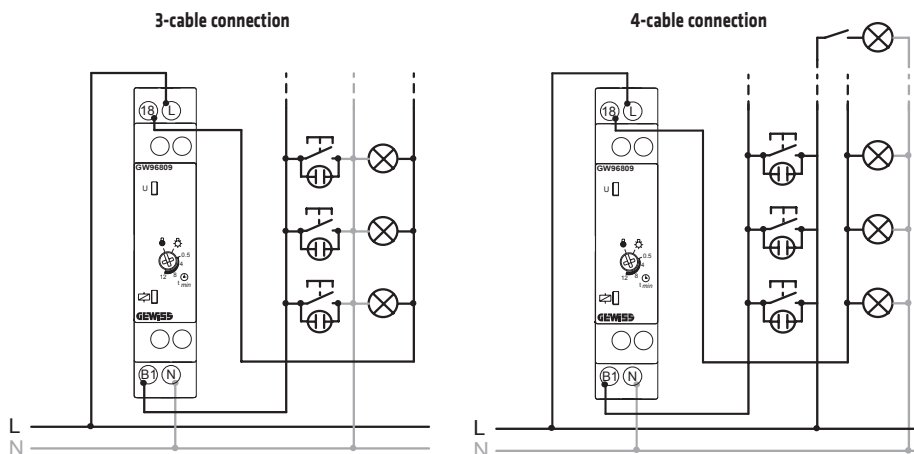
Ii



Staircase lighting time delay switch

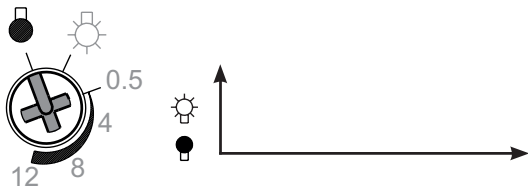
TECHNICAL DATA		
Code:		GW96809
Standards:		EN 61812-1
Rated operating voltage (Ue):	(Vac)	230
Rated frequency:	(Hz)	50 - 60
Rated impulse withstand voltage:	(kV)	4
Overvoltage category:		III
Power loss:	(VA)	2
Switch-on timing:		30s - 12min
Switch-off warning:		no
Functions:		steady light OFF steady light ON retrigger (time extension) pumping energy saving
Output contact:		1 NO
Rated current of output contact:	(A)	16
Switchover capacity:		
	incandescent lamp:	(W) 2000
	LED lamp:	(W) 200
	low-pressure halogen lamp:	(W) 770
	halogen lamp:	(W) 2000
	compact fluorescent lamp:	(W) 500
	fluorescent lamp:	(W) 1000
Connection type:		3 or 4 cables
Illuminated push-buttons that can be connected:	(mA)	max 100
Signalling:		Green LED: presence of power supply voltage Yellow LED: indication of output contact status
No. of modules:		1
Maximum cable section (flexible/rigid):	(mm ²)	4
Rated tightening torque:	(Nm)	1
Operating temperature:	(°C)	-25...+55
Stocking temperature:	(°C)	-25...+70
Pollution degree:		2
Weight:	(g)	106

Circuit diagrams

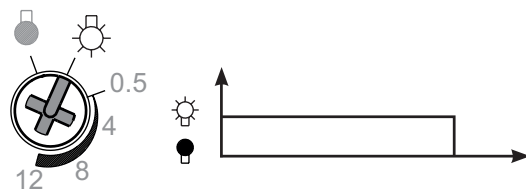


Function

Steady light OFF

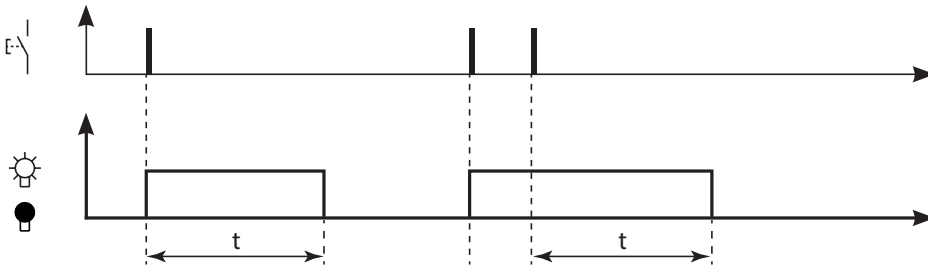


Steady light ON



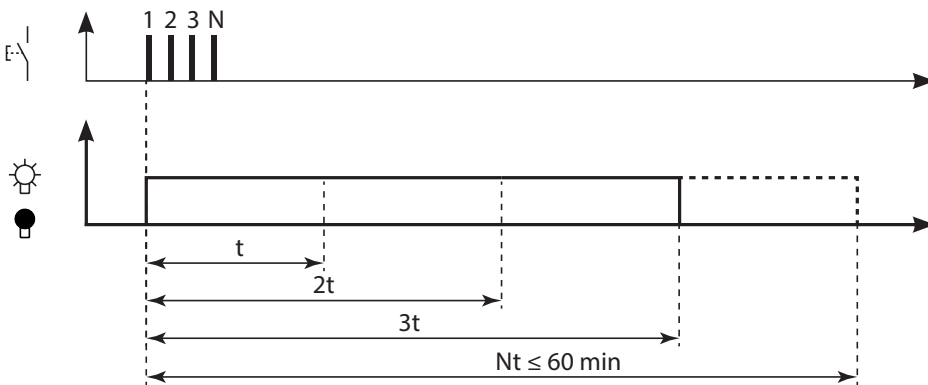
Retrigger (time extension)

If the pushbutton is pressed again before the interval t has expired, the interval t begins again.



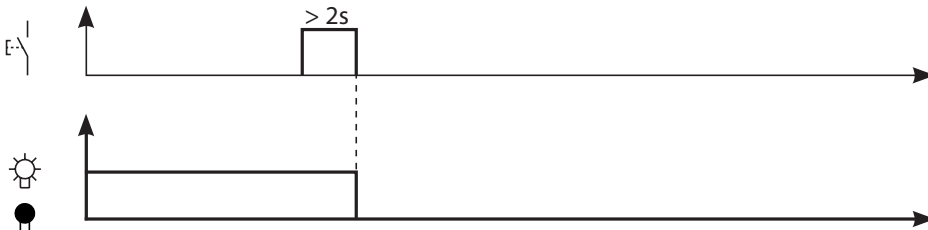
Pumping

Rapid and multiple pressing of the pushbutton adds 2, 3 or more time intervals to extend the time up to 60min.



Risparmio energetico

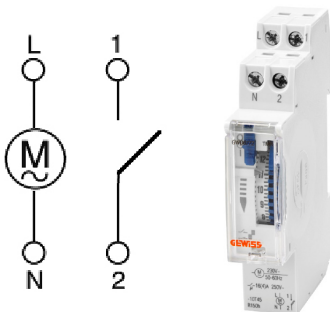
Prolonged pressure on the button ($>2s$) aborts the interval running and switches the light off.



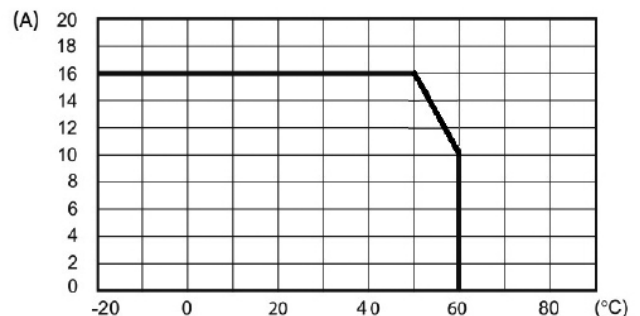
Compact analogue/electromechanical daily time switches

TECHNICAL DATA		
Code:	GW D6 771	GW D6 772
Standard:	EN 60730-2-7	
Programming type:	Daily (without charge reserve)	Daily (with charge reserve)
Rated operating voltage (Ue):	(Vac)	230 (-15% ÷ +10%)
Rated frequency:	(Hz)	50 - 60
Rated impulse withstand voltage (Uimp):	(kV)	4
Overvoltage category:		III
Power loss:	(W)	0.5
Type of dial:	24 hours with 96 pins	
Minimum time of functioning:	15 minutes	
Switching accuracy:	± 5 minutes	
Operating accuracy:	± 1 second/day at 22°C	
Charge reserve:	-	150 hours
Type of battery:	-	NiMH type V80H (rechargeable and replacing)
Functions:	permanent OFF automatic permanent ON	
Output contact type:	1 NO	
Capacity of output contact:	(A)	16
Lamp switching capacity:		
	incandescent lamp:	(W) 3600
	LED lamp:	(W) 350
	low voltage halogen lamp:	(W) 1500 (max 24V)
	halogen lamp:	(W) 3600
	compact fluorescent:	(W) 300
	fluorescent:	(W) 300
Protection class:	II	
Protection degree:	IP20 / IP40 (front)	
DIN modules:	1	
Max cable section (flexible/rigid):	(mm ²)	4
Rated tightening torque:	(Nm)	0.8
Beam stripping cable recommended:	(mm)	8
Screwdriver suggested:	PZ1	
Operating temperature:	(°C)	-20...+50
Storage temperature:	(°C)	-20...+60
Pollution degree:	2	
Sealing:	yes	
Weight:	(g)	70
		73

Circuit diagrams



Rated current derating depending on ambient temperature

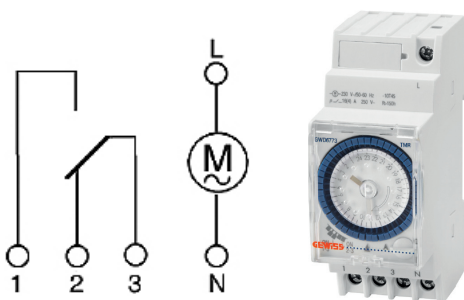


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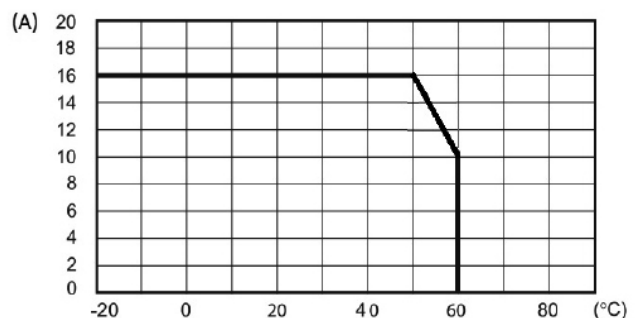
Analogue/electromechanical daily time switch

TECHNICAL DATA		
Code:		GW D6 773
Standard:		EN 60730-2-7
Programming type:		Daily (with charge reserve)
Rated operating voltage (Ue):	(Vac)	230 (-15% ÷ +10%)
Rated frequency:	(Hz)	50 - 60
Rated impulse withstand voltage (Uimp):	(kV)	4
Overvoltage category:		III
Power loss:	(W)	0.5
Type of dial:		24 hours with 48 pins
Minimum time of functioning:		30 minutes
Switching accuracy:		± 5 minutes
Operating accuracy:		± 1 second/day at 23°C
Charge reserve:		150 ore
Type of battery:		NiMH type V80H (rechargeable and replacing)
Functions:		permanent OFF automatic permanent ON
Output contact type:		1 changeover
Capacity of output contact:	(A)	16
Lamp switching capacity:		
	incandescent lamp:	(W) 3600
	LED lamp:	(W) 350
	low voltage halogen lamp:	(W) 1500 (max 24V)
	halogen lamp:	(W) 3600
	compact fluorescent:	(W) 300
	fluorescent:	(W) 300
Protection class:		II
Protection degree:		IP20 / IP40 (front)
DIN modules:		2
Max cable section (flexible/rigid):	(mm ²)	4
Rated tightening torque:	(Nm)	0.8
Beam stripping cable recommended:	(mm)	8
Screwdriver suggested:		PZ1
Operating temperature:	(°C)	-20...+50
Storage temperature:	(°C)	-20...+60
Pollution degree:		2
Sealing:		yes
Weight:	(g)	110

Circuit diagrams



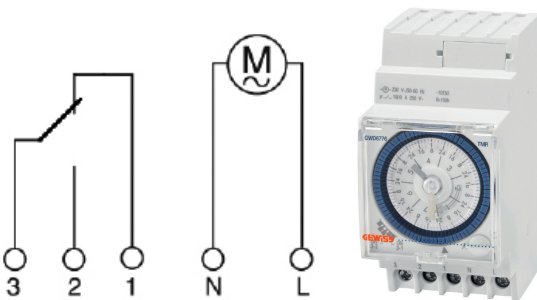
Rated current derating depending on ambient temperature



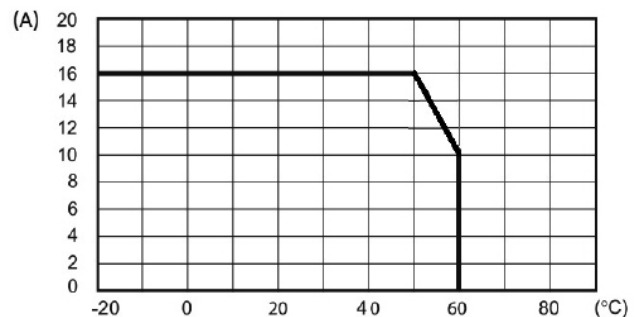
Analogue/electromechanical weekly time switch

TECHNICAL DATA		
Code:		GW D6 776
Standard:		EN 60730-2-7
Programming type:		Weekly (with charge reserve)
Rated operating voltage (Ue):	(Vac)	230 (-15% ÷ +10%)
Rated frequency:	(Hz)	50 - 60
Rated impulse withstand voltage (Uimp):	(kV)	4
Overvoltage category:		III
Power loss:	(W)	0.5
Type of dial:		7 days with 84 pins
Minimum time of functioning:		2 hours
Switching accuracy:		±30 minutes
Operating accuracy:		± 1 second/day at 23°C
Charge reserve:		150 hours
Type of battery:		NiMH type V80H (rechargeable and replacing)
Functions:		permanent OFF automatic permanent ON
Output contact type:		1 changeover
Capacity of output contact:	(A)	16
Lamp switching capacity:		
	incandescent lamp:	(W) 3600
	LED lamp:	(W) 350
	low voltage halogen lamp:	(W) 1500 (max 24V)
	halogen lamp:	(W) 3600
	compact fluorescent:	(W) 300
	fluorescent:	(W) 300
Protection class:		II
Protection degree:		IP20 / IP40 (front)
DIN modules:		2.5
Max cable section (flexible/rigid):	(mm ²)	4
Rated tightening torque:	(Nm)	0.8
Beam stripping cable recommended:	(mm)	8
Screwdriver suggested:		PZ1
Operating temperature:	(°C)	-20...+50
Storage temperature:	(°C)	-20...+60
Pollution degree:		2
Sealing:		yes
Weight:	(g)	115

Circuit diagrams



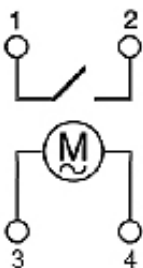
Rated current derating depending on ambient temperature



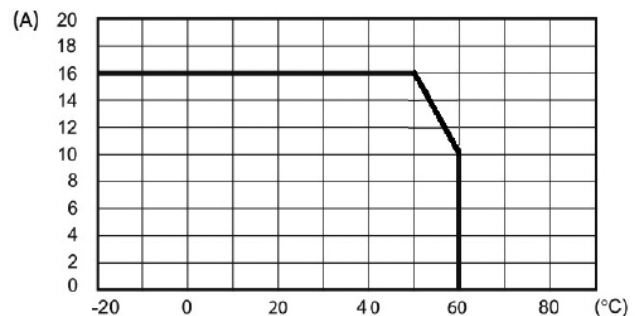
Compact digital weekly time switch

TECHNICAL DATA		
Code:		GW D6 781
Standard:		EN 60730-2-7
Programming type:		Weekly (with charge reserve)
Rated operating voltage (Ue):	(Vac)	230 (-15% ÷ +10%)
Rated frequency:	(Hz)	50 - 60
Rated impulse withstand voltage (Uimp):	(kV)	4
Overvoltage category:		III
Power loss:	(W)	1
Type of dial:		7 days with 48 virtual pins
Minimum time of functioning:		30 minutes
Operating accuracy:		± 1 second/day at 25°C
Charge reserve:		4 years
Type of battery:		Lithium CR-1632 (replacing)
Functions:		Manual output relay switching Choice of programming mode (weekly or daily) Display backlighting when power supplied by mains Product supplied with date and time set at the factory Automatic daylight saving time update Low battery warning
Programs:		ON OFF
Output contact type:		1 NO
Capacity of output contact:	(A)	16
Lamp switching capacity:		
	incandescent lamp:	(W) 2000
	LED lamp:	(W) 200
	low voltage halogen lamp:	(W) 1500 (max 24V)
	halogen lamp:	(W) 2000
	compact fluorescent:	(W) 400
	fluorescent:	(W) 600
Protection degree:		IP20 / IP40 (front)
DIN modules:		1
Max cable section (flexible/rigid):	(mm ²)	4
Rated tightening torque:	(Nm)	0.6
Beam stripping cable recommended:	(mm)	8
Screwdriver suggested:		PH0
Operating temperature:	(°C)	-20...+50
Storage temperature:	(°C)	-10...+70
Humidity:		20÷90% non-condensing
Pollution degree:		2
Sealing:		no
Weight:	(g)	70

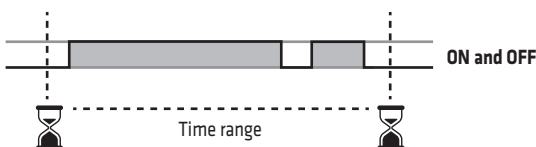
Circuit diagrams



Rated current derating depending on ambient temperature



Programs

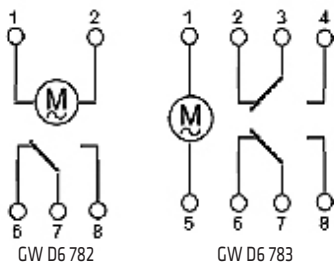


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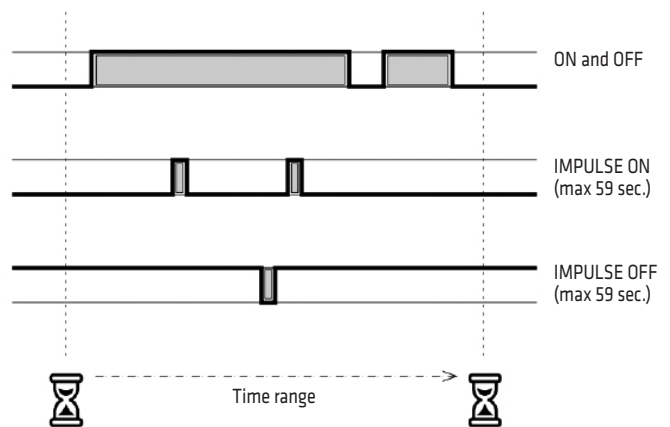
Digital weekly time switches

TECHNICAL DATA			
		GW D6 782	GW D6 783
Code:			
Standard:		EN 60730-2-7	
Programming type:		Weekly (with charge reserve)	
Rated operating voltage (Ue):	(Vac)	230 (-10% ÷ +10%)	
Rated frequency:	(Hz)	50 - 60	
Rated impulse withstand voltage (Uimp):	(kV)	4	
Overvoltage category:		III	
Power loss:	(W)	1	1.5
Minimum time of functioning:		1 minute	
Operating accuracy:		± 0.5 seconds/day a 25°C	
Charge reserve:		5 years	
Type of battery:		Lithium CR-2032 (replacing)	
Functions:		Integrated type 5 NFC interface for transferring programs created on smartphones thanks to the dedicated TimerOn app Manual output relay switching Random of output contacts switching Display backlighting when power supplied by mains Product supplied with date and time set at the factory Automatic daylight saving time update Keypad lock by password Low battery warning	
Programs:		ON OFF IMPULSE (from 1 to 59 sec.) HOLIDAY	
No. of storable programs:		120	120 (divided over the 2 contacts)
Output contact type:		1 changeover	2 changeover
Capacity of output contact:		(A) 16	
Lamp switching capacity:			
	incandescent lamp:	(W) 2000	
	LED lamp:	(W) 200	
	low voltage halogen lamp:	(W) 1500 (max 24V)	
	halogen lamp:	(W) 2000	
	compact fluorescent:	(W) 400	
	fluorescent:	(W) 600	
Protection degree		IP20 / IP40 (front)	
DIN modules:		2	
Max cable section (flexible/rigid):		(mm ²) 6	
Rated tightening torque:		(Nm) 0.8	
Beam stripping cable recommended:		(mm) 12	
Screwdriver suggested:		PH1	
Operating temperature:		(°C) -20...+50	
Storage temperature:		(°C) -10...+70	
Humidity:		20÷90% non-condensing	
Pollution degree:		2	
Sealing:		yes	
Weight:		(g) 130	150

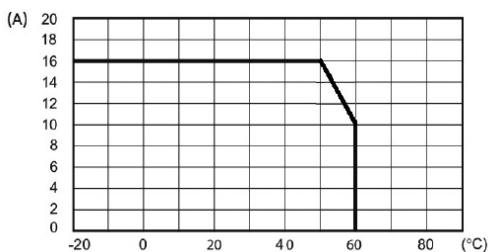
Circuit diagrams



Programs



Rated current derating depending on ambient temperature



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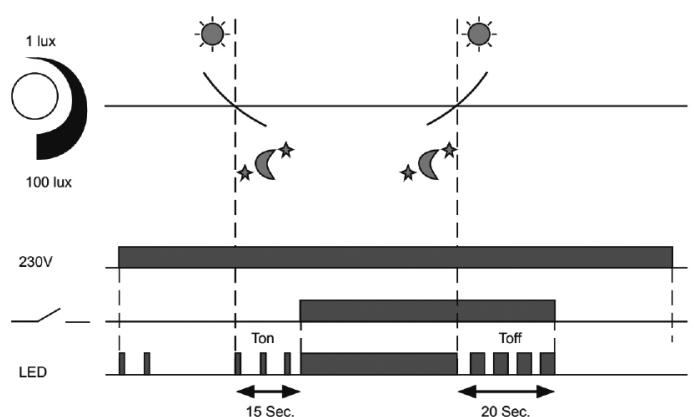
Twilight switch

TECHNICAL DATA OF TWILIGHT SWITCH		
Code:		GW D6 779
Standard:		EN 60669-2-1
Rated operating voltage (Ue):	(Vac)	230 (-15% ÷ +10%)
Rated frequency:	(Hz)	50 - 60
Rated impulse withstand voltage (Uimp):	(kV)	4
Overvoltage category:		III
Power loss:	(W)	1
Sensitivity:	(lux)	1...100
Hysteresis:		15% of the threshold
Time of intervention Ton:	(sec)	15
Release time Toff:	(sec)	20
Functions:		Outdoor probe supplied inside package Red led for relay intervention signalling
Output contact type:		1 NO
Capacity of output contact:	(A)	16
Lamp switching capacity:		
	incandescent lamp:	(W) 2000
	LED lamp:	(W) 200
	low voltage halogen lamp:	(W) 1500 (max 24V)
	halogen lamp:	(W) 2000
	compact fluorescent:	(W) 400
	fluorescent:	(W) 600
Protection degree		IP20 / IP40 (front)
DIN modules:		1
Max cable section (flexible/rigid):	(mm ²)	4
Rated tightening torque:	(Nm)	0.6
Beam stripping cable recommended:	(mm)	8
Screwdriver suggested:		PH0
Operating temperature:	(°C)	-20...+50
Storage temperature:	(°C)	-10...+70
Humidity:		20÷90% non-condensing
Pollution degree:		2
Sealing:		no
Weight:	(g)	65
TECHNICAL DATA OF OUTDOOR PROBE		
Code:		GW D6 780
Protection degree		IP65
Max cable section (flexible/rigid):	(mm ²)	1.5
Rated tightening torque:	(Nm)	0.4
Beam stripping cable recommended:	(mm)	5
Screwdriver suggested:		flathead
Operating temperature:	(°C)	-20...+50
Max distance between probe and twilight switch:	(m)	50 (it is suggested the use of twisted cable)
Max number of connected outdoor probes:		1
Weight:	(g)	20

Circuit diagrams



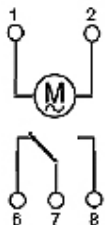
Functions



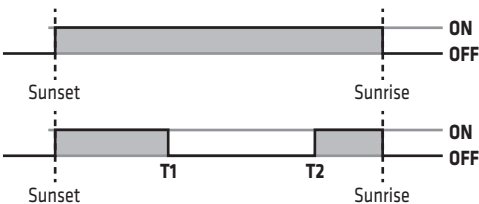
Digital astronomical daily switch

TECHNICAL DATA		
Code:	GW D6 785	
Standard:	EN 60730-2-7	
Programming type:	Astronomical daily (with charge reserve)	
Rated operating voltage (Ue):	230 (-15% ÷ +10%)	
Rated frequency:	50 - 60	
Rated impulse withstand voltage (Uimp):	4	
Overvoltage category:	III	
Power loss:	1	
Type of dial:	Daily with virtual pins for nighttime hours	
Minimum time of nighttime power off:	30 minutes	
Operating accuracy:	± 1 second/day at 25°C	
Charge reserve:	5 years	
Type of battery:	Lithium CR-2032 (replacing)	
Functions:	Nighttime power off option Visualization of sunrise and sunset hours Manual output relay switching Display backlighting when power supplied by mains Product supplied with date and time set at the factory Automatic daylight saving time update Low battery warning	
Programs:	ON OFF	
Correction of sunrise and sunset hours:	± 120 minutes	
Output contact type:	1 changeover	
Capacity of output contact:	16	
Lamp switching capacity:		
	incandescent lamp: (W)	2000
	LED lamp: (W)	200
	low voltage halogen lamp: (W)	1500 (max 24V)
	halogen lamp: (W)	2000
	compact fluorescent: (W)	400
	fluorescent: (W)	600
Protection degree	IP20 / IP40 (front)	
DIN modules:	2	
Max cable section (flexible/rigid): (mm ²)	6	
Rated tightening torque: (Nm)	0.8	
Beam stripping cable recommended: (mm)	12	
Screwdriver suggested:	PH1	
Operating temperature: (°C)	-20...+50	
Storage temperature: (°C)	-10...+70	
Humidity:	20÷90% non-condensing	
Pollution degree:	2	
Sealing:	no	
Weight: (g)	130	

Circuit diagrams

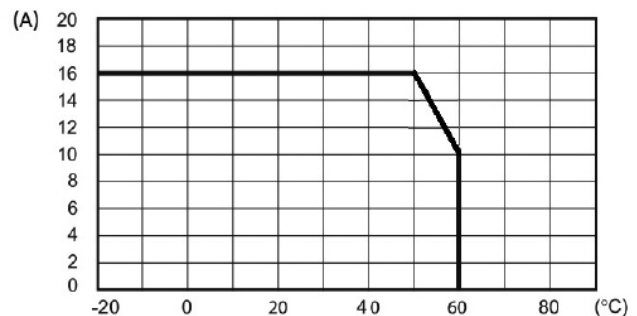


Programs



T1 and T2 are nighttime power off hours

Rated current derating depending on ambient temperature

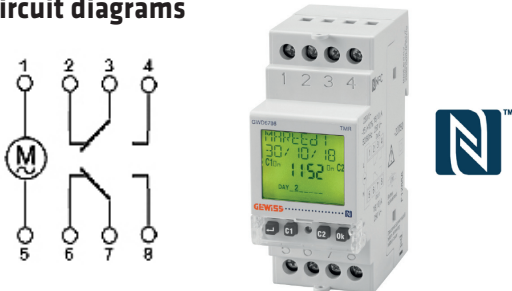


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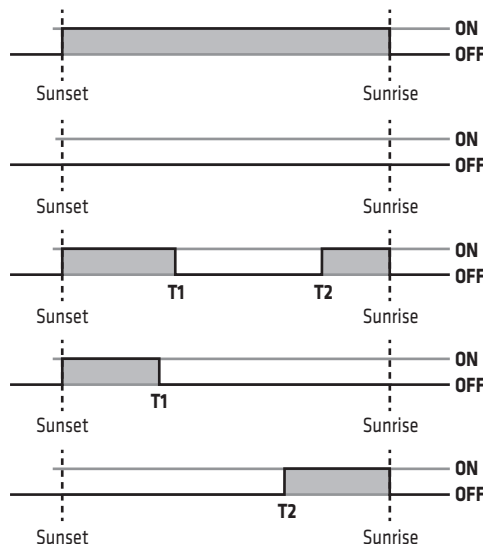
Digital astronomical weekly switch

TECHNICAL DATA			
Code:			GW D6 786
Standard:			EN 60730-2-7
Programming type:			Astronomical weekly (with charge reserve)
Rated operating voltage (Ue):	(Vac)		230 (-10% ÷ +10%)
Rated frequency:	(Hz)		50 - 60
Rated impulse withstand voltage (Uimp):	(kV)		4
Overvoltage category:			III
Power loss:	(W)		2
Minimum time of functioning:			1 minute
Operating accuracy:			± 0.5 seconds/day at 25°C
Charge reserve:			5 years
Type of battery:			Lithium CR-2032 (replacing)
Functions:			Integrated type 5 NFC interface for transferring programs created on smartphones thanks to the dedicated TimerOn app Manual output relay switching Display backlighting when power supplied by mains Product supplied with date and time set at the factory Automatic daylight saving time update Keypad lock by password Low battery warning
Programs:			ON OFF IMPULSE (from 1 to 59 sec.) HOLIDAY
Correction of sunrise and sunset hours:			± 120 minutes
Output contact type:			2 changeover
Capacity of output contact:	(A)		16
Lamp switching capacity:			
	incandescent lamp:	(W)	2000
	LED lamp:	(W)	200
	low voltage halogen lamp:	(W)	1500 (max 24V)
	halogen lamp:	(W)	2000
	compact fluorescent:	(W)	400
	fluorescent:	(W)	600
Protection degree			IP20 / IP40 (front)
DIN modules:			2
Max cable section (flexible/rigid):	(mm ²)		6
Rated tightening torque:	(Nm)		0.8
Beam stripping cable recommended:	(mm)		12
Screwdriver suggested:			PH1
Operating temperature:	(°C)		-20...+50
Storage temperature:	(°C)		-10...+70
Humidity:			20÷90% non-condensing
Pollution degree:			2
Sealing:			yes
Weight:	(g)		150

Circuit diagrams



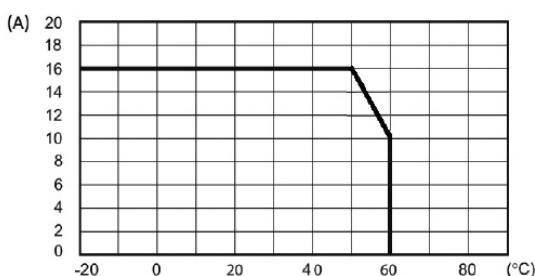
Programs



T1 and T2 can be:

1. a precise hour
2. a delay respect to sunset (T1) or an advance respect to sunrise (T2)
3. a pulse of 59 seconds max duration at sunset (T1) or at sunrise (T2)

Rated current derating depending on ambient temperature



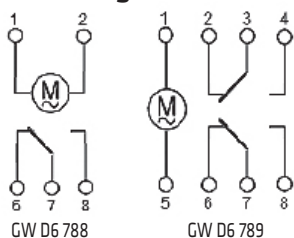
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Time/astronomical switches

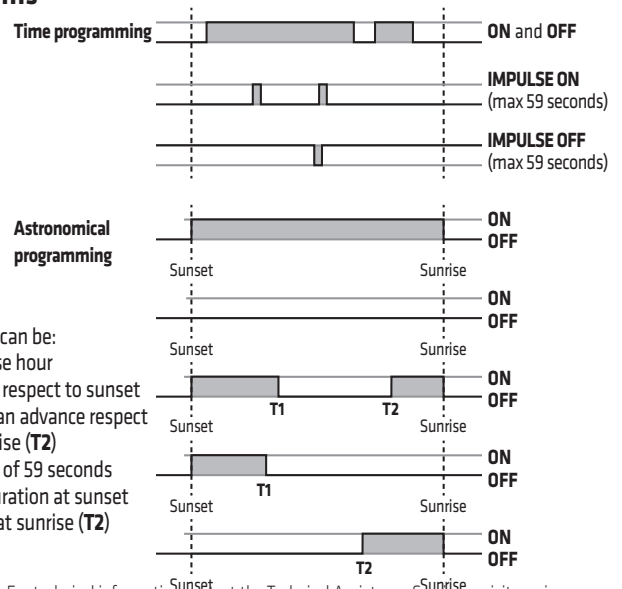
TECHNICAL DATA			
Code:	GW D6 788	GW D6 789	
Standard:	EN 60730-2-7, ETSI EN 301 489-1, ETSI EN 301 489-17, ETSI EN 300 328		
Programming type:	Weekly and/or astronomical (with charge reserve)		
Rated operating voltage (Ue):	(Vac)	230 (-10% ÷ +10%)	
Rated frequency:	(Hz)	50 - 60	
Rated impulse withstand voltage (Uimp):	(kV)	4	
Overtoltage category:		III	
Power loss:	(W)	1	1.5
Minimum time of functioning:		1 minute	
Charge reserve:		5 years	
Type of battery:		Lithium CR-2032 (replacing)	
Functions:	Integrated Bluetooth BLE 4.1 interface for transferring programs created on smartphones thanks to the dedicated TimerOn app Manual output relay switching Random of output contacts switching Display backlighting when power supplied by mains Product supplied with date and time set at the factory Automatic daylight saving time update Keypad lock by password Low battery warning		
Operating Bluetooth frequency range:	(MHz)	2400-2483.5	
Maximum wireless power transmitted:	(dBm)	4	
Programs:		ON OFF IMPULSE (from 1 to 59 sec.) HOLIDAY NIGHT (astronomical) ± 120 minutes	
Correction of sunrise and sunset hours:			
No. of storable programs:	120	120 (divided over the 2 contacts)	
Output contact type:	1 changeover	2 changeover	
Capacity of output contact:	(A)	16	
Lamp switching capacity:			
	incandescent lamp:	(W) 2000	
	LED lamp:	(W) 200	
	low voltage halogen lamp:	(W) 1500 (max 24V)	
	halogen lamp:	(W) 2000	
	compact fluorescent:	(W) 400	
	fluorescent:	(W) 600	
Protection degree		IP20 / IP40 (front)	
DIN modules:		2	
Max cable section (flexible/rigid):	(mm ²)	6	
Rated tightening torque:	(Nm)	0.8	
Beam stripping cable recommended:	(mm)	12	
Screwdriver suggested:		PH1	
Operating temperature:	(°C)	-20...+50	
Storage temperature:	(°C)	-10...+70	
Humidity:		20÷90% non-condensing	
Pollution degree:		2	
Sealing:		yes	
Weight:	(g)	130	150

The time/astronomical switches allow weekly or astronomical programming; in the case of 2 output contacts time switch type, it is possible to set a different programming (time or astronomical) to each contact.

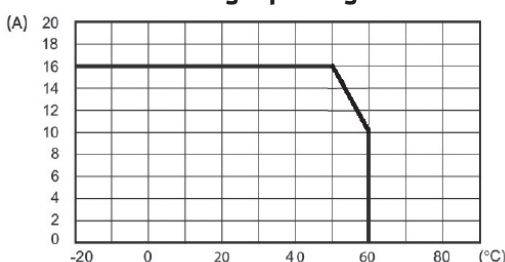
Circuit diagrams



Programs



Rated current derating depending on ambient temperature



T1 and T2 can be:

1. a precise hour
2. a delay respect to sunset (T1) or an advance respect to sunrise (T2)
3. a pulse of 59 seconds max duration at sunset (T1) or at sunrise (T2)

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MEASUREMENT

Voltmeters and Ammeters

TECHNICAL DATA		
Type:	Analogue	Digital
Standards:	EN 60051-1, EN 60051-2	EN 61010-1
Rated operating voltage (Ue):	(V) -	230 ac
Rated frequency:	40-60	15-100
Ammeter interchangeable scales and capacity:	10-20-30-40-50-60-100-150-250 400-600-1000-1200-1500	5 ÷ 999
Voltmeter scales:	(V) 300-500 ac	500 ac
Precision class:	1.5	0.5
Ammeter overloadability:	10 In for 1s / 2 In continuous	1.1 In continuous
Voltmeter overloadability:	2 Ue for 5s / 1.2 Ue continuous	1.2 Ue continuous
Absorbed power:	(VA) 0.3 (ammeter) 1.5 (voltmeter)	2 (ammeter) 1.5 (voltmeter)
Degree of protection:	IP20	IP20
Operating temperature:	(°C) -10...+55	-5...+55
Maximum cable section:	(mm ²) 6	6

Analogue voltmeters and ammeters

Indicator instruments of the electromagnetic type made up of a movable coil element. The voltmeter is the direct activation type, with a scale of 0-300/0-500V. The ammeters of 10 - 20 - 30A capacity use direct activation, whereas the GW 96 878 ammeter allows the measurement of currents up to 1500A thanks to the use of the appropriate TA and relative scale.

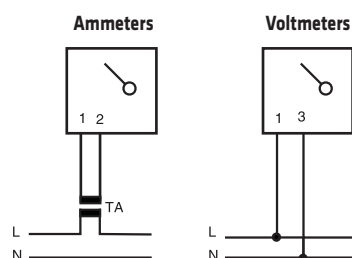
Digital voltmeters and ammeters

The digital tools with completely electronic operation ensure high precision and a long lifespan, thanks to the absence of moving mechanical parts subject to wear and tear. The measurement is displayed by means of a digital multiscale display. The ammeters are fitted for capacity selection using the front push-button.

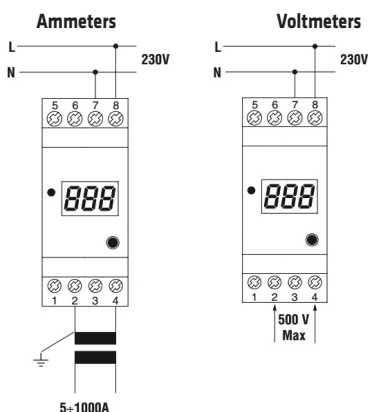
The current transformers (.../5) must have a primary current equal to the capacity pre-set on the tool.

Circuit diagrams

ANALOGUE



DIGITAL

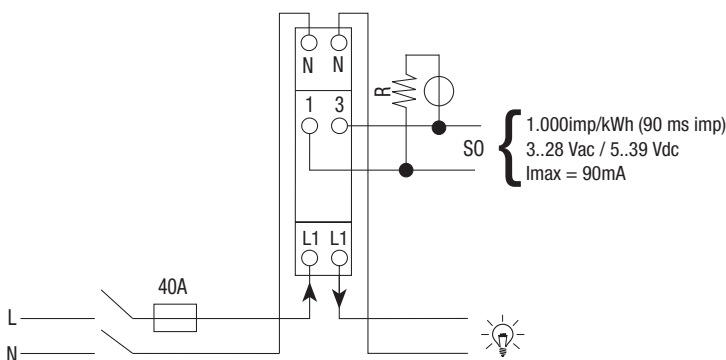


Single-phase digital energy meter

TECHNICAL DATA			
Code:	GW D6 801	GW D6 802	GW D6 803
Type MID:	no	yes	yes
Modbus integrated:	no	no	yes
Standards:	EN 50470-1-3, EN 62053-31		
DIN modules:	1		
Reference voltage U_n :	(V)	230 ac	
Minimum operating voltage (U_n min):	(V)	184 ac	
Maximum operating voltage (U_n max):	(V)	276 ac (continuous) 300 ac (momentary 1s)	
Activation:	direct		
Measured values:	active energy (exported and imported), active power (exported and imported), voltage, current, power factor, frequency		
Reference frequency:	(Hz)	50	
Minimum current measured NOT in Class (Ist):	(A)	0.02	
Minimum current measured in Class (Imin):	(A)	0.25	
Base current (Ib):	(A)	5	
Maximum current (Imax):	(A)	40 (continuous) 960 (momentary 10ms)	
Precision class:	1		
Reading resolution:	(kWh)	0.1	
Absorbed power:	(VA)	8	
Remote signalling contact:	1 NO		
Max. output current with pulse:	(A)	0.09 (max 230V ac/dc)	
Pulse output contact operating voltage:	(V)	5÷230 ac 5÷300 dc	
Output pulse frequency:	(imp/kWh)	1000	
Output pulse duration:	(ms)	90	
Display:	LCD (N° 7 digits)		
Digits displayed:	999 999.9		
Degree of protection:	IP20		
Operating temperature:	(°C)	-25...+55	
Storage temperature:	(°C)	-25...+70	
Maximum cable section:	(mm ²)	16	
Screwdriver suggested for main terminals:	PZ1		
Maximum cable section for output contact:	(mm ²)	4	
Screwdriver suggested for output contact:	PZ1		
Resetting of energy count:	yes	no	no
Sealing:	yes		
Suitable accessory:	with KNX GW 90 876 interface* with RS485 Modbus GW D6 820 interface* with LAN-TCP/IP GWD6821 interface*		no

* communication of values measured by energy meters by means KNX, RS485 Modbus or LAN-TCP/IP network.
Interfaces are optically coupled with energy meter (the two devices have to be installed side-by-side).
KNX interface GW90876 has to be configured with ETS software.

Circuit diagrams



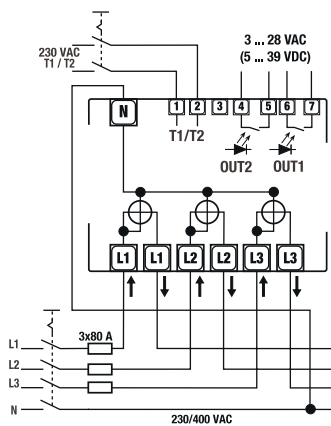
KNX interface Energy meter
For technical information contact the Technical Assistance Service or visit gewiss.com

Three-phase digital energy meters

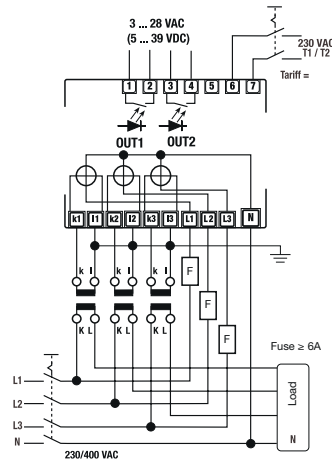
TECHNICAL DATA				
Code:	GW D6 804	GW D6 807	GW D6 805	GW D6 809
Type MID:	yes		yes	
Modbus integrated:	yes	no	yes	no
Standard:	EN 50470-1-3, EN 62059-32-1		EN 50470-1-3, EN 62059-32-1	
Activation:	direct		indirect with C.T.	
DIN modules:	4		4	
Reference voltage (Un):	230 ac Phase-Neutral		230 ac Phase-Neutral	
Connection:	single phase line (2 cables) single phase line (4 cables)		three-phase line (4 cables)	
Minimum operating voltage (Un min):	92 ac (L-N) - 160 ac (L-L)		92 ac (L-N) - 160 ac (L-L)	
Maximum operating voltage (Un max):	L-N: 276 ac (continuous) - 300 ac (momentary 1s) L-L: 480 ac (continuous) - 800 ac (momentary 1s)		L-N: 276 ac (continuous) - 300 ac (momentary 1s) L-L: 480 ac (continuous) - 800 ac (momentary 1s)	
Measured values:	active power (exported and imported) active energy (exported and imported) voltage, current, power factor, frequency, THD voltage, THD current		active power (exported and imported) active energy (exported and imported) voltage, current, power factor, frequency, THD voltage, THD current	
Reference frequency:	50		50	
Minimum current measured NOT in Class (Ist):	0.015		0.001	
Minimum current measured in Class (Imin):	0.25		0.01	
Base current (Ib):	5		1	
Maximum current (Imax):	80 (continuous) - 2400 (momentary 10 ms)		6 (continuous) - 120 (momentary 10 ms)	
Precision class:	1 (active energy) - 2 (reactive energy)		1 (active energy) - 2 (reactive energy)	
Absorbed power:	2		2	
Remote signalling contact:	2 contacts for carry active and reactive energy, imported and exported		2 contacts for carry active and reactive energy, imported and exported	
Tariffs:	n° 2 tariffs for active energy		n° 2 tariffs for active energy	
Max. output current with pulse:	0.09		0.09	
Pulse output contact operating voltage:	3÷28 ac - 5÷39 dc		3÷28 ac - 5÷39 dc	
Output pulse frequency:	adjustable from 1 to 200		adjustable from 1 to 10000 depending on C.T. ratio	
Output pulse duration:	adjustable from 30 to 100		adjustable from 30 to 100	
Display:	LCD (N° 9 digits)		LCD (N° 9 digits)	
Degree of protection:	IP40		IP40	
Operating temperature:	-25...+55		-25...+55	
Storage temperature:	-25...+70		-25...+70	
Maximum cables section:	35 (also with terminal cable)		4 (also with terminal cable)	
Screwdriver suggested for main terminals:	PZ2		PZ1	
Maximum cable pulse output contact:	4 (2.5 with terminal cable)		2.5 (also with terminal cable)	
Screwdriver suggested for output impulse contact:	flathead (0.8x3.5)		flathead (0.8x3.5)	
Resetting of energy count:	yes (only for partial energy)		yes (only for partial energy)	
Sealing:	yes		yes	
Suitable accessory:	no	with KNX GW 90 876 interface* with RS485 Modbus GW D6 820 interface* with LAN-TCP/IP GWD6821 interface*	no	with KNX GW 90 876 interface* with RS485 Modbus GW D6 820 interface* with LAN-TCP/IP GWD6821 interface*

* communication of values measured by energy meters by means KNX, RS485 Modbus or LAN-TCP/IP network. Interfaces are optically coupled with energy meter (the two devices have to be installed side-by-side). KNX interface GW90876 has to be configured with ETS software.

Circuit diagrams



GW D6 804
GW D6 807

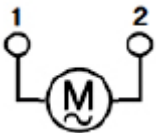


GW D6 805
GW D6 809

Hour counter

TECHNICAL DATA		
Code:		GW D6 911
Standard:		EN 61010-1 EN 61000-6-2 EN 61000-6-3
Rated operating voltage (Ue):	(Vac)	230 (-10% ÷ +10%)
Rated frequency:	(Hz)	50
Rated impulse withstand voltage (Uimp):	(kV)	4
Overvoltage category:		III
Accuracy:	(h)	1/100
No. digit:		5 + 2 decimals
Digit dimension:	(mm)	4
Max counting:	(h)	99999.99
Shutdown time Toff:	(sec)	25
Functions and features:		Supplied inside package with 00001.01 counting
Protection degree:		IP20 / IP40 (front)
DIN modules:		2
Max cable section (flexible/rigid):	(mm ²)	4
Rated tightening torque:	(Nm)	0.8
Beam stripping cable recommended:	(mm)	10
Screwdriver suggested:		PZ1
Operating temperature:	(°C)	-25...+70
Storage temperature:	(°C)	-40...+70
Humidity:		max 80% at 25°C
Pollution degree:		2
Sealable:		no
Weight:		80

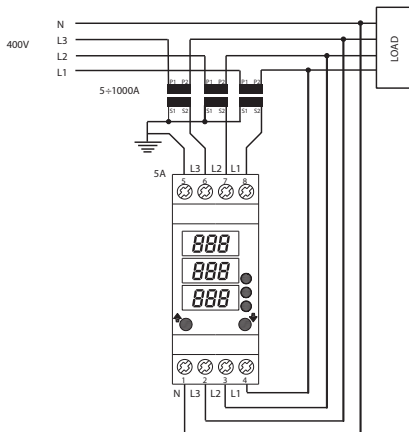
Circuit diagrams



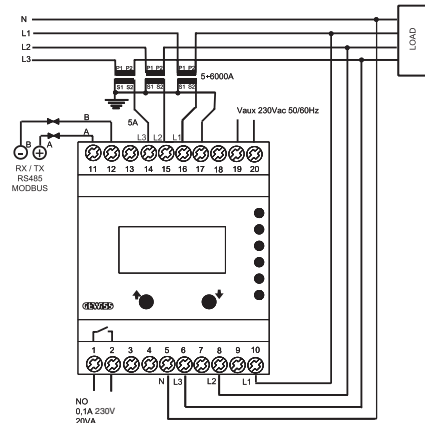
Multimeter and network analyzer

TECHNICAL DATA		
Type:	Multimeter	Network analyzer
Standard:	EN 61010	EN 61010
Rated operating voltage (Ue):	(V) 230 ac Phase-Neutral	230 ac Phase-Neutral
Rated frequency:	(Hz) 50-60	50-60
Activation:	CT of 5A	CT of 5A
Suitable for network system:	single and three-phase	single and three-phase
Measured values:	Instantaneous measures: - voltage (phase and line) - current	Instantaneous measures: - voltage (phase and line) - power (phases and neutral) - frequency - active, reactive, apparent power (total and by phase) - cos ϕ (total and per phase) Average values (based on 15min): - active, reactive, apparent power (total and by phase) Energy measurement: - active energy (partial, resettable and total) - reactive energy (partial, resettable and total)
Resetting of partial energy count:	-	active and reactive
Display:	LED	LCD
Number of digits displayed:	3	4
Remote signalling contact:	-	all measured values
RS485 output:	-	MODBUS RTU
Precision class:	0.5	2
Overloadability:	1.1 In	1.2 In
Absorbed power:	(VA) 2	2
Degree of protection:	IP20	IP20
Operating temperature:	(°C) -5...+55	0...+55
Storage temperature:	(°C) -10...+70	-10...+70

Circuit diagrams - Multimeter



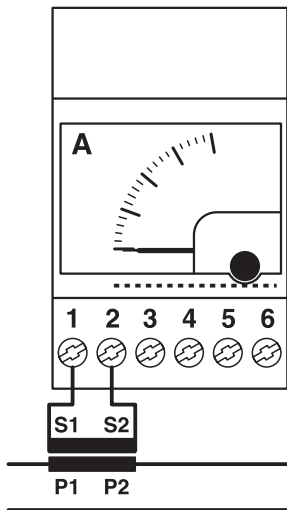
Circuit diagrams - Network analyzer



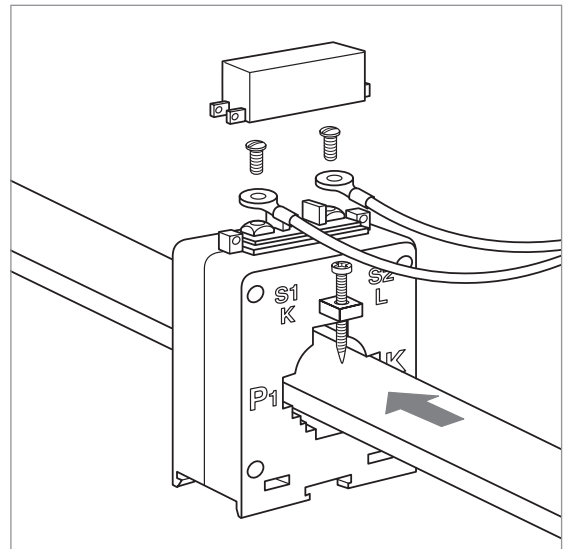
Current transformers

TECHNICAL DATA		
Standards:		EN 61869-1, EN 61869-2
Secondary current:	(A)	5
Rated frequency:	(Hz)	50-60
Test voltage:		6kV at 50Hz for 1 min.
Overload:		1.2 I _n
Dynamic shorting current:		2.5 I _{th}
Safety factor:		< 5
Degree of protection:		IP30
Operating temperature:	(°C)	-20...+50
Storage temperature:	(°C)	-40...+80
Relative humidity:		80%
Maximum cable section:	(mm ²)	10

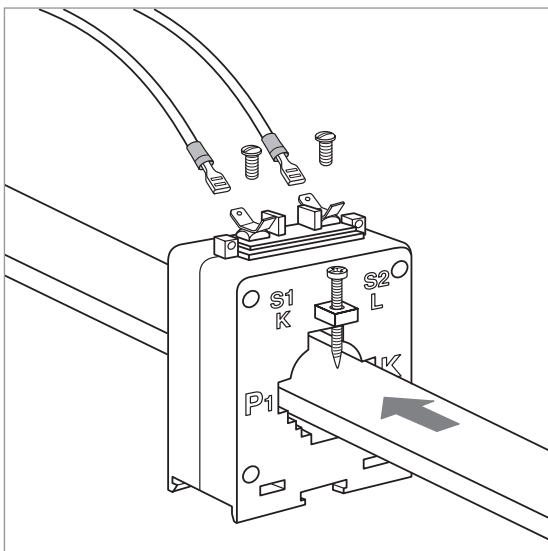
Circuit diagrams



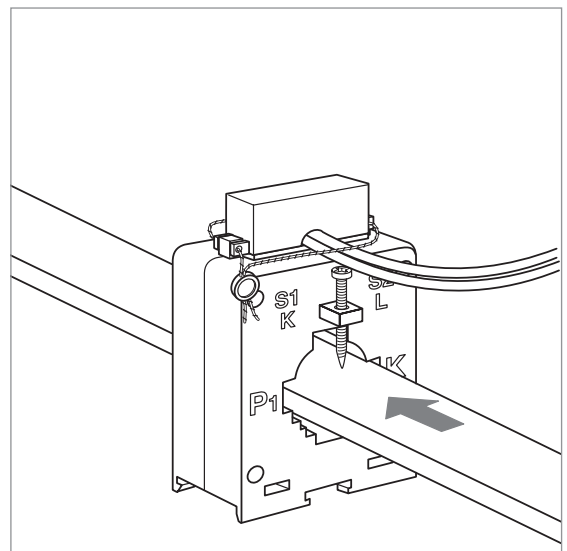
CONNECTION WITH CABLE TERMINAL



CONNECTION WITH FAST-ON (6.3MM)



TERMINAL COVER FIXING AND SEALING



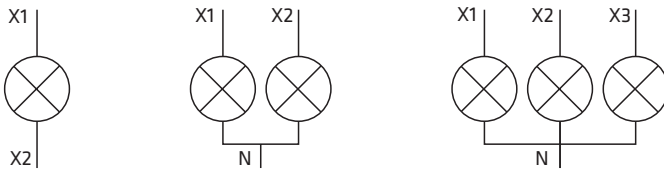
SIGNALLING

Indicator lights

TECHNICAL DATA			
Standard:		EN 62094-1	EN 62094-1
Rated operating voltage (Ue):	(V)	230 ac	12-48 ac/dc
Rated frequency:	(Hz)	50/60	50/60
Type of lamp:		LED	LED
Lamp consumption:	(W)	0.8 (single) / 1.4 (double) / 1.8 (triple)	0.08
Lamp duration:	(h)	100,000	100,000
Operating temperature:	(°C)	-5...+40	-5...+40
Maximum cable section:	(mm²)	6 (flexible) / 10 (rigid)	6 (flexible) / 10 (rigid)

Note: rated operating voltage for triple signalling lamp : 230Vac Phase-Neutral and 400Vac Phase-Phase. Triple signalling lamp cannot be used in a three phase system without neutral.

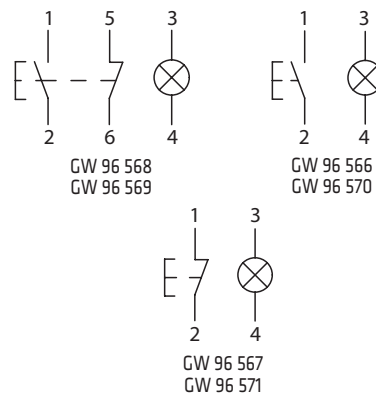
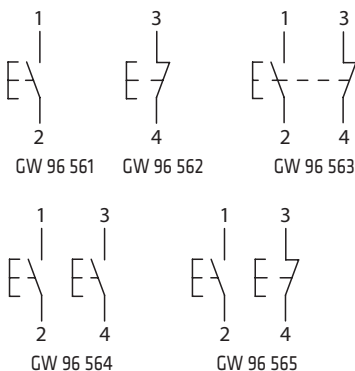
Circuit diagrams



Push-buttons and illuminated push-buttons

TECHNICAL DATA			
		Push-buttons	Illuminated push-buttons
Standard:		EN 60669-1	EN 60669-1
Rated operating voltage (Ue):	(V)	250 ac	250 ac
Lamp voltage:	(V)	-	12-48 ac 230 ac
Rated current:	(A)	16	16
Rated impulse withstand voltage (Uimp):	(kV)	4	4
Rated frequency:	(Hz)	50/60	50/60
Closing capacity:		1.25Ie - 1.1 Ue - Cos φ = 0.6	1.25Ie - 1.1 Ue - Cos φ = 0.6
Type of lamp:		-	LED
Lamp consumption:	(W)	-	0.08 0.8
Lamp duration:	(h)	-	100,000
Mechanical operations:		20,000	20,000
Operating temperature:	(°C)	-5...+40	-5...+40
Maximum cable section:	(mm²)	6 (flexible) / 10 (rigid)	6 (flexible) / 10 (rigid)

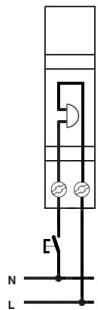
Circuit diagrams



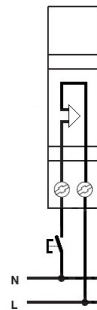
Bells and buzzers

TECHNICAL DATA						
Type:		Bells	Bell + transformer	Buzzers	Buzzer + transformer	Bell + Buzzer + transformer
Rated operating voltage (Ue):	(V)	12-230 ac	230 ac	12-230 ac	230 ac	230 ac
Rated frequency:	(Hz)	50-60	50	50-60	50	50
Secondary rated voltage:	(V)	-	24 ac	-	24 ac	24 ac
Sound level at 1m:	(dB)	84	80	80	70	80 bell - 70 buzzer
Absorbed power:	(VA)	5 version 12V 10 version 230V	6.1	5 version 12V 10 version 230V	6.1	3.8+3.8
Degree of protection:		IP20	IP20	IP20	IP20	IP20
Operating temperature:	(°C)	-10...+55	-10...+55	-10...+55	-10...+55	-10...+55
Maximum cable section:	(mm ²)	6	6	6	6	6

Circuit diagrams - Bells and Buzzers



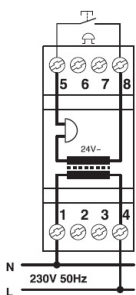
GW 96 401 (12V)
GW 96 402 (230V)



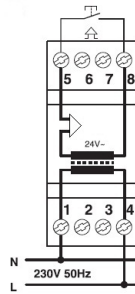
GW 96 406 (12V)
GW 96 407 (230V)



Circuit diagrams - Bell + transformer and Buzzer + transformer



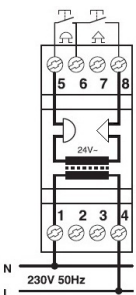
GW 96 403



GW 96 408



Circuit diagram - Bell + Buzzer + transformer



GW 96 411



Bell transformers (for discontinuous use)

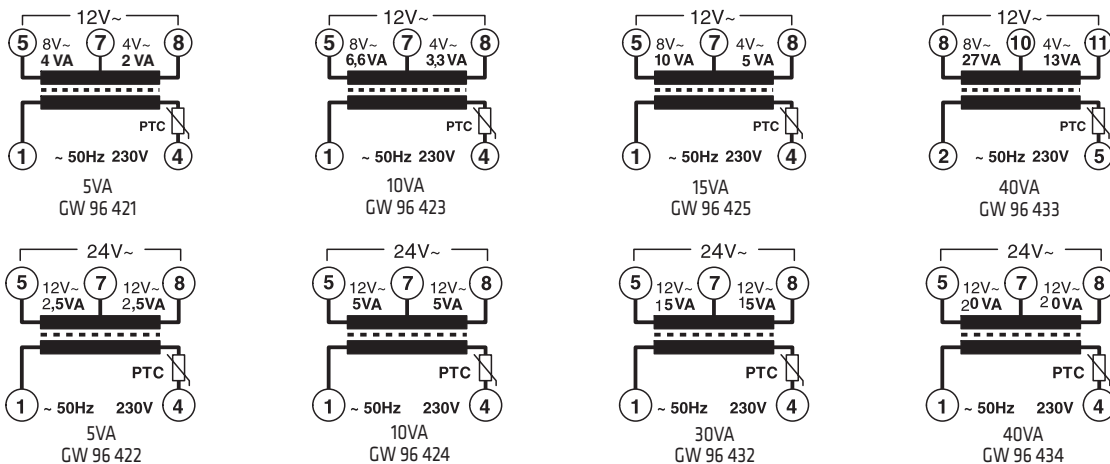
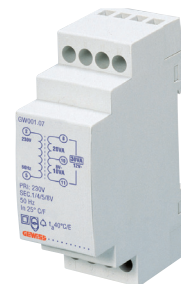
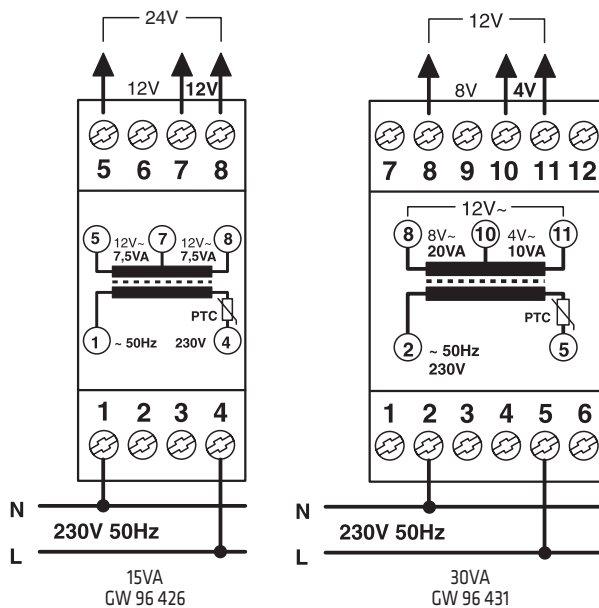
TECHNICAL DATA		
Standards:		EN 61558-1, EN 61558-2-8
Primary rated voltage:	(V)	230 ac
Secondary rated voltage:	(V)	4+8=12 / 12+12=24
Secondary voltage change at full load:		15%
Secondary no-load voltage:	(V)	< 33 ac
Insulation class:		II
Rated power:	(VA)	6 - 10 - 15 - 30 - 40
Degree of protection:		IP20
Operating temperature:	(°C)	-10...+40
Maximum cable section:	(mm ²)	6

Applications

Thanks to intermittent operation, the bell transformers can be used to actuated the shunt trip releases GW 96 011 and GW D6 013 with rated voltage Vn=12/24V. The following table shows the maximum number of releases GW 96 011 or GW D6 013 actuated by bell transformer.

Transformer code	Secondary voltage (V)	Rated power (VA)	Max n. of releases GW 96 001 actuated
GW 96 425	12	15	5
GW 96 426	12	7.5	3
	24	15	2
GW 96 431	12	30	11
	12	15	7
GW 96 432	24	30	6
	12	40	12
GW 96 434	12	20	8
	24	40	7

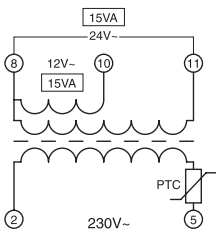
Circuit diagrams



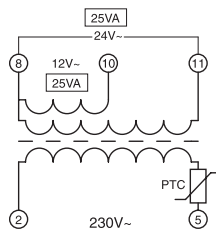
Safety transformers (for continuous operation)

		TECHNICAL DATA
Standards:		EN 61558-1, EN 61558-2-6
Primary rated voltage:	(V)	230 ac
Secondary rated voltage:	(V)	12-24 ac
Secondary voltage change at full load:	(V)	5%
Secondary no-load voltage:	(V)	< 50 ac
Rated frequency:	(Hz)	50
Rated power:	(VA)	50/60 (only for GW96325)
	GW 96 321	15
	GW 96 322	25
	GW 96 323	40
	GW 96 324	63
	GW 96 325	100
Off-load power loss:	(W)	
	GW 96 321	0.9
	GW 96 322	0.9
	GW 96 323	1.4
	GW 96 324	1.8
	GW 96 325	1.04
Insulation class:		II
Degree of protection:		IP20
Operating temperature:	(°C)	-10...+25
		-5...+40 (only for GW96325)
Maximum cable section:	(mm ²)	6
		only for GW96325: 2.5 (rigid) / 1.5 (flexible)
Resistant to the short-circuit not for construction:		yes
Max limit of temperature PTC:	(°C)	120

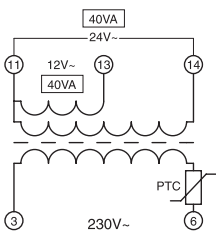
Circuit diagrams



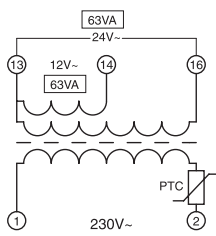
GW 96 321



GW 96 322



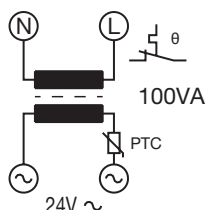
GW 96 323



GW 96 324



230V ~ 50-60Hz



GW 96 325

Socket for assembly on DIN rail EN 50022

TECHNICAL DATA					
Standards:		German	French	Italian/German	Danish
No. poles:		2P+E	2P+E	2P+E	2P+E
Standard:		IEC 60884-1			
Specific regulation:		DIN VDE 0620-1	NFC 61-314	CEI 23-50	DK 107-2-D1
Rated current (In):	(A)	16		10 / 16*	16
Rated operating voltage (Ue):	(V)	250 ac			
Rated frequency:	(Hz)	50			
Protection shields:		yes			
Degree of protection:		IP20	IP40 (closed cover)	IP20	IP20
Rated tightening torque:	(Nm)	0.8			
Maximum cable section:	(mm²)	10 (flexible) / 16 (rigid)			

* 10A Italian standard / 16A German standard



GW 96 522



GW 96 523



GW 96 524



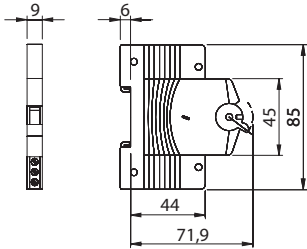
GW 96 525



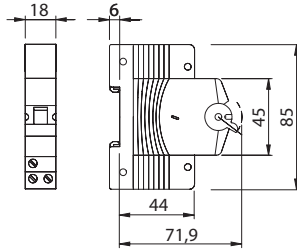
GW 96 526

Dimension tables

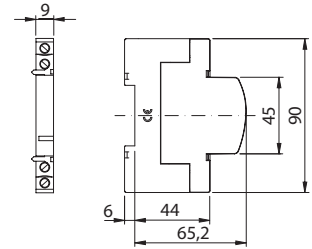
AUXILIARY CONTACTS FOR MTC-MT-MTHP-MDC-IDP-SWITCH DISCONNECTORS



RELEASES FOR MTC-MT-MTHP-MDC-IDP-SWITCH DISCONNECTORS

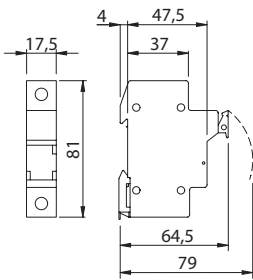


AUXILIARY CONTACTS AND RELEASES FOR IDP 4P IN 3 MODULES

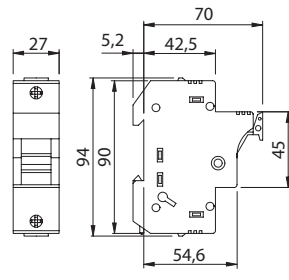


DISCONNECTABLE FUSE HOLDERS

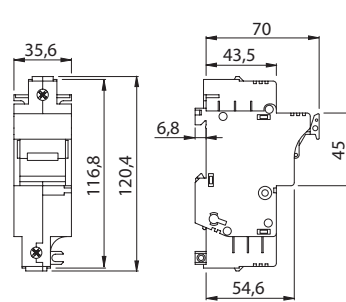
AC Fuse holders



For fuses 8.5 x 31.5 - 10.3 x 38



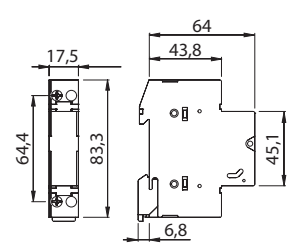
For fuses 14 x 51



For fuses 22 x 58

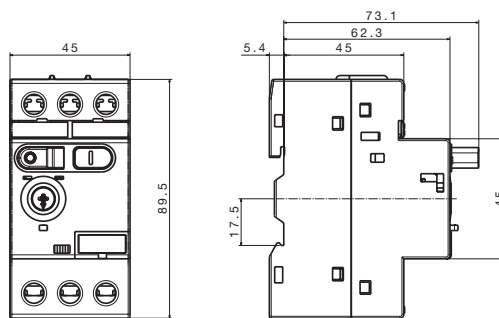
DC Fuse holders

Compact fuse holder

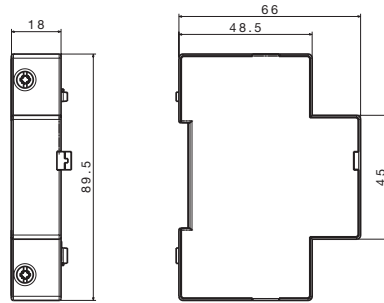


For fuses 10.3 x 38

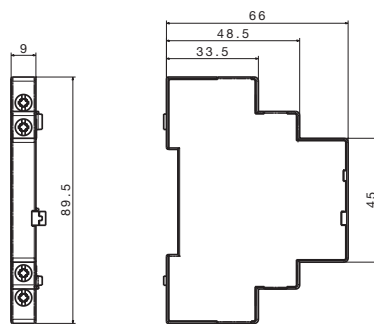
MOTOR PROTECTION SWITCHES



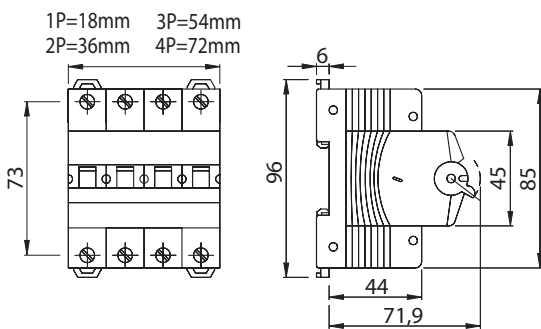
RELEASES FOR MOTOR PROTECTION SWITCHES



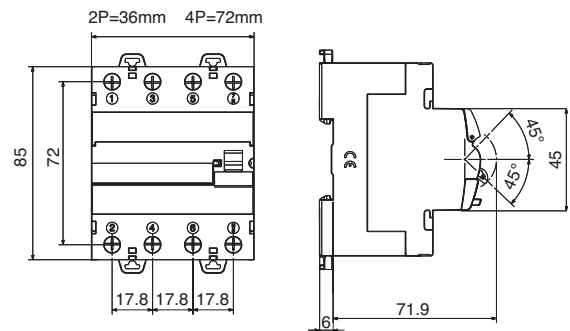
AUXILIARY CONTACT FOR MOTOR PROTECTION SWITCHES



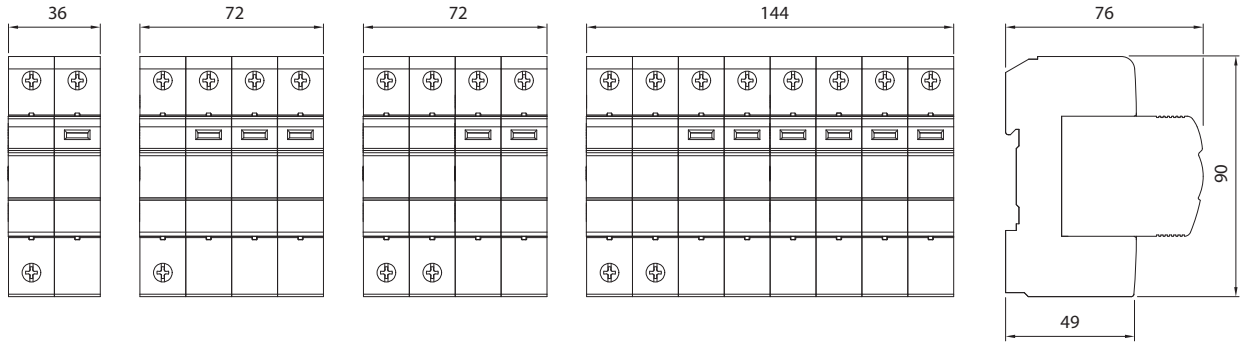
AC SWITCH DISCONNECTORS WITHOUT ACCESSORIES OPTION



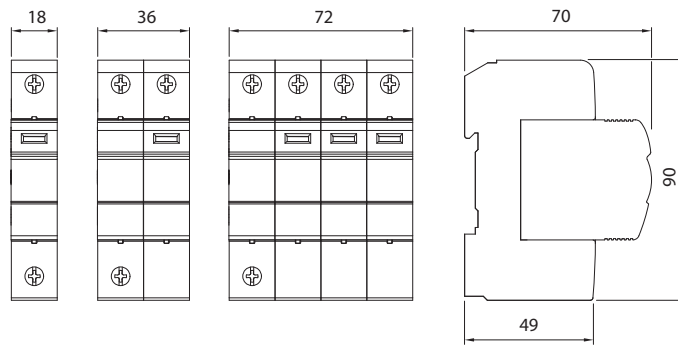
AC SWITCH DISCONNECTORS WITH ACCESSORIES OPTION



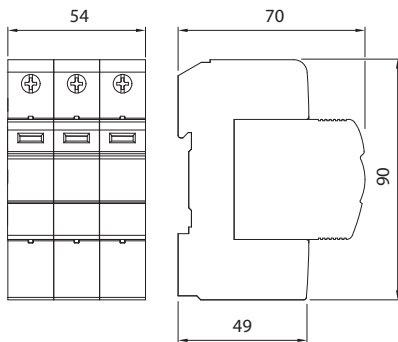
SURGE PROTECTIVE DEVICES TYPE 1+2



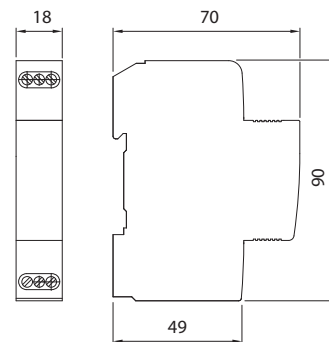
SURGE PROTECTIVE DEVICES TYPE 2



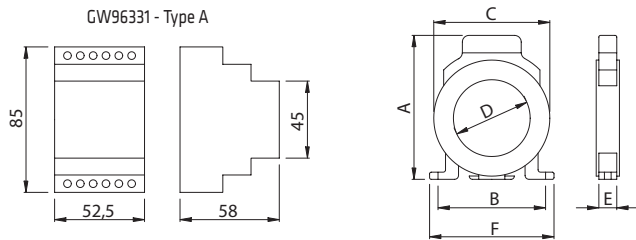
DC SURGE PROTECTIVE DEVICES



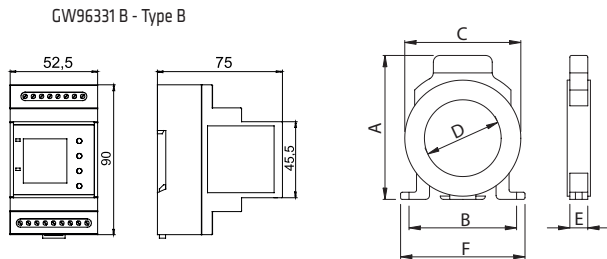
SURGE PROTECTIVE DEVICES FOR TELECOM AND DATALINE



RESIDUAL CURRENT RELAY AND TOROIDS

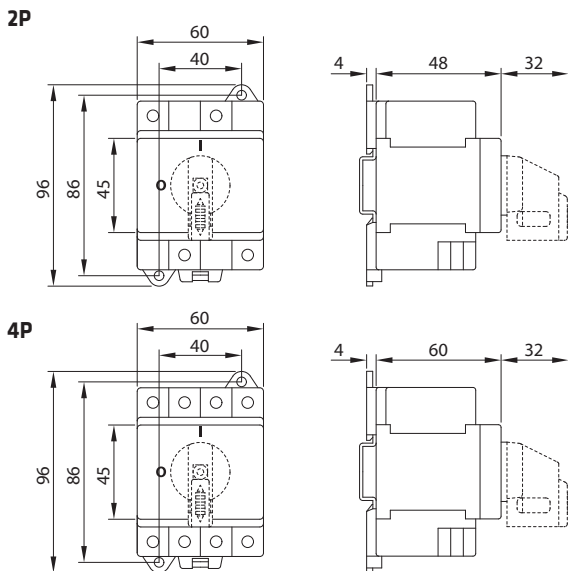


Code	D	A	B	C	E	F
GW 96 332	35	118	90	78.5	27	104
GW 96 333	80	163	110	114.5	27	125
GW 96 334	110	198	140	150.5	32	155
GW 96 335	210	298	210	250.5	32	227

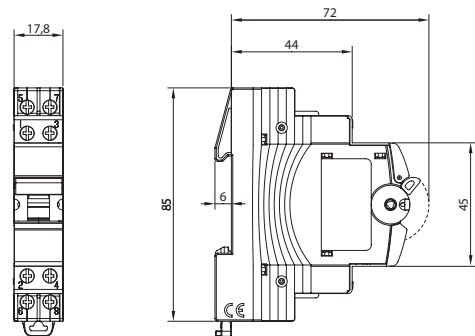


Code	D	A	B	C	E	F
GW 96 332 B	35	118	90	78.5	27	104
GW 96 333 B	80	163	110	114.5	27	125
GW 96 334 B	110	198	140	150.5	32	155
GW 96 335 B	210	298	210	250.5	32	227

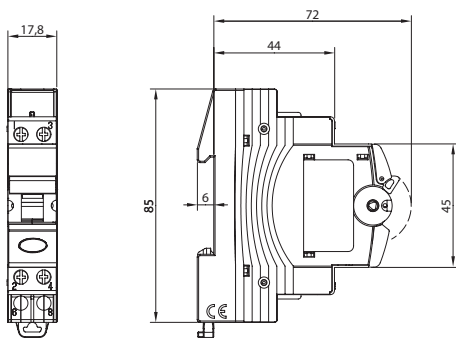
DC ROTARY SWITCH DISCONNECTORS



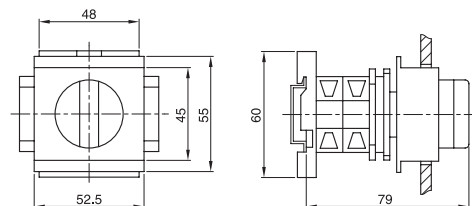
ISOLATING SWITCHES AND LEVER SWITCHES



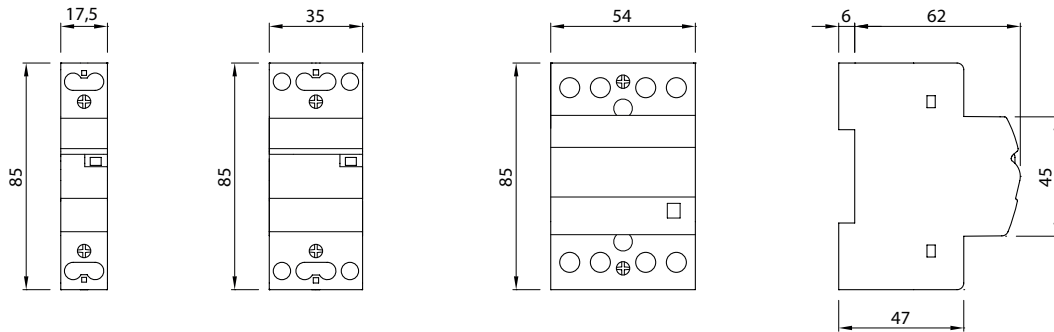
ON-OFF SWITCHES WITH INDICATOR LAMP



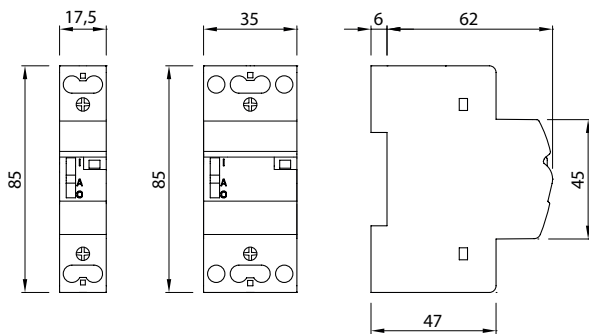
ROTARY SWITCHES



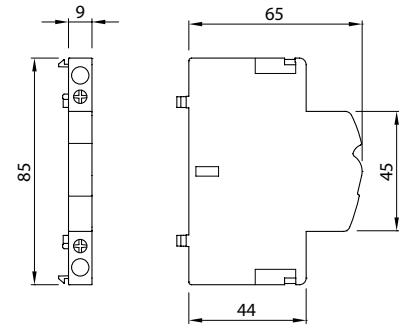
CONTACTORS



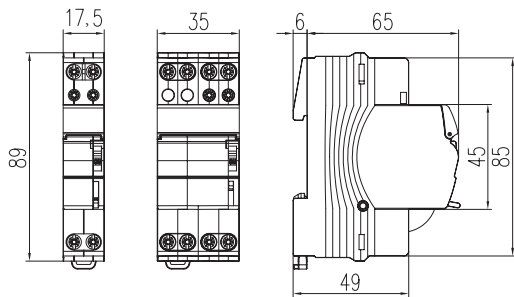
MANUAL CONTROL CONTACTORS AND INSTALLATION RELAYS



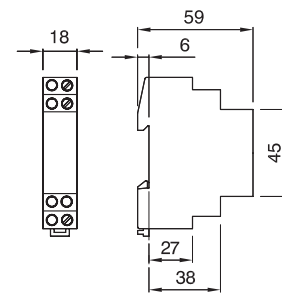
AUXILIARY CONTACTS FOR CONTACTORS, INSTALLATION RELAYS AND LATCHING RELAYS



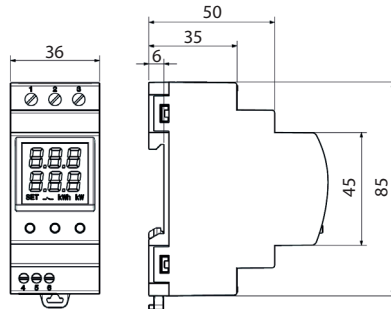
LATCHING RELAYS



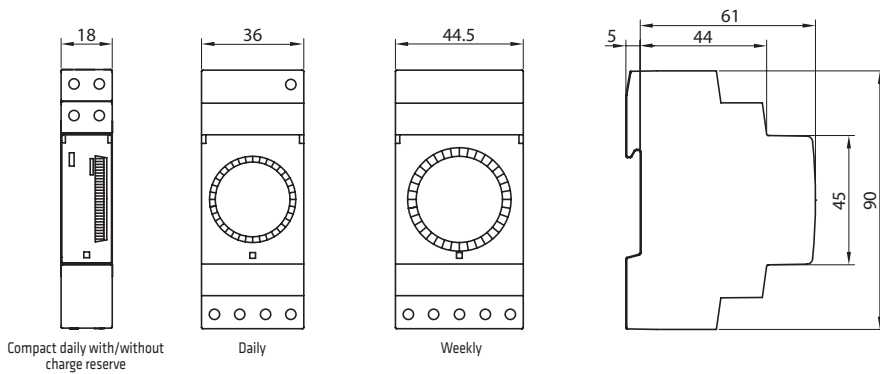
BIOCOMFORT



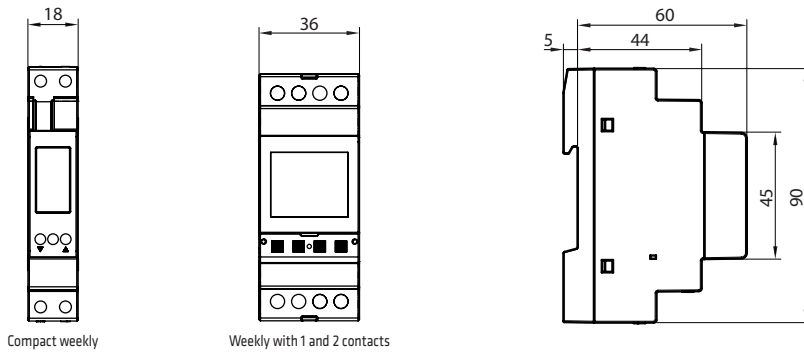
LOAD MANAGEMENT RELAY



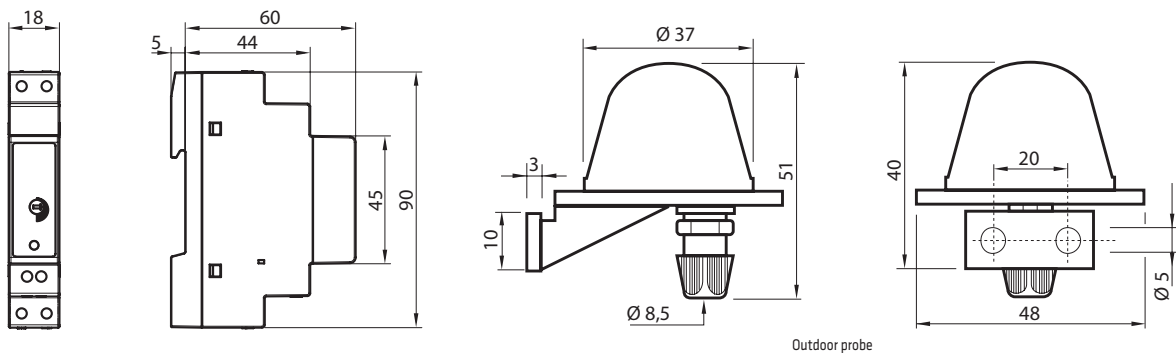
ANALOGUE TIME SWITCHES



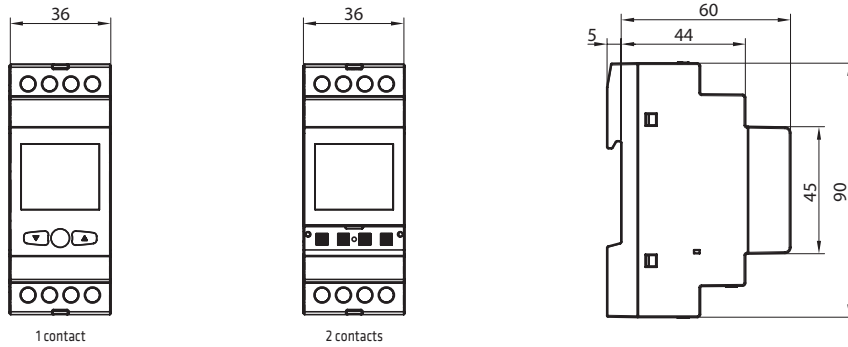
DIGITAL TIME SWITCHES



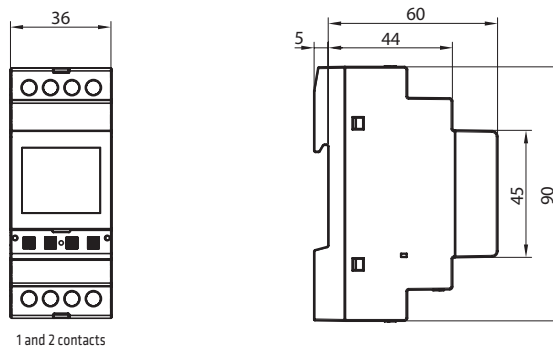
TWILIGHT SWITCHES



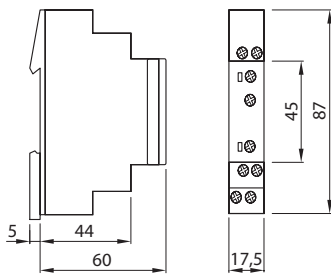
ASTRONOMICAL SWITCHES



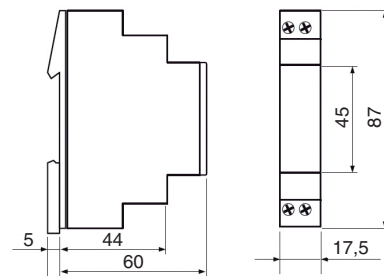
TIME/ASTRONOMICAL SWITCHES



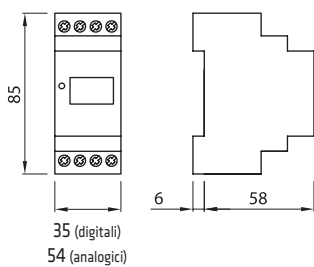
CONTROL RELAYS AND TIMERS



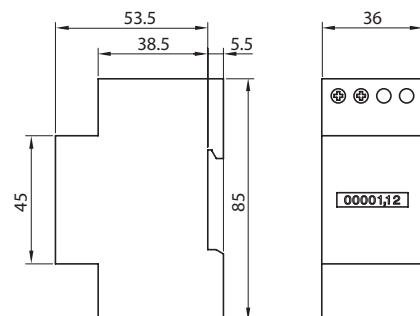
STAIRCASE LIGHTING SWITCH



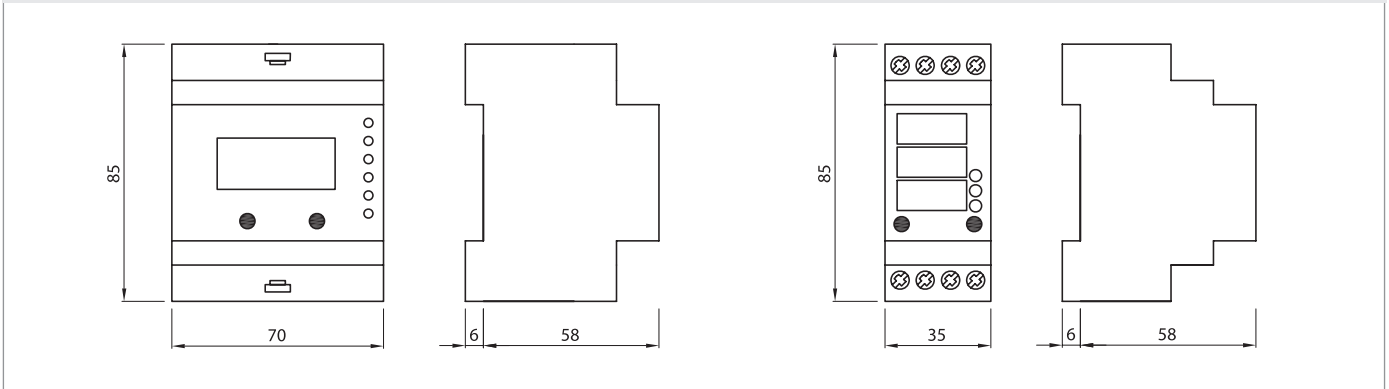
VOLTMETER AND AMMETER



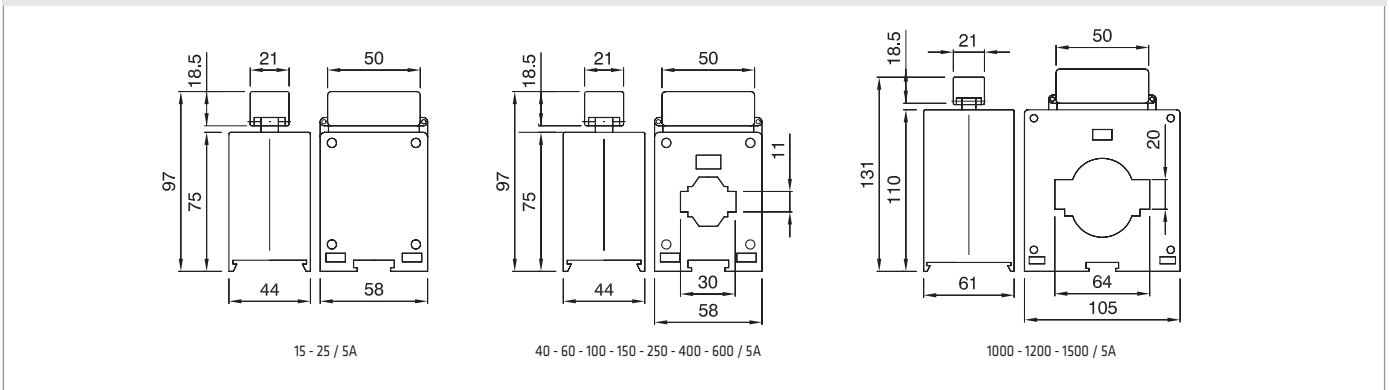
HOUR COUNTER



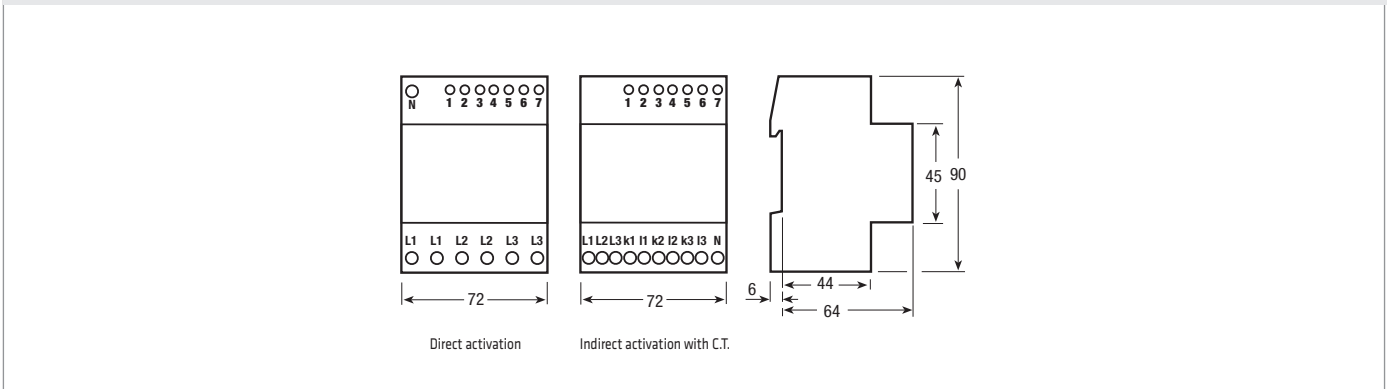
NETWORK ANALYSER, MULTIMETER



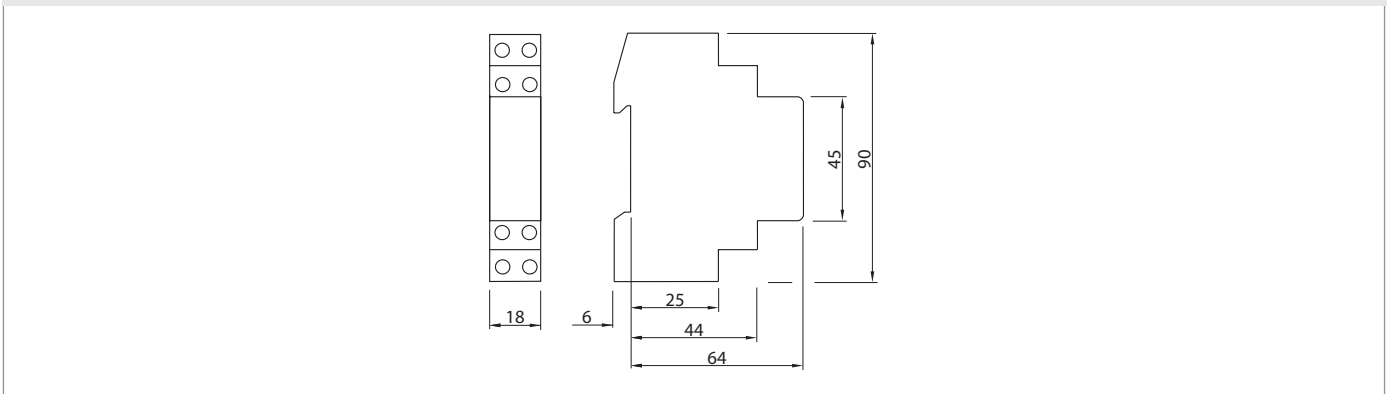
CURRENT TRANSFORMERS



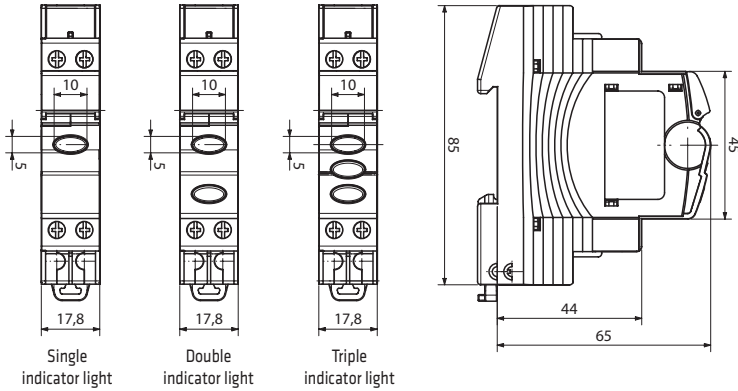
THREE-PHASE DIGITAL ENERGY METERS



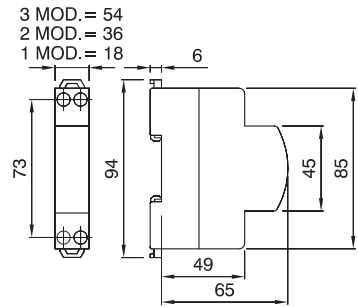
SINGLE-PHASE DIGITAL ENERGY METERS



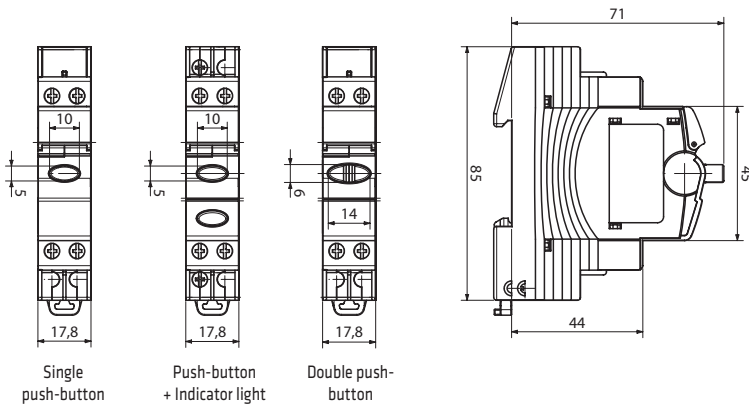
INDICATOR LIGHTS



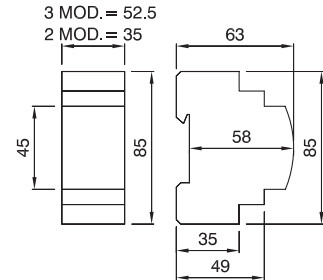
BELLS AND BUZZERS



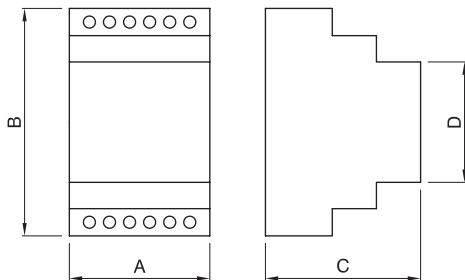
PUSH-BUTTONS



BELL TRANSFORMERS

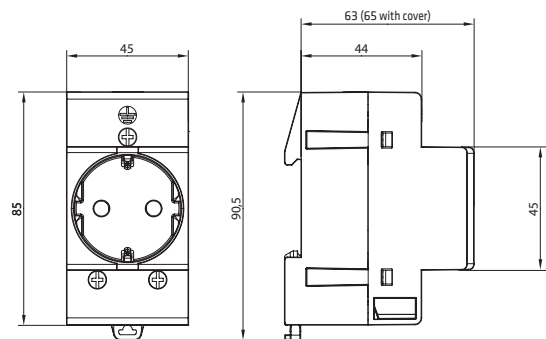


SAFETY TRANSFORMERS

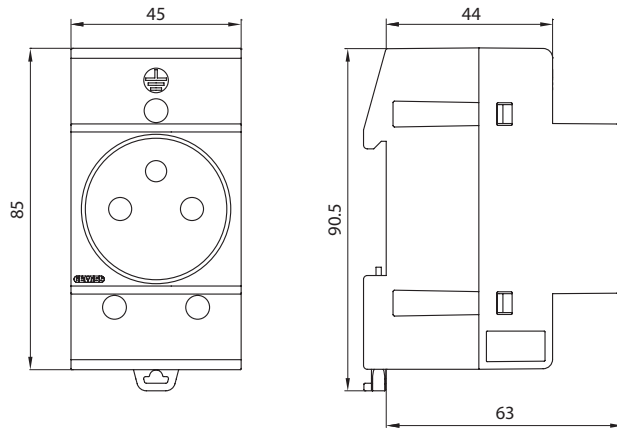


Code	A (mm)	B (mm)	C (mm)	D (mm)
GW 96 321	52.5	85	58	45
GW 96 322	52.5	85	58	45
GW 96 323	70	85	58	45
GW 96 324	105	85	65	45
GW 96 325	140	93.5	68.5	54

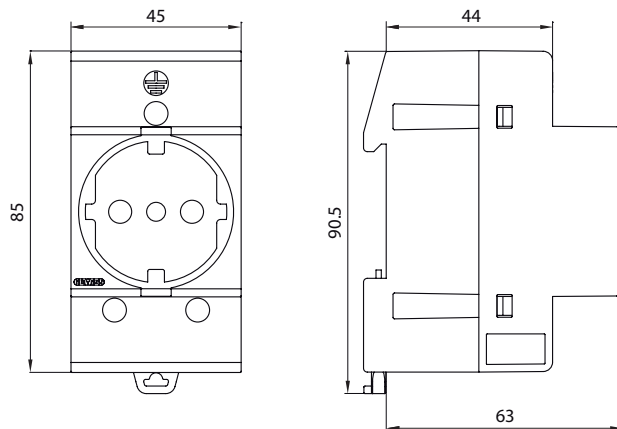
SOCKET GERMAN STANDARD FOR ASSEMBY ON DIN RAIL



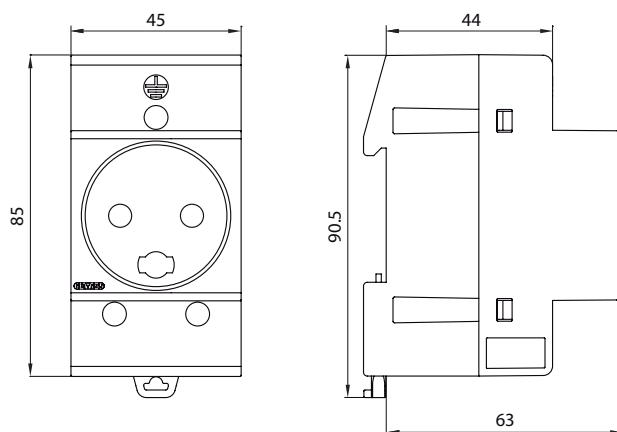
SOCKET FRENCH STANDARD FOR ASSEMBLY ON DIN RAIL



SOCKET ITALIAN/GERMAN STANDARD FOR ASSEMBLY ON DIN RAIL



SOCKET DANISH STANDARD FOR ASSEMBLY ON DIN RAIL



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Economic and Administrative Index 107496 - Share Capital 60,000,000.00 EUR fully paid up

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