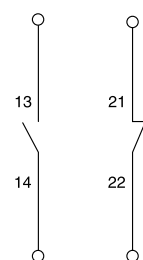
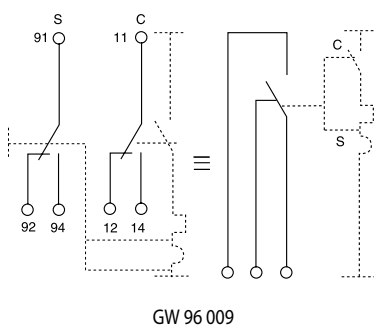
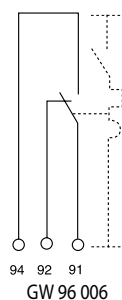
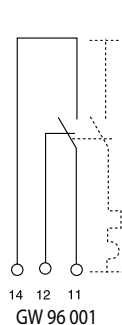


ACCESSORIES AND AUXILIARIES FOR MODULAR CIRCUIT BREAKER

AUXILIARY CONTACTS

TECHNICAL DATA	AUX CONTACTS FOR MTC - MT - MTHP - MDC	AUX CONTACTS FOR SD 25÷100A	AUX CONTACTS FOR SD 125A	AUX CONTACTS FOR SD type B
Code:	GW96001 - GW96006 - GW96009	GW96003 - GW96004	GW96005	GW96007
DIN modules:	0,5	0,5	0,5	0,5
Rated operating voltage (Ue):	AC - 50 Hz (V)	24 ÷ 400	24 ÷ 400	24 ÷ 230
	DC (V)	24 ÷ 250	24 ÷ 110	24 ÷ 220
Aux contact type:	1 CO	1 NO + 1 NC	1 NO + 1 NC	1 NO + 1 NC
Rated operating current (Ie):	AC12 - 230V (A)	6	6	5
	AC12 - 400V (A)	3	2	0,5
	DC12 - 24V (A)	6	4	-
	DC12 - 60V (A)	2	-	-
	DC12 - 110V (A)	1,5	1	-
	DC12 - 250V (A)	1	-	0,5
Rated tightening torque:	(Nm)	0,6	0,6	0,6
Beam stripping cable recommended:	(mm)	6	6	6
Screwdriver suggested:	Philips 1	Philips 1	Philips 1	Philips 1
Operating temperature:	(°C)	-25 ÷ 60	-25 ÷ 60	-25 ÷ 60
Max cable section (flexible/rigid):	(mm²)	2,5/4	2,5/4	2,5/4

CIRCUIT DIAGRAMS - AUXILIARY CONTACTS



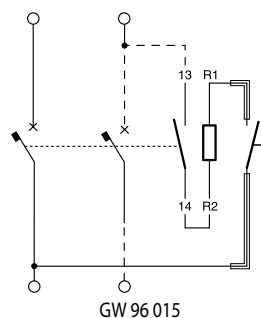
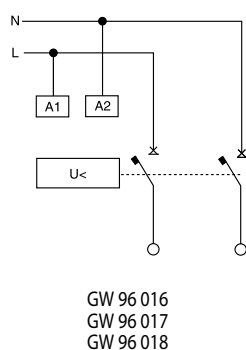
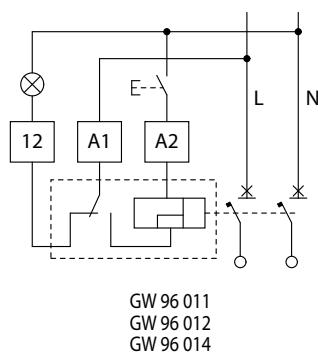
GW 96 003
GW 96 004
GW 96 005
GW 96 007



SHUNT TRIP AND UNDERVOLTAGE RELEASES

TECHNICAL DATA			SHUNT TRIP RELEASES							UNDERVOLTAGE RELEASES									
Code:			GW96011			GW96012			GW96014		GW96015		GW96016		GW96017		GW96018		
DIN modules:			1			1			1		1		1		1		1		
Rated operating voltage (Ue):	AC - 50 Hz	(V)	12	24	48	110	-	415	230		230		230		24		48		
	DC	(V)	12	24	48	110	125	-	-		-		-		24		48		
Pick-up current:			(A)	1,6	3,2	6,4	0,22	0,25	0,84	0,46		-		-		-		-	
Pick-up power:			(VA in AC - W in DC)	19,2	76,8	307	24,4	31,6	348	106		-		-		-		-	
Rated operating current (Ie):	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		-		-		-		-		
Release trip:	AC - 50 Hz	(V)	-			-			-		-		0,35 ÷ 0,7 Ue		0,35 ÷ 0,7 Ue		0,35 ÷ 0,7 Ue		
	DC	(V)	-			-			-		-		-		0,35 ÷ 0,7 Ue		0,35 ÷ 0,7 Ue		
Minimum operating voltage:	AC - 50 Hz	(V)	8,4			77			161		170		-		-		-		
	DC	(V)	8,4			77			77		-		-		-		-		
Minimum reset voltage:	AC - 50 Hz	(V)	-			-			-		-		0,85 Ue		0,85 Ue		0,85 Ue		
	DC	(V)	-			-			-		-		-		0,85 Ue		0,85 Ue		
Maximum operating voltage:	AC - 50 Hz	(V)	52,8			456,5			253		440		-		-		-		
	DC	(V)	52,8			137,5			137,5		-		-		-		-		
Duration of impulse command:			(ms)	< 10			< 10			< 10		< 10		-		-		-	
Tripping time:			(ms)	< 10			< 10			< 10		< 10		-		-		-	
Tripping delay:			(ms)	-			-			-		-		300		300		300	
Holding current:			(mA)	-			-			-		-		12		10		12	
Holding power:			(VA)	-			-			-		-		2,8		0,28		0,57	
Coil resistance:			(Ω)	7,5			495			495		360		-		-		-	
Aux contact type:				1 NO			1 NO			1 NO		-		-		-		-	
Rated tightening torque:			(Nm)	0,6			0,6			0,6		0,06		0,6		0,6		0,6	
Beam stripping cable recommended:			(mm)	6			6			6		6		6		6		6	
Screwdriver suggested:				Philips 1			Philips 1			Philips 1		Philips 1		Philips 1		Philips 1		Philips 1	
Operating temperature:			(°C)	-5 ÷ 55			-5 ÷ 55			-5 ÷ 55		-5 ÷ 55		-5 ÷ 55		-5 ÷ 55		-5 ÷ 55 1	
Max cable section (flexible/rigid):			(mm²)	2,5/4			2,5/4			2,5/5		2,5/4		2,5/4		2,5/4		2,5/4	

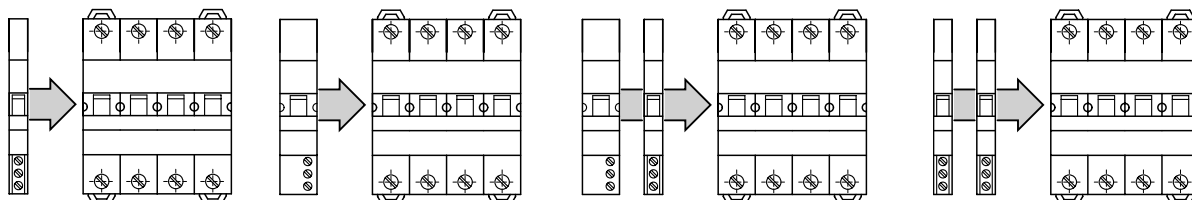
CIRCUIT DIAGRAMS - RELEASES



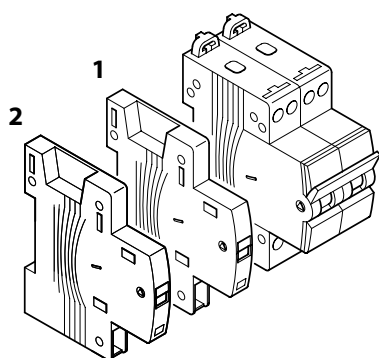
Note: the terminal 12 can be connected in order to know the tripping of circuit breaker caused by release.

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.

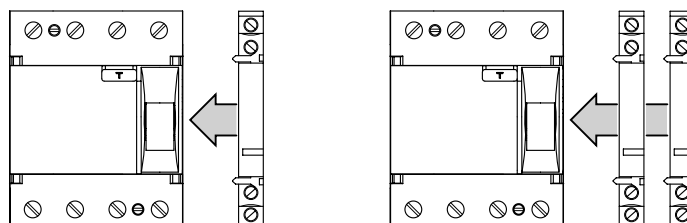


POS. 2	POS. 1
GW 96 001 GW 96 009c	GW 96 001 GW 96 009c
GW 96 001	GW 96 006 GW 96 009s
GW 96 009c	
GW 96 006 GW 96 009s	

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

SD

For each 4 pole RCCB it's possible to fit up to max 2 accessories. The tripped relay contact must be in the first position to the right of the residual current circuit breaker.

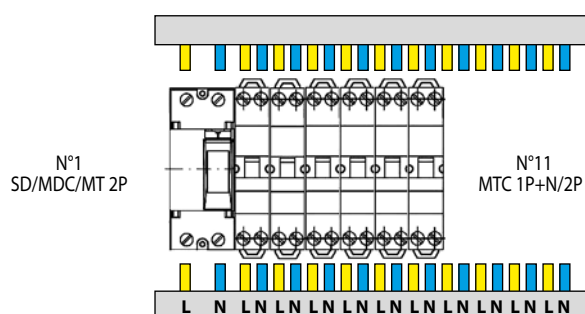


WIRING BUSBARS

TECHNICAL DATA		
Rated operating voltage (Ue):	(V)	400 AC
Conditional short-circuit current conditioned by fuse (Icc):	(kA)	25 (gL 100)
Rated impulse withstand voltage (Uimp):	(kV)	4

WIRING BUSBARS FOR MTC CIRCUIT BREAKERS

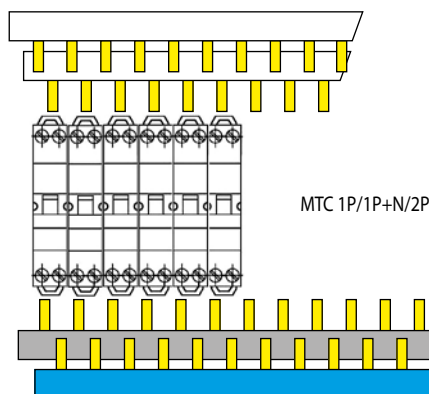
GW 96 504 F - 13 MOD. - 63A



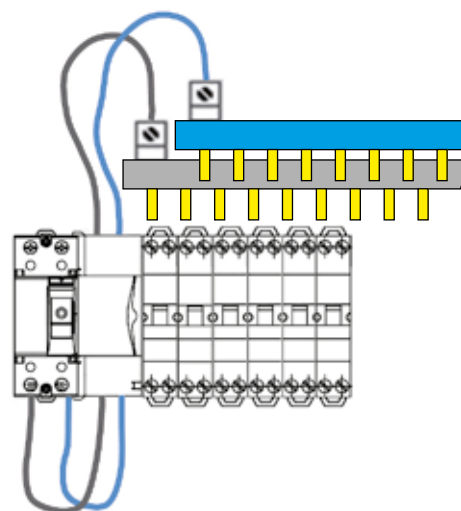
GW 96 500 - GRIGIO - 13 MOD. - 63A

GW 96 501 - BLU - 13 MOD. - 63A

GW 96 988 - BIANCO - L=1 MT. - 63A



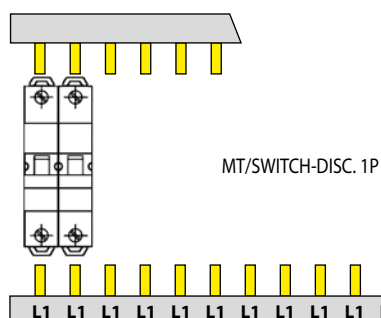
GW 96 503



WIRING BUSBARS FOR MT/MDC/SD CIRCUIT BREAKERS AND SWITCH-DISCONNECTORS WITH RED LEVER

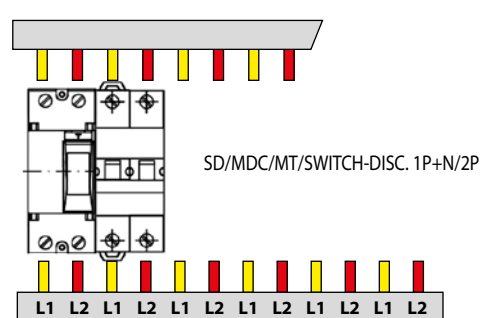
GW 96 984 - 12 MOD. - 63A

GW 96 988 - 1 MT. - 63A

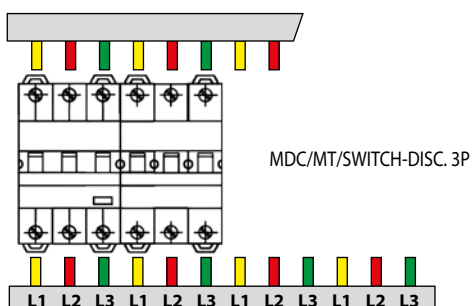


GW 96 985 - 12 MOD. - 63A

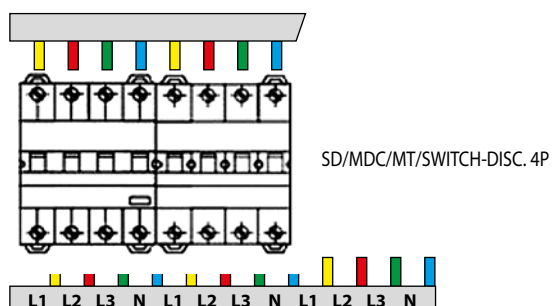
GW 96 989 - 1 MT. - 63A



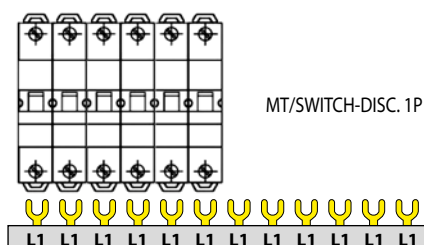
GW 96 986 – 12 MOD. – 63A
GW 96 990 – 1 MT. – 63A



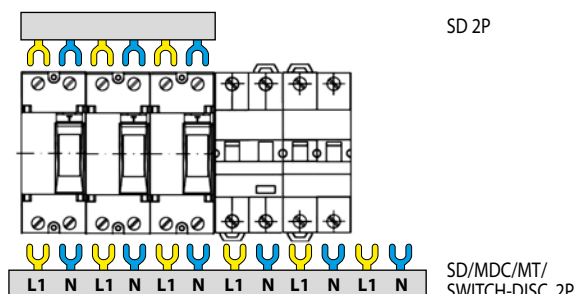
GW 96 987 – 12 MOD. – 80A
GW 96 991 – 1 MT. – 80A



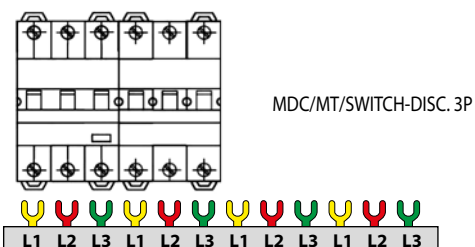
GW 96 992 – 12 MOD. – 63A
GW 96 996 – 1 MT. – 63A



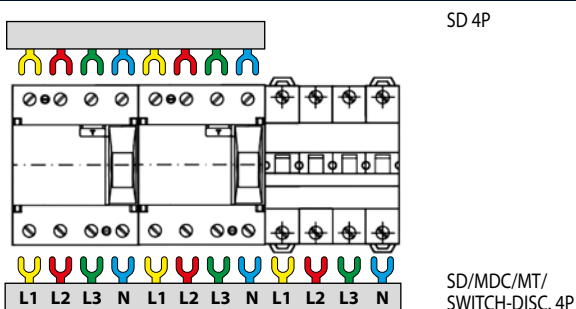
GW 96 993 – 12 MOD. – 63A
GW 96 997 – 1 MT. – 63A



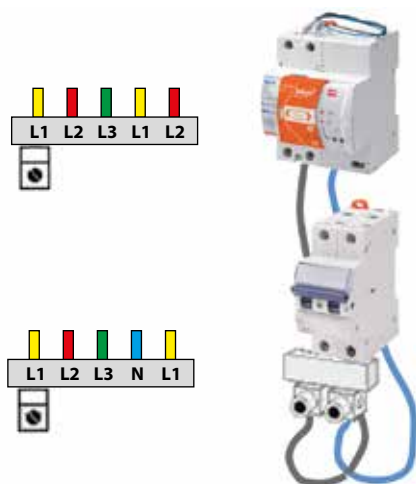
GW 96 994 – 12 MOD. – 63A
GW 96 998 – 1 MT. – 63A



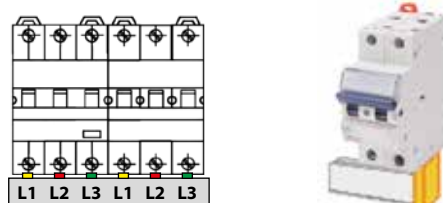
GW 96 995 – 12 MOD. – 80A
GW 96 999 – 1 MT. – 80A



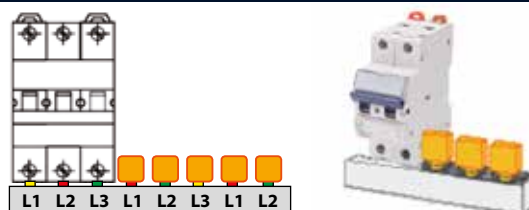
GW 96 961 PER PETTINI 1P/2P/3P
GW 96 962 PER PETTINI 4P



GW 96 963 PER PETTINI 1P - GW 96 964 PER PETTINI 2P -
GW 96 965 PER PETTINI 3P - GW 96 966 PER PETTINI 4P



GW 96 967

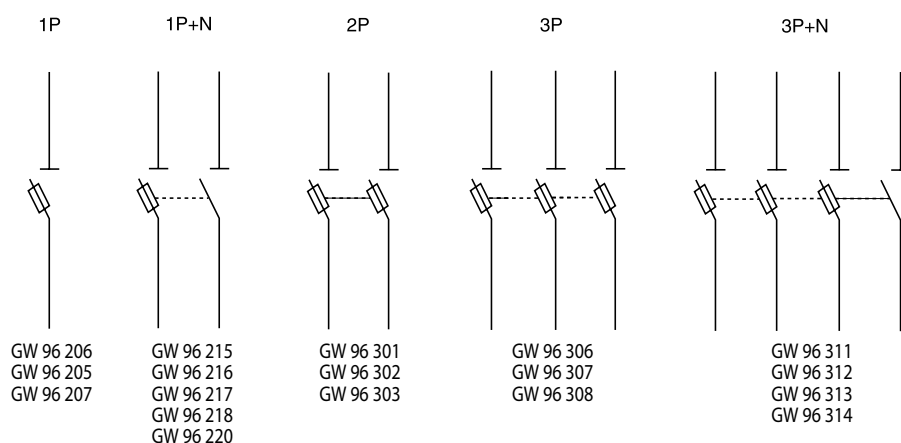


PROTECTION

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 a.c.	690 a.c.	690 a.c.	690 a.c.
Rated insulation voltage (Ui):	(V)	400 a.c.	690 a.c.	690 a.c.	690 a.c.
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:	(mm²)	25	25 10 (only for GW 96 220)	35	50

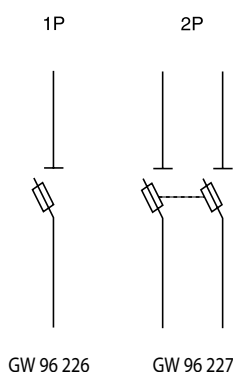
CIRCUIT DIAGRAM



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 d.c.
Category of use:	DC-20B
Max power loss:	(W) 3
Max cable section:	(mm²) 10

CIRCUIT DIAGRAM

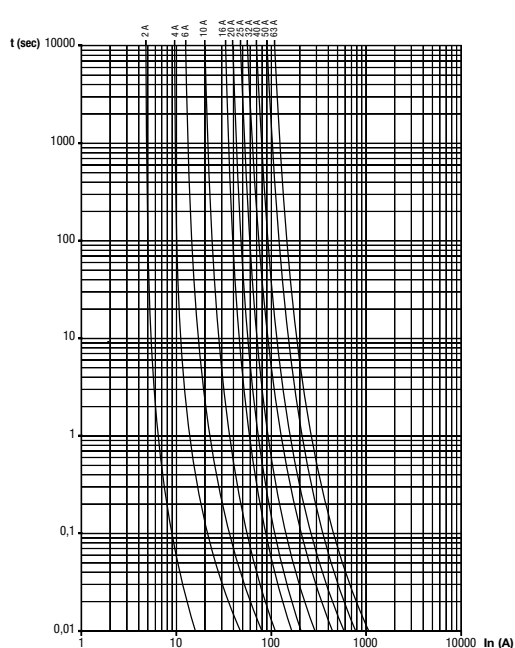


AC CYLINDRICAL FUSES

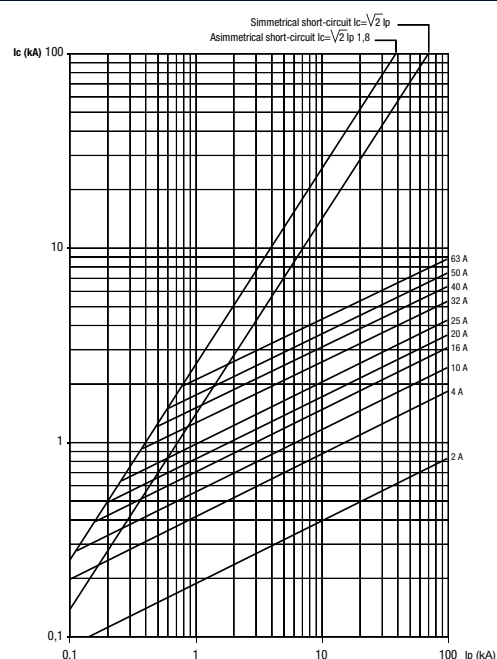
TECHNICAL DATA				
Standard:	IEC 60269/2-1			
Type:	gG			
Characteristic:	fast			
Dimensions:	(mm)	8,5x31,5	10,3x38	14x51
Rated current (In):	(A)	2÷25	2÷32	25÷50
Rated operating voltage (Ue):	(V AC)	400	400-500	400-500-690
Breaking capacity:	(kA)	50	120	80

CHARACTERISTIC CURVES

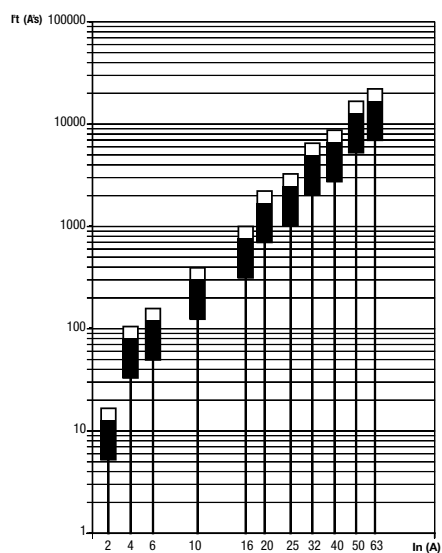
TIME CURRENT CHARACTERISTIC



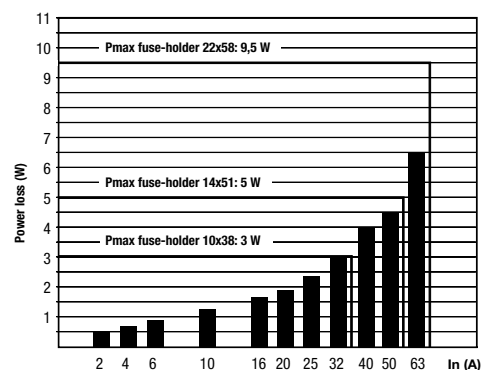
CUT-OFF CURRENT CHARACTERISTICS



I²t CHARACTERISTIC



POWER LOSS

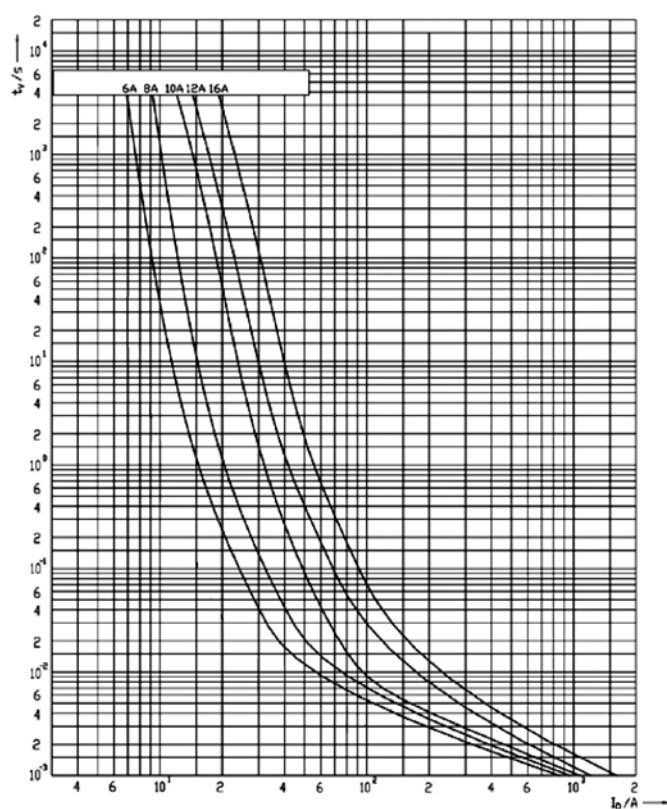


DC CYLINDRICAL FUSES

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



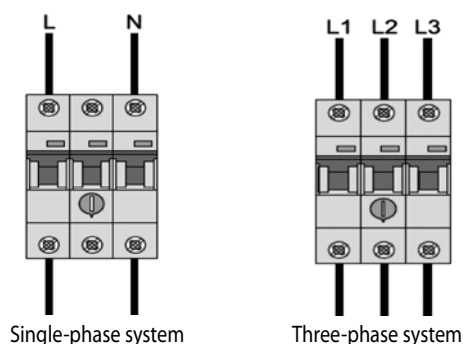
MOTOR PROTECTION SWITCHES

TECHNICAL DATA		
Standard:		EN 60947-2
N° of modules:		3
Rated operating voltage (Ue):	(V)	230-400 a.c.
Rated insulation voltage (Ui):	(V)	440 a.c.
Rated impulse withstand voltage (Uimp):	(kV)	4
Rated current (In):	(A)	0,1÷40
Breaking capacity (Iq):	(kA)	10
Back-up fuse:	(A)	up to 2,5 -4A fuse not necessary above 4 - 6,3A fuse gL or gG type 100A if Icc>Iq
Electrical endurance (number of O-C cycles):		6000
Mechanical endurance (number of O-C cycles):		20000
Rated tightening torque:	(Nm)	2,5
Power loss per pole:	(W)	2,3 (1,6-10A) 3,3 (16A) 4,5 (25-40A)
Degree of protection:		IP20
Operating temperature:	(°C)	-25...+50
Max cable section:	(mm²)	25
Total weight:	(g)	244/366

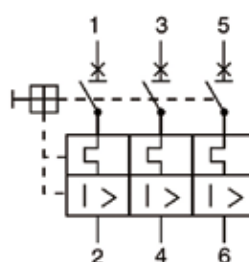
SELECTION TABLE

Type	Adjustment range	Single-phase system 230V		Three-phase system 230V		Three-phase system 400V	
		Power (KW)	Current (A)	Power (KW)	Current (A)	Power (KW)	Current (A)
GW 96 752	0,16 - 0,25	-	-	-	-	0,06	0,2
GW 96 753	0,25 - 0,40	-	-	0,06	0,4	0,09	0,3
GW 96 754	0,40 - 0,63	-	-	0,9	0,5	0,12	0,4 0,6
GW 96 755	0,63 - 1	0,4	0,7	0,12	0,7	0,25	0,8
GW 96 756	1 - 1,6	0,12	1,3	0,18 0,25	1 1,4	0,37 0,55	1,1 1,5
GW 96 757	1,6 - 2,5	0,06	1,9 2,4	0,37	2	0,75	1,9
GW 96 758	2,5 - 4	0,7	0,12	0,7	0,25	0,8	2,6 3,6
GW 96 759	4 - 6,3	0,12	1,3	0,18	4,6	2,2	5
GW 96 760	6,3 - 10	1	7,4 8,9	1,5 2,5	6,3 8,7	2,5 - 3 4	6,6 8,5
GW 96 761	10 - 16	0,37	14,5	3	11,5	5,5 7,5	11,3 13,2
GW 96 762	16 - 25	1,1	17,8	4 5,5	14,8 19,6	11	21,7
GW 96 763	25 - 40	-	-	7,5 11	26,4 38	15 18,5	29,3 36

WIRING



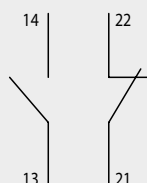
CIRCUIT DIAGRAM



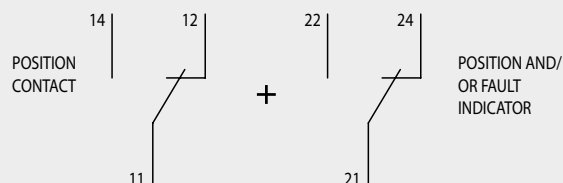
TECHNICAL DATA FOR AUXILIARY CONTACTS:

Operating current:	AC15	(A)	2 (250V AC)
	AC13	(A)	3 (250V AC)
	DC12	(A)	0.5 (110V DC)
Max cable section:		(mm ²)	2.5

GW 96 764 POSITION CONTACT



GW 96 765 POSITION AND/OR FAULT INDICATOR CONTACT



TECHNICAL DATA FOR SHUNT TRIP RELEASES:

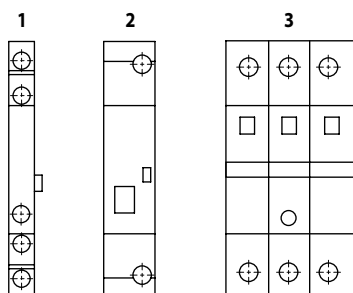
Pick-up current:	(A)	1.4 (230V)
Max cable section:	(mm ²)	2.5

TECHNICAL DATA FOR UNDER VOLTAGE RELEASES:

Min. reset voltage:	(V)	0.8 U _e
Release trip:	(V)	0.5 U _e
Holding power:	(VA)	3 (230V) - 5 (400V)
Max cable section:	(mm ²)	2.5

NOTE: For the auxiliary contact GW 96 765, the changeover contact 14-11-12 signals only position status (open-closed) while the changeover contact 22-21-24 is configurable which signals the tripped status for fault or the position status (open-close). The configuration of the latter changeover contact is set by means the rotation of the selector placed on the side of the product in vertical position (fault indicator) or in horizontal position (position indicator).

ACCESSORIES - POSSIBLE COMBINATIONS

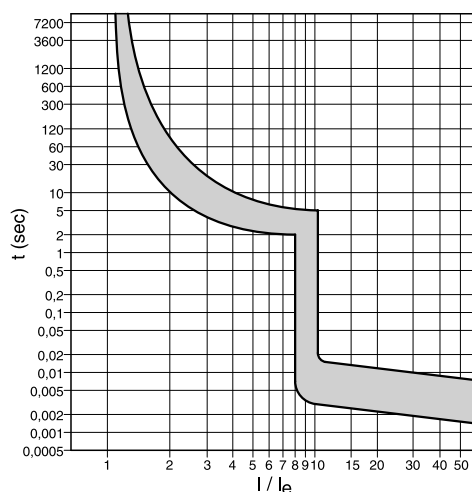


Motor protection switch (3) with:

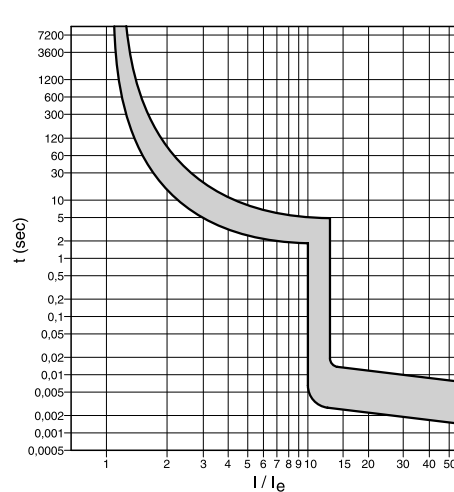
Position contact (1)	Fault indicator contact (1)	Shunt trip release (2)	Under voltage release (2)
•			
	•		
		•	
			•
	•	•	

CHARACTERISTICS

MOTOR PROTECTION SWITCH TRIPPING CHARACTERISTIC 0.16/0.25/0.40/0.63/10A



MOTOR PROTECTION SWITCH TRIPPING CHARACTERISTIC 1/1.6/2.5/4/6.3/16/25/40A

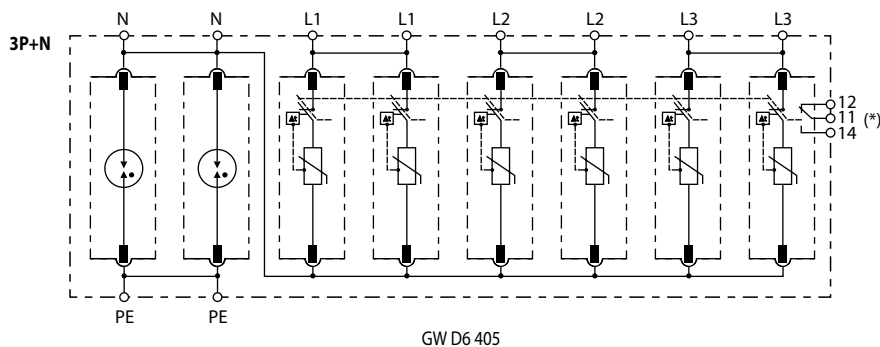
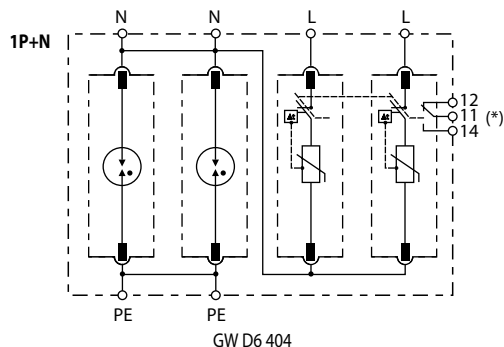
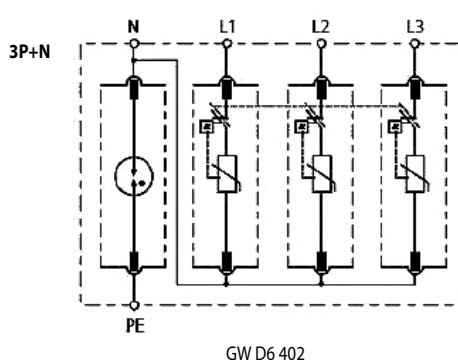
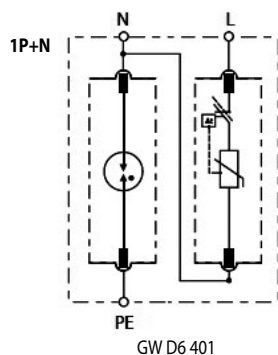


SURGE PROTECTIVE DEVICES LST TYPE 1+2 AND TYPE 2

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
Impulse current 10/350µs (Iimp):	(kA)	12,5	25	-
Rated discharge current 8/20µs (In):	(kA)	20	25	10
Network:		TT - TNS	TT - TNS	TT - TNS - TNC - IT
Rated operational voltage (Un):	(V)	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)
Voltage protection level at In (Up):	(kV)	< 1,3 (L - N) < 1,3 (N - PE)	< 1,5 (L - N) < 1,5 (N - PE)	< 1,4 (L - N) < 1,5 (N - PE)
Rated frequency:	(Hz)	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)
Follow current interrupting rating (Ifi):	(A)	100	100	100
Short circuit withstand (Icc):	(kA)	25	25	25
State indicator:		yes	yes	yes
Auxiliary contact type:		no	Changeover	no
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)	4	4	4
Cable cross sections: rigid	(mm²)	min 6 max 35	min 6 max 35	min 6 max 35
flexible	(mm²)	min 6 max 25	min 6 max 25	min 6 max 25
Degree of protection:		IP20	IP20	IP20
Operating temperature:	(°C)	-40...+80	-40...+80	-40...+80

TYPE 1+2 LST CIRCUIT DIAGRAMS

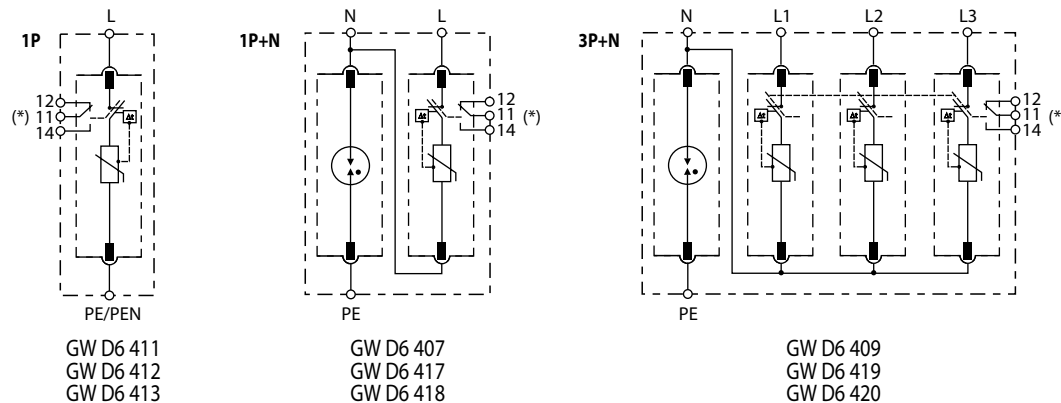
SPDs 1+2 type protect electrical equipment from overvoltages due to the direct and indirect effects of lightning strikes or due to manoeuvres on electrical network supply. They provide protection for installations in areas with a high frequency of lightning strikes and are typically installed in primary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

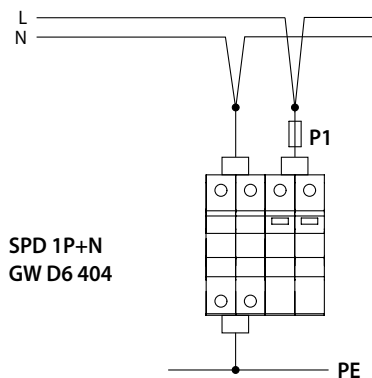
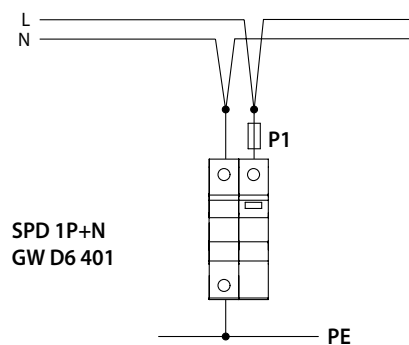


(*) Only for version with auxiliary contact

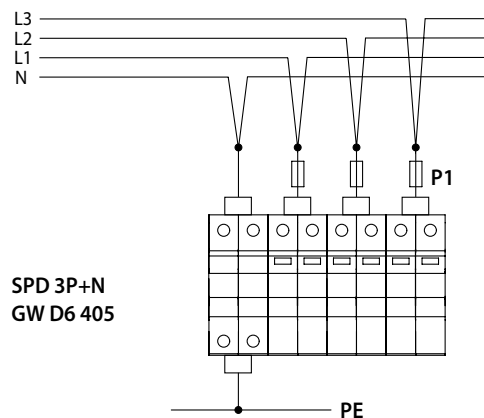
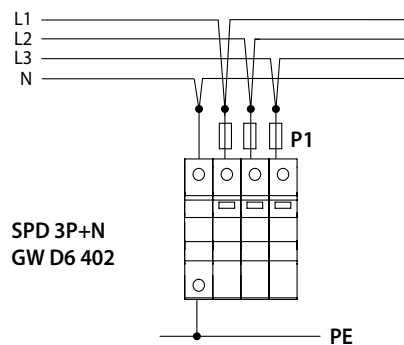
TYPE 1+2 LST CONNECTION

TT NETWORK - TNS NETWORK

SINGLE-PHASE SYSTEM



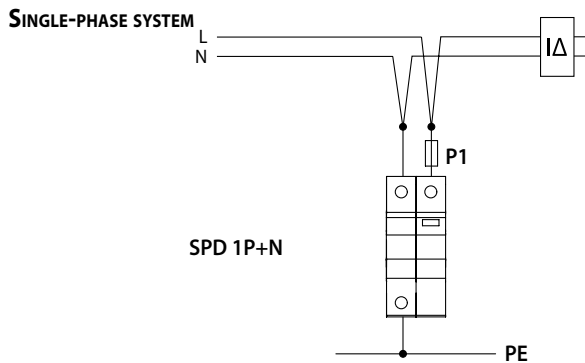
THREE-PHASE SYSTEM



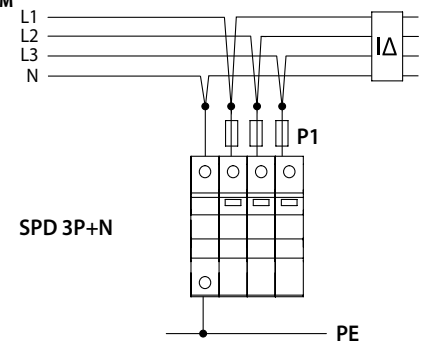
P1 = fuse or miniature circuit breaker

TYPE 2 LST CONNECTION

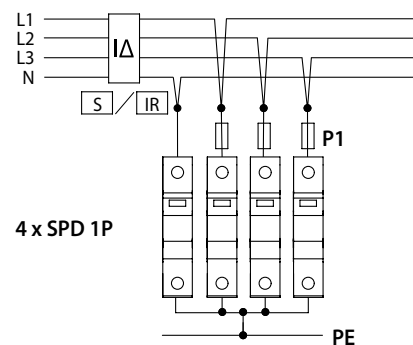
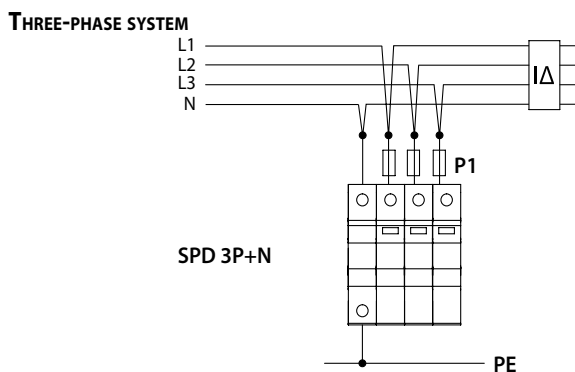
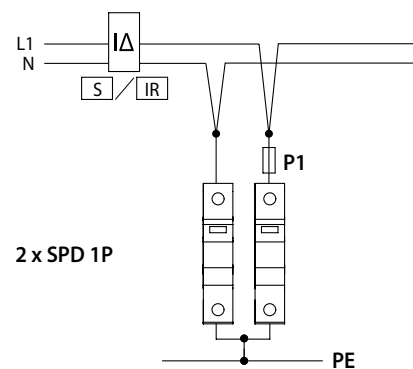
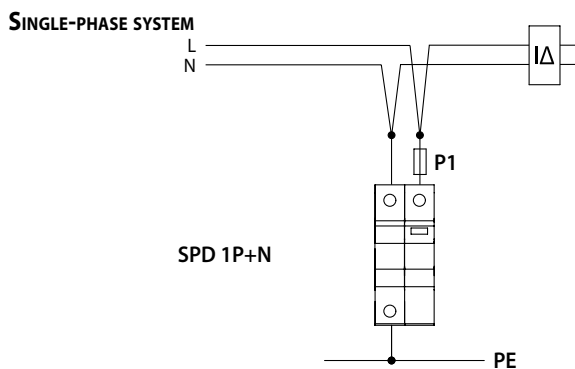
TT NETWORK



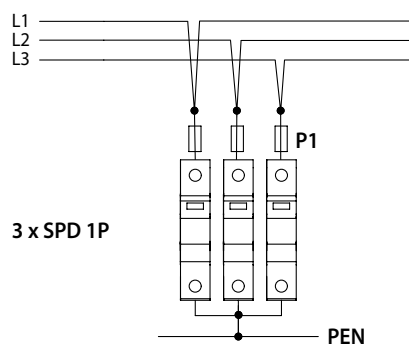
THREE-PHASE SYSTEM



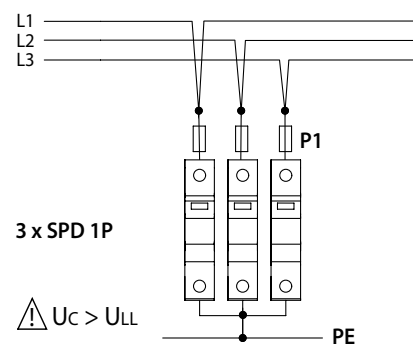
TNS NETWORK



TNC NETWORK



IT NETWORK

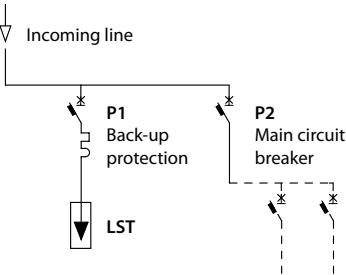


P1 = fuse or miniature circuit breaker

BACK-UP PROTECTION

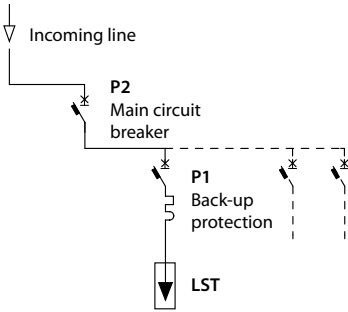
LST TYPE 1+2

SERVICE CONTINUITY PRIORITY



	$P1 \leq 125A \text{ gG}$
--	---------------------------

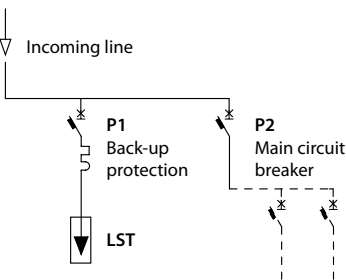
PROTECTION PRIORITY



	$\text{if } P2 > 125A \Rightarrow P1 \leq 125A \text{ gG}$ $\text{if } P2 \leq 125A \Rightarrow \text{NO protection P1}$
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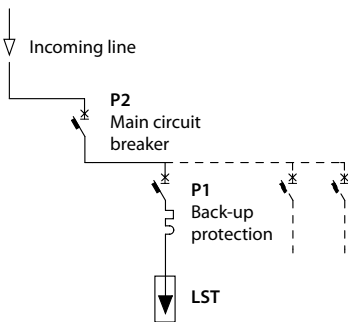
LST TYPE 2

SERVICE CONTINUITY PRIORITY



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

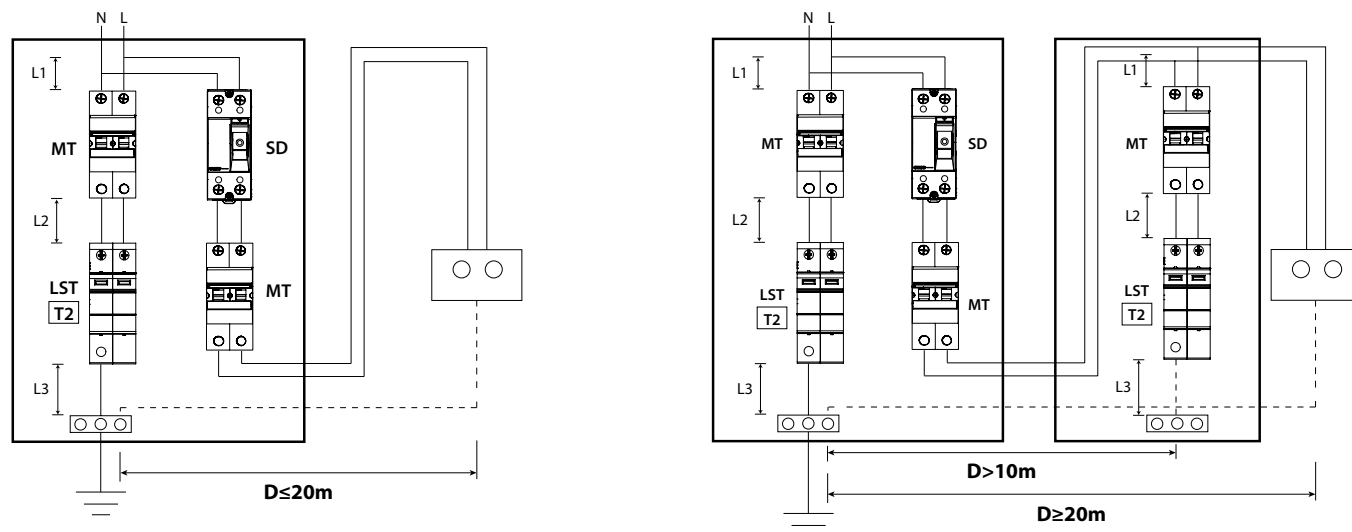
PROTECTION PRIORITY



	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 ($L1 + L2 + L3 \leq 0,5 \text{ m}$). 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.



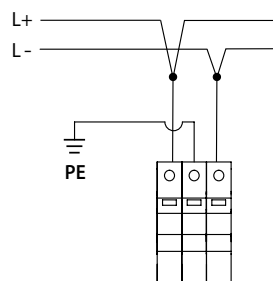
SURGE PROTECTIVE DEVICES LST FOR PV APPLICATIONS

TECHNICAL DATA			
Standard	IEC 61643-1, EN 61643-11		
Type	2 (8/20 μ s) Photovoltaic		
Rated operational voltage (Un):	(V)	600 cc	1000 cc
Maximum discharge current 8/20 μ s (Imax):	(kA)	40	
Max continuous operating voltage (Uc):	(V)	700 cc	1170 cc
Voltage protection level at In (Up):	(kV)	< 2,6 (600V)	< 4 (1000V)
State indicator:	si		
Auxiliary contact type:	no		
Rated tightening torque:	(Nm)	4	
Cable cross sections:	rigid	(mm ²)	min 6 max 35
	flexible	(mm ²)	min 6 max 25
Degree of protection:	IP20		
Operating temperature:	(°C)	-40...+80	

BACK-UP PROTECTION

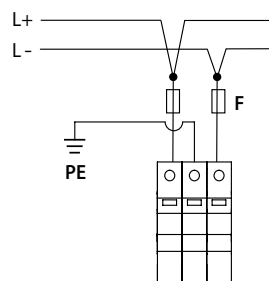
If $I_{cc} \leq 100A$

➔ **NO back-up protection**



If $I_{cc} > 100A$

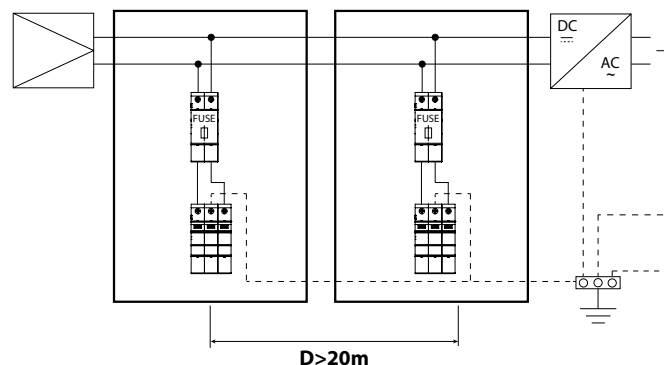
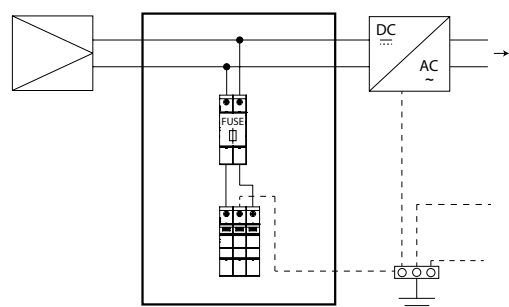
➔ **YES back-up protection with FUSES $\leq 20A$ gPV**



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.

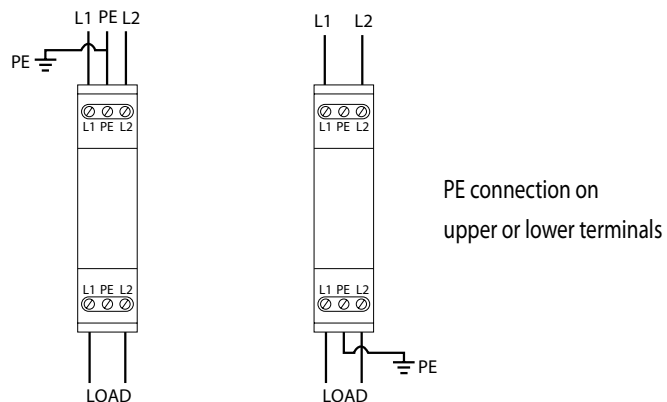
The SPDs LST for PV applications can protect the PV modules placed at a maximum distance of 20m, if they are further away, it's necessary to install an additional SPD.



SURGE PROTECTIVE DEVICES LST FOR TELECOM AND DATALINE

TECHNICAL DATA			
Standard		IEC 61643-1, EN 61643-11	
Type		2 (8/20 μ s) Telecom / Dataline	
Maximum discharge current 8/20 μ s (Imax):	(kA)	10	
Rated discharge current 8/20 μ s (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	

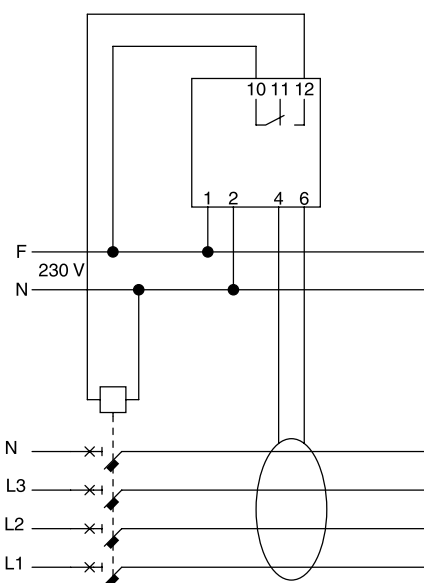
CIRCUIT DIAGRAMS



RESIDUAL CURRENT RELAY WITH SEPARATE TOROID

TECHNICAL DATA		
Standards:		EN 60947-2 Appendix M
Rated operating voltage (Ue):	(V)	230 AC $\pm 10\%$
Test voltage:	(kV)	2 at 50Hz (1kV per measurement circuit)
Rated frequency:	(Hz)	40-60
Type:		A
Sensitivity setting I Δ n:		30 - 50 - 150 - 230 - 300 - 350mA 0.5 - 1 - 1.5 - 2 - 3A
Delay time setting Δt :	(s)	0 - 0.25 - 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:	(mm ²)	6
Sealing:		yes

CIRCUIT DIAGRAM



ON (green LED): relay ON

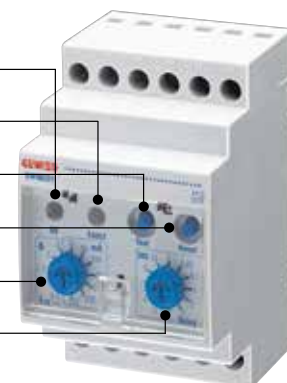
FAULT (red LED): relay tripping

TEST: relay test-button

RESET: anomaly resetting

I Δ n: sensitivity setting

DELAY: delay time setting



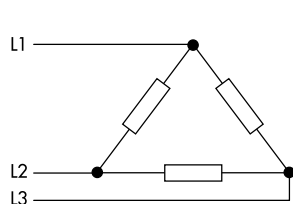
In order to obtain the residual current protection, it is necessary the use of all these following components:

- 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.

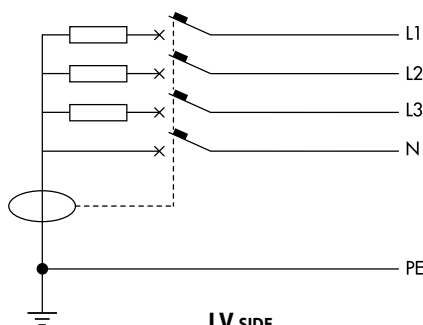
The distance between earth leakage relay and the core current transformer must be less than 20m.

GUIDE FOR USING THE EARTH LEAKAGE RELAY WITH SEPARATE TOROID

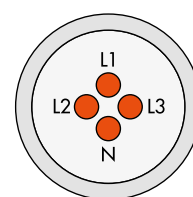
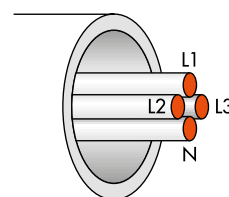
In the case of power centers with large cable-section, it is possible to place the core current transformer directly on the cable which connect the star point of the MV/LV transformer to earth. Special attention must be paid for core current transformer wiring. In fact, the cables must be as centred 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).



MV SIDE



LV SIDE



COMMAND

AC SWITCH DISCONNECTORS

TECHNICAL DATA							
		In<63A		In≥63A			
Standard:		EN 60947-3		EN 60947-3			
Rated operating voltage (Ue):	(V)	240 - 415 AC		240 - 415 AC			
Rated insulation voltage (Ui):	(V)	500 AC		500 AC			
Rated impulse withstand voltage (Uimp):	(kV)	4		4			
Rated frequency:	(Hz)	50		50			
Rated current (In):	(A)	32	40	63	80	100	125
Utilization category:		AC-23B		AC-22A			
Rated closing capacity:	(A)	320	400	189	240	300	375
Rated breaking capacity:	(A)	256	320	189	240	300	375
Rated short-time current (Icw):	(A)	384	480	756	960	1200	1500
Rated conditional short-circuit current (Icc):	(kA)						
MTC45		4.5	3	3	3	3	3
MTC 60 - MT 60		4.5	3	3	3	3	3
MTC 100 - MT 100		4.5	3	3	3	3	3
MT 250		4.5	3	3	3	3	3
MTHP 160 - MTHP 250		3	3	3	3	3	3
Power loss per pole:	(W)	0.8	1.5	2	3.2	5	6
Screwdriver suggested:		PZ2		Phillips			
Maximum cable section:	(mm²)	25		50			
Suitable accessory:		GW 96 001 (position contact)		GW 96 001 (position contact)			
Lockable:		with GW 96 041 (padlocking lever block)		with GW 96 041 (padlocking lever block)			

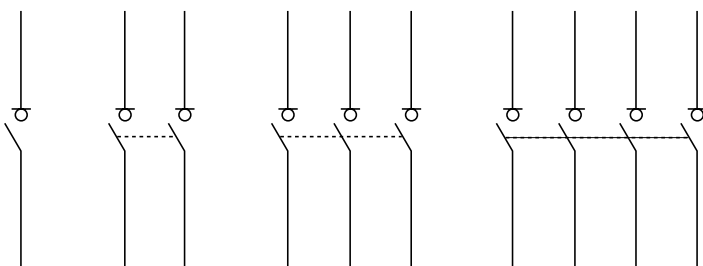
CIRCUIT DIAGRAMS

1P

2P

3P

4P



GW 96 104
GW 96 105
GW 96 146
GW 96 147
GW 96 148
GW 96 149

GW 96 114
GW 96 115
GW 96 156
GW 96 157
GW 96 158
GW 96 159

GW 96 124
GW 96 125
GW 96 166
GW 96 167
GW 96 168
GW 96 169

GW 96 134
GW 96 135
GW 96 176
GW 96 177
GW 96 178
GW 96 179



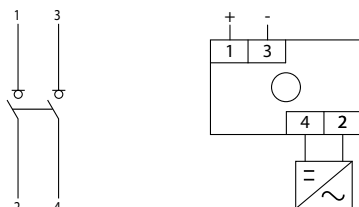
DC ROTARY SWITCH DISCONNECTORS

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 (In)				
	2 poles in series		2 poles in series + 2 poles in parallel	4 poles in series	
	500 V d.c.	25 A	8 A	58 A	32 A 32 A
	600 V d.c.	25 A	6 A	50 A	32 A 27,5 A
	700 V d.c.	23 A	-	27 A	32 A -
	800 V d.c.	20 A	2,5 A	23 A	32 A 12,5 A
	900 V d.c.	16 A	-	20 A	32 A -
1000 V d.c.	11 A	1,5 A	13 A	32 A 10 A	
Rated short-time withstand current (Icw):	(A)	900		1000	
Short circuit making capacity (Icm):	(A)	900		1000	
Rated conditional short-circuit current with fuse (Icc):	(kA)	5 (gL Gg max 63A)		5 (gL Gg max 80A)	
Rated insulation voltage (Ui):	(V)	1500 d.c.			
Rated impulse withstand voltage (Uimp):	(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 In DC-21B:	(W)	5		16	
Operating temperature:	(°C)	-40...+65			
Upline/downline power supply:		si			
Max cable cross section:	(mm²)	10 (exible) 16 (solid or stranded)			

NOTE: DC switch disconnectors aren't lockable and accessorized

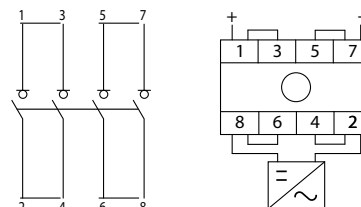
CIRCUIT DIAGRAMS

2 POLES IN SERIES



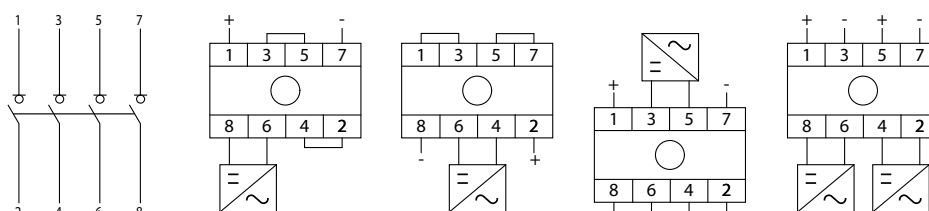
DC-21B					
500V	600V	700V	800V	900V	1000V
25A	25A	23A	25A	16A	11A
DC-22B					
500V	600V	-	800V	-	1000V
8A	6A	-	2,5A	-	1,5A

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

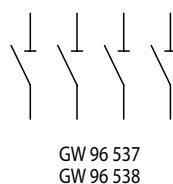
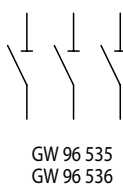
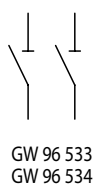


ISOLATING SWITCHES - ON-OFF SWITCHES WITH INDICATOR LAMP

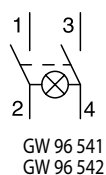
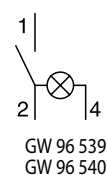
TECHNICAL DATA				
		Isolating switches		On-off switches with indicator lamp
Standards:		EN 60669-2-4		EN 60669-1
Rated operating voltage (Ue):	(V)	250 - 415 AC		230 AC
Rated insulation voltage (Ui):	(V)	500 AC		
Rated frequency:	(Hz)	50/60		
Rated operating current (Ie):	(A)	16	32	16 32
Power loss per 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 (Inc):	(A)	1500		
Coordination with fuses gG:	(A)	16	32	16 32
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



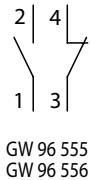
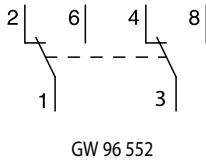
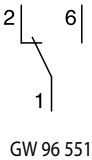
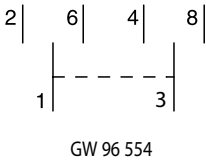
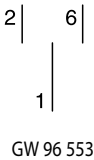
CIRCUIT DIAGRAMS - ON-OFF SWITCH WITH INDICATOR LAMP



LEVER SWITCHES

TECHNICAL DATA			
Standards:		EN 60669-1, EN 60947-5-1	
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
Operating temperature:	(°C)	5...40	
Maximum cable section:	(mm²)	6 (flexible) 10 (rigid)	
Lockable:		with GW 96 041 (padlocking lever block)	

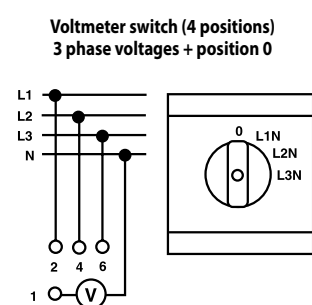
CIRCUIT DIAGRAMS



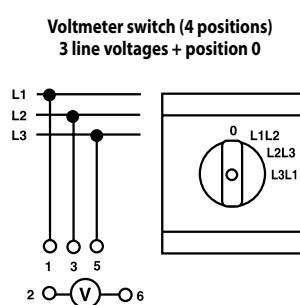
ROTARY SWITCHES

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

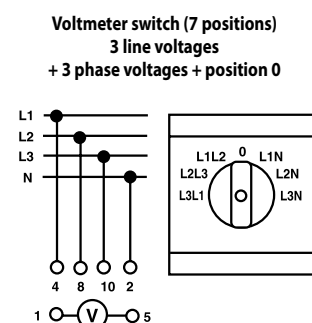
CIRCUIT DIAGRAMS



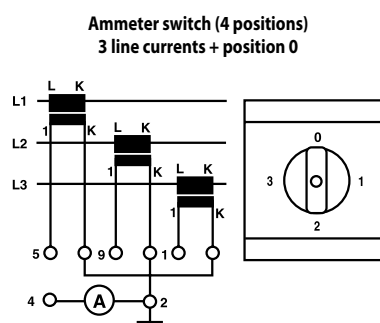
GW 96 851



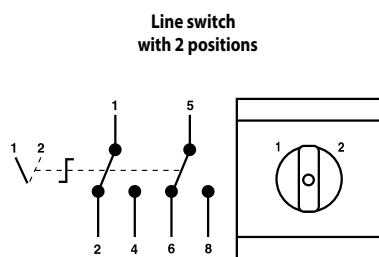
GW 96 852



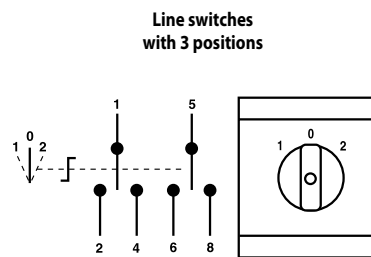
GW 96 853



GW 96 856



GW 96 951



GW 96 952 - GW 96 953



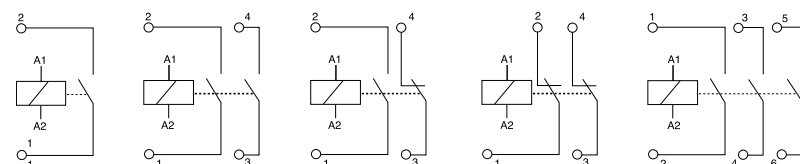
TECHNICAL DATA

ELECTRICAL CHARACTERISTICS					
Contactor type:		CTR 20 - CTRM 20	CTR 25 - CTRM 25	CTR 40	CTR 63
Standard:		EN 61095, EN 60947-4-1, EN60947-5-1			
Rated current AC-1/AC-7a (In):	(A)	20	25	40	63
Rated operational voltage (Ue):	(V)	230 AC (1-2 poles) - 400 AC (3-4poles)			
Rated insulation voltage (Ui):	(V)	230 AC (1-2 poles) - 440 AC (3-4poles)			
Rated impulse withstand voltage (Uimp):	(kV)	4			
Rated conditional short-circuit current with fuse:	(kA)	3 (gL 20)	3 (gL 25)	3 (gL 63)	3 (gL 80)
Rated frequency:	(Hz)	50/60			
No. of modules:		1 (1NO - 2NO - 1NO+1NC) 2 (3NO - 4NO)	2	3	
Power loss per pole (AC-1 / AC-7a):	(W)	1.7	2.2	4	8
Mechanical endurance (no. of operations):		3 x 10 ⁶			
Operating temperature:	(°C)	-5...+55			
Storage temperature:	(°C)	-30...+80			
Max number of contactors (side-by-side):		3 (≤ 40 °C) ⁽¹⁾ 2 (40 - 55 °C) ⁽¹⁾			
Rated tightening torque:	(Nm)	1.2			3.5
Terminal screw type:		M3.5			M5
Screwdriver suggested:		PZ1			PZ2
Cable section:	rigid (mm²) flexible (mm²)	1...10 1...6	1.5...25 1.5...16		
Weight	(g)	130	240	420	
CONTROL COIL CHARACTERISTICS					
Control coil voltage (Uc):	(V)	24 - 230 AC	24 - 230 AC / 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			M3.5
Screwdriver suggested:		PZ1			
Cable section:	rigid (mm²) flexible (mm²)	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)	0.6			
Terminal screw type:		M3			
Screwdriver suggested:		PZ1			
Cable section:	rigid (mm²) flexible (mm²)	1...2.5 1...2.5			
Weight	(g)	35			

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

⁽²⁾ The contactors' coils for 25, 40 and 63A versions can be controlled by AC voltage with frequency from 40 to 500Hz ⁽³⁾ For 2NO - 3NO - 4NO - 3NA+1NC versions ⁽⁴⁾ For 4NC versions

CIRCUIT DIAGRAMS - CONTACTORS



GW D6 701

GW D6 702

GW D6 721

GW D6 706

GW D6 705

GW D6 708

GW D6 761

GW D6 762

GW D6 703

GW D6 731

GW D6 744

GW D6 743

GW D6 713

GW D6 711

GW D6 741

GW D6 742

GW D6 735

GW D6 722

GW D6 712

GW D6 742

GW D6 745

GW D6 735

GW D6 722

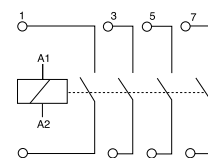
GW D6 751

GW D6 751

GW D6 751

GW D6 735

GW D6 722



GW D6 709

GW D6 714

GW D6 715

GW D6 717

GW D6 718

GW D6 725

GW D6 724

GW D6 733

GW D6 734

GW D6 735

GW D6 725

GW D6 723

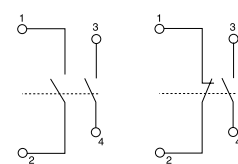
GW D6 753

GW D6 754

GW D6 735

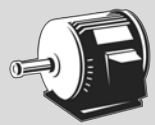
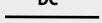
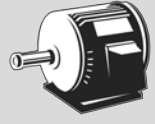
GW D6 725

CIRCUIT DIAGRAMS - AUXILIARY CONTACTS



UTILIZATION CATEGORIES

The table below shows a brief description of each utilization category according to EN 61095. For the performance of the Gewiss contactors 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 d.c. motors 
	DC-5	Series-motors: starting, plugging, inching Dynamic breaking of d.c. motors
	DC-6	Switching of incandescent lamps 

⁽¹⁾ AC-3 category 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.

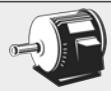
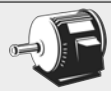
APPLICATION NOTE

In general, the technical data of Gewiss contactors 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	CTR40	CTR63
Utilization category:	AC-1 / AC-7a Resistive, non-inductive or slightly inductive loads			
Rated operational current (A):	20	25	40	63
Max operational power (kW):	230V single-phase	4	5.4	8.7
	230V three-phase	6	9	16
	400V three-phase	13	16	26
Electrical endurance (opening-closing)	200,000		100,000	
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
Max operational power (kW):	230V single-phase	NO contacts: 1.3 NC contacts: 0.75	1.3	3.7
	230V three-phase	-	2.2	5.5
	400V three-phase	-	4	11
Electrical endurance (opening-closing)	300,000	500,000	150,000	
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	220
Electrical endurance (opening-closing)	100,000			
Max operating frequency (opening-closing per hour)	600			

GEWISS CTR contactors 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.

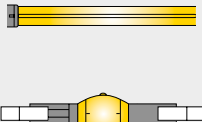
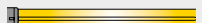
DC APPLICATION					
Utilization category	Nr. poles	Contactor type			
		CTR 20 - CTRM 20	CTR 25 - CTRM 25	CTR 40	CTR 63
Max operating frequency (DC-1):		300 switching per hour			
Electrical endurance (DC-1/DC-3/DC-5):		100.000			
Rated operational current (A)					
RATED OPERATIONAL VOLTAGE: 24V DC			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

DC APPLICATION							
Utilization category	Nr. poles	Contactor type					
		CTR 20 - CTRM 20	CTR 25 - CTRM 25	CTR 40	CTR 63		
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	4	4		
	2 in series	10	10	10	10		
	3 in series	-	20	30	35		
	4 in series	-	20	40	63		
DC-3 (L/R ≤ 2ms)	1	1	1.3	1.5	1.5		
	2 in series	4	5.5	5	5		
	3 in series	-	15	15	18		
	4 in series	-	20	40	63		
DC-5 (L/R ≤ 7,5ms)	1	0.3	0.5	1	1		
	2 in series	2	4	5	5		
	3 in series	-	12	12	15		
	4 in series	-	15	35	45		
RATED OPERATIONAL VOLTAGE: 220V DC							
DC-1 (L/R ≤ 1ms)	1	0.6	0.6	1.2	1.2		
	2 in series	6	6	8	8		
	3 in series	-	15	20	30		
	4 in series	-	15	40	63		
DC-3 (L/R ≤ 2ms)	1	0.1	0.2	0.3	0.3		
	2 in series	0.4	0.6	1	1		
	3 in series	-	3	4	5		
	4 in series	-	8	10	10		
DC-5 (L/R ≤ 7,5ms)	1	0.06	0.1	0.2	0.2		
	2 in series	0.2	0.4	0.8	0.8		
	3 in series	-	2	3	4		
	4 in series	-	5	8	10		

SWITCHING OF LAMPS

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

Contactor type		CTR 20 - CTRM 20		CTR 25 - CTRM 25		CTR 40		CTR 63	
Lamp type	Power (W)	Max number of lamps per phase							
Max operating frequency:		600 switching per hour							
INCANDESCENT AND HALOGEN									
 	15	130	130	260	330				
	25	80	80	160	200				
	40	50	50	100	125				
	60	33	33	65	85				
	75	26	26	53	66				
	100	20	20	40	50				
	150	13	13	26	33				
	200	10	10	20	25				
	300	6	6	13	16				
	500	3	3	8	10				
1000	1	1	4	5					
ENERGY SAVING									
	3	50	60	150	200				
	5	45	55	135	180				
	7	40	50	120	160				
	8	35	45	110	150				
	9	30	40	100	140				
	10	30	40	100	140				
	11	30	40	100	140				
	12	25	35	95	120				
	14	25	35	90	120				
	15	20	30	85	115				
	16	20	30	80	105				
	18	18	26	70	95				
	20	17	22	65	85				
	21	15	20	60	80				
	23	15	20	60	70				
	24	15	20	55	70				
	30	15	20	55	70				
FLUORESCENT		UNCORRECTED OR IN SERIES	IN PARALLEL	UNCORRECTED OR IN SERIES	IN PARALLEL	UNCORRECTED OR IN SERIES	IN PARALLEL	UNCORRECTED OR IN SERIES	IN PARALLEL
	11	55 (1,3 µF)	9 (3,5 µF)	70 (1,3 µF)	10 (3,5 µF)	125 (1,3 µF)	62 (3,5 µF)	200 (1,3 µF)	94 (3,5 µF)
	18	22 (2,7 µF)	7 (4,5 µF)	24 (2,7 µF)	8 (4,5 µF)	90 (2,7 µF)	48 (4,5 µF)	140 (2,7 µF)	73 (4,5 µF)
	24	22 (2,5 µF)	7 (4,5 µF)	24 (2,5 µF)	8 (4,5 µF)	90 (2,5 µF)	48 (4,5 µF)	140 (2,5 µF)	73 (4,5 µF)
	36	17 (3,4 µF)	7 (4,5 µF)	20 (3,4 µF)	8 (4,5 µF)	65 (3,4 µF)	48 (4,5 µF)	95 (3,4 µF)	73 (4,5 µF)
	58	14 (5,3 µF)	4 (7 µF)	17 (5,3 µF)	5 (7 µF)	45 (5,3 µF)	31 (7 µF)	70 (5,3 µF)	47 (7 µF)
	65	14 (5,3 µF)	4 (7 µF)	17 (5,3 µF)	5 (7 µF)	35 (5,3 µF)	31 (7 µF)	50 (5,3 µF)	47 (7 µF)
	85	12 (5,3 µF)	3 (8 µF)	15 (5,3 µF)	4 (8 µF)	25 (5,3 µF)	27 (8 µF)	40 (5,3 µF)	41 (8 µF)
FLUORESCENT LEAD-LAG CIRCUIT									
	2 x 11	2 x 50	2 x 60	2 x 140	2 x 200				
	2 x 18	2 x 30	2 x 40	2 x 100	2 x 150				
	2 x 24	2 x 24	2 x 31	2 x 78	2 x 118				
	2 x 36	2 x 17	2 x 24	2 x 65	2 x 95				
	2 x 58	2 x 10	2 x 14	2 x 40	2 x 60				
	2 x 65	2 x 9	2 x 13	2 x 30	2 x 45				
	2 x 85	2 x 6	2 x 10	2 x 20	2 x 30				
FLUORESCENT WITH ELECTRONIC CONTROL GEAR (ECG)									
	18	25	35	100	140				
	36	15	20	52	75				
	58	14	19	50	72				
	2 x 18	2 x 12	2 x 17	2 x 50	2 x 70				
	2 x 36	2 x 7	2 x 10	2 x 26	2 x 38				
	2 x 58	2 x 7	2 x 9	2 x 25	2 x 36				

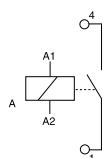
Contactor type		CTR 20 - CTRM 20		CTR 25 - CTRM 25		CTR 40		CTR 63	
Lamp type	Power (W)	Max number of lamps per phase							
Max operating frequency:		600 switching per hour							
FLUORESCENT T5 WITH ELECTRONIC CONTROL GEAR (ECG)									
	14	30 (HE)		40 (HE)		105 (HE)		150 (HE)	
	21	22 (HE)		30 (HE)		80 (HE)		115 (HE)	
	22	22 (FC)		30 (FC)		80 (FC)		110 (FC)	
	24	20 (HO)		26 (HO)		70 (HO)		100 (HO)	
	28	18 (HE)		22 (HE)		60 (HE)		90 (HE)	
	35	14 (HE)		18 (HE)		48 (HE)		70 (HE)	
	39	12 (HO)		16 (HO)		42 (HO)		62 (HO)	
	40	12 (FC)		15 (FC)		40 (FC)		60 (FC)	
	49	10 (HO)		14 (HO)		35 (HO)		52 (HO)	
	54	9 (HO)		13 (HO)		32 (HO)		47 (HO)	
	55	8 (FC)		12 (FC)		30 (FC)		45 (FC)	
	80	6 (HO)		8 (HO)		22 (HO)		32 (HO)	
	2 x 14	2 x 15 (2 x HE)		2 x 20 (2 x HE)		2 x 52 (2 x HE)		2 x 75 (2 x HE)	
	2 x 21	2 x 11 (2 x HE)		2 x 15 (2 x HE)		2 x 40 (2 x HE)		2 x 57 (2 x HE)	
	2 x 22	2 x 11 (2 x FC)		2 x 15 (2 x FC)		2 x 40 (2 x FC)		2 x 55 (2 x FC)	
	2 x 24	2 x 10 (2 x HO)		2 x 13 (2 x HO)		2 x 35 (2 x HO)		2 x 50 (2 x HO)	
	2 x 28	2 x 9 (2 x HE)		2 x 11 (2 x HE)		2 x 20 (2 x HE)		2 x 45 (2 x HE)	
	2 x 35	2 x 7 (2 x HE)		2 x 9 (2 x HE)		2 x 24 (2 x HE)		2 x 35 (2 x HE)	
	2 x 39	2 x 6 (2 x HO)		2 x 8 (2 x HO)		2 x 21 (2 x HO)		2 x 31 (2 x HO)	
	2 x 40	2 x 6 (2 x FC)		2 x 7 (2 x FC)		2 x 20 (2 x FC)		2 x 30 (2 x FC)	
	2 x 49	2 x 5 (2 x HO)		2 x 7 (2 x HO)		2 x 17 (2 x HO)		2 x 26 (2 x HO)	
	2 x 54	2 x 4 (2 x HO)		2 x 6 (2 x HO)		2 x 16 (2 x HO)		2 x 23 (2 x HO)	
	2 x 55	2 x 4 (2 x FC)		2 x 6 (2 x FC)		2 x 15 (2 x FC)		2 x 22 (2 x FC)	
	2 x 80	2 x 3 (2 x HO)		2 x 4 (2 x HO)		2 x 11 (2 x HO)		2 x 16 (2 x HO)	
HIGH-PRESSURE MERCURY-VAPOUR		UNCORRECTED	IN PARALLEL	UNCORRECTED	IN PARALLEL	UNCORRECTED	IN PARALLEL	UNCORRECTED	IN PARALLEL
	50	14	4 (7 µF)	18	5 (7 µF)	38	31 (7 µF)	55	47 (7 µF)
	80	10	4 (8 µF)	13	5 (8 µF)	29	27 (8 µF)	42	41 (8 µF)
	125	7	3 (10 µF)	9	4 (10 µF)	20	22 (10 µF)	29	33 (10 µF)
	250	4	1 (18 µF)	5	2 (18 µF)	10	12 (18 µF)	15	18 (18 µF)
	400	2	1 (25 µF)	3	1 (25 µF)	7	9 (25 µF)	10	13 (25 µF)
	700	1	-	2	-	4	5 (45 µF)	6	7 (45 µF)
	1000	1	-	1	-	3	4 (60 µF)	4	5 (60 µF)
METAL HALIDE		UNCORRECTED	IN PARALLEL	UNCORRECTED	IN PARALLEL	UNCORRECTED	IN PARALLEL	UNCORRECTED	IN PARALLEL
	35	18	5 (6 µF)	22	6 (6 µF)	43	36 (6 µF)	60	50 (6 µF)
	70	10	2 (12 µF)	12	3 (12 µF)	23	18 (12 µF)	32	25 (12 µF)
	150	5	1 (20 µF)	7	1 (20 µF)	12	11 (20 µF)	18	15 (20 µF)
	250	3	-	4	1 (33 µF)	7	6 (33 µF)	10	9 (33 µF)
	400	3	-	3	1 (35 µF)	6	6 (35 µF)	9	8 (35 µF)
	1000	1	-	1	-	2	2 (95 µF)	3	3 (95 µF)
	2000	-	-	-	-	1	1 (148 µF)	1	2 (148 µF)
METAL HALIDE WITH ELECTRONIC CONTROL GEAR (PCI)									
	20	9		9		18		20	
	35	6		6		11		13	
	70	5		5		10		12	
	150	4		4		8		10	
HIGH-PRESSURE SODIUM-VAPOUR		UNCORRECTED	IN PARALLEL	UNCORRECTED	IN PARALLEL	UNCORRECTED	IN PARALLEL	UNCORRECTED	IN PARALLEL
	150	5	1 (20 µF)	6	1 (20 µF)	17	11 (20 µF)	22	16 (20 µF)
	250	3	-	4	1 (33 µF)	10	6 (33 µF)	13	10 (33 µF)
	400	2	-	2	-	6	4 (48 µF)	8	6 (48 µF)
	1000	-	-	1	-	3	2 (106 µF)	3	3 (106 µF)

Contactor type		CTR 20 - CTRM 20		CTR 25 - CTRM 25		CTR 40		CTR 63	
Lamp type	Power (W)	Max number of lamps per phase							
Max operating frequency:		600 switching per hour							
HIGH-PRESSURE SODIUM-VAPOUR WITH ELECTRONIC CONTROL GEAR (PCI)									
	20	9		9		18		20	
	35	6		6		11		13	
	70	5		5		10		12	
	150	4		4		8		10	
LOW-PRESSURE SODIUM-VAPOUR		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)
	35	7	1 (20 µF)	9	1 (20 µF)	23	11 (20 µF)	30	16 (20 µF)
	55	7	1 (20 µF)	9	1 (20 µF)	23	11 (20 µF)	30	16 (20 µF)
	90	4	1 (26 µF)	5	1 (26 µF)	14	8 (26 µF)	19	12 (26 µF)
	135	3	-	4	-	10	4 (45 µF)	13	7 (45 µF)
	180	3	-	4	-	10	5 (40 µF)	13	8 (40 µF)
COMPACT FLUORESCENT		IN SERIES	IN PARALLEL	IN SERIES	IN PARALLEL	IN SERIES	IN PARALLEL	IN SERIES	IN PARALLEL
	5	-	13 (2,2 µF)	-	16 (2,2 µF)	-	100 (2,2 µF)	-	150 (2,2 µF)
	7	-	14 (2,1 µF)	-	17 (2,1 µF)	-	104 (2,1 µF)	-	157 (2,1 µF)
	9	-	15 (2,0 µF)	-	18 (2,0 µF)	-	110 (2,0 µF)	-	165 (2,0 µF)
	10	50 (1,4 µF)	13 (2,2 µF)	60 (1,4 µF)	16 (2,2 µF)	105 (1,4 µF)	100 (2,2 µF)	165 (1,4 µF)	150 (2,2 µF)
	11	-	17 (1,7 µF)	-	21 (1,7 µF)	-	125 (1,7 µF)	-	194 (1,7 µF)
	13	50 (1,4 µF)	16 (1,8 µF)	60 (1,4 µF)	20 (1,8 µF)	105 (1,4 µF)	120 (1,8 µF)	165 (1,4 µF)	183 (1,8 µF)
	18	40 (1,7 µF) 25 (2,7 µF)	13 (2,3 µF) 7 (4,2 µF)	50 (1,7 µF) 30 (2,7 µF)	15 (2,3 µF) 8 (4,2 µF)	85 (1,7 µF) 50 (2,7 µF)	95 (2,3 µF) 52 (4,2 µF)	135 (1,7 µF) 80 (2,7 µF)	143 (2,3 µF) 78 (4,2 µF)
	24	25 (2,7 µF)	8 (3,6 µF)	30 (2,7 µF)	10 (3,6 µF)	50 (2,7 µF)	61 (3,6 µF)	80 (2,7 µF)	91 (3,6 µF)
	26	30 (2,5 µF)	9 (3,3 µF)	35 (2,5 µF)	11 (3,3 µF)	60 (2,5 µF)	66 (3,3 µF)	95 (2,5 µF)	100 (3,3 µF)
36	20 (3,4 µF)	6 (4,4 µF)	25 (3,4 µF)	8 (4,4 µF)	45 (3,4 µF)	50 (4,4 µF)	70 (3,4 µF)	75 (4,4 µF)	
COMPACT FLUORESCENT WITH ELECTRONIC CONTROL GEAR (ECG)									
	5	45		63		180		250	
	7	45		63		180		250	
	9	32		45		128		180	
	10	32		45		128		180	
	11	32		45		128		180	
	13	32		45		128		180	
	18	10		14		40		57	
	24	10		14		40		57	
	26	10		14		40		57	
	32	10		14		40		57	
	36	10		14		40		57	
	40	10		14		40		57	
	42	10		14		40		57	
	55	8		11		32		45	
	57	8		11		32		45	
	70	6		9		25		36	
	80	5		8		22		30	
	120	4		5		15		22	
	2 x 9	2 x 16		2 x 22		2 x 90		2 x 125	
	2 x 10	2 x 16		2 x 22		2 x 90		2 x 125	
	2 x 11	2 x 16		2 x 22		2 x 90		2 x 125	
	2 x 13	2 x 16		2 x 22		2 x 90		2 x 125	
	2 x 18	2 x 5		2 x 7		2 x 20		2 x 28	
	2 x 24	2 x 5		2 x 7		2 x 20		2 x 28	
	2 x 26	2 x 5		2 x 7		2 x 20		2 x 28	
	2 x 32	2 x 5		2 x 7		2 x 20		2 x 28	
	2 x 36	2 x 5		2 x 7		2 x 20		2 x 28	
	2 x 40	2 x 4		2 x 6		2 x 18		2 x 26	
	2 x 42	2 x 4		2 x 6		2 x 18		2 x 26	
	2 x 55	2 x 3		2 x 5		2 x 16		2 x 22	
	2 x 57	2 x 3		2 x 5		2 x 16		2 x 22	

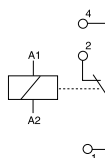
INSTALLATION RELAYS

TECHNICAL DATA				
No. poles		1 pole	2 poles	4 poles
Standards:		EN 61095	EN 61095	EN 61095
Rated current (In):	(A)	16	16	16
Rated operating voltage (Ue):	(V)	230 AC	230 AC	230 - 400 AC
Rated coil voltage (Uc):	(V)	8-12-24-230 AC / 12-24 DC	8-12-24-230 AC / 24 DC	12-24-230 AC
Rated insulation voltage (Ui):	(V)	250 AC	250 AC	400 AC
Rated impulse withstand voltage (Uimp):	(kV)	4	4	4
Rated frequency:	(Hz)	50	50	50
Coil consumption:	Average pull-in value (AC/DC)	4VA / 2.9W	9VA / 12W	14 VA
	Average holding value (AC/DC)	2.4VA / 2.9W	2.5VA / 0.7W	6 VA
Coil operating voltage:		0.9...1.1xUc	0.9...1.1xUc	0.9...1.1xUc
Max. lamp power:	(W)			
	Incandescent lamps	2400	2400	2400
	Fluorescent lamps	500	500	500
	Halogen lamps	1000	1000	1000
Power loss per pole:	(W)	0.6	0.6	0.6
Electrical endurance (total no. operations) (full load, cosφ= 0.9):		100.000	100.000	100.000
Mechanical endurance (total no. operations):		1,000,000	1,000,000	1,000,000
Minimum closing control duration:	(ms)	25	25	25
Operating temperature:	(°C)	-5...+40	-5...+40	-5...+40
Maximum contact cable section:	(mm ²)	4 or 2x2.5	10 or 2x4	10 or 2x4
Maximum coil cable section:	(mm ²)	4 or 2x2.5	4 or 2x2.5	4 or 2x2.5

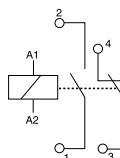
CIRCUIT DIAGRAMS



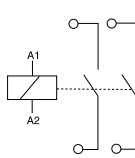
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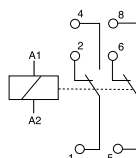
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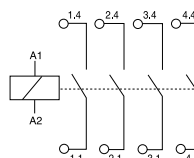
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GW 96 615



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GW 96 932



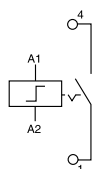
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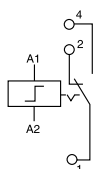
LATCHING RELAY

TECHNICAL DATA		LATCHING RELAY		LATCHING RELAY WITH CENTRAL COMMAND FUNCTION	
No. poles		1 POLE	2/4 POLES	1 POLE	2/3 POLES
Standards:		EN 60669-2-2	EN 60669-2-2	EN 60669-2-2	EN 60669-2-2
Rated operating current (Ie):	(A)	16	16	16	16
Rated operating voltage (Ue):	(V)	230 AC	230 AC	230 AC	230 AC
Rated coil voltage (Uc):	(V)	8-12-24-230 AC 24 DC	12-24-230 AC 24 DC	24-230 AC 24 DC	24-230 AC 24 DC
Rated insulation voltage (Ui):	(V)	250 AC	250 AC	250 AC	250 AC
Rated impulse withstand voltage (Uimp):	(kV)	4	4	4	4
Rated frequency:	(Hz)	50	50	50	50
Coil consumption:	Average pull-in value (AC/DC)	5VA / 3.3W	9VA / 12W	12VA / 12W	12VA / 12W
	Average holding value (AC/DC)	3.5VA / 3.3W	2.5VA / 1W	1VA / 1W	1VA / 1W
Coil operating voltage:		0.9 - 1.1xUc	0.9 - 1.1xUc	0.9 - 1.1xUc	0.9 - 1.1xUc
Max. lamp power:	(W)				
	Incandescent lamps	2400	2400	2400	2400
	Fluorescent lamps	500	500	500	500
	Halogen lamps	1000	1000	1000	1000
Power loss per pole:	(W)	1.5	1.5	1.5	1.5
Electrical endurance (total no. operations) (Ie and cos φ = 0.9):		100,000	100,000	100,000	100,000
Mechanical endurance (total no. operations):		200,000	200,000	200,000	200,000
Minimum closing control duration:	(ms)	25	25	25	25
Operating temperature:	(°C)	-5...+40	-5...+40	-5...+40	-5...+40
Maximum contact cable section:	(mm²)	4 or 2x2.5	10 or 2x4	10 or 2x4	10 or 2x4
Maximum coil cable section:	(mm²)	4 or 2x2.5	4 or 2x2.5	4 or 2x2.5	4 or 2x2.5

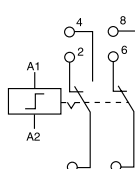
CIRCUIT DIAGRAMS - LATCHING RELAY



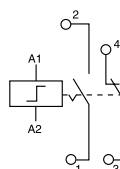
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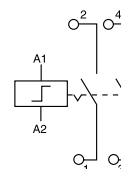
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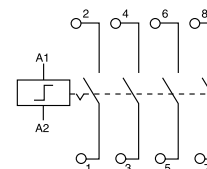
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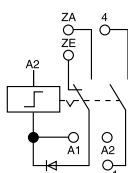


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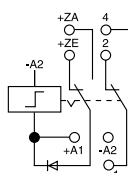


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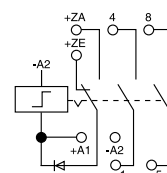
CIRCUIT DIAGRAMS - LATCHING RELAY WITH CENTRAL COMMAND FUNCTION



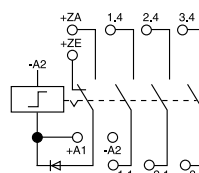
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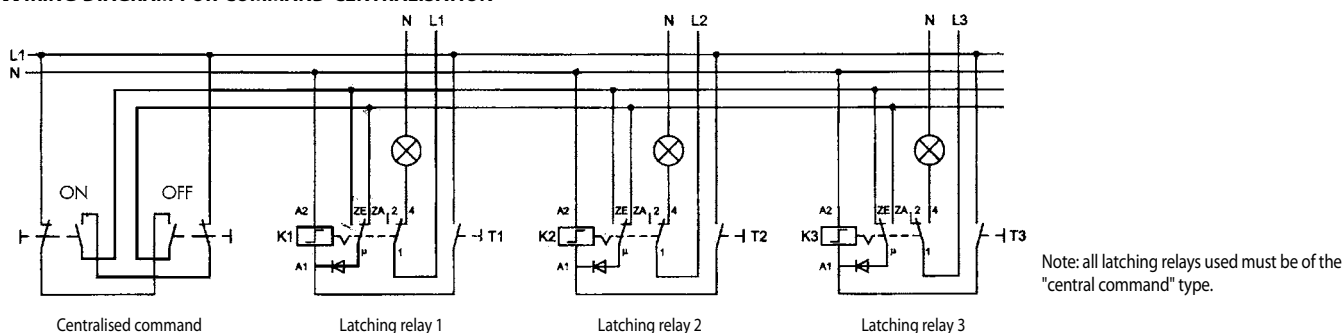
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GUIDE TO USING THE LATCHING RELAY WITH CENTRAL COMMAND FUNCTION

The latching relay with central command function has a command centralisation output in just one point, thereby allowing the switching off and on of all loads commanded by the various relays, regardless of their status (on or off).

WIRING DIAGRAM FOR COMMAND CENTRALISATION



INSERTING LAMPS VIA THE LATCHING RELAY

The following table shows the number of lamps per phase that can be commanded by the latching relay, according to the rated power and the type of lamp. The values refer to a rated voltage of 230V, unless specified otherwise. Remember that all the lamps indicated in the table are intended as being with P.F. correction.

SINGLE PHASE DISTRIBUTION 230V AC		
Latching relay rated current (In)		16A
Type of lamp	Power (W)	Number of lamps per phase
INCANDESCENT AND HALOGEN		
	60	33
	100	20
	200	10
	300	6
	500	4
	1000	1
HALOGEN (12V)		
	20	55
	50	20
	75	15
	100	11
FLUORESCENT		
Single with P.F. correction ($\cos\phi \geq 0.9$)	18	55
	36	27
	58	16
Double with P.F. correction ($\cos\phi \geq 0.9$)	2 x 18	27
	2 x 36	13
	2 x 58	8
DISCHARGE - METAL HALIDES		
	35	13
	70	6
	150	3
	250	2
DISCHARGE - LOW PRESSURE SODIUM VAPOUR		
	35	9
	55	7
	90	5
	135	4
	180	3
DISCHARGE - HIGH PRESSURE SODIUM VAPOUR		
	70	6
	150	3
	250	2
DISCHARGE - MERCURY VAPOUR		
	50	8
	80	6
	125	4
	250	2
	400	1

LOAD MANAGEMENT RELAY

TECHNICAL DATA		
Standards:		EN 61010-1, EN 61000-6-2, EN 61000-6-4, EN 60688
Rated operating voltage (Ue):	(V)	230 AC Phase-Neutral / 220 AC Phase-Phase
Rated current (In):	(A)	32
Capacity and type of contact:		16A AC1 / 250V AC - 1NC
Absorbed power:	(VA)	2
Precision class:		1
Operating temperature:	(°C)	-5...+55
Degree of protection:		IP 20
Maximum cable section:	(mm²)	6

The load management relay measures the consumption of active power in the system and, when the set threshold is exceeded, it disconnects non-preferential loads reconnecting them after a pre-set time lapse.

The operating logic involves a block condition after 3 consecutive exceedances of the power threshold (P) set in kW. This block condition, signaled by a flashing ESC P on the screen of the device, switches off the non-preferential load until manually reset by pressing the button on the front of device.

The load management relay with rated current **32A** is suitable for installation in systems up to **6 kW**.

The device is already programmed with **optimum default values for 3 kW users**, but can also be personalised using the single push-button on the front:

ton: contact opening delay when power threshold is exceeded

adjustment range: 0 - 255 seconds

default value: **45 seconds**

tof: contact opening time for non-priority loads

adjustment range: 0 - 255 seconds

default value: **240 seconds**

Bel: duration of the acoustic "threshold exceeded" warning

adjustment range: 0 - 255 seconds

default value: **45 seconds**

P: contact opening threshold for non-priority loads

adjustment range: 0 - 9.99 kW

default value: **3.8 kW**



Below, the sequence of events to achieve the block condition is described.

1st overcoming power threshold

- In case of overload, i.e. the power value is exceeding the threshold (**P**) set in kW, P-Comfort counts ton period of time before to open the contact (non-preferential load is off), if the power value does not come back under the limit of threshold.
- The contact remains open during tof period of time and then closes the contact (non-preferential load is on).

2nd overcoming power threshold

- If the power value is exceeding again the threshold (**P**), P-Comfort counts **ton** period of time and then the contact is opened.
- The contact remains open during **tof x 4** period of time (the index of multiplication is fixed, e.g. if tof = 60s the opening time of the contact will be equal to 240s) and then closes the contact supplying the non-preferential load.

3rd overcoming power threshold

- If the power consumption continues to remain above the threshold (**P**), P-Comfort counts ton and then opens the contact running to block condition and switching off the non-preferential load.

A power exceedance is consecutive when the overload happens within a time equal to **ton + tof**, compared to the previous one.

If the overload happens after this period of time, the counter of the number of consecutive exceedances is automatically reset.

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.

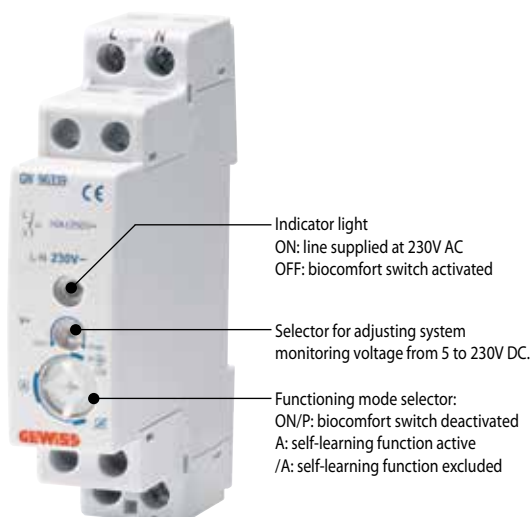
TECHNICAL DATA			
Standard:		EN 60669-2-1	
Rated operating voltage (Ue):	(V)	230 AC $\pm$ 10%	
Rated operating current (Ie):	(A)	16	
Rated insulation voltage (Ui):	(V)	250 AC	
Rated frequency:	(Hz)	50	
Monitoring voltage:	(V)	5 - 230 DC	
Maximum lamp load:	Incandescent lamps and halogen lamps (W)	2300	
	Fluorescent lamps (VA)	1000	
	Lamps with electronic ballast (VA)	1000	
Power loss:	(W)	0.8	
Max. operating cycles:		1000/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, 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.

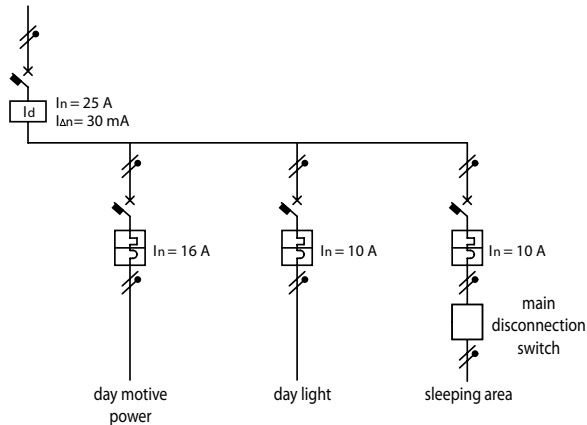


Base load

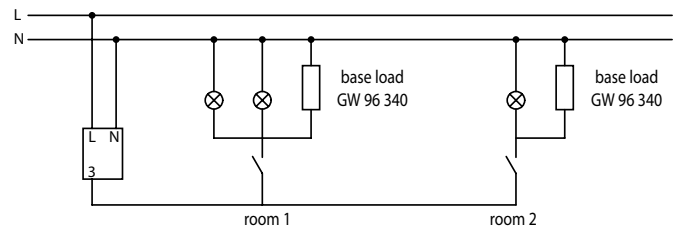
CIRCUIT DIAGRAMS

INSTALLATION IN THE ENCLOSURE

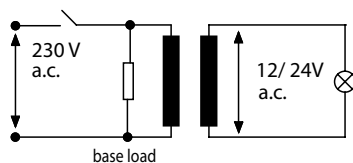
(requiring a dedicated line for the sleeping area)



FLUORESCENT LAMPS / LOW CONSUMPTION LAMPS



HALOGEN LAMPS WITH 12/24V TRANSFORMER



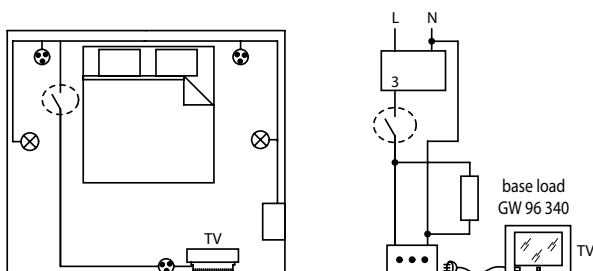
The biocomfort switch works correctly by adding the base load in parallel with the transformer, downstream from the command switch. The lamp command switch must be located upstream from the transformer (230V AC side).

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

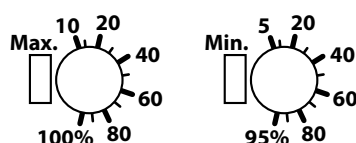
⁽²⁾ 1000VA resistive load

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).

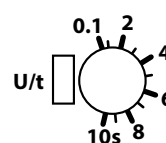
Instead overcurrent protection is needed when there is an irregular increase of power consumption that could be the consequence of the blockage of a conveyor belt motor or the jamming of a mixer.



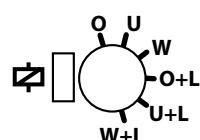
% values adjustment



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

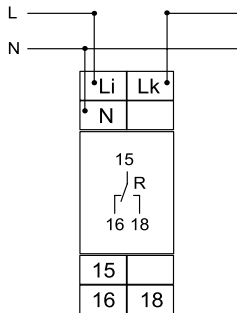
U/t green LED on: presence of power supply voltage

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



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.

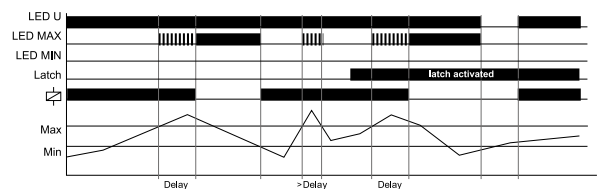
UNDER

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

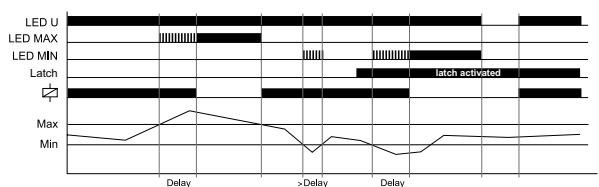
UNDER + Latch

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.

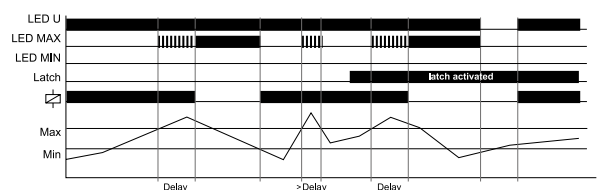
(OVER, OVER+Latch)



(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

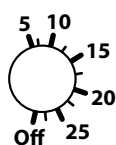
If the energy supplied by a three-phase system has phase imbalances due to uneven load distribution, the motor converts a part of the energy into reactive power that is lost and hence wasted, exposing the motor to big thermal stress.

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

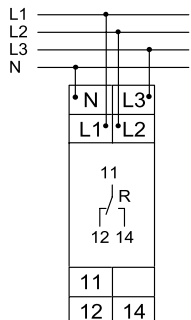


Signalling

U green LED on: presence of power supply voltage

Yellow LED  on/off: indication of output contact status

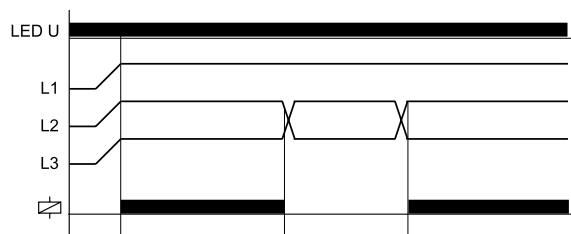
CIRCUIT DIAGRAMS



FUNCTIONS

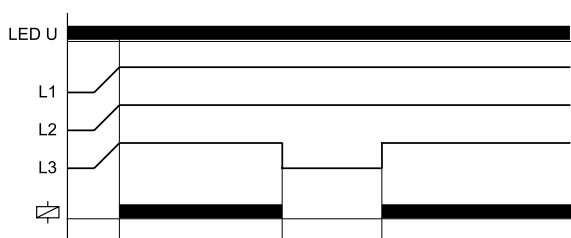
Phase sequence monitoring

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).



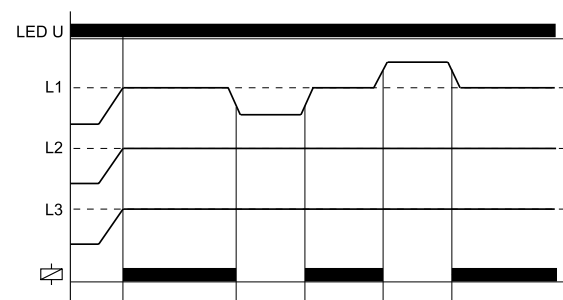
Phase absence monitoring

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

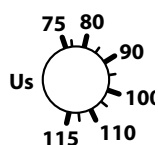
⁽¹⁾ 100VA resistive load

⁽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

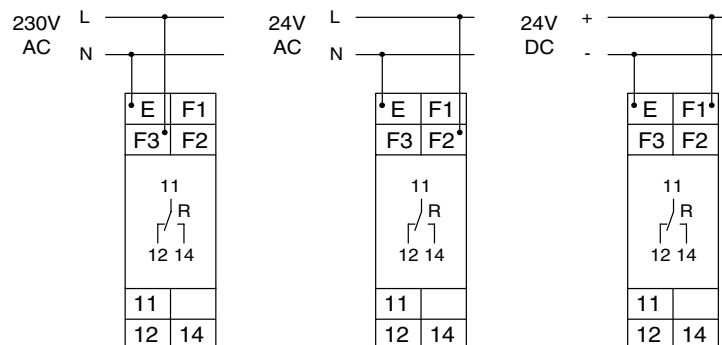


Signalling

U green LED on: presence of power supply voltage

Yellow LED  on/off: indication of output contact status

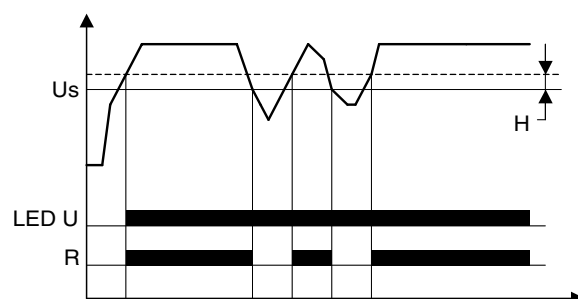
CIRCUIT DIAGRAMS



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

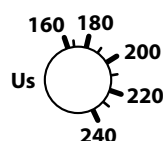
TECHNICAL DATA		
Code:		GW 96 909
Input circuit		
Rated operating voltage (Un):	(V)	230/400 AC
Tolerance:	(% Un)	-30 / +10
Controlled voltage:	(V)	230/400 AC
Power loss:	(VA)	8
Rated frequency:	(Hz)	48 ÷ 63
Overload category (IEC 60664-1):		III
Rated impulse withstand voltage (Uimp):	(kV)	4
Output circuit		
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.



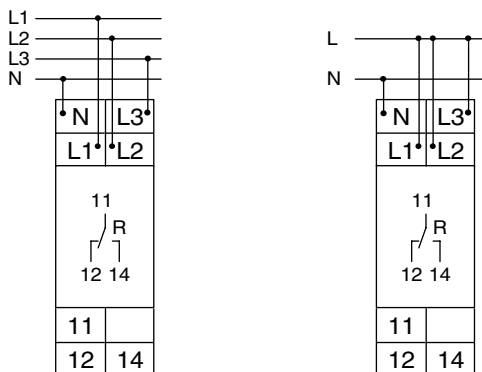
Rated voltage adjustment (160÷240V L-N)



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

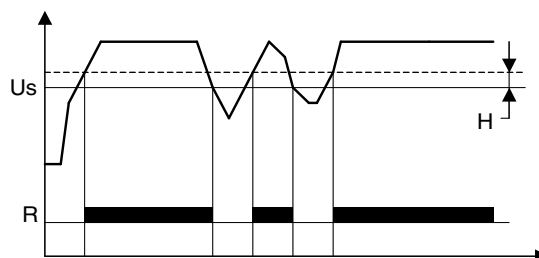


FUNCTIONS

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

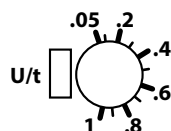
MULTIFUNCTION TIMER

TECHNICAL DATA		
Code:		GW 96 814
Control voltage:	(V)	24...240 a.c./d.c.
Type of contact:		1 changeover
Switchover capacity:		8A - 250V a.c.
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% o ± 5 ms
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)

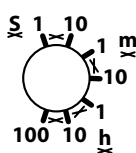
The multifunction timer allows to connect and disconnect a load for a set period of time (adjustable from 0.05s to 100h).



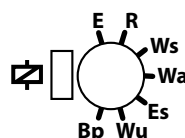
Precise delay time adjustment



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

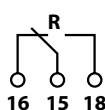
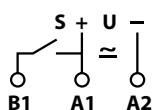
SIGNALLING

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.

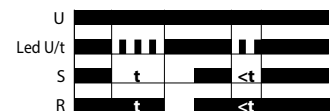
E



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.

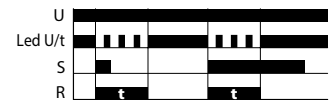
R



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.

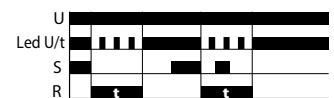
Ws



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.

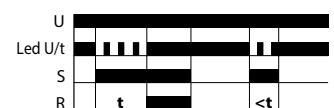
Wa



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.

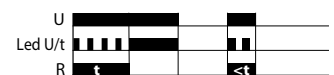
Es



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



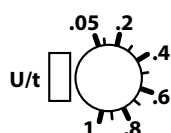
ASYMMETRICAL TIMER

TECHNICAL DATA		
Code:		GW 96 815
Control voltage:	(V)	12...240 a.c./d.c.
Type of contact:		1 changeover
Switchover contact:		8A - 250V a.c.
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 ± 5 ms
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)

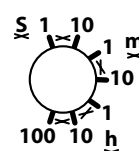
Asymmetrical timer allows to connect and disconnect a load according to a continuing cycle of ON-OFF periods of time with different settings (both adjustable from 0.05s to 100h).



Precise delay time adjustment



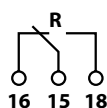
Delay time adjustment



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

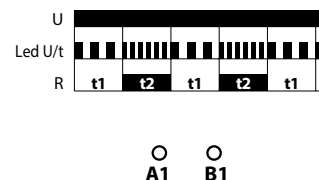
FUNCTIONS

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

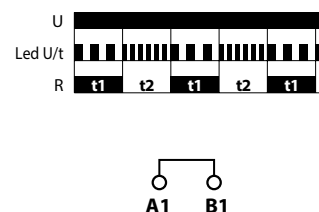


Asymmetric cycle, initial pulse (Ii)

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

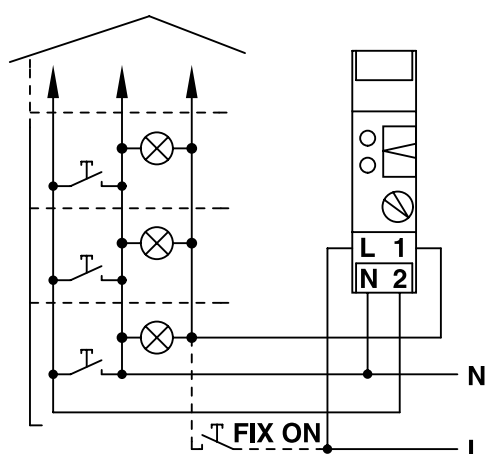


STAIRCASE LIGHTING TIME DELAY SWITCHES

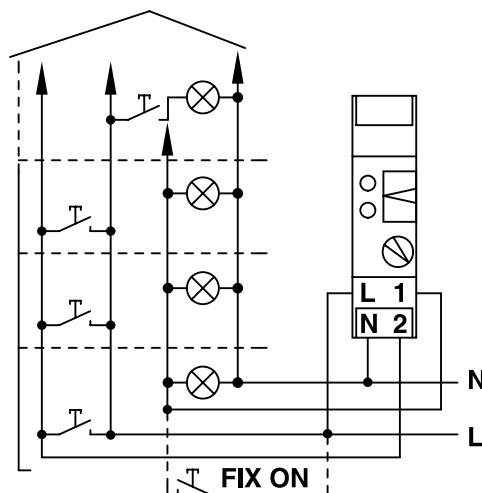
TECHNICAL DATA			
Type:		Normal	With switch-off warning
Code:		GW 96 810	GW 96 813
Standards:		EN 60669-1/2-1	EN 60669-1/2-1
Rated operating voltage (Ue):	(V)	230 AC	230 AC
Rated insulation voltage (Ui):	(V)	250 AC	250 AC
Rated frequency:	(Hz)	50	50/60
Timer setting:		30s...20min	30s...20min
Output contact:		1 NO	1 NO
Switchover capacity:			
	resistive loads (cosφ=1) (A)	16	16
	inductive loads (cosφ=0.6) (A)	10	10
	incandescent lamps (W)	2300	3600
	fluorescent lamps (W)	1000	1000
	halogen lamps (W)	-	3600
Connection type:		3 or 4 cables	3 or 4 cables
Operating state:		automatic/fixed ON	automatic/fixed ON
Power loss:	(VA)	1.3	<1
Illuminated push-buttons that can be connected:	(mA)	50	150 (4 wires) - 50 (3 wires)
Degree of protection:		IP20	IP20
Memory effect:		yes	-
Operating temperature:	(°C)	-10...+55	-10...+55
Maximum cable section:	(mm²)	1x4/2x2.5 (rigid) 1x2.5/2x1.5 (flexible)	1x4/2x2.5 (rigid) 1x2.5/2x1.5 (flexible)

CIRCUIT DIAGRAMS

3-cable connection



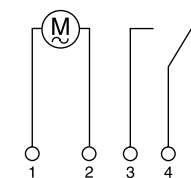
4-cable connection



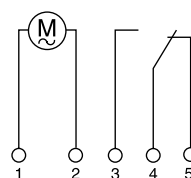
ANALOGUE TIME SWITCHES

TECHNICAL DATA				
Code:	GW 96 830	GW 96 831	GW 96 832	GW 96 836
Standard:	EN 60335-1/2-26	EN 60335-1/2-26	EN 60335-1/2-26	EN 60335-1/2-26
Type:	Daily	Daily	Weekly	Daily
Rated operating voltage (Ue):	(V)	230 AC	230 AC	230 AC
		-	130 DC	110 DC
Rated frequency:	(Hz)	50	50	50
Output contact:		1 NO	1 changeover	1 changeover
Switchover capacity:				
	resistive loads	16A-250V-cos φ = 1	16A-250V-cos φ = 1	16A-250V-cos φ = 1
	inductive loads	4A-250V-cos φ = 0.6	4A-250V-cos φ = 0.6	4A-250V-cos φ = 0.6
	incandescent lamps	1000 W	1350 W	1350 W
Minimum setting:		30min	30min	3h
Charge reserve:	(h)	NO	150	150
Operating state:		automatic/fixed ON	automatic/fixed ON/ fixed OFF	automatic/fixed ON/ fixed OFF
Absorbed power:	(VA)	1	1	1
Degree of protection:		IP20	IP20	IP20
Operating temperature:	(°C)	-25...+55	-20...+55	-20...+55
Maximum cable section:	(mm²)	6	6	6
Sealing:		yes	yes	yes

CIRCUIT DIAGRAMS



GW 96 830 - GW 96 836



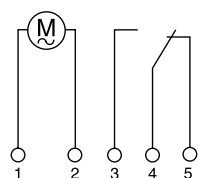
GW 96 831 - GW 96 832



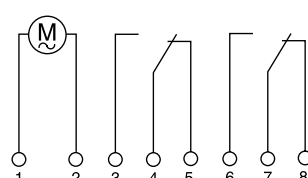
DIGITAL TIME SWITCHES

TECHNICAL DATA			
Code:	GW 96 844	GW 96 845	GW 96 846
Standard:	EN 60669-1, EN 60669-2-1	EN 60669-1, EN 60669-2-1	EN 60669-1, EN 60669-2-1
Type:	Daily/Weekly	Daily/Weekly	Daily/Weekly
Rated operating voltage (Ue): (V)	230 AC	230 AC	230 AC
Rated frequency: (Hz)	50-60	50-60	50-60
No. of channels:	1	2	1
Output contact:	1 changeover	2 changeover	1 changeover
Switchover capacity:	resistive loads	16A-250V-cos φ = 1	16A-250V-cos φ = 1
	inductive loads	8A-250V-cos φ = 0.6	8A-250V-cos φ = 0.6
	incandescent lamps	1000 W	1000 W
Memory steps:	50	50	50
Minimum setting: (min.)	1	1	1
Charge reserve: (h)	3 years	3 years	3 years
Battery:	Lithium (CR2450 type)	Lithium (CR2450 type)	Lithium (CR2450 type)
Operating state:	automatic/fixed ON/fixed OFF	automatic/fixed ON/fixed OFF	automatic/fixed ON/fixed OFF
Precision (s/day):	2.5	2.5	2.5
Absorbed power: (VA)	5	5	5
Degree of protection:	IP20	IP20	IP20
Operating temperature: (°C)	-25...+55	-25...+55	-25...+55
Maximum cable section: (mm ²)	4	4	2.5
Sealing:	yes	yes	yes

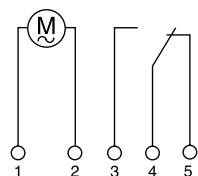
CIRCUIT DIAGRAMS - DIGITAL SWITCHES



GW 96 844



GW 96 845



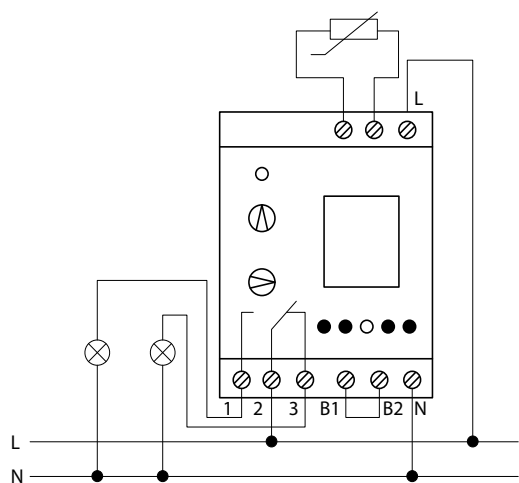
GW 96 846



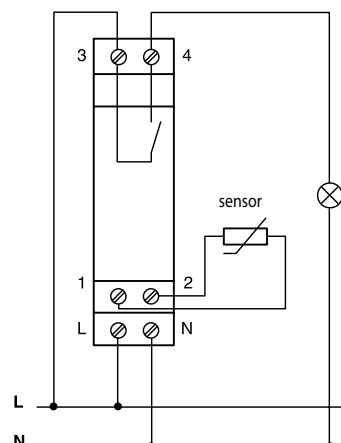
TWILIGHT SWITCHES

TECHNICAL DATA			
Type:	With digital time switch		Normal
Code:	GW 96 891		GW 96 892
Standard:	EN 60669-1, EN 60669-2-1		EN 60669-1, EN 60669-2-1
Rated operating voltage (Ue):	(V)	230 AC	230 AC
Rated frequency:	(Hz)	50-60	50-60
No. of channels:		1	1
Output contact:		1 changeover	1 NO
Switchover capacity in AC:	resistive loads	16A-250V	16A-250V
	inductive loads	10A-250V-cos φ = 0.6	2,5A-250V-cos φ = 0.6
	incandescent lamps	2600W	1000W
	fluorescent lamps	1000W	-
Switchover capacity in DC:	(A)		
	resistive loads 24V	0.8	0.8
	resistive loads 60V	0.3	0.3
	resistive loads 220V	0.15	0.15
Brightness adjustment:		2...500 lux	2...500 lux
Switchover delay:	(s)	0...100 adjustable	50 (fixed)
Clock type:		Daily/Weekly	-
Timer switch no. of memories:		50	-
Minimum timer switch adjustment:	(min.)	1	-
Timer switch standby charge:		3 years	-
Battery:		Lithium (CR2032 type)	-
Timer switch operation:		automatic/fixed ON/fixed OFF	-
Timer switch precision (s/day):		2.5	-
Absorbed power:	(VA)	2.5	5
Length of the cable connecting the sensor:	(m)	100	100
Max number of sensors:		10	1
Switch degree of protection:		IP20	IP20
Sensor degree of protection:		IP65	IP65
Switch operating temperature:	(°C)	-20...+55	-20...+55
Sensor operating temperature:	(°C)	-30...+70	-30...+70
Maximum cable section:	(mm²)	4	4

CIRCUIT DIAGRAMS



GW 96 891



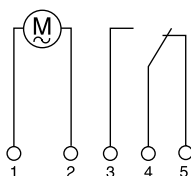
GW 96 892



ASTRONOMICAL SWITCH

TECHNICAL DATA			
Code:		GW 96 821	
Standard:		EN 60065	
Rated operating voltage (Ue):	(V)	230 AC	
Rated frequency:	(Hz)	50-60	
No. of channels:		1	
Output contact:		1 changeover	
Switch-over capacity:	resistive loads	16A-250V-cos φ = 1	
	inductive loads	8A-250V-cos φ = 0.6	
	incandescent lamps	1000 W	
Charge reserve:	(h)	3 years	
Battery:		Lithium (CR2450 type)	
Operating state:		automatic/fixed ON/fixed OFF	
Precision (s/day):		2.5	
Absorbed power:	(VA)	5	
Degree of protection:		IP20	
Operating temperature:	(°C)	-25...+55	
Maximum cable section:	(mm ²)	4	
Sealing:		yes	

CIRCUIT DIAGRAMS



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: (mm²)	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.

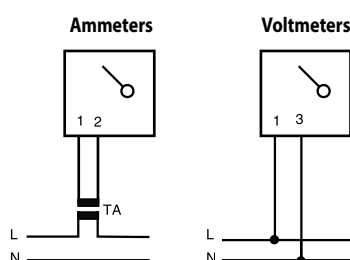
Digital voltmeters and ammeters

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.

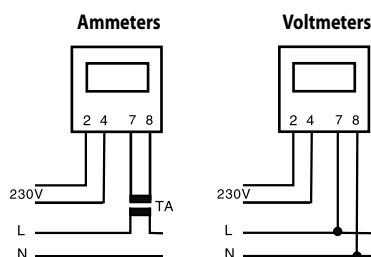
The current transformers (.../5) must have a primary current equal to the capacity pre-set on the tool.

CIRCUIT DIAGRAMS

ANALOGUE



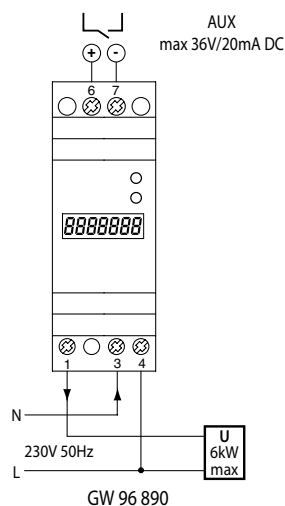
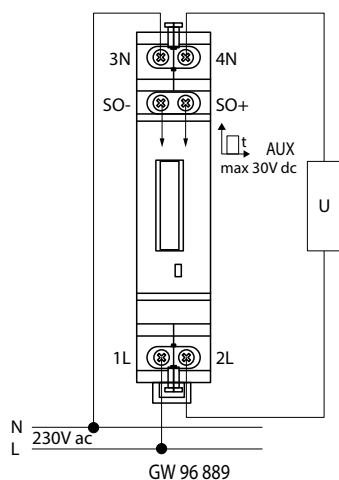
DIGITAL



SINGLE-PHASE ANALOGUE ENERGY METERS

TECHNICAL DATA		
Code:	GW 96 889	GW 96 890
Standards:	EN 62053-21	EN 62053-21
DIN modules:	1	2
Reference voltage Un:	230 AC	230 AC
Activation:	direct	direct
Reference frequency:	50	50-60
Minimum current measured NOT in Class 1st:	0.02	0.03
Minimum current measured in Class Imin:	0.25	0.3
Base current Ib:	5	6
Maximum current Imax:	25	30
Precision class:	1	2
Reading resolution:	0.1	0.01
Absorbed power:	9	4
Remote signalling contact:	1 NO	1 NO
Max. output current with pulse:	0.5 (100V AC)	0.02 (max 36V DC)
Output pulse frequency:	10/1/0.1	1000
Output pulse duration:	100	100
Degree of protection:	IP20	IP20
Operating temperature:	-10...+45	-5...+50
Maximum cable section:	input 6 - output 2.5	6
Resetting of energy count:	no	no
Approvals:	PTB	-

CIRCUIT DIAGRAMS

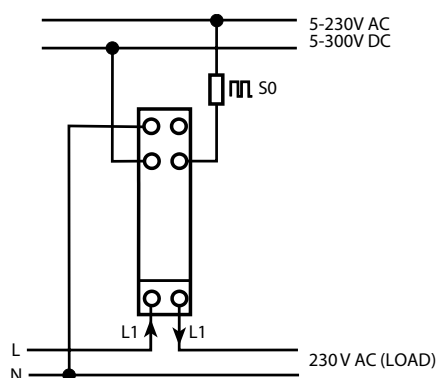


SINGLE-PHASE DIGITAL ENERGY METER

TECHNICAL DATA	
Code:	GW D6 801
Standards:	EN 50470-1-3, EN 62053-31
DIN modules:	1
Reference voltage Un: (V)	230 AC
Minimum operating voltage (Un min): (V)	184 AC
Maximum operating voltage (Un max): (V)	276 AC (continuous) 300 AC (momentary 1s)
Activation:	direct
Measured values:	active energy (exported and imported) active power (exported and imported)
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)	32 (continuous) 960 (momentary 1s)
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: (mm²)	16 (also with terminal connector)
Screwdriver suggested for main terminals:	PZ1
Maximum cable section for output contact: (mm²)	2,5 (with terminal connector)
Screwdriver suggested for output contact:	PZ0
Resetting of energy count:	yes
Sealing:	yes
Suitable accessory:	KNX interface GW D6 801*

* KNX interface (1 module) communicates on the KNX bus system the values of energy and power measured by the energy meter.
The KNX interface is optically coupled with energy meter (the two devices have to be installed side-by-side).
KNX interface has to be configured with ETS software.

CIRCUIT DIAGRAMS

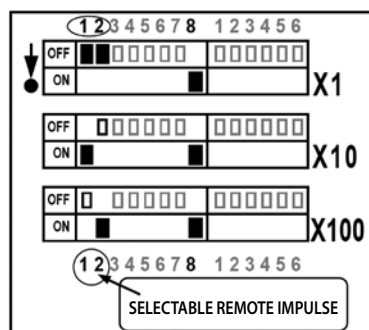
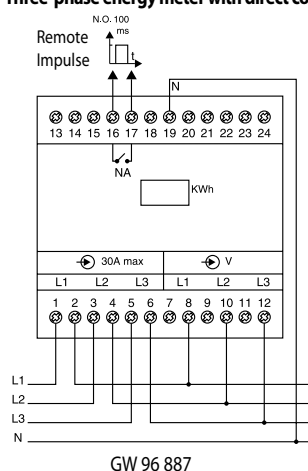


THREE-PHASE ANALOGUE ENERGY METERS

TECHNICAL DATA			
Code:		GW 96 887	GW 96 888
Standards:		EN 62053-21	EN 62053-21
Reference voltage Un:	(V)	3x230/400 AC	3x230/400 AC
Activation:		direct	indirect with C.T.
Reference frequency:	(Hz)	50-60	50-60
Minimum current measured NOT in Class Ist:	(A)	0.03	0.015
Minimum current measured in Class Imin:	(A)	0.3	0.1
Base current Ib:	(A)	6	-
Rated current (In):	(A)	-	5
Maximum current Imax:	(A)	30	6
Precision class:		2	2
Reading resolution:	(kWh)	0.1	0.1
Absorbed power:	(VA)	10	10
Remote signalling contact:		1 NO	1 NO
Max. output current with pulse:	(A)	0.5 (100V AC)	0.5 (100V AC)
Output pulse frequency:	(Imp/kWh)	10/1/0.1	10/1/0.1
Output pulse duration:	(ms)	100	100
Degree of protection:		IP20	IP20
Operating temperature:	(°C)	-10...+45	-10...+45
Maximum wire section:	(mm ²)	6	6
Resetting of energy count:		no	no

CIRCUIT DIAGRAMS

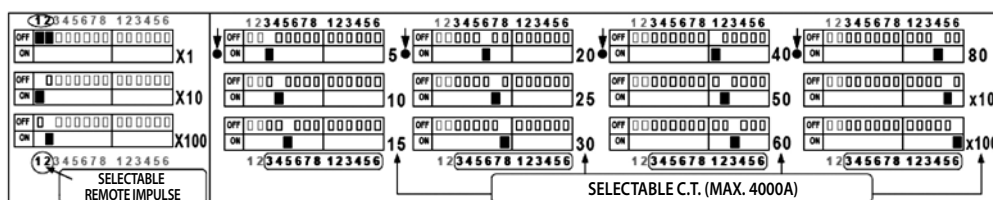
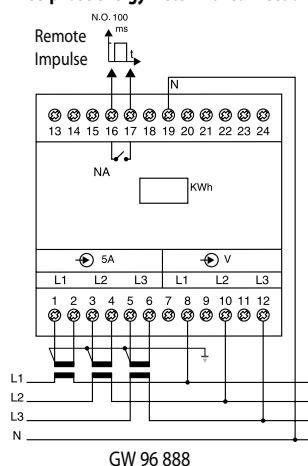
Three-phase energy meter with direct connection Remote impulse setting



X1=1/imp/0,1kWh;
X10=1/imp/1kWh;
X100=1/imp/10kWh



Three-phase energy meter with connection using CT Remote impulse and CT setting



X1=1/imp/0,1kWh;
X10=1/imp/1kWh;
X100=1/imp/10kWh

Hour Counter

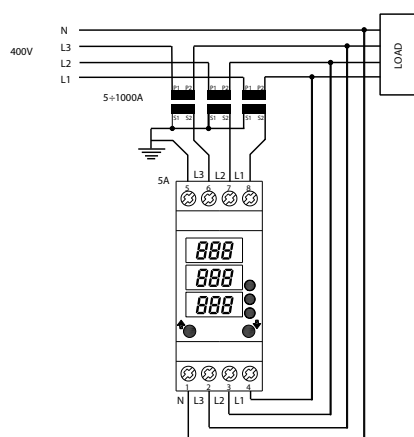
TECHNICAL DATA		
Standard:		EN 60335-1, EN 60335-2-26
Rated operating voltage (Ue):	(V)	230 AC
Rated frequency:	(Hz)	50
Displayed digits:		99,999.99
Resetting:		no
Absorbed power:	(VA)	1
Degree of protection:		IP20
Operating temperature:	(°C)	-25...+55
Maximum wire section:	(mm ²)	10



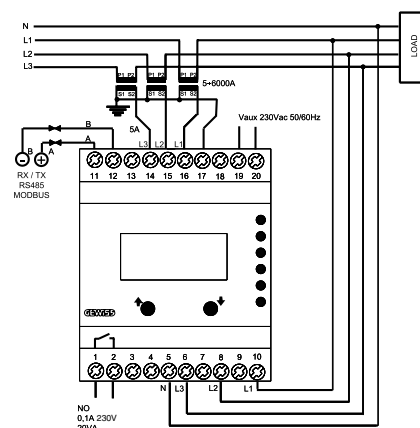
MULTIMETER AND NETWORK ANALYSER

TECHNICAL DATA		
Type:	Multimeter	Network analyser
Standard:	EN 61010	EN 61010
Rated operating voltage (Ue):	(V) 230 AC	230 AC
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) Measurement of energy quality: - THD (% harmonic dispersion rate for voltage and current)
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



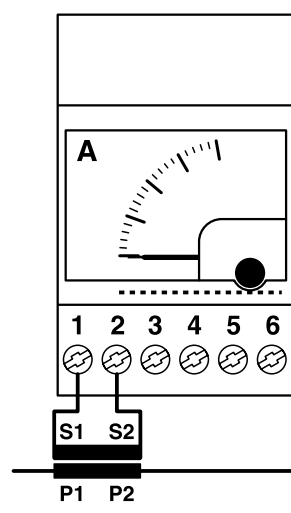
CIRCUIT DIAGRAMS - NETWORK ANALYSER



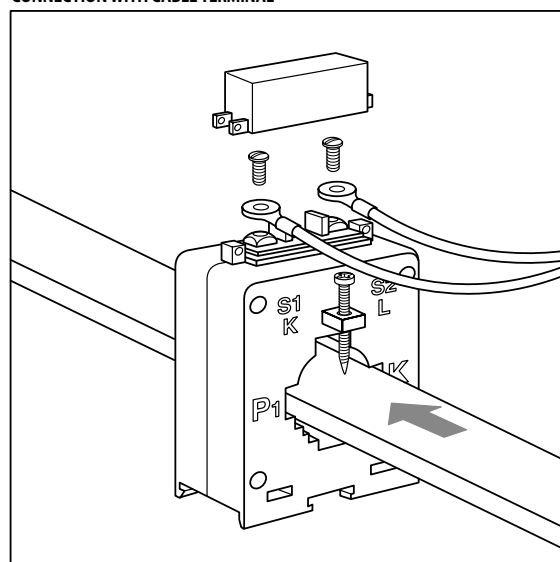
CURRENT TRANSFORMERS

TECHNICAL DATA		
Standards:		EN 60044-1
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

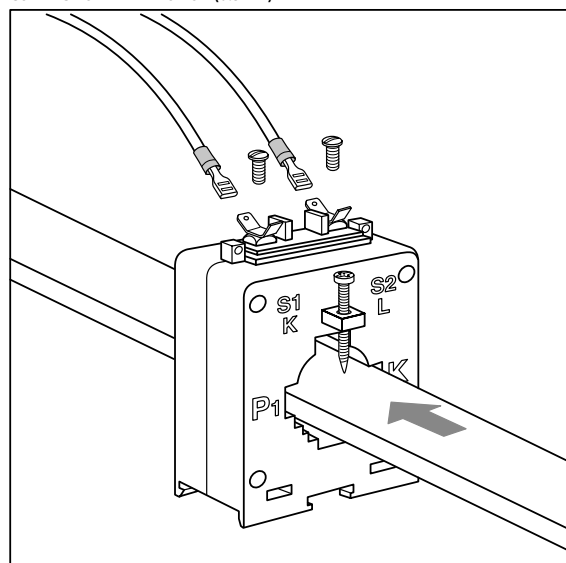
CIRCUIT DIAGRAMS



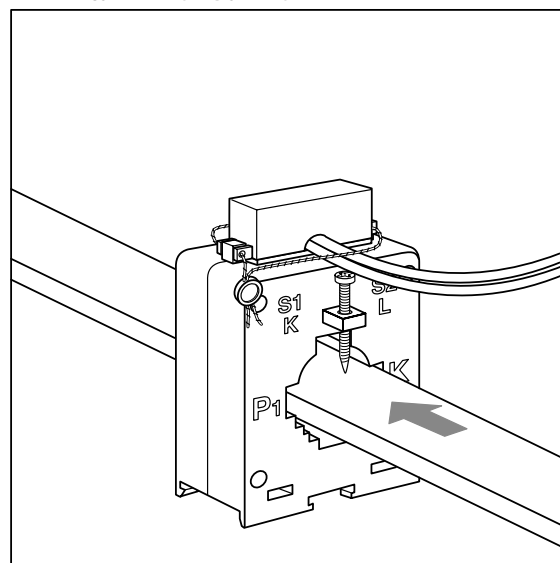
CONNECTION WITH CABLE TERMINAL



CONNECTION WITH FAST-ON (6.3MM)



TERMINAL COVER FIXING AND SEALING



SIGNALLING

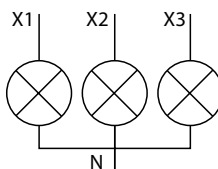
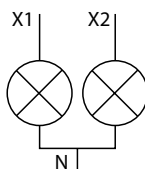
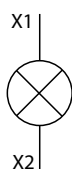
INDICATOR LIGHTS

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 is 230V AC phase-neutral and 400V AC phase-phase

CIRCUIT DIAGRAMS

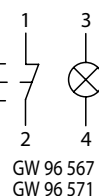
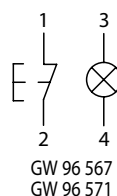
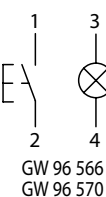
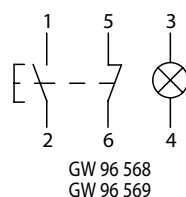
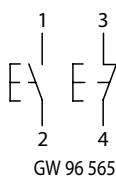
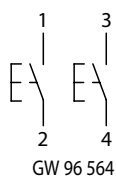
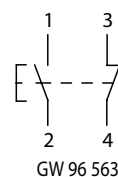
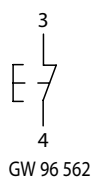
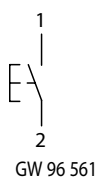


PUSH-BUTTONS AND ILLUMINATED PUSH-BUTTONS

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)	

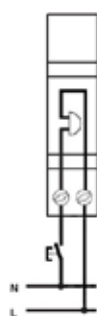
CIRCUIT DIAGRAMS



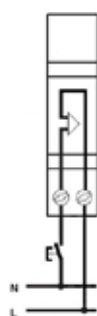
BELLS AND BUZZERS

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:	(mm²)	6	6	6	6	6

CIRCUIT DIAGRAMS - BELLS AND BUZZERS



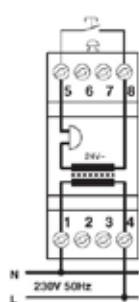
GW 96 401 (12V)
GW 96 402 (230V)



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



CIRCUIT DIAGRAMS - BELL + TRANSFORMER AND BUZZER + TRANSFORMER



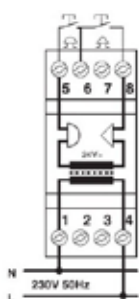
GW 96 403



GW 96 408



CIRCUIT DIAGRAM - BELL + BUZZER + TRANSFORMER



GW 96 411



BELL TRANSFORMERS (FOR DISCONTINUOUS USE)

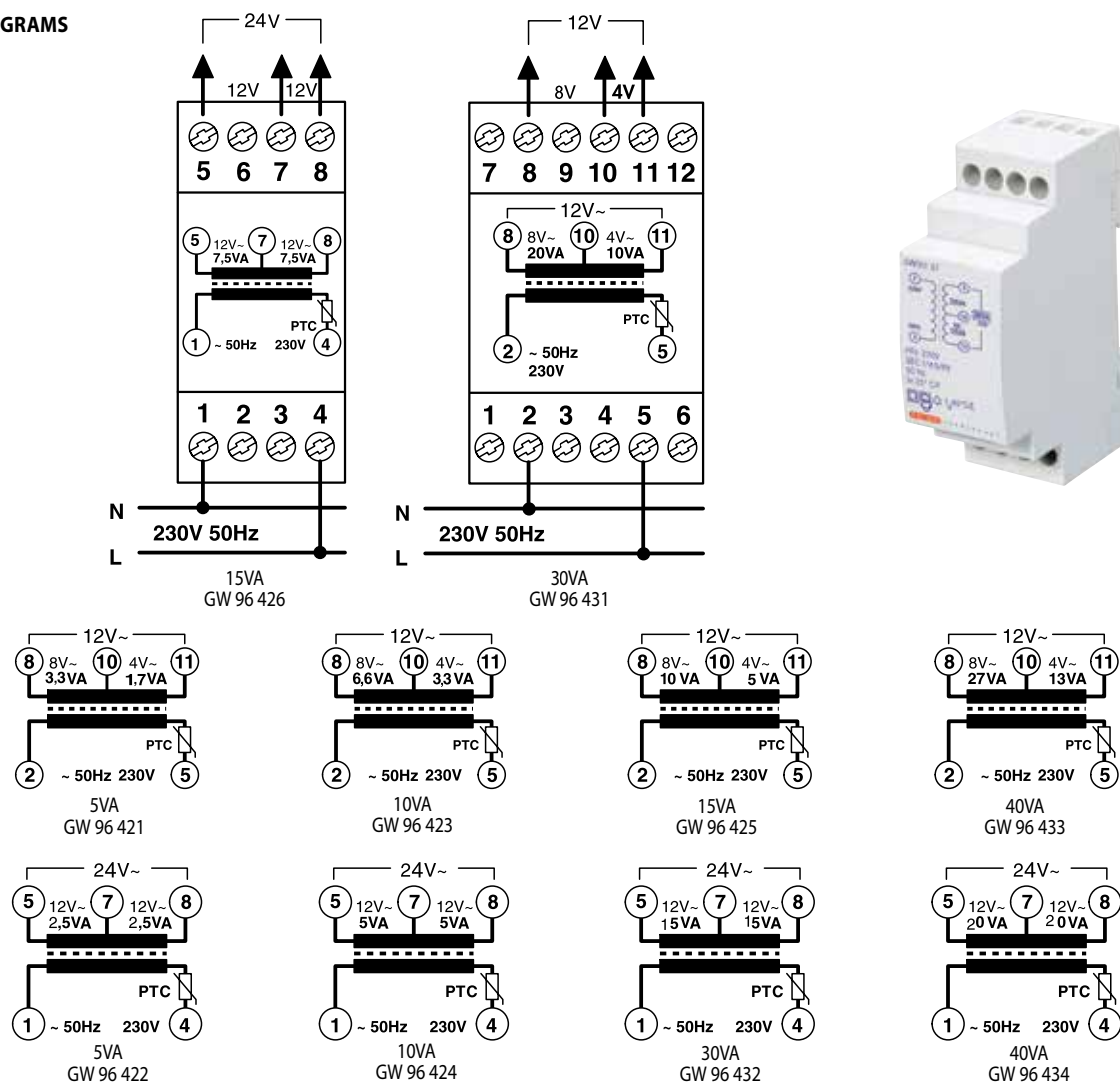
TECHNICAL DATA		
Standards:		EN 61558-1, EN 61558-2-8
Primary rated voltage:	(V)	230 AC
Secondary rated voltage:	(V)	4+8=12 / 12+12=24
Secondary voltage change at full load:		15%
Insulation class:		II
Rated power:	(VA)	5 - 10 - 15 - 30 - 40
Degree of protection:		IP20
Operating temperature:	(°C)	-10...+40
Maximum cable section:	(mm²)	6

Applications

Thanks to intermittent operation, the bell transformers can be used to actuated the shunt trip release 96 GW 011 with rated voltage $V_n=12/24V$. The following table shows the maximum number of releases GW 96 001 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
GW 96 432	12	15	7
	24	30	6
GW 96 433	12	40	12
GW 96 434	12	20	8
	24	40	7

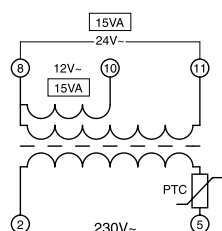
CIRCUIT DIAGRAMS



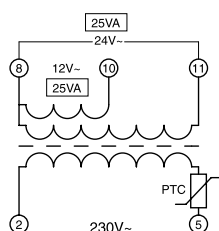
SAFETY TRANSFORMERS (FOR CONTINUOUS OPERATION)

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%
Rated frequency:	(Hz)	50
Rated power:	(VA)	
	GW 96 321	15
	GW 96 322	25
	GW 96 323	40
	GW 96 324	63
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
Insulation class:		II
Degree of protection:		IP20
Operating temperature:	(°C)	-10...+25
Maximum cable section:	(mm ²)	6
Resistant to the short-circuit not for construction:		yes
Max limit of temperature PTC:	(°C)	120

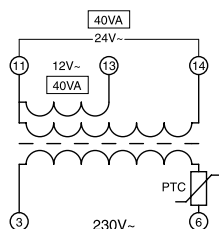
CIRCUIT DIAGRAMS



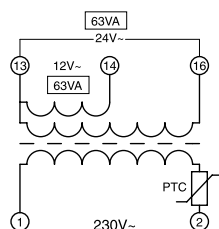
GW 96 321



GW 96 322



GW 96 323



GW 96 324



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	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				no
Degree of protection:	IP20	IP40 (closed cover)	IP20	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

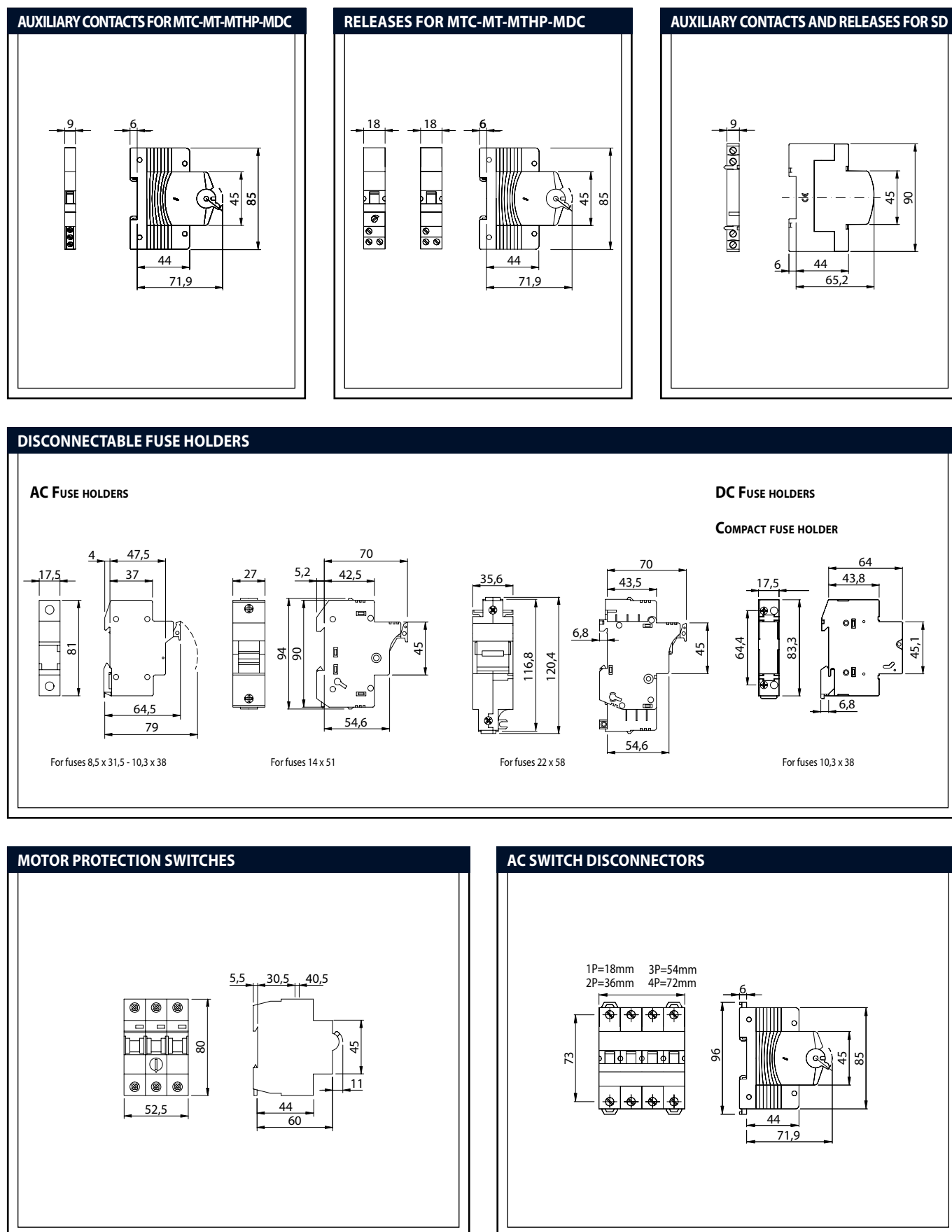


GW 96 525

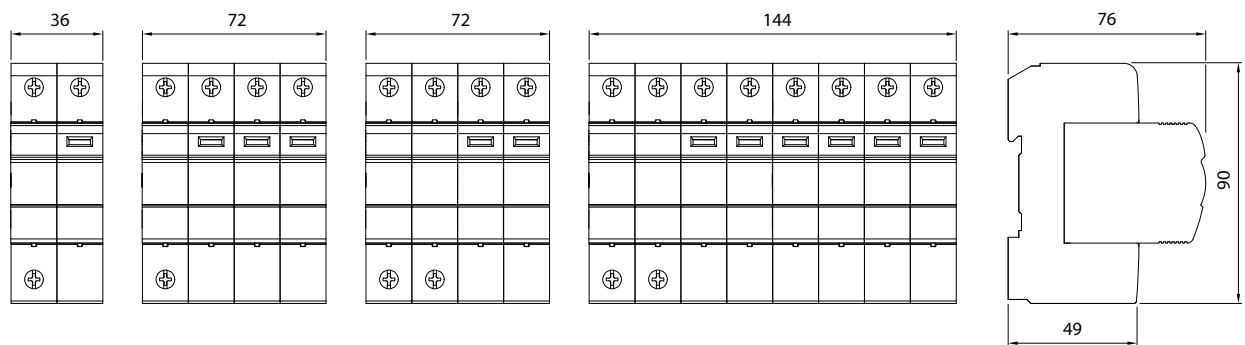


GW 96 526

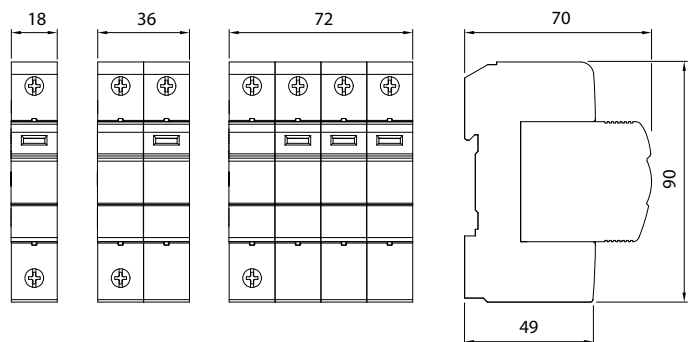
DIMENSION TABLES



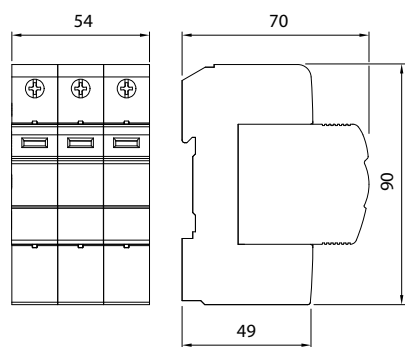
SURGE PROTECTIVE DEVICES TYPE 1+2



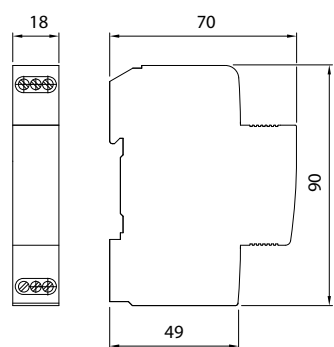
SURGE PROTECTIVE DEVICES TYPE 2



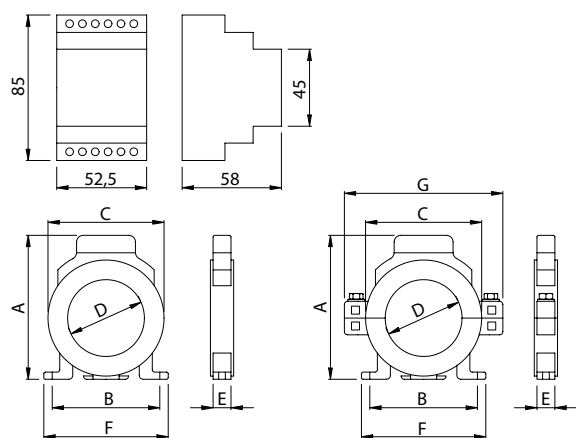
DC SURGE PROTECTIVE DEVICES



SURGE PROTECTIVE DEVICES FOR TELECOM AND DATALINE



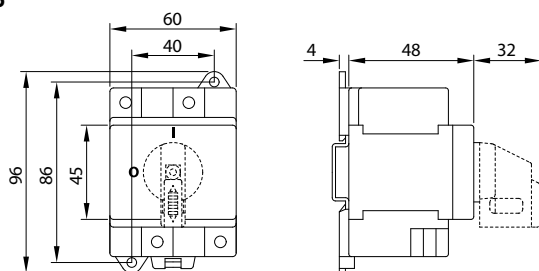
RESIDUAL CURRENT RELAY AND TOROIDS



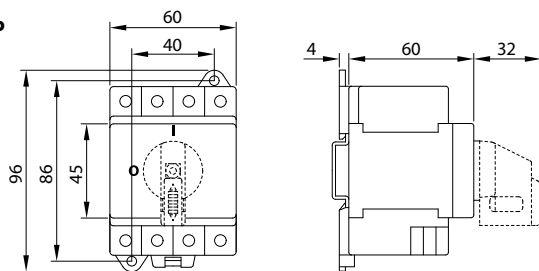
Code	D	A	B	C	E	F	G
GW 96 332	35	118	90	78,5	27	104	
GW 96 333	80	163	110	114,5	27	117	
GW 96 334	110	198	140	150,5	32	155	
GW 96 335	210	298	210	250,5	32	227	
GW 96 336	110	198	140	150,5	32	155	198
GW 96 337	210	298	210	250,5	32	227	296

DC ROTARY SWITCH DISCONNECTORS

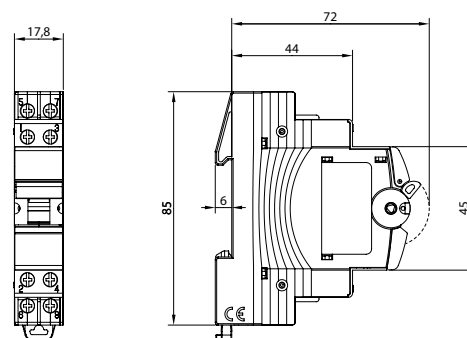
2P



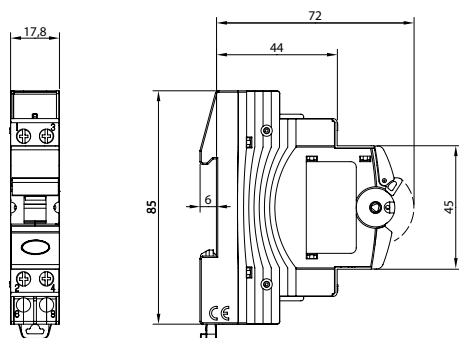
4P



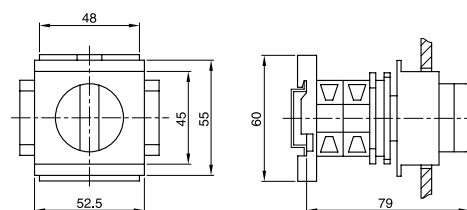
ISOLATING SWITCHES AND LEVER SWITCHES



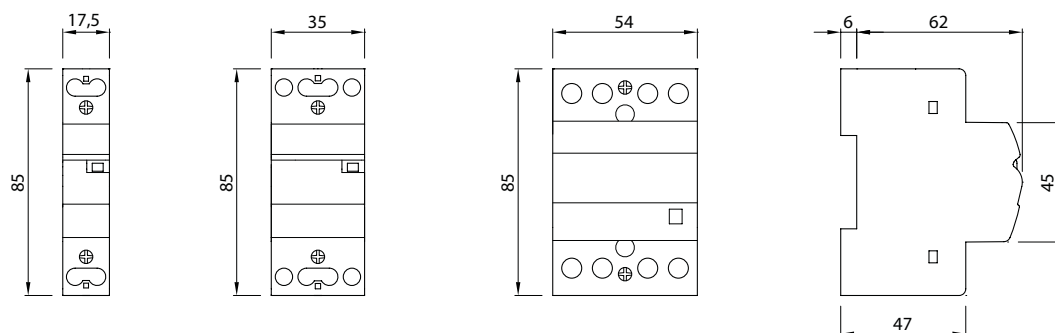
ON-OFF SWITCHES WITH INDICATOR LAMP



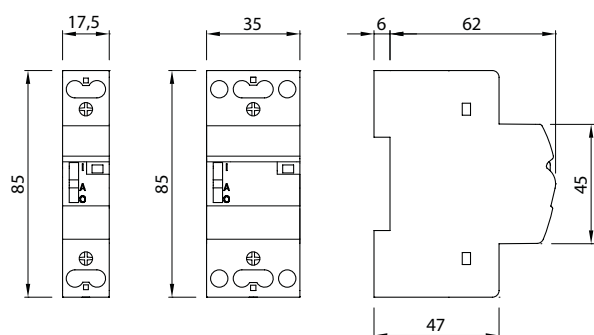
ROTARY SWITCHES



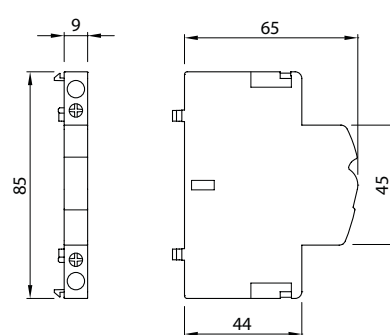
CONTACTORS



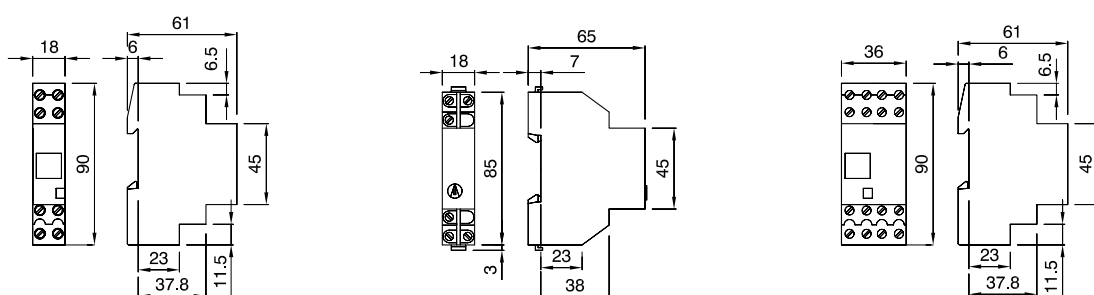
MANUAL CONTROL CONTACTORS



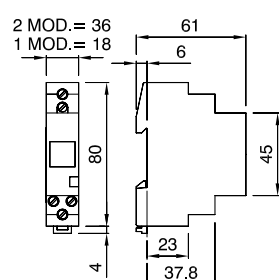
AUXILIARY CONTACTS FOR CONTACTORS



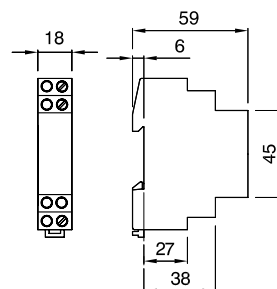
INSTALLATION RELAYS



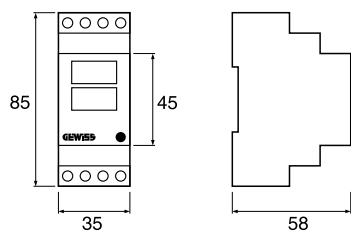
LATCHING RELAYS



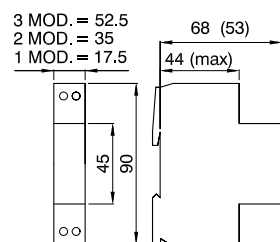
BIOCOMFORT



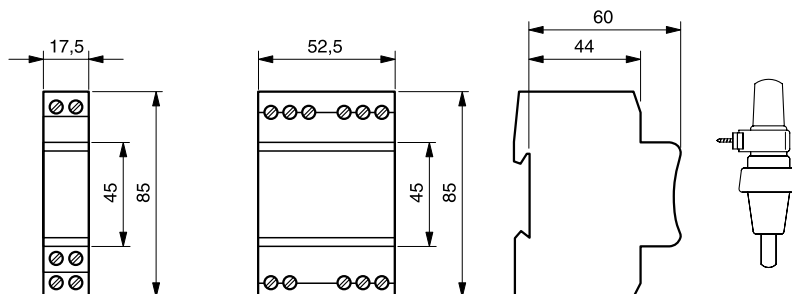
LOAD MANAGEMENT RELAY



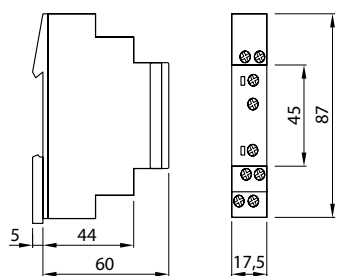
TIME SWITCHES



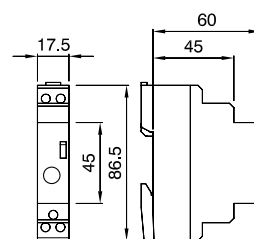
TWILIGHT SWITCHES



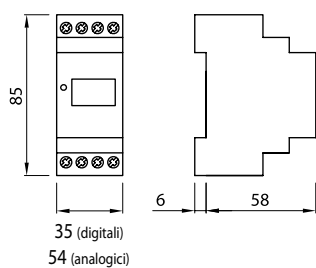
CONTROL RELAYS AND TIMERS



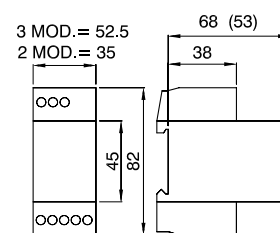
STAIRCASE LIGHTING TIME DELAY SWITCHES



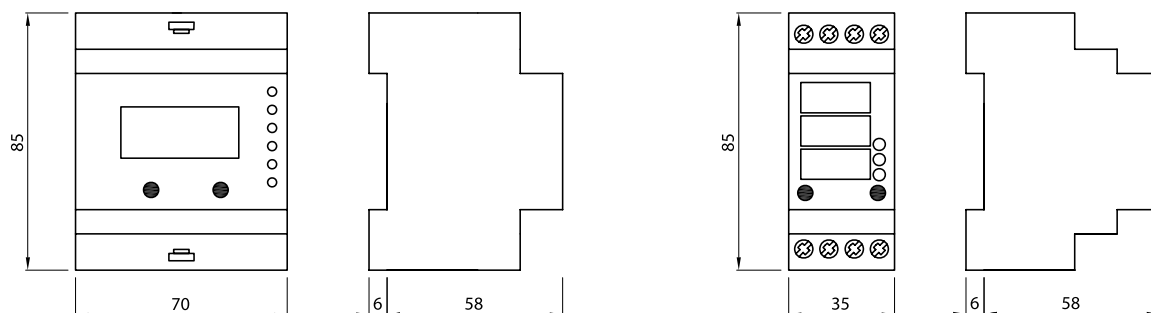
DIGITAL VOLTMETER AND DIGITAL AMMETER



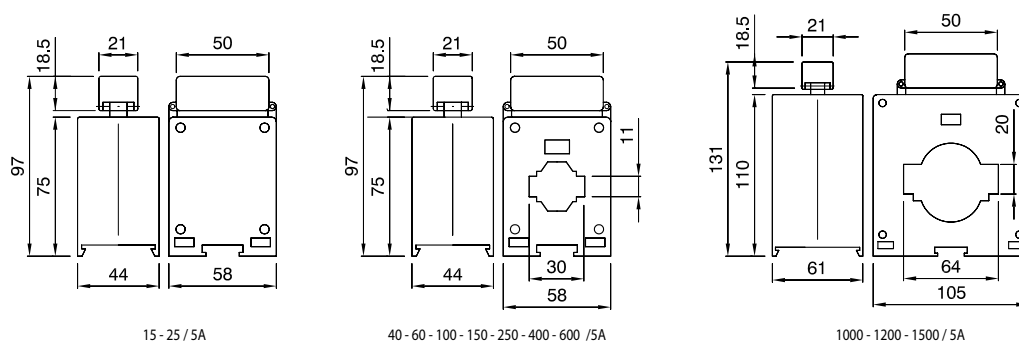
HOURLY COUNTER



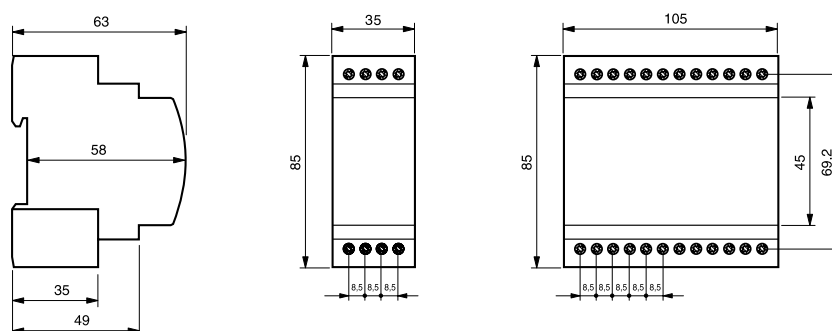
NETWORK ANALYSER AND MULTIMETER



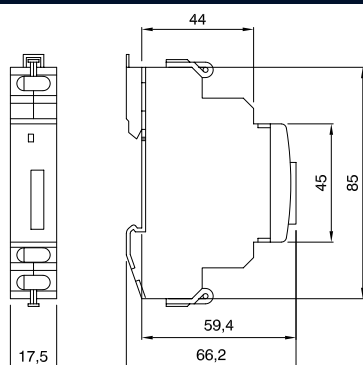
CURRENT TRANSFORMERS



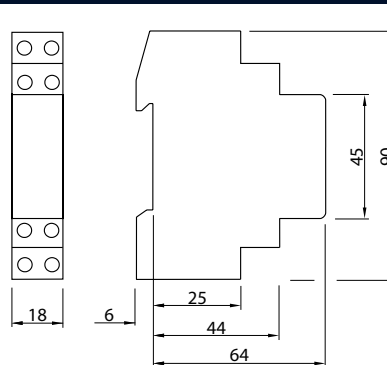
ENERGY METERS



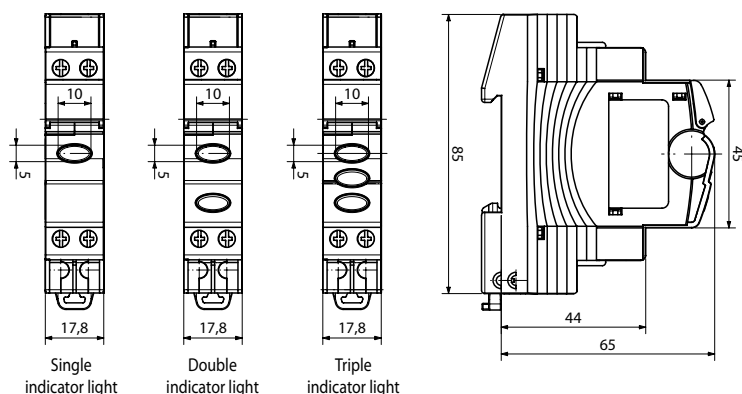
COMPACT SINGLE-PHASE ENERGY METER



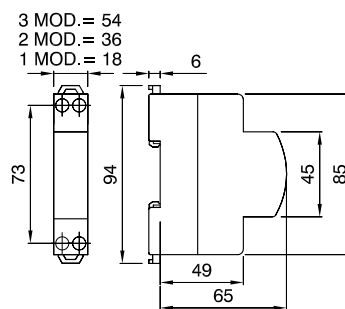
DIGITAL ENERGY METER



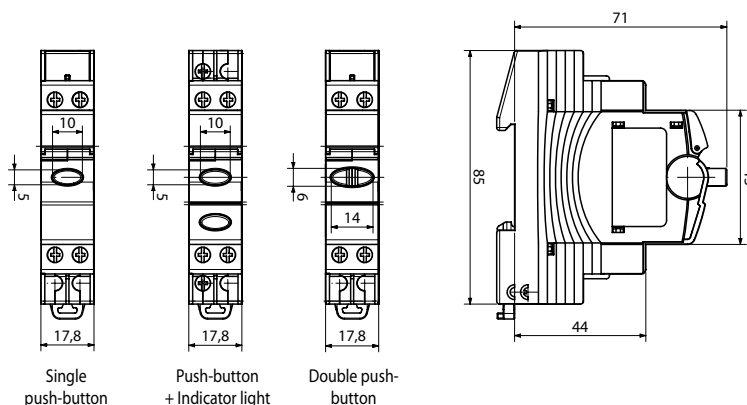
INDICATOR LIGHTS



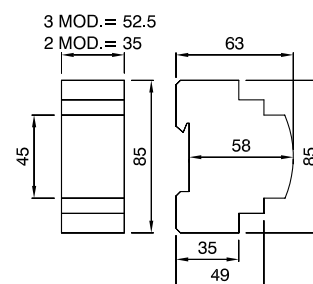
BELLS AND BUZZERS



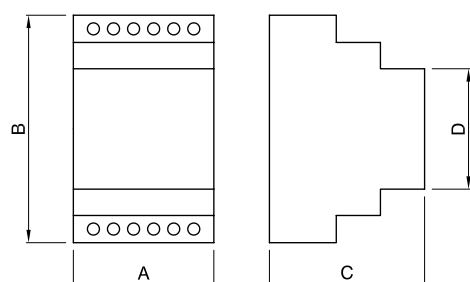
PUSH-BUTTONS



BELL TRANSFORMERS

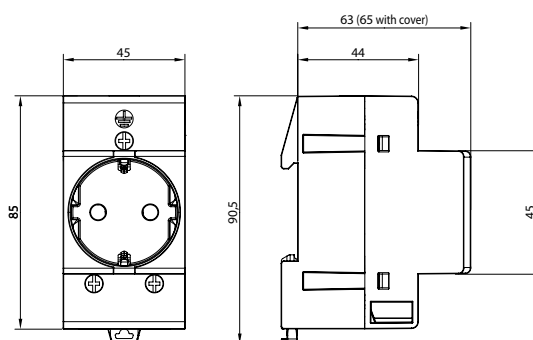


SAFETY TRANSFORMERS

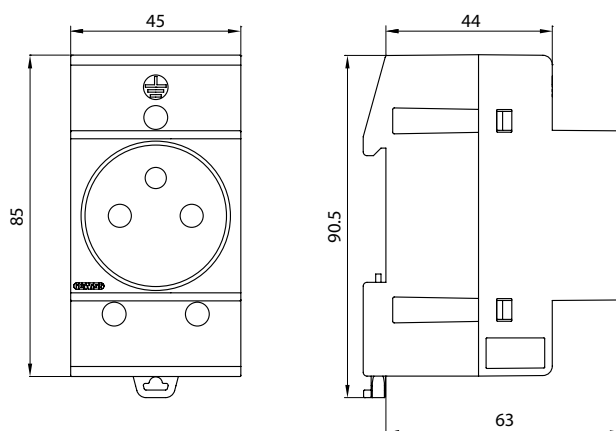


Code	A (mm)	B (mm)	C (mm)	D (mm)
GW 96 321	52.5	85	58	45
GW 96 322	52.5	85	58	45
GW 96 323	70	85	58	45
GW 96 324	105	85	65	45

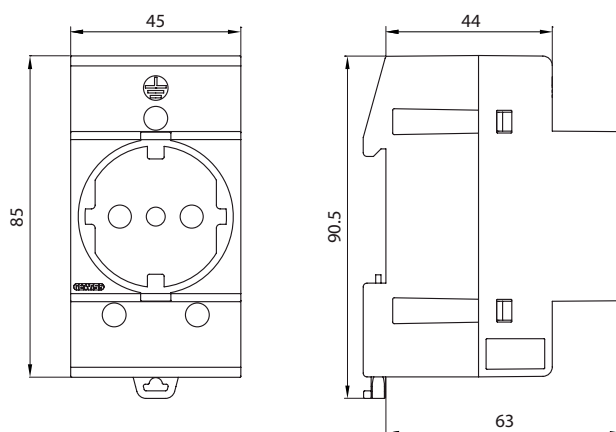
SOCKET GERMAN STANDARD FOR ASSEMBLY ON DIN RAIL



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

