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Standard contactors, type GC

Presentation and standards

Presentation

GC-25

Designed for use in modular panels and enclosures, these contactors feature :

- **Easy installation**
  - quick clip-on fixing onto 35 mm omega rail,
  - easy connection by means of ready-to-tighten captive, pozidrive screw terminals.
- **Compact size**
  All units have a common depth of 60 mm and width in modules of 17.5 mm (width of one module : 17.5 mm).
- **User safety**
  - use of materials conforming to strictest fire safety standards,
  - live parts protected against direct finger contact,
  - completely safe operation,
  - indication of contact state on front face.

Standards

The new range of modular contactors has been designed taking into account the requirements of **new international standards IEC/EN 61095**.
This standard is specific to :
“Electromagnetic contactors for domestic and similar use”.
It has very strict requirements, meeting the expectations of users, with regard to the safety of equipment and persons in “premises and areas accessible to the public”.
Conformity with this standard makes it possible to obtain the following quality labels without the need for additional tests: NF-USE, VDE, CEBEC.

Applications

Modular contactors are designed for switching single-phase, 3-phase or 4-phase resistive loads up to 100 A.

Power switching

The new range of contactors has multiple applications in industrial, agricultural and commercial premises, hospitals and the home, i.e. wherever switching of a specific supply is required. For example :
- lighting,
- heating,
- ventilation,
- motorised shutters or gates.

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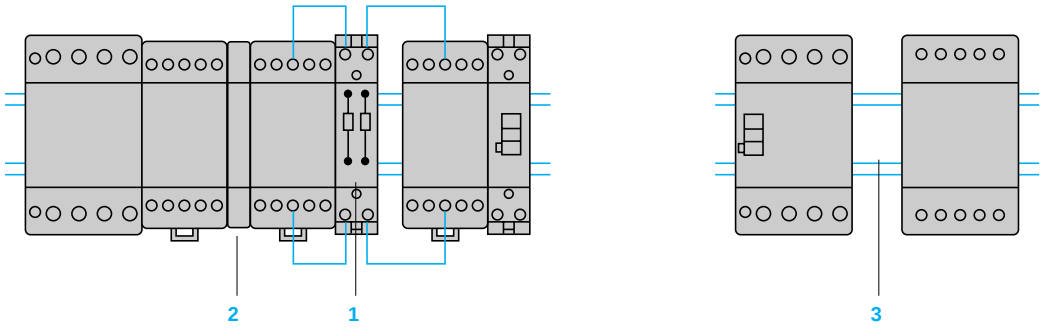
Standard contactors, type GC

Setting-up precautions

Setting-up precautions

The contactor controls must be bounce free. If not, connect a coil suppression block (GAP-21, 22 or 23) across the coil terminals ≤ 250 V (ref. 1).
When several contactors which operate at the same time are mounted side by side, a GAC-5 ventilation 1/2 module must be fitted every 2 contactors (ref. 2).

It is advisable to mount electronic units at the bottom of the modular panel and to separate them from electromechanical units by a space equal to one module (ref. 3) or by 2 ventilation modules GAC-5.



Derating of contactors mounted in a modular enclosure if the temperature within the enclosure is > 40 °C

40 °C	**50 °C**	**60 °C** (1)	Contactor rating
16 A	14 A	13 A	**16 A**
25 A	22 A	20 A	**25 A**
40 A	36 A	32 A	**40 A**
63 A	57 A	50 A	**63 A**
100 A	87 A	80 A	**100 A**

(1) Ventilation 1/2 module must be fitted

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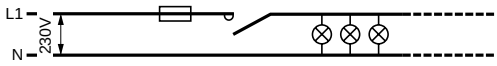
Modular contactors

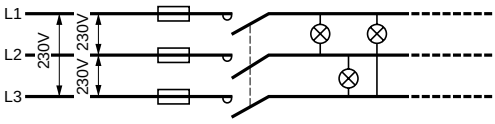
Contactor selection for lighting circuits

Lighting (Maximum number of lamps depending on the power of each unit)

Presentation of installations according to type of supply:
Single-phase circuit, 230 V

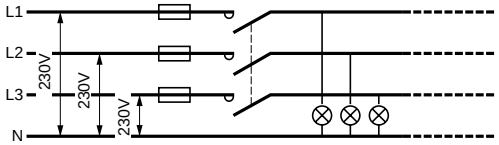


3-phase circuit, 230 V



The maximum number of lamps which can be operated per phase is equal to the number of lamps in the “single-phase 230 V” table divided by $\sqrt{3}$.

3-phase circuit, 400 V (with neutral)



The maximum number of lamps which can be operated per phase is equal to the total number of lamps in the “single-phase 230 V” table.

Contactor rating indicated below for a single-phase 230 V circuit (single-pole).

Fluorescent lamps with starter

Single fitting	**Non corrected**					**With parallel correction**					Contactor rating
P in W	20	40	50	80	110	20	40	58	80	110	–
I in A	0.39	0.43	0.70	0.80	1.2	0.19	0.29	0.46	0.57	0.79	–
C in µF	–	–	–	–	–	5	5	7	7	16	–
Maximum number of lamps	22	20	13	10	7	15	15	10	10	5	**16 A**
	30	28	17	15	10	20	20	15	15	7	**25 A**
	70	60	35	30	20	40	40	30	30	14	**40 A**
	100	90	56	48	32	60	60	43	43	20	**63 A**

Twin fitting	**Non corrected**					**With series correction**					Contactor rating
P in W	2 x 18	2 x 36	2 x 58	2 x 80	2 x 140	2 x 18	2 x 36	2 x 58	2 x 80	2 x 140	–
I in A	0.44	0.82	1.34	1.64	2.2	0.26	0.48	0.78	0.96	1.3	–
C in µF	–	–	–	–	–	3.5	4.5	7	9	18	–
Maximum number of lamps	20	11	7	5	4	30	17	10	9	6	**16 A**
	30	16	10	8	6	46	25	16	13	10	**25 A**
	50	26	16	13	10	80	43	27	22	16	**40 A**
	75	42	25	21	16	123	67	42	34	25	**63 A**

High pressure mercury vapour lamps

	Non corrected						**With parallel correction**							Contactor rating
P in W	50	80	125	250	400	700	50	80	125	250	400	700	1000	–
I_B in A	0.6	0.8	1.15	2.15	3.25	5.4	0.35	0.50	0.7	1.5	2.4	4	5.7	–
C in µF	–	–	–	–	–	–	7	8	10	18	25	40	60	–
Maximum number of lamps	15	10	8	4	2	1	10	9	9	4	3	2	–	**16 A**
	20	15	10	6	4	2	15	13	10	6	4	2	1	**25 A**
	34	27	20	10	6	4	28	25	20	11	8	5	3	**40 A**
	53	40	28	15	10	6	43	38	30	17	12	7	5	**63 A**

I_B : value of current drawn by each lamp at its rated operational voltage.
C : unit capacitance for each lamp.
I_B and **C** correspond to values normally quoted by lamp manufacturers

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Modular contactors

Contactor selection for lighting circuits

Lighting (maximum number of lamps depending on the power of each unit)

Contactor rating indicated below for a single-phase 230 V circuit (single-pole).

Low pressure sodium vapour lamps

	Non corrected						With parallel correction						Contactor rating
P in W	18	35	55	90	135	180	18	35	55	90	135	180	–
I_B in A	0.35	1.4	1.4	2.1	3.1	3.1	0.35	0.6	0.6	0.9	0.9	0.9	–
C in µF	–	–	–	–	–	–	5	20	20	26	45	40	–
Maximum	18	4	5	3	2	2	14	3	3	2	1	1	**16A**
number	34	9	9	6	4	4	21	5	5	4	2	2	**25 A**
of lamps	57	14	14	9	6	6	40	10	10	8	4	5	**40 A**
	91	24	24	19	10	10	60	15	15	11	6	7	**63 A**

High pressure sodium vapour lamps

	Non corrected					With parallel correction					Contactor rating
P in W	70	150	250	400	1000	70	150	250	400	1000	–
I_B in A	1	1.8	3	4.4	10.3	0.6	0.7	1.5	2.5	6	–
C in µF	–	–	–	–	–	12	12	32	25	45	–
Maximum	8	4	2	1	–	6	6	2	2	1	**16 A**
number	12	7	4	3	1	9	9	3	4	2	**25 A**
of lamps	20	13	8	5	2	18	18	6	8	4	**40 A**
	32	18	11	8	3	25	25	9	12	6	**63 A**

Metal iodine or halogen vapour lamps

	Non corrected						With parallel correction							Contactor rating
P in W	35	70	150	250	400	1000	39	70	150	250	400	1000	2000	–
I_B in A	0.3	0.5	1	1.5	2.5	6	0.3	0.5	1	1.5	2.5	6	5.5	–
C in µF	–	–	–	–	–	–	6	12	20	32	45	85	60	–
Maximum	27	16	8	5	3	1	12	6	4	3	2	–	1	**16 A**
number	40	24	12	8	5	2	18	9	6	4	3	1	2	**25 A**
of lamps	68	42	20	14	8	4	31	16	10	7	5	3	3	**40 A**
	106	64	32	21	13	5	50	25	15	10	7	4	5	**63 A**

Incandescent and halogen lamps

									Contactor rating
P in W	60	75	100	150	200	300	500	1000	–
I_B in A	0.26	0.32	0.44	0.65	0.87	1.30	2.17	4.4	–
Maximum	30	25	19	12	10	7	4	2	**16A**
number	45	38	28	18	14	10	6	3	**25 A**
of lamps	85	70	50	35	26	18	10	6	**40 A**
	125	100	73	50	37	25	15	8	**63 A**

Halogen lamps used with transformer

					Contactor rating
P in W	60	80	105	150	–
I_B in A	0.26	0.35	0.45	0.65	–
Maximum	9	8	6	4	**16 A**
number	14	12	9	6	**25 A**
of lamps	27	23	18	13	**40 A**
	40	35	27	19	**63 A**

I_B : value of current drawn by each lamp at its rated operational voltage.
C : unit capacitance for each lamp.
I_B and **C** correspond to values normally quoted by lamp manufacturers.

Modular contactors

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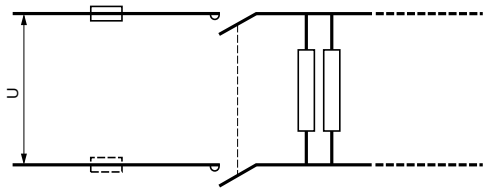
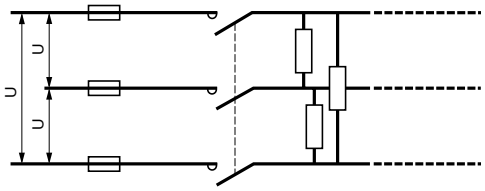
Selection for heating circuits

Heating (AC-7a)

Single-phase, 2-pole switching



3-phase switching



Heating by resistive elements or by infra-red radiators, convectors or radiators, heating ducts, industrial furnaces. The current peak between the hot and cold states must not exceed 2 to 3 In at the moment of switch-on.

Maximum power in kW according to electrical durability

Electrical durability in operating cycles	100 x 10^3	150 x 10^3	200 x 10^3	500 x 10^3	10^6	Contactor rating
Single-phase switching 230 V (2-pole)	3.5	3	2.2	1	0.8	**16 A**
	5.4	4.6	3.5	1.6	1.2	**25 A**
	8.6	7.4	5.6	2.6	1.9	**40 A**
	13.6	11.6	8.8	4	3	**63 A**
	21.6	18.4	14	6.4	4.8	**100 A**
3-phase switching 400 V (3-pole)	10	9	6.5	3.2	2.2	**16 A**
	16	14	10	5	3.5	**25 A**
	26	22	17	7.5	6	**40 A**
	41	35	26.5	12	9	**63 A**
	64.8	55.2	42	19.2	14.4	**100 A**

Modular contactors

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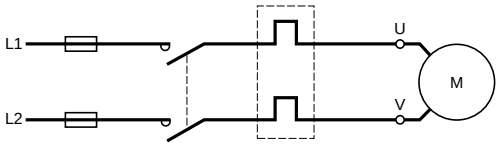
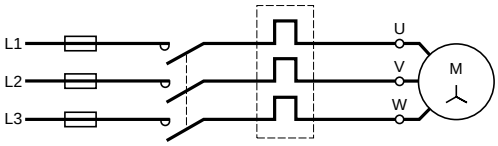
Selection for motor control

Motor control (AC-7b)

Single-phase circuit, 230 V



3-phase circuit, 400 V



Maximum power in kW

230 V single-phase capacitor motor (2-pole)	400 V 3-phase motor	Contactor rating (Ith)
0.55	2.2	**16 A**
1.1	4	**25 A**
2.2	7.5	**40 A**
4	11	**63 A**

Standard contactors, type GC

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Characteristics

Type			GC16	GC25	GC40	GC63	GC100
Environment							
Rated insulation voltage (Ui)	Conforming to IEC/EN 61095	**V**	500				
	Conforming to VDE 0110	**V**	500				
Rated impulse withstand voltage (Uimp)		**kV**	4 in enclosure				
Conforming to standards			IEC/EN 61095, VDE 0660 and IEC/EN 60947-5-1 for auxiliary contacts				
Approvals			NF- USE, VDE, CEBEC, ÖVE				
Degree of protection	Conforming to VDE 0106		Protection against direct finger contact (IP 20 open, IP 40 in enclosure)				
Protective treatment	Standard version		"TC"				
Ambient air temperature around the device	Storage	**°C**	- 40…+ 70				
	Operation	**°C**	- 5…+ 50 (0.85…1.1 Uc)				
Maximum operating altitude	Without derating	**m**	3000				
Operating positions	Without derating		± 30° in relation to normal vertical mounting position				
Shock resistance 1/2 sine wave = 10 ms	Contactor open		10 g_n				
	Contactor closed		15 g_n				
Vibration resistance 5…300 Hz	Contactor open		2 g_n				
	Contactor closed		3 g_n				
Flame resistance			Conforming to IEC/EN 61095				
Opacity and toxicity of fumes			Conforming to NF F 16-101 and 16-102				
Pole characteristics							
Number of poles			2, 3 or 4				
Rated operational current (Ie) (Ue ≤ 440 V)	In AC-7a (heating)	**A**	16	25	40	63	100
	In AC-7b (motor control)	**A**	5	8.5	15	25	–
Rated operational voltage (Ue)	Up to	**V**	250 two-pole contactors, 415 three and four-pole contactors				
Frequency limits	Of the operational current	**Hz**	400				
Conventional thermal current (Ith)	θ ≤ 50 °C	**A**	16	25	40	63	100
Rated making and breaking capacity	Conforming to IEC/EN 61095 (AC-7b) I rms 400 V 3-phase	**A**	40	68	120	200	–
Permissible short time rating with no current flow for the previous 15 minutes and with θ ≤ 40 °C	For 10 s	**A**	128	200	320	504	800
	For 30 s	**A**	40	62	100	157	250
Short-circuit protection by fuse or circuit breaker U ≤ 440 V	gG fuse	**A**	16	25	40	63	100
	Circuit breaker I^2t 230 V (at 3 kA rms prospective)	**A^2s**	5000	10000	16000	18000	–
	400 V	**A^2s**	9000	14000	17500	20000	–
Average impedance per pole	At Ith and 50 Hz	**mΩ**	2.5	2.5	2	2	2
Power dissipated per pole	For the above operational currents	**W**	0.65	1.6	1.6	1.6	3.2
Maximum cabling c.s.a.							
Flexible cable without cable end	1 conductor	**mm²**	6	6	25	25	35
	2 conductors	**mm²**	4	4	16	16	–
Flexible cable with cable end	1 conductor	**mm²**	6	6	16	16	35
	2 conductors	**mm²**	1.5	1.5	4	4	–
Solid cable without cable end	1 conductor	**mm²**	6	6	25	25	35
	2 conductors	**mm²**	4	4	6	6	10
Tightening torque	Power circuit connections	**N.m**	1.4	1.4	3.5	3.5	5

Standard contactors, type GC

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Characteristics

Type			**GC16, GC25** single or 2-pole	**GC16, GC25** 3 or 4-pole **GC40, GC63** 2-pole	**GC40, GC63** 3 or 4-pole **GC100** 2-pole	**GC100** 4-pole

Control circuit characteristics

Rated control circuit voltage (Uc)	50 or 60 Hz	**V**	12…240 V, for other voltages, please consult your Regional Sales Office			
Control voltage limits ($\theta \leq 50$ °C) 50 Hz coils	Operational		0.85…1.1 Uc			
	Drop out		0.2…0.75 Uc			
Average coil consumption at 20 °C and at Uc ∿ 50 Hz	Inrush	**VA**	15	34	53	106
	Sealed	**VA**	3.8	4.6	6.5	13
Maximum heat dissipation	50/60 Hz	**W**	1.3	1.6	2.1	4.2
Operating times (1)	Closing “C”	**ms**	10…30			
	Opening “O”	**ms**	10…25			
Mechanical durability	In operating cycles		10^6			
Maximum operating rate at ambient temperature ≤ 50 °C	In operating cycles per hour		300			
Maximum cabling c.s.a.						
Flexible cable without cable end	1 or 2 conductors	**mm²**	2.5			
Flexible cable with cable end	1 conductor	**mm²**	2.5			
	2 conductors	**mm²**	1.5			
Solid cable without cable end	1 or 2 conductors	**mm²**	1.5			
Tightening torque		**N.m**	1.4			

Instantaneous auxiliary contact characteristics

Rated operational voltage (Ue)	Up to	**V**	250
Rated insulation voltage (Ui)	Conforming to IEC/EN 60947-5-1	**V**	500
	Conforming to VDE 0110	**V**	500
Conventional thermal current (Ith)	For ambient $\theta \leq 50$ °C	**A**	5
Mechanical durability	Operating cycles		10^6
Maximum cabling c.s.a.	Flexible or solid conductor	**mm²**	2.5
Tightening torque		**N.m**	1.4

Standard contactors, type GC

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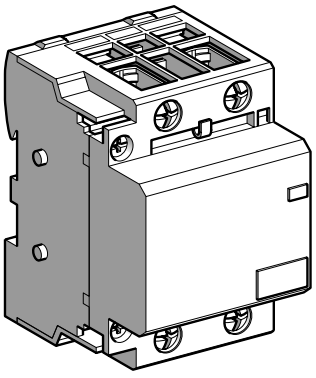
References

GC-2520

GC-4040



GC-10020

Maximum current rating category AC-1	Number of poles		Number of 17.5 mm modules	Sold in lots of	Basic ordering reference. Complete with code indicating control circuit voltage (2)	Weight
A						kg
16	1	–	1	12	**GC-1610●●**	0.110
	2	–	1	12	**GC-1620●●**	0.110
	4	–	2	6	**GC-1640●●**	0.230
	1	1	1	12	**GC-1611●●**	0.110
	2	2	2	6	**GC-1622●●**	0.230
25	1	–	1	12	**GC-2510●●**	0.110
	2	–	1	12	**GC-2520●●**	0.110
	3	–	2	6	**GC-2530●●**	0.230
	4	–	2	6	**GC-2540●●**	0.230
	1	1	1	12	**GC-2511●●**	0.110
	2	2	2	6	**GC-2522●●**	0.230
	–	2	1	12	**GC-2502●●**	0.110
	–	4	2	6	**GC-2504●●**	0.230
40	2	–	2	6	**GC-4020●●**	0.230
	3	–	3	4	**GC-4030●●**	0.350
	4	–	3	4	**GC-4040●●**	0.390
	1	1	2	6	**GC-4011●●**	0.230
	2	2	3	4	**GC-4022●●**	0.390
	–	2	2	6	**GC-4002●●**	0.230
	–	4	3	4	**GC-4004●●**	0.390
63	2	–	2	6	**GC-6320●●**	0.340
	3	–	3	4	**GC-6330●●**	0.390
	4	–	3	4	**GC-6340●●**	0.390
	1	1	2	6	**GC-6311●●**	0.340
	2	2	3	4	**GC-6322●●**	0.390
	–	2	2	6	**GC-6302●●**	0.340
	–	4	3	4	**GC-6304●●**	0.390
100	2	–	3	4	**GC-10020●●**	0.680
	4	–	6	2	**GC-10040●●**	0.780

(2) Standard control circuit voltages.

Volts	**12**	**24**	**48**	**110**	**220/240**
50 Hz	J5	B5	E5	F5	M5
60 Hz	J6	B6	E6	F6	M6

Standard contactors, type GC

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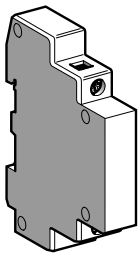
References

Instantaneous auxiliary contact blocks

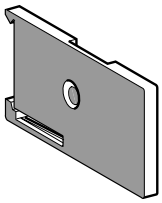
GAC-05●●

Number of contacts	Number of poles			Ordering reference	Weight kg
2	1	1	–	**GAC-0521**	0.016
	–	2	–	**GAC-0531**	0.016
	–	–	1	**GAC-0511**	0.016

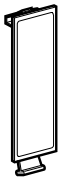
Accessories



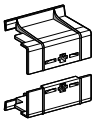
GAP-2●



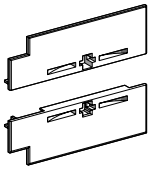
GAC-5



GA1-C●



GW-254



GW-63●

Description	For use on contactor	Number of modules	Operational voltage in V	Sold in lots of	Unit ordering reference	Weight kg
Coil suppression block comprising 2 RC circuits	–	1	24…48	10	**GAP-21**	0.090
			48…110	10	**GAP-22**	0.090
			220…240	10	**GAP-23**	0.090
Ventilation 1/2 module clips onto ⊓ rail	–	1/2	–	10	**GAC-5**	0.015
Cover plates	–	1/2	–	10	**GA1-C7**	0.001
		1	–	10	**GA1-C6**	0.001
Sealable terminal covers (1 top part + 1 bottom part)	16 or 25 A 3 or 4 contacts	2	–	1	**GW-254**	0.040
	40 or 63 A 2 contacts	2	–	1	**GW-632**	0.040
	40 or 63 A 3 or 4 contacts	3	–	1	**GW-634**	0.050

Selection :
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References :
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Dimensions and schemes :
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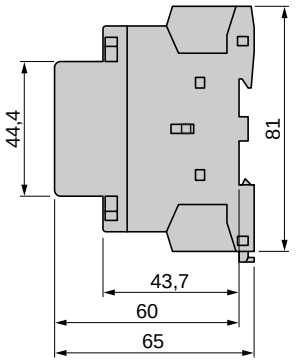
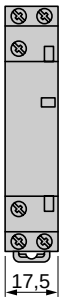
Standard contactors, type GC

Dimensions

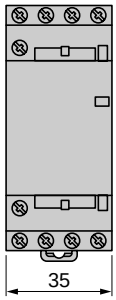
Contactors
Common side view



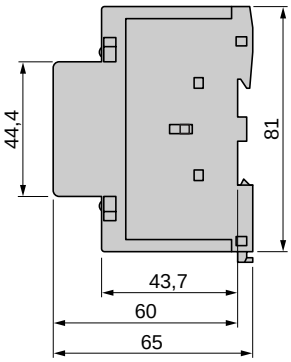
GC-1610, 1611, 1620
GC-2502, 2510, 2511, 2520
1 module

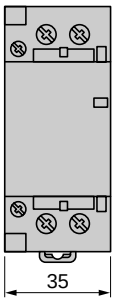


GC-1622, 1640
GC-2504, 2522, 2530, 2540
2 modules

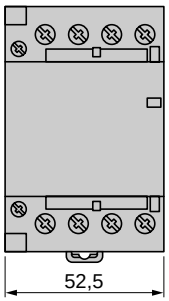


GC-4002, 4011, 4020
GC-6302, 6311, 6320
2 modules

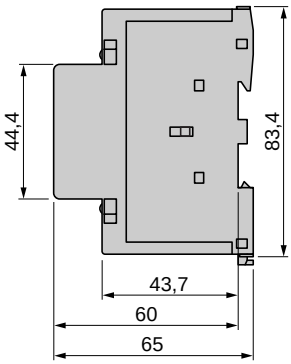


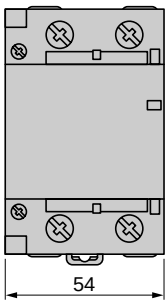


GC-4004, 4022, 4030, 4040
GC-6304, 6322, 6330, 6340
3 modules

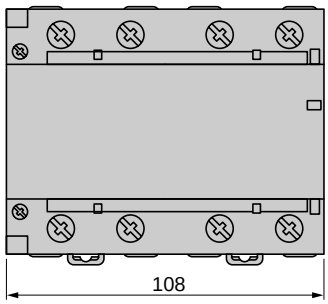


GC-10020
3 modules





GC-10040
6 modules



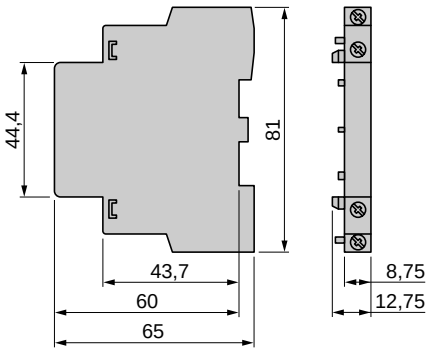
Selection :
pages 7/4 to 7/7
Characteristics :
pages 7/8 and 7/9
References :
pages 7/10 and 7/11
Dimensions :
page 7/12

Standard contactors, type GC

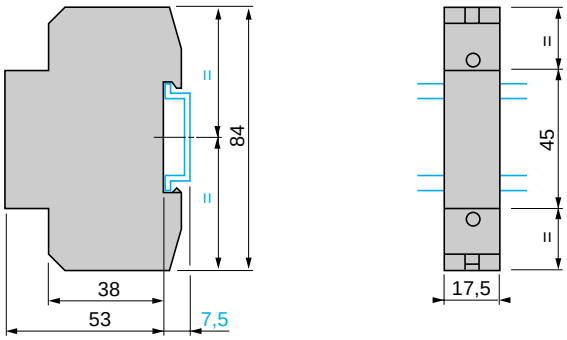
Dimensions, schemes

Dimensions

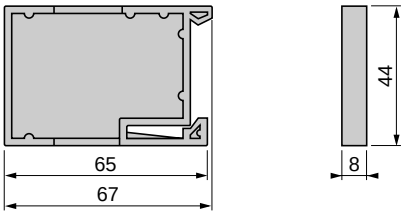
Auxiliary contacts
GAC-0511, 0531 and 0521



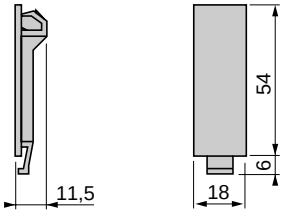
Coil suppression block
GAP-21, 22, and 23



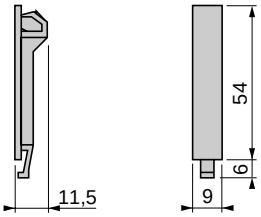
Clip-on ventilation module
GAC-5



Cover plates
GA1-C6



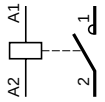
GA1-C7



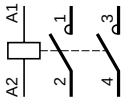
Schemes

contactors

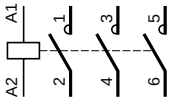
GC-●●10



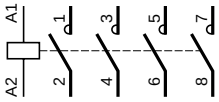
GC-●●20



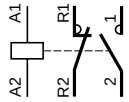
GC-●●30



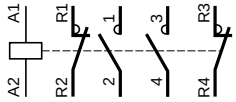
GC-●●40



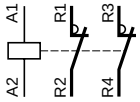
GC-●●11



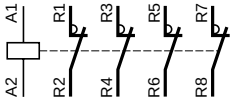
GC-●●22



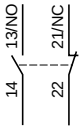
GC-●●02



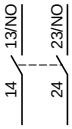
GC-●●04



Auxiliary contacts
GAC-0521



GAC-0531



GAC-0511