



Relays

Applications



- Switching of lighting, heating, etc.
- Galvanic insulation of i.e. status signalisation lamps from a (high) power (high voltage) circuit.
- Galvanic insulation of PLC-inputs or outputs to avoid destruction through excessive voltage.

Features

- Besides the normal operation through electrically energising the coil, manual operation is possible at all times.
- The switch position is visualised by the position of the front handle.
- The safety terminals are equipped with captive Pozidriv screws and have IP20 protection degree.
- Add-on auxiliary contacts available.
- Because of the advanced product design, no spacers are needed.
- Increased safety: sealing caps for both coil and terminal are available.

Function

Relays are electromechanically controlled switches used to control low power loads.

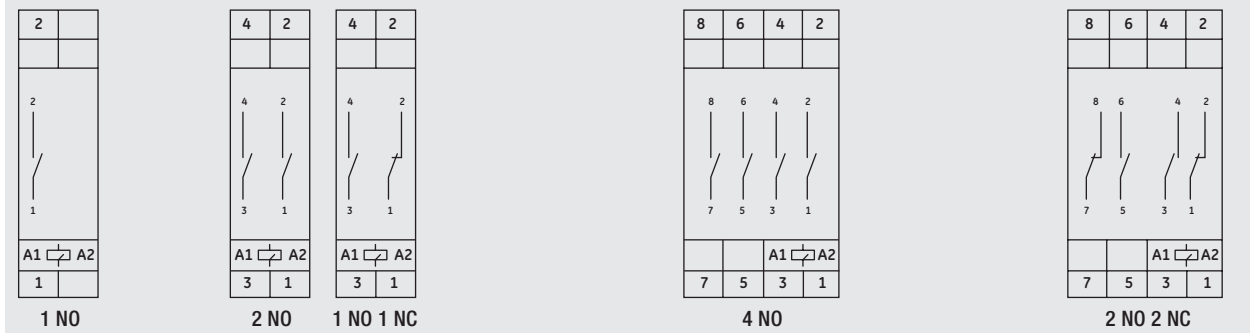
Marking



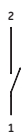
Standards

EN 60947-4-1

Terminal identification



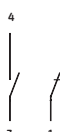
Relays



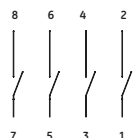
Nominal current	Contact combination	Coil voltage AC	Coil voltage DC	Number of modules	Cat. No.	Ref. No.	Pack.
16A	1NO	8	-	1	VFR+1016A5	686220	12
16A	1NO	12	6	1	VFR+1016J5	686223	12
16A	1NO	24	12	1	VFR+1016B5	686221	12
16A	1NO	48	24	1	VFR+1016E5	686222	12
16A	1NO	230	115	1	VFR+1016M5	686224	12
16A	1NO	240	120	1	VFR+1016P5	686225	12



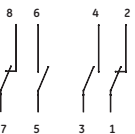
16A	1NO 1NC	8	-	1	VFR+1116A5	686226	12
16A	1NO 1NC	12	6	1	VFR+1116J5	686229	12
16A	1NO 1NC	24	12	1	VFR+1116B5	686227	12
16A	1NO 1NC	48	24	1	VFR+1116E5	686228	12
16A	1NO 1NC	230	115	1	VFR+1116M5	686230	12
16A	1NO 1NC	240	120	1	VFR+1116P5	686231	12



16A	2NO	8	-	1	VFR+2016A5	686232	12
16A	2NO	12	6	1	VFR+2016J5	686235	12
16A	2NO	24	12	1	VFR+2016B5	686233	12
16A	2NO	48	24	1	VFR+2016E5	686234	12
16A	2NO	230	115	1	VFR+2016M5	686236	12
16A	2NO	240	120	1	VFR+2016P5	686237	12

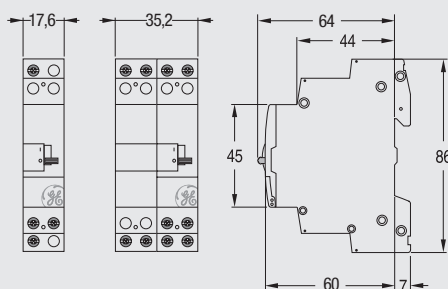


16A	2NO 2NC	8	-	2	VFR+2216A5	686238	6
16A	2NO 2NC	12	6	2	VFR+2216J5	686241	6
16A	2NO 2NC	24	12	2	VFR+2216B5	686239	6
16A	2NO 2NC	48	24	2	VFR+2216E5	686240	6
16A	2NO 2NC	230	115	2	VFR+2216M5	686242	6
16A	2NO 2NC	240	120	2	VFR+2216P5	686243	6



16A	4NO	8	-	2	VFR+4016A5	686244	6
16A	4NO	12	6	2	VFR+4016J5	686247	6
16A	4NO	24	12	2	VFR+4016B5	686245	6
16A	4NO	48	24	2	VFR+4016E5	686246	6
16A	4NO	230	115	2	VFR+4016M5	686248	6
16A	4NO	240	120	2	VFR+4016P5	686249	6

Dimensions



Performance

			Relays
			VFR+
Rated current (according to EN 60947-4-1)			
250VAC (1 & 2 pole) / 400VAC (3 & 4 pole)	A		16
Nominal thermal current (I _{th})	A		16
Number of pole			1 → 4
Contacts			
	NO		1 → 4
	Changeover ("m" contacts)		1 → 4
	NO + NC		1+1 / 2+2
Width (in 17.8mm DIN modules)			
	1P & 2P	Mod.	1
	3P & 4P	Mod.	2
Coil specifications			
Supply voltage : DC/AC ratio ⁽¹⁾			0.5 / 1
Supply voltage range (in % of U _n)	%		85-110
Coil pick-up power	1P & 2P	VA	3.4
	3P & 4P	VA	6.7
Coil power loss - AC	1P & 2P	VA	1.8
	3P & 4P	VA	3.4
Coil power loss - DC	1P & 2P	W	2.1
	3P & 4P	W	3.9
Maximum coil holding voltage time			unlimited
Contact bounce time at closing		sec.	<0.010
Operate and release time (bounce time incl.)			
Pick-up time	NO contact	sec.	< 0.040
(from 0 to U _n)	NC contact	sec.	< 0.020
Drop-out time	NO contact	sec.	< 0.050
(from U _n to 0)	NC contact	sec.	< 0.050
Maximum peak current at closing			
Single phase 250VAC cos $\psi = 0.95$	A		45
3-phase 400V~ cos $\psi = 0.65$	A		60
Maximum peak current at opening			
Single phase 250VAC cos $\psi = 0.95$	A		75
3-phase 400V~ cos $\psi = 0.65$	A		60
Lifetime (in number of operations)⁽²⁾			
Electrical (in AC-1 - At full load)			3 x 10 ⁵
Mechanical			2 x 10 ⁶
Load specifications per phase			
Maximum load AC-1	1P & 2P	kW	3.0
	3P & 4P	kW	8.5
Maximum load AC-5b		kW	1.8
Maximum load AC-7b		kW	0.9
Maximum load AC-3	250VAC	kW	1.5
	400VAC	kW	2.2
Minimum load (under 5V)		W	2
Short-circuit fuse protection		A	20
Maximum lamp load (10³ operations/h)			
Incandesc. & halogen (40 to 200 W lamps)		W	1,800
Fluorescence, compensated (cos $\psi = 0.9$)			
	Serial compensation	VA	1,800
	Parallel compensation	VA	500
Fluorescence, non compensated (cos $\psi = 0.5$)		VA	900
General specifications			
Auxiliary contact add-on (PLS / CTX R)			yes
Need for spacer			no
DIN rail mounting			yes
2-position DIN rail lock			yes
Front handle for manual operation			yes
Permanent ON/OFF			no
Indicator of contact position			yes
Clamping terminals			yes
Unlosable screws			yes
Sealable terminals (coil and load)			yes
Cable cross section (Ø min/max)	Coil	mm ²	1.5 / 10
	Load	mm ²	1.5 / 10
Maximum torque on terminals		Nm	1
Ambient temperature at installation point (min./max.)		°C	-20 / +45

(1) DC supply voltage = AC supply voltage x DC/AC ratio, except for 8VAC and 115VAC (48VDC)

(2) 1 cycle = 2 operations per pole (closing + opening)

Impulse switches and relays: maximum lamp loads

Lamps type	Lamp Watts Power consumption	Relays VFR+	Impulse switches VFS+
Incandescent lamps			
Max. load 230VAC		1800 W	3000 W
Max. number of lamps	15 W	120	200
	25 W	72	120
	40 W	45	75
	60 W	30	50
	75 W	24	40
	100 W	18	30
	150 W	12	20
	200 W	9	15
	300 W	6	9
	500 W	3	5
Fluor lamp PF uncorrected			
Max. load 230VAC		900 W	1800 W
Max. number of lamps	18 W	50	81
	36 W	25	44
	40 W	23	38
	58 W	16	29
	65 W	13	26
Fluor twin lamps			
Max. load 230VAC		1800 W	3000 W
Max. number of lamps	2 x 18 W	50	78
	2 x 36 W	25	38
	2 x 40 W	23	35
	2 x 58 W	16	23
	2 x 65 W	13	22
Fluor lamp parallel compensation			
Max. load 230VAC		500 W	2500 W
Max. number of lamps	18 W	17	103
	36 W	13	55
	40 W	12	50
	58 W	8	34
	65 W	7	30
Halogen 230V			
Max. load 230VAC		1800 W	3000 W
Max. number of lamps	150 W	12	20
	250 W	7	12
	300 W	6	10
	400 W	4	7
	500 W	3	6
	1000 W	2	3
HP sodium vapour			
Max. load 230VAC		800 W	1200 W
Max. number of lamps	70 W	10	15
	150 W	5	8
	250 W	3	4
	400 W	2	3
	1000 W	-	1
LP sodium vapour			
Max. load 230VAC		400 W	1400 W
Max. number of lamps	55 W	6	27
	90 W	4	16
	135 W	3	11
	180 W	2	8
	185 W	2	8
HP mercury vapour			
Max. load 230VAC		800 W	1200 W
Max. number of lamps	50 W	16	19
	80 W	10	15
	125 W	7	9
	250 W	3	4
	400 W	2	3
	1000 W	-	1
VLV halogen			
Max. load 230VAC		1500 W	2300 W
Max. number of lamps	20 W	72	116
	50 W	29	46
	75 W	20	31
	100 W	15	24
	150 W	10	15
	200 W	7	12
	300 W	5	7
Electronic reactor			
Max. load 230VAC		1000 W	1600 W
Max. number of lamps	1 x 18 W	38	83
	1 x 36 W	30	46
	1 x 58 W	17	31
	2 x 18 W	19	40
	2 x 36 W	15	23
	2 x 58 W	8	14