



## Function

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

## Marking



## 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.

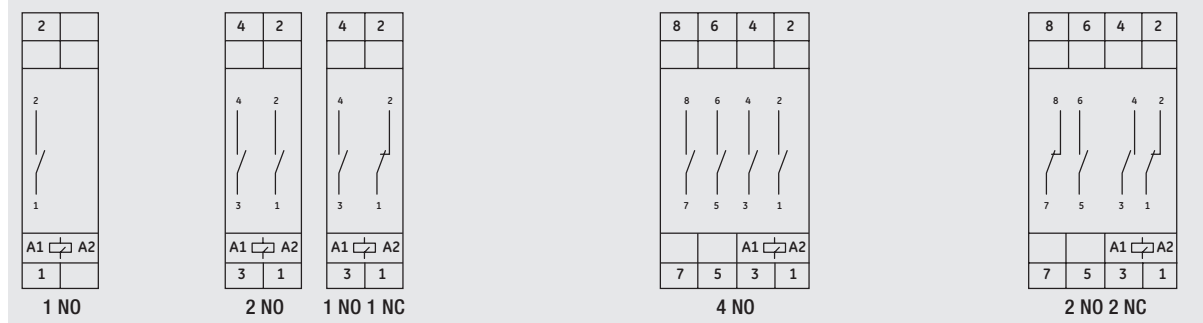
## Features

- 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.

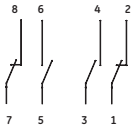
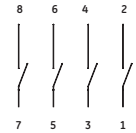
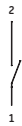
## Standard

EN 60947-4-1

## Terminal identification

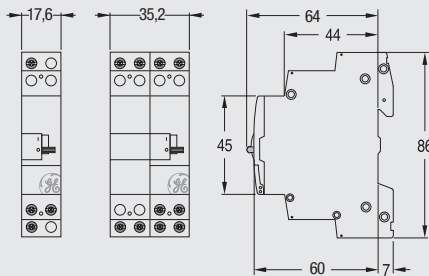


## Relays



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



## Relays: Performance

			Relays
			VFR+
<b>Rated current (according to EN 60947-4-1)</b>			
250VAC (1 & 2 pole) / 400VAC (3 & 4 pole)	A		16
Nominal thermal current (I <sub>th</sub> )	A		16
Number of pole			1 → 4
<b>Contacts</b>			
	NO		1 → 4
	Changeover ("m" contacts)		1 → 4
	NO + NC		1+1 / 2+2
<b>Width (in 17.8mm DIN modules)</b>			
	1P & 2P	Mod.	1
	3P & 4P	Mod.	2
<b>Coil specifications</b>			
Supply voltage: DC/AC ratio <sup>(1)</sup>			0.5 / 1
Supply voltage range (in % of U <sub>n</sub> )	%		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
<b>Contact bounce time at closing</b>	sec.		<0.010
<b>Operate and release time (bounce time incl.)</b>			
Pick-up time	NO contact	sec.	< 0.040
(from 0 to U <sub>n</sub> )	NC contact	sec.	< 0.020
Drop-out time	NO contact	sec.	< 0.050
(from U <sub>n</sub> to 0)	NC contact	sec.	< 0.050
<b>Maximum peak current at closing</b>			
Single phase 250VAC cos φ = 0.95	A		45
3-phase 400V~ cos φ = 0.65	A		60
<b>Maximum peak current at opening</b>			
Single phase 250VAC cos φ = 0.95	A		75
3-phase 400V~ cos φ = 0.65	A		60
<b>Lifetime (in number of operations)<sup>(2)</sup></b>			
Electrical (in AC-1 - At full load)			3 x 10 <sup>5</sup>
Mechanical			2 x 10 <sup>6</sup>
<b>Load specifications per phase</b>			
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
<b>Maximum lamp load (10<sup>3</sup> operations/h)</b>			
Incandesc. & halogen (40 to 200W lamps)		W	1,800
Fluorescence, compensated (cos φ = 0.9)			
	Serial compensation	VA	1,800
	Parallel compensation	VA	500
Fluorescence, non compensated (cos φ = 0.5)		VA	900
<b>General specifications</b>			
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 <sup>2</sup>	1.5 / 10
	Load	mm <sup>2</sup>	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	Relays	Impulse switches
	Power consumption	VFR+	VFS+
<b>Incandescent lamps</b>			
Max. load 230V AC		1800W	3000W
Max. number of lamps	15W	120	200
	25W	72	120
	40W	45	75
	60W	30	50
	75W	24	40
	100W	18	30
	150W	12	20
	200W	9	15
	300W	6	9
	500W	3	5
<b>Fluor lamp PF uncorrected</b>			
Max. load 230V AC		900W	1800W
Max. number of lamps	18W	50	81
	36W	25	44
	40W	23	38
	58W	16	29
	65W	13	26
<b>Fluor twin lamps</b>			
Max. load 230V AC		1800W	3000W
Max. number of lamps	2 x 18W	50	78
	2 x 36W	25	38
	2 x 40W	23	35
	2 x 58W	16	23
	2 x 65W	13	22
<b>Fluor lamp parallel compensation</b>			
Max. load 230V AC		500W	2500W
Max. number of lamps	18W	17	103
	36W	13	55
	40W	12	50
	58W	8	34
	65W	7	30
<b>Halogen 230V</b>			
Max. load 230V AC		1800W	3000W
Max. number of lamps	150W	12	20
	250W	7	12
	300W	6	10
	400W	4	7
	500W	3	6
	1000W	2	3
<b>HP sodium vapour</b>			
Max. load 230V AC		800W	1200W
Max. number of lamps	70W	10	15
	150W	5	8
	250W	3	4
	400W	2	3
	1000W	-	1
<b>LP sodium vapour</b>			
Max. load 230V AC		400W	1400W
Max. number of lamps	55W	6	27
	90W	4	16
	135W	3	11
	180W	2	8
	185W	2	8
<b>HP mercury vapour</b>			
Max. load 230V AC		800W	1200W
Max. number of lamps	50W	16	19
	80W	10	15
	125W	7	9
	250W	3	4
	400W	2	3
	1000W	-	1
<b>VLV halogen</b>			
Max. load 230V AC		1500W	2300W
Max. number of lamps	20W	72	116
	50W	29	46
	75W	20	31
	100W	15	24
	150W	10	15
	200W	7	12
	300W	5	7
<b>Electronic reactor</b>			
Max. load 230V AC		1000W	1600W
Max. number of lamps	1 x 18W	38	83
	1 x 36W	30	46
	1 x 58W	17	31
	2 x 18W	19	40
	2 x 36W	15	23
	2 x 58W	8	14