



DILET, ETR Timing Relays, measuring relays and EMR Monitoring relays

The range of electronic time relays comprises three different construction types, adapted for the most widely varying applications. The time relays are mounted on a DIN top-hat rail.

The measurement and monitoring relays monitor fluids, currents, phases, resistances or voltages.

Electronic timing relay DILET

45 mm contactor width +++ Numerous time relay functions +++ Ideal when combined with contactors

Electronic timing relay ETR2

17.5 mm width (one division unit = 18 mm) +++ With 45 mm cap dimensions, suitable for integration into distribution boards +++ Numerous time relay functions

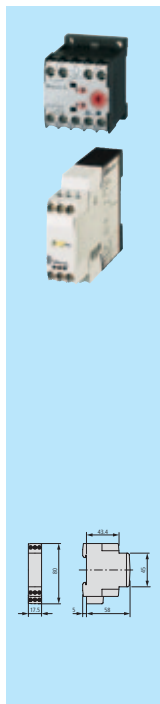
Electronic timing relay ETR4

Robust industrial construction, 22.5 mm width +++ Numerous time relay functions

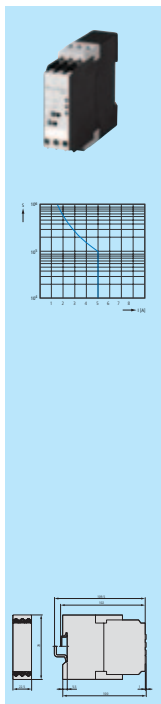
EMR Electronic measuring and monitoring relays

Monitors levels of conductive fluids, current, phase sequence and position, insulation resistance, asymmetry, over- and undervoltage +++ All devices in 22.5 mm or 45 mm width +++ Phase monitor at 580 V AC in 45 mm width

Timing relay, measuring relay and monitoring relay



DILET, ETR timing relay	
Ordering	
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EMR Measuring and monitoring relays	
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Our product range of measurement and monitoring relays has been partially updated.

Old device	Old article no.	New device	New article no.
EMR4-W500-2-C	221785	EMR5-W500-1-D	134221
EMR4-W500-2-D	221786	EMR5-W500-1-D	134221
EMR4-W580-2-D	221787	EMR5-AWM720-2	134236
EMR4-A400-1	221788	EMR5-A400-1	134222
EMR4-AW300-1-C	290243	EMR5-AW300-1-C	134223
EMR4-AW500-1-D	290244	EMR5-AW500-1-D	134224
EMR4-AWN170-1-E	290245	EMR5-AWN170-1-E	134225
EMR4-AWN280-1-F	290246	EMR5-AWN280-1-F	134226
EMR4-W300-1-C	290182	EMR5-W300-1-C	134227
EMR4-W500-1-D	290183	EMR5-W500-1-D	134221
EMR4-W380-1	290184	EMR5-W380-1	134228
EMR4-W400-1	290185	EMR5-W400-1	134229
EMR4-A300-1-C	290180	EMR5-A300-1-C	134230
EMR4-A500-1-D	290181	EMR5-A400-1	134222

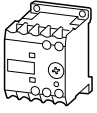

This table provides assistance in replacing EMR4 articles with current EMR5 products.



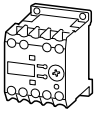

Rated operational current AC-11		Conventional thermal current I_{th} A	Time Range	Voltage range	Part no. Article No.	Price See price list	Std. pack
230 V	400 V						
I_e A	I_e A	A					
A	A						
A	A						

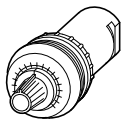




Timing relays DILET


On-delayed
Timing functions → Page 11/8
Component lifespan → Page 11/10

	3	3	6	1.5 - 30 s	24 - 240 V AC, 50/60 Hz 24 - 240 V DC	DILET11-30-A 048878	1 off 
	3	3	6	1.5 - 30 s	400 V AC, 50/60 Hz	DILET11-30-W 048904	
	3	3	6	0.05 - 1 s 0.15 - 3 s 0.5 - 10 s	24 - 240 V AC, 50/60 Hz 24 - 240 V DC	DILET11-M-A 048886	
	3	3	6	3 - 60 s 0.15 - 3 min 0.5 - 10 min 3 - 60 min 0.15 - 3 h 0.5 - 10 h 3 - 60 h	400 V AC, 50/60 Hz	DILET11-M-W 048891	

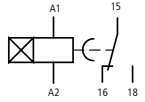
Multi-functional with remote potentiometer
Timing functions → Page 11/8
Component lifespan → Page 11/10

	3	3	6	0.05 - 1 s 0.15 - 3 s 0.2217925 - 10 s	24 - 240 V AC, 50/60 Hz 24 - 240 V DC	DILET70-A 048893	1 off 
	3	3	6	3 - 60 s 0.15 - 3 min 0.5 - 10 min 3 - 60 min 0.15 - 3 h 0.5 - 10 h 3 - 60 h	400 V AC, 50/60 Hz	DILET70-W 048899	

	Resistance R kΩ	Rated power P W	For use with	Part no. Article no.	Price See price list	Std. pack
Remote potentiometer, IP66 	10	≤ 0.5	DILET... ETR4-70	M22-R10K 229491		1 off 
	10	-	DILET... ETR4-70	M22S-R10K 232233		1 off 
Screw adapters For screw fixing 	-	-	EWDIL ETS4-VS3 ETR4	CS-TE 095853		10 off 

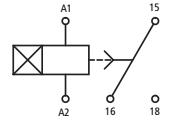
Notes	Information relevant for export to North America
	

Fixed
11, On-delayed

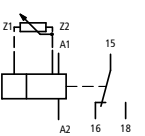


Product Standards
IEC/EN 61812-1; IEC/EN 60947-5-1; UL 508;
CSA-22.2 No. 14-05; CE marking

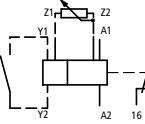
UL File No. E29184
UL CCN NKCR, NKCR7
CSA File No. 12528
CSA Class No. 3211-03
NA Certification UL Listed, CSA Certified
Degree of Protection IEC: IP20, UL/CSA Type: -



Adjustable
11, On-delayed
21, Fleeting contact on energization
42, Flashing
81, Pulse generating
ON-OFF



Adjustable
12, Off-delayed
16, On- and off-delayed
22, Fleeting contact on de-energization
82, Pulse shaping
ON-OFF

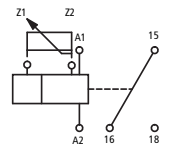



Cable connection with
Y1/Y2, Z1/Z2
Permissible cable length
(cable unshielded, with
cable cross-section
0.5-1.5 mm²):
Two-core cable 250 m
Two-core cable in the
same cable duct with
mains cable, 50/60 Hz 50 m

Product Standards
IEC/EN 61812-1; IEC/EN 60947-5-1; UL 508;
CSA-22.2 No. 14-05; CE marking

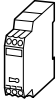
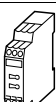
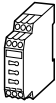
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UL CCN NKCR, NKCR7
CSA File No. 12528
CSA Class No. 3211-03
NA Certification UL Listed, CSA Certified
Degree of Protection IEC: IP20, UL/CSA Type: -

11 ON-DELAYED
21 FLEETING CONTACT ON ENERGIZATION
42 FLASHING
81 PULSE GENERATING CONTACT



Information relevant for export to North America	
	
Product Standards UL File No. E29184 UL CCN NKCR CSA File No. 012528 CSA Class No. 3211-03 NA Certification UL Listed, CSA Certified Degree of Protection UL/CSA part no. 3R, 4X, 12, 13	IEC/EN 60947-5; UL 508; CSA-C22.2 No. 14-05; CSA-C22.2 No. 94-91; CE marking

UL/CSA certification not required

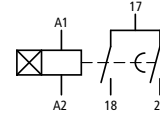
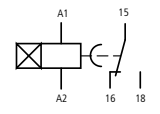
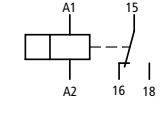
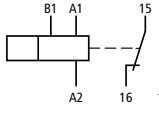
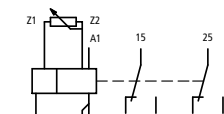
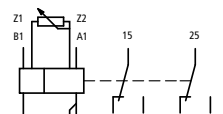
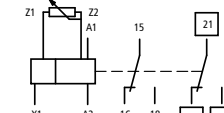
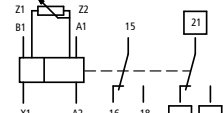
	Rated operational current AC-15		Conventional thermal current I_{th} A	Time Range	24 - 240 V AC, 50/60 Hz 24 - 240 V DC		Std. pack	400 V AC, 50/60 Hz		Std. pack
	230 V I_e A	400 V I_e A			Part no. Article no.	Price See price list		Part no. Article no.	Price See price list	
Electronic timing relays ETR4, 22.5 mm wide										
 Star-delta switching Timing functions → Page 11/8	3	3	6	3 - 60 s	ETR4-51-A 031884		1 off	ETR4-51-W 031885		1 off
 On-delayed Timing functions → Page 11/8	3	3	6	0.05 - 1 s 0.15 - 3 s 0.5 - 10 s 1.5 - 30 s 5 - 100 s 15 - 300 s 1.5 - 30 min 15 - 300 min 1.5 - 30 h 5 - 100 h	ETR4-11-A 031882			ETR4-11-W 031883		
 Multifunctional Timing functions → Page 11/8	3	3	6		ETR4-69-A 031891			ETR4-69-W 031887		
Multifunctional with connection for potentiometer, and two changeover contacts that can be converted to two timed contacts or one non-delayed contact and one timed contact. Timing functions → Page 11/8	3	-	6		ETR4-70-A 031888					

Notes

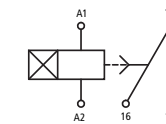
Information relevant for export to North America



Product Standards	IEC/EN 61812-1; IEC/EN 60947-5-1; UL 508; CSA-22.2 No. 14-05; CE marking
UL File No.	E29184
UL CCN	NKCR
CSA File No.	12528
CSA Class No.	3211-03
NA Certification	UL Listed, CSA certified
Degree of Protection	IEC: IP20, UL/CSA Type: -

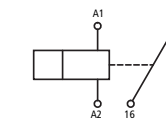
		Notes	
Function	Terminal marking according to EN 50042	Cable connection with B1, Z1/Z2 Permissible cable length (cable unshielded, with cable cross-section 0.5--1.5 mm ²): Two-core cable 250 m Two-core cable in the same cable duct with mains cable, 50/60 Hz 50 m	
Fixed 51, Star-delta			
Function	Terminal marking according to EN 50042		
Fixed 11, On-delayed			
Function	Terminal marking according to EN 50042	Function	Terminal marking according to EN 50042
Adjustable 11, On-delayed 21, Fleeting contact on energization 42, Flashing, pulse initiating 81, Pulse generating ON-OFF		Adjustable 12, Off-delayed 16, On- and off-delayed 22, Fleeting contact on de-energization 82, Pulse shaping ON-OFF	
Function	Terminal marking according to EN 50042	Function	Terminal marking according to EN 50042
A2/X1 linked 11, On-delayed 21, Fleeting contact on energization 42, Flashing, pulse initiating 81, Pulse generating ON-OFF		A2/X1 linked 12, Off-delayed 16, On- and off-delayed 22, Fleeting contact on de-energization 82, Pulse shaping ON-OFF	
A2/X1 not linked 11, On-delayed 21, Fleeting contact on energization 42, Flashing, pulse initiating 81, Pulse generating ON-OFF		A2/X1 not linked 12, Off-delayed 16, On- and off-delayed 22, Fleeting contact on de-energization 82, Pulse shaping ON-OFF	

ETR4-11



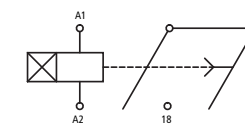
ON-DELAYED

ETR4-69



11 ON-DELAYED
21 FLEETING CONTACT ON ENERGIZATION
42 FLASHING
81 PULSE GENERATING CONTACT

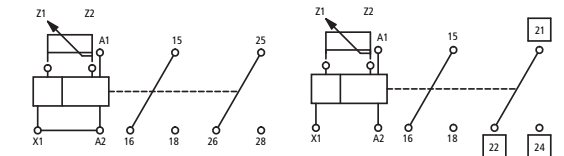
ETR4-51



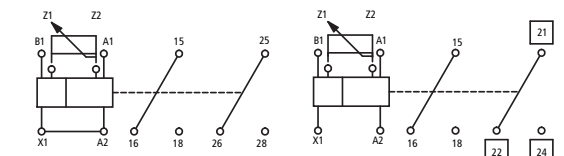
ON-DELAYED

12 OFF-DELAYED
16 ON- and OFF-DELAYED
22 FLEETING CONTACT ON DE-ENERGIZATION
82 PULSE SHAPING CONTACT

ETR4-70



11 ON-DELAYED
21 FLEETING CONTACT ON ENERGIZATION
42 FLASHING
81 PULSE GENERATING CONTACT

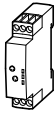


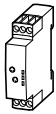
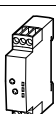
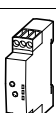
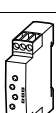
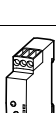


12 OFF-DELAYED
16 ON- and OFF-DELAYED
22 FLEETING CONTACT ON DE-ENERGIZATION
82 PULSE SHAPING CONTACT

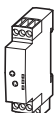


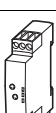
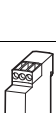
	Rated operation current		Conventional thermal current	Time Range	Voltage range	Part no. Article no.	Price See price list	Std. pack
	N/O 230 V	230 V (N/C)						
	I_e A	I_e A	I_{th} A					

Electronic timing relays ETR2, 17.5 mm wide

One changeover contact

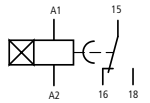
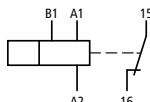
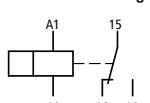
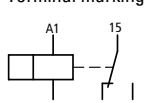
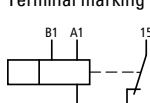
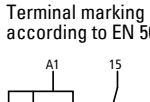
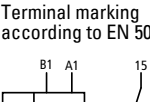
	On-delayed Timing functions → Page 11/8 Load limit curves → Page 11/10	3	–	6	0.05 - 1 s 0.5 - 10 s 5 - 100 s 0.5 - 10 min 5 - 100 min 0.5 - 10 h 5 - 100 h	24 - 240 V AC, 50/60 Hz 24 - 48 V DC	ETR2-11 262684	1 off  
	Off-delayed Timing functions → Page 11/8 Load limit curves → Page 11/10	3	–	6			ETR2-12 262686	
	Fleeting contact on energization Timing functions → Page 11/8 Load limit curves → Page 11/10	3	–	6			ETR2-21 262687	
	Flashing, pulse initiating Timing functions → Page 11/8 Load limit curves → Page 11/10	3	–	6			ETR2-42 262688	
	Flashing, 2 speeds (ON/OFF times variable) Timing functions → Page 11/8 Load limit curves → Page 11/10	3	–	6			ETR2-44 262730	
	Multifunction relay Timing functions → Page 11/8 Load limit curves → Page 11/10	3	–	6			ETR2-69 262689	

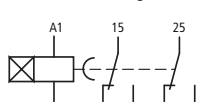
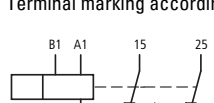


Two changeover contacts

	On-delayed Timing functions → Page 11/8 Load limit curves → Page 11/10	3	–	6	0.05 - 1 s 0.5 - 10 s 5 - 100 s 0.5 - 10 min 5 - 100 min 0.5 - 10 h 5 - 100 h	24 - 240 V AC, 50/60 Hz 24 - 48 V DC	ETR2-11-D 119426	1 off  
	Off-delayed Timing functions → Page 11/8 Load limit curves → Page 11/10	3	–	6			ETR2-12-D 119427	
	Multifunctional Timing functions → Page 11/8 Load limit curves → Page 11/10	3	0.75	6			ETR2-69-D 119428	

Information relevant for export to North America



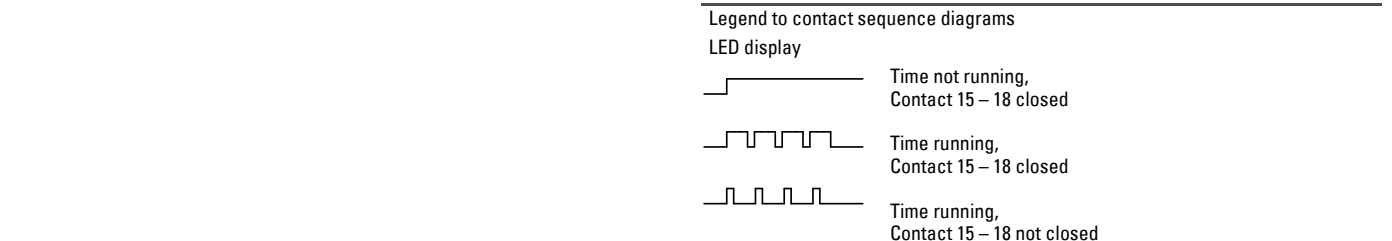
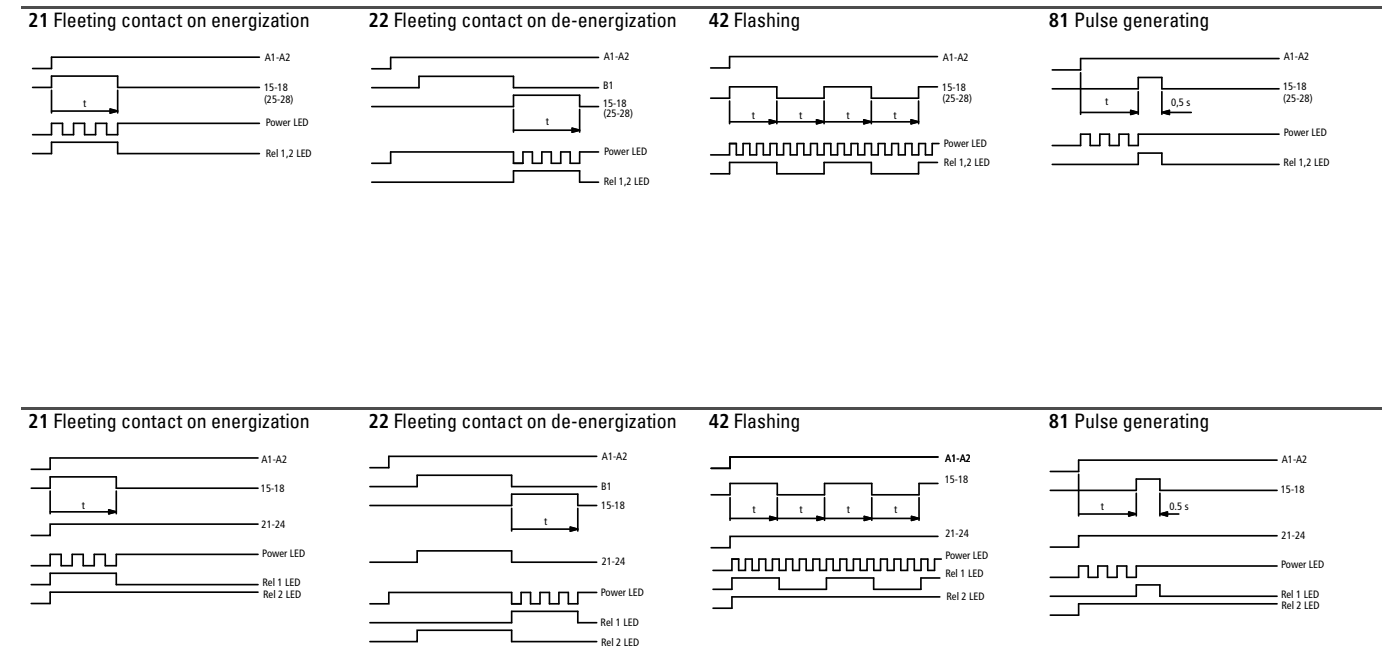
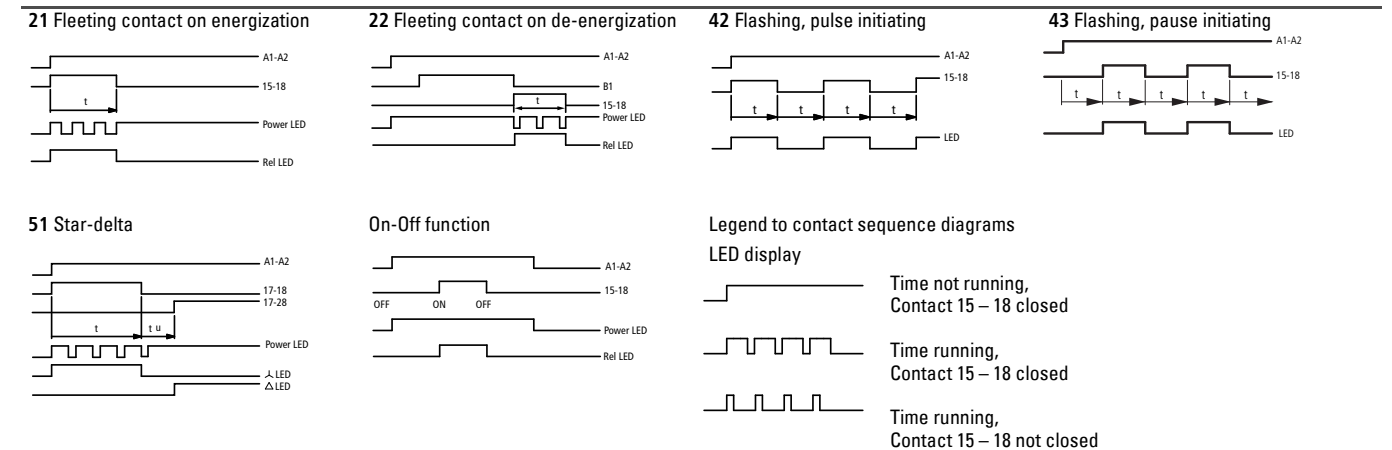
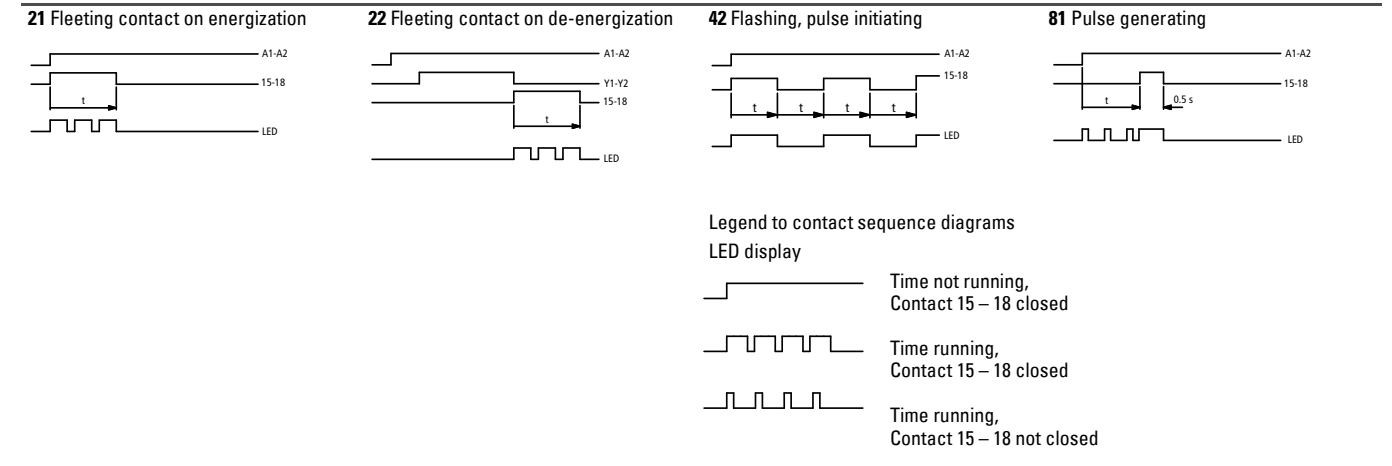
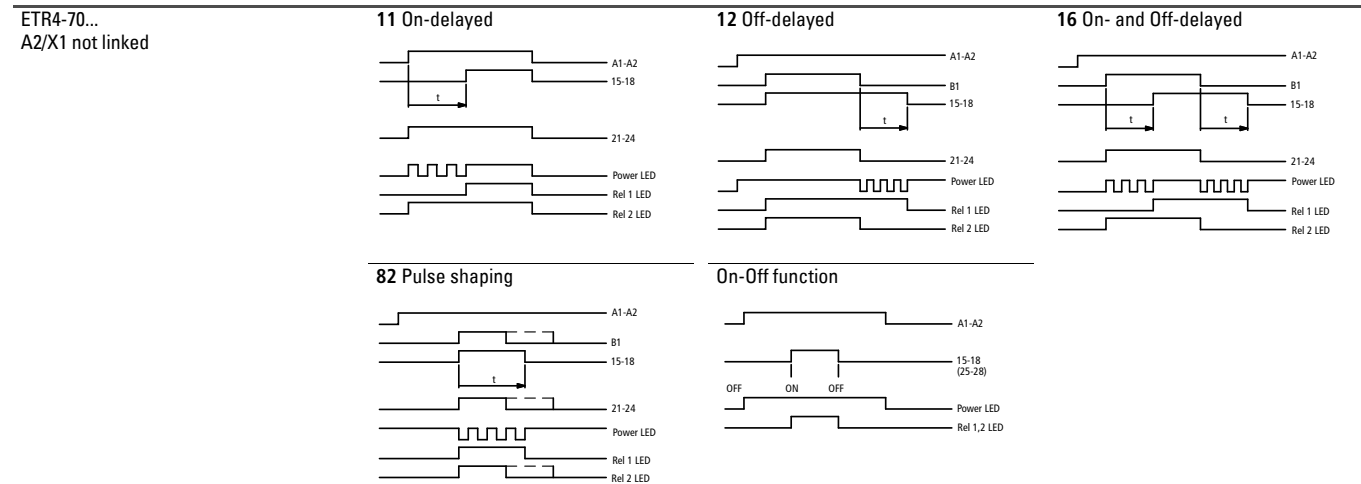
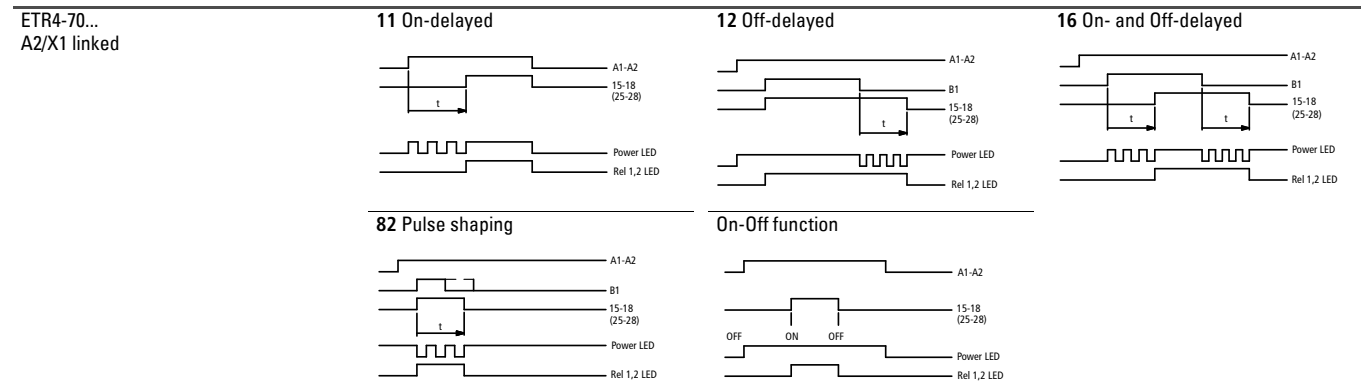
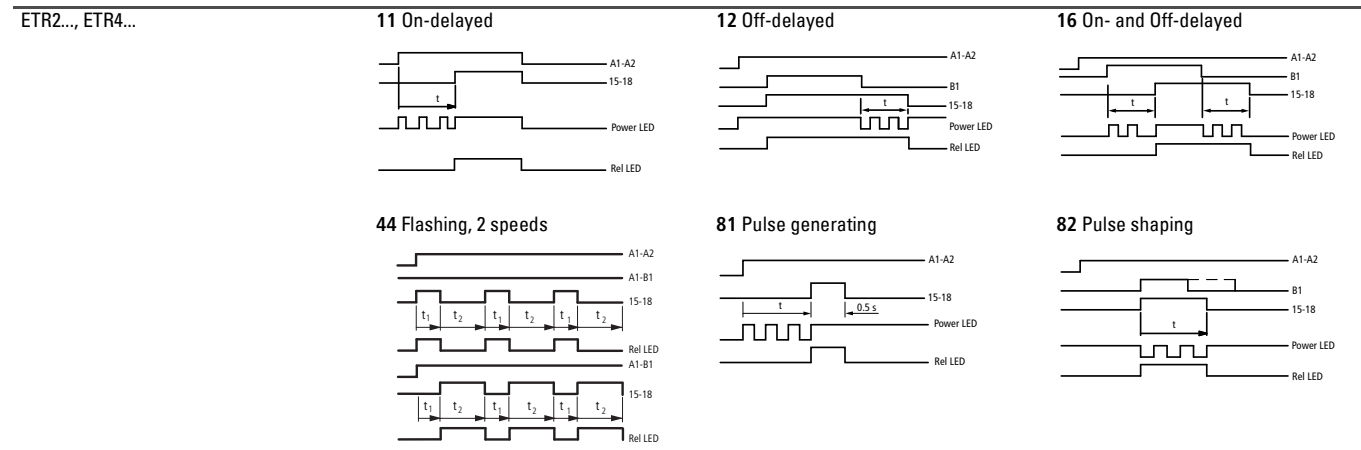
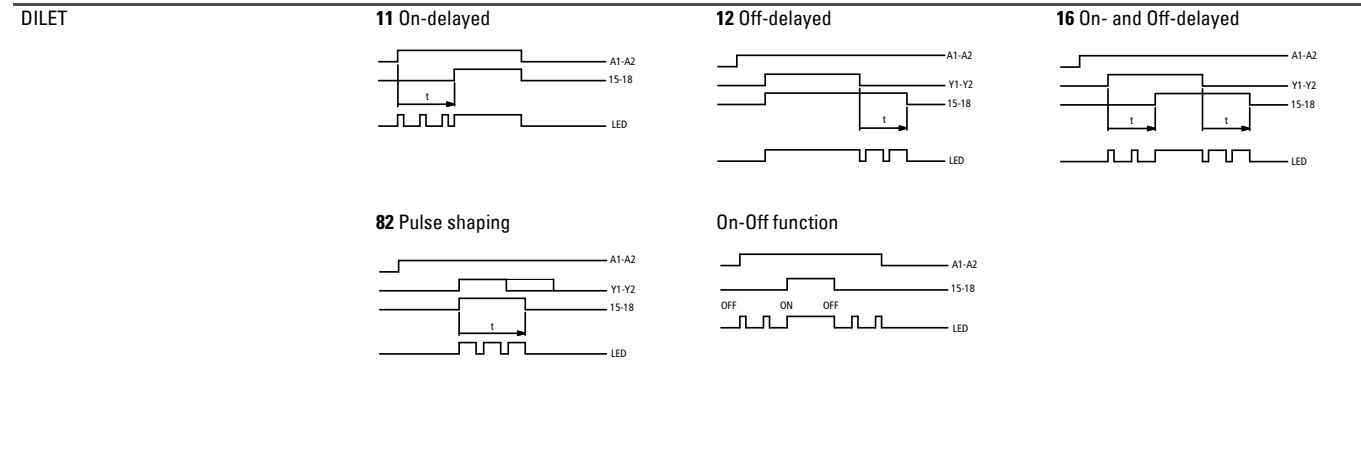
Function Fixed 11, On-delayed	Terminal marking according to EN 50042 	Product Standards IEC/EN 61812-1; IEC/EN 60947-5-1; UL 508; CSA-22.2 No. 14-05; CE marking UL File No. E29184 UL CCN NKCR, NKCR7 CSA File No. UL report valid CSA Class No. 3211-03 NA Certification UL Listed, Certified by UL for use in Canada Degree of Protection IEC: IP20, UL/CSA Type: -
Function Fixed 12, Off-delayed	Terminal marking according to EN 50042 	
Function Fixed 21, Fleeting contact on energization	Terminal marking according to EN 50042 	
Function Fixed 42, Flashing, pulse initiating	Terminal marking according to EN 50042 	
Function Fixed 44, Flashing, 2 variable times Can be set to either pulse or pause initiating	Terminal marking according to EN 50042 	
Function Adjustable 11, On-delayed 21, Fleeting contact on energization 42, Flashing, pulse initiating 43, Flashing, pause initiating	Terminal marking according to EN 50042 	Function Adjustable 12, Off-delayed 22, Fleeting contact on de-energization 82, Pulse shaping
		Terminal marking according to EN 50042 

Function Fixed 11, On-delayed	Terminal marking according to EN 50042 	Product Standards IEC/EN 61812-1; IEC/EN 60947-5-1; UL 508; CSA-22.2 No. 14-05; CE marking UL File No. E29184 UL CCN NKCR, NKCR7 CSA File No. UL report valid CSA Class No. 3211-03 NA Certification UL Listed, Certified by UL for use in Canada Degree of Protection IEC: IP20, UL/CSA Type: -
Function Fixed 12, Off-delayed	Terminal marking according to EN 50042 	
Function Adjustable 11, On-delayed 21, Fleeting contact on energization 42, Flashing, pulse initiating 43, Flashing, pause initiating	Terminal marking according to EN 50042 	Function Adjustable 12, Off-delayed 22, Fleeting contact on de-energization 82, Pulse shaping
		Terminal marking according to EN 50042 

Engineering

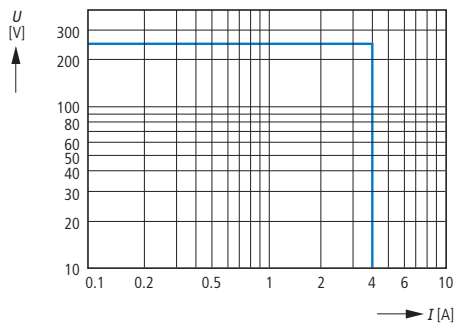
Electronic timing relays

Contact sequence diagram

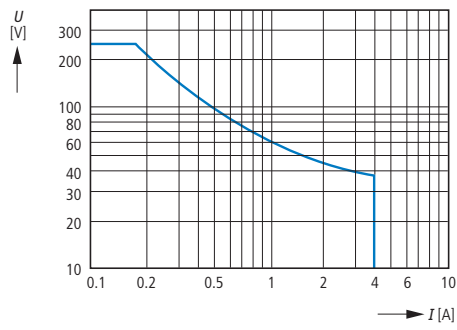


Load limit curves, ETR2-11/12/21/42/44/69

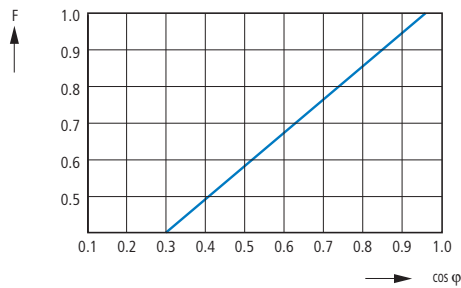
AC load (resistive)



DC load (resistive)

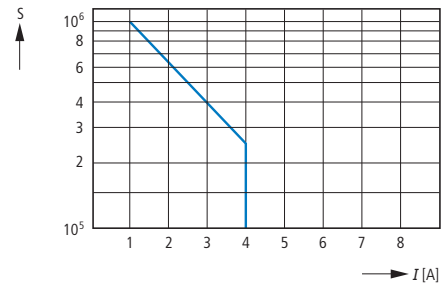


Derating factor with inductive AC load



Derating factor F with inductive load

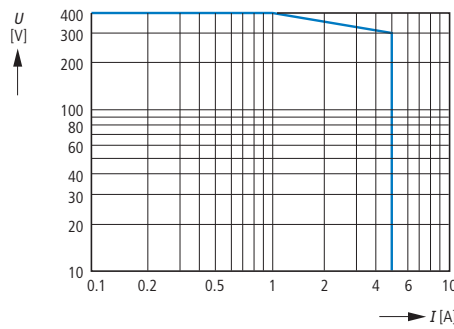
Contact life



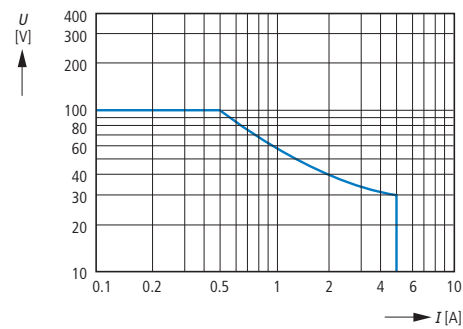
Contact life
Operations S
220 V 50 Hz AC-1
360 operations/h

Load limit curves, ETR2...-D

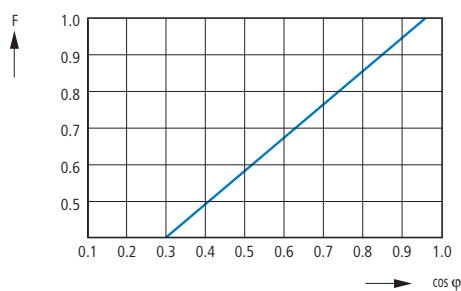
AC load (resistive)



DC load (resistive)

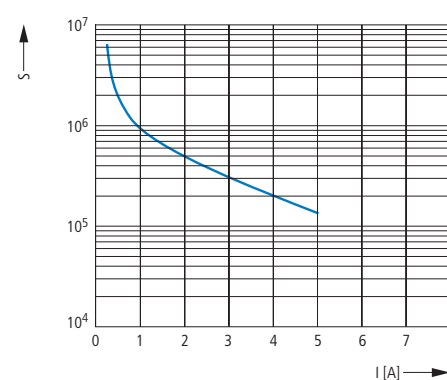


Derating factor with inductive AC load



Derating factor F with inductive load

Contact life

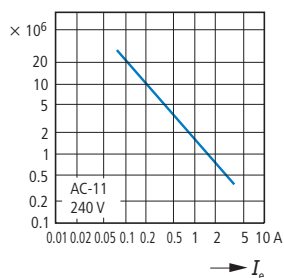


Contact life
Operations S
220 V 50 Hz AC-1
360 operations/h

DILET (AC-11)

Component lifespan (operations)

I_e = Rated operational current



			DILET-A	DILET-W	ETR4-A	ETR4-W
General						
Standards			IEC/EN 61812 VDE 0435	IEC/EN 61812 VDE 0435	IEC/EN 61812 VDE 0435	IEC/EN 61812 VDE 0435
Lifespan, mechanical						
AC operated	Switch operations	x 10 ⁶	30	30	30	30
DC operated	Switch operations	x 10 ⁶	30	30	30	30
Climatic proofing			Damp heat, constant, to IEC 60068-2-78; Damp heat, cyclic, to IEC 60068-2-30			
Ambient temperature						
Storage		°C			-45 - 60	-45 - 60
Open		°C	-20 - 60	-20 - 60	-25 - 60	-25 - 60
Encapsulated		°C	-20 - 45	-20 - 45	-25 - 45	-25 - 45
Mounting position			Any	Any	Any	Any
Mechanical shock resistance (IEC/EN 60068-2-27)						
Half-sinusoidal shock 20 ms						
N/O		g	4	4	4	4
Degree of protection						
Clamps			IP20	IP20	IP20	IP20
Weight			kg	0.09	0.1	0.1
Terminal capacity						
Solid		mm ²	1 x (0.75 - 2.5) 2 x (0.75 - 2.5)	1 x (0.75 - 2.5) 2 x (0.75 - 2.5)	1 x (0.75 - 2.5) 2 x (0.75 - 1.5)	1 x (0.75 - 2.5) 2 x (0.75 - 1.5)
Flexible with ferrule		mm ²	1 x (0.75 - 1.5) 2 x (0.75 - 1.5)	1 x (0.75 - 1.5) 2 x (0.75 - 1.5)	1 x (0.75 - 2.5) 2 x (0.75 - 1.5)	1 x (0.75 - 2.5) 2 x (0.75 - 1.5)
Solid or stranded		AWG	1 x (18 - 14)	1 x (18 - 14)	1 x (20 - 14)	1 x (20 - 14)
Contacts						
Rated impulse withstand voltage			U _{imp}	V AC	6000	6000
Overvoltage category/pollution degree					III/2	III/2
Rated insulation voltage			U _i	V AC	600	600
Rated operating voltage			U _e	V AC	440	440
Safe isolation according to EN 61140						
Between coil and auxiliary contacts				V AC	250	250
Between the auxiliary contacts				V AC	250	250
Making capacity						
AC-14 p.f. $\varphi = 0.3$ 440 V				A	48	48
AC-15 p.f. $\varphi = 0.3$ 220 V				A	50	50
DC-11 L/R ≤ 40 ms				x I _e	1.1	1.1
Breaking capacity						
AC-14 p.f. $\varphi = 0.3$ 440 V				A	3	3
AC-15 p.f. $\varphi = 0.3$ 220 V				A	3	3
DC-11 L/R ≤ 40 ms				x I _e	1.1	1.1
Rated operation current						
AC-14						
440 V	I _e	A	3	3	3	3
AC-15						
220 V (230 V)	I _e	A	3	3	3	3
DC-11 ¹⁾						
L/R max. 15 ms						
24 V	I _e	A	1.5	1.5	1.5	1.5
L/R max. 50 ms						
	I _e	A	1.2	1.2	1.2	1.2
Conventional thermal current			I _{th}	A	6	6
General use						
AC operated				V	250	250
AC operated				A	6	6
Pilot duty						
AC operated			B300	B300	B300	B300
Short-circuit rating without welding ²⁾						
Max. fuse, N/O (normally open)				A gG/gL	6	6
Max. fuse, N/C (normally closed)				A gG/gL	6	6
Max. overcurrent protective device, 220/230 V				Part no.	–	FAZ-B4/1-HI

**Notes**

¹⁾ Making and breaking conditions to DC13, time constant as stated

²⁾ When supplied directly from mains or transformer > 1000 VA

			DILET-A	DILET-W	ETR4-A	ETR4-W
Magnet systems						
Rated operating voltage						
AC			24 - 240	400	24 - 240	400
DC			24 - 240	–	24 - 240	–
Rated frequency			Hz	47 - 63	47 - 63	47 - 63
AC operated	Pick-up	$x U_c$	0.85 - 1.1	0.85 - 1.1	0.85 - 1.1	0.85 - 1.1
DC operated	Pick-up	$x U_c$	0.7 - 1.1	–	0.7 - 1.1	–
Power consumption						
AC pick-up rating		VA	2	0.5	2	0.5
AC holding rating		VA	2	0.5	2	0.5
DC pick-up rating		W	1.8	–	1.8	–
DC holding rating		W	1.8	–	1.8	–
Duty factor			% duty factor	100	100	100
Maximum operating frequency			Ops/h	4000	4000	4000
Minimum command time						
AC		ms	50	50	50	50
DC		ms	30	–	30	–
Repetition accuracy (deviation)			%	≤ 0.5	≤ 0.5	≤ 0.5
Recovery time (after 100% time delay)			ms	70	70	70
Contact changeover time ¹⁾			t_u ms	–	4	4
Electromagnetic compatibility (EMC)						
Electrostatic discharge (IEC/EN 61000-4-2, Level 3, ESD)			kV	–	–	–
Air discharge		kV	8	8	8	8
Contact discharge		kV	6	6	6	6
Electromagnetic fields (IEC/EN 61000-4-3, RFI)			V/m	10	10	10
Radio interference suppression (EN 55011)				EN 55011 Class A	EN 55011 Class A	EN 55011 Class A
Burst pulses (IEC/EN 61000-4-4, level 3)				2	2	2
High-energy pulses (surge) (IEC/EN 61000-4-5, level 2)			kV	1	1	1
Immunity to line-conducted interference (IEC/EN 61000-4-6)			V	10	10	10

Notes ¹⁾ ETR4-51: 50 ms



Technical data

Part no.	ETR2-11(12, 21, 42, 44, 69)	ETR2-69-D	ETR2-11-D/ETR2-12-D
Input circuit - power supply circuit			
Rated control voltage U_s			
A1 - A2	24 - 240 V AC/24 - 48 V DC	12-240 V AC/DC	24 - 240 V AC/24 - 48 V DC
Tolerance of rated control voltage U_s	-15 - +10 %	-15 - +10 %	-15 - +10 %
Rated frequency	DC or 50/60 Hz	DC or 50/60 Hz	DC or 50/60 Hz
Frequency range	DC or 47 - 63 Hz	DC or 47 - 63 Hz	DC or 47 - 63 Hz
Typical current/power consumption			
12 V DC	–	35 mA	–
24 V DC	0.6 W	–	24.1mA
230 V AC	1.3 VA	6.25 mA	31.3 mA
115 V AC	1.3 VA	34.25 mA	20 mA
Mains failure buffering time	min. 30 ms	min. 30 ms	min. 30 ms
Input circuit - control circuit			
Type of actuation	Non-isolated actuation	Non-isolated actuation	Non-isolated actuation
Control input, control function	External time start	External time start	External time start
Parallel connection possible/polarized	Yes/yes	Yes/yes	Yes/yes
Maximum cable length at the control inputs	50 m - 100 pF/m	50 m - 100 pF/m	50 m - 100 pF/m
Minimum control pulse length/duration	30 ms	30 ms	30 ms
Control voltage potential	see Rated control voltage	see Rated control voltage	see Rated control voltage
Power consumption of control input	Max. 4 mA		
12 V DC	–	0.018 mA	–
24 V DC	–	–	0.92 mA
230 V AC	–	0.01 mA	6.43 mA
115 V AC	–	0.01 mA	3.27 mA
Timing circuit			
Time ranges			
7 time ranges 0.05 s - 100 h	0.05 - 1 s, 0.5 - 10 s, 5 - 100 s, 0.5 - 10 min, 5 - 100 min, 0.5 - 10 h, 5 - 100 h	0.05 - 1 s, 0.5 - 10 s, 5 - 100 s, 0.5 - 10 min, 5 - 100 min, 0.5 - 10 h, 5 - 100 h	0.05 - 1 s, 0.5 - 10 s, 5 - 100 s, 0.5 - 10 min, 5 - 100 min, 0.5 - 10 h, 5 - 100 h
Recovery time	< 50 ms	< 50 ms	< 50 ms
Accuracy within the rated control voltage tolerance	$\Delta t < 0.005 \% / V$	$\Delta t < 0.005 \% / V$	$\Delta t < 0.005 \% / V$
Accuracy within temperature range	$\Delta t < 0.06 \% / ^\circ C$	$\Delta t < 0.06 \% / ^\circ C$	$\Delta t < 0.06 \% / ^\circ C$
Operating status indication			
U control voltage/time running: green LED	Continuous light: control voltage present; slow flashing: time running		
Relay status R: yellow LED	Continuous light: output relay 1 picked up	Continuous light: output relay 1 or 2 picked up	Continuous light: output relay 1 or 2 picked up
Output circuits			
Output type			
15 - 16/18	Relay, 1 changeover contact	–	–
15 - 16/18; 25 - 26/28	–	Relay, 2 changeover contacts	Relay, 2 changeover contacts
Contact material	Cadmium-free	Cadmium-free	Cadmium-free
Rated operational voltage U_e	250 V	250 V	250 V
Minimum switching voltage/minimum switching current	12 V/100 mA	12 V/100 mA	12 V/100 mA
Rated operational current (IEC 60947-5-1)			
AC12 (resistive) 230 V	6 A	5 A	5 A
AC15 (inductive) 230 V N/O	3 A	3 A	3 A
AC15 (inductive) 230 V N/C	3 A	0.75 A	0.75 A
DC12 (resistive) 24 V	6 A	5 A	5 A
DC13 (inductive) 24 V N/O	2 A	3 A	3 A
DC13 (inductive) 24 V N/C	2 A	1 A	1 A
Rated operational data AC (UL 508)			
Utilization category (Control Circuit Rating Code)	B300	N/O: B300; N/C: C300	N/O: B300; N/C: C300
Max. rated operational voltage	300 V AC	300 V AC	300 V AC
Max. thermal continuous current	at B300 = 5 A	at B300 = 5 A; at C300 = 2.5 A	at B300 = 5 A; at C300 = 2.5 A
Max. input/output rating (N/O / N/C)	at B300 = 3600/360 VA	at B300 = 3600/360 VA; at C300 = 1800/180 VA	at B300 = 3600/360 VA; at C300 = 1800/180 VA
Mechanical lifespan	30 x 10 ⁶ operations	30 x 10 ⁶ operations	30 x 10 ⁶ operations
Electrical lifespan (AC12, 230 V, 4 A)	0.1 x 10 ⁶ operations	0.1 x 10 ⁶ operations	0.1 x 10 ⁶ operations
Short-circuit rating, max. fuse (IEC/EN 60947-5-1)			
N/C	6 A fast	6 A fast	6 A fast
N/O	10 A fast	10 A fast	10 A fast



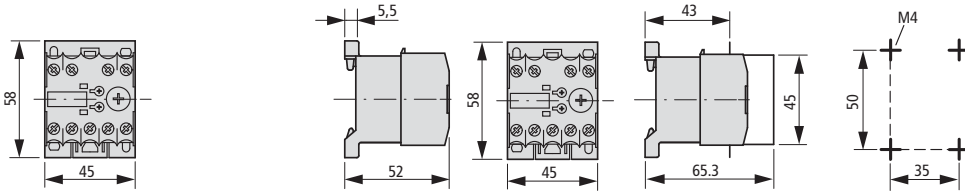
Part no.	ETR2-11(12, 21, 42, 44, 69)	ETR2-69-D	ETR2-11-D/ETR2-12-D
General data			
Duty factor (DF)	100 %	100 %	100 %
Repetition accuracy (constant parameters)	$\Delta t < 0.5 \%$	$\Delta t < 0.5 \%$	$\Delta t < 0.5 \%$
Weight	0.060 kg	0.065 kg	0.065 kg
Enclosure measurements (w x h x d)	17.5 mm x 70 mm x 58 mm (0.69 x 2.76 x 2.28 inches)	17.5 mm x 80 mm x 58 mm (0.69 x 3.15 x 2.28 inches)	17.5 mm x 80 mm x 58 mm (0.69 x 3.15 x 2.28 inches)
Mounting position	Any	Any	Any
Degree of protection of enclosures/terminals	IP50/IP20	IP50/IP20	IP50/IP20
Minimum horizontal/vertical distance to adjacent devices	None/none	None/none	None/none
Mounting	DIN rail (IEC/EN 60715), clip-type toolless	DIN rail (IEC/EN 60715), clip-type toolless	DIN rail (IEC/EN 60715), clip-type toolless
Electrical connection			
Terminal capacity			
Flexible with/without ferrule	2 x 0.5 - 1.5 mm ² (2 x 20 - 16 AWG)/ 1 x 0.5 - 2.5 mm ² (1 x 20 - 14 AWG)	3 x 0.5 - 1.5 mm ² (2 x 20 - 16 AWG)/ 1 x 0.5 - 2.5 mm ² (1 x 20 - 14 AWG)	4 x 0.5 - 1.5 mm ² (2 x 20 - 16 AWG)/ 1 x 0.5 - 2.5 mm ² (1 x 20 - 14 AWG)
Rigid	2 x 0.5 - 1.5 mm ² (2 x 20 - 16 AWG) 1 x 0.5 - 4 mm ² (1 x 20 - 12 AWG)	2 x 0.5 - 1.5 mm ² (2 x 20 - 16 AWG) 1 x 0.5 - 4 mm ² (1 x 20 - 12 AWG)	2 x 0.5 - 1.5 mm ² (2 x 20 - 16 AWG) 1 x 0.5 - 4 mm ² (1 x 20 - 12 AWG)
Stripped length	7 mm (0.28 inches)	7 mm (0.28 inches)	7 mm (0.28 inches)
Tightening torque	0.5 - 0.8 Nm	0.5 - 0.8 Nm	0.5 - 0.8 Nm
Environmental data			
Ambient temperature range, operation/storage	-20 - +60 °C/-40 - +85 °C	-20 - +60 °C/-40 - +85 °C	-20 - +60 °C/-40 - +85 °C
Damp heat (cyclic) (IEC/EN 60068-2-30)	6 x 24 h cycle, 55 °C, 95 % RH	6 x 24 h cycle, 55 °C, 95 % RH	6 x 24 h cycle, 55 °C, 95 % RH
Vibration (sinusoidal) (IEC/EN 60068-2-6)	40 m/s ² , 20 cycles, 10...150...10 Hz	40 m/s ² , 20 cycles, 10...150...10 Hz	40 m/s ² , 20 cycles, 10...150...10 Hz
Impact (half-sinusoidal) (IEC/EN 60068-2-27)	100 m/s ² , 11 ms	100 m/s ² , 11 ms	100 m/s ² , 11 ms
Insulation data			
Rated impulse withstand voltage Uimp between all insulated circuits (VDE 0110, IEC/EN 60664-1)	4 kV; 1.2/50 μ s	4 kV; 1.2/50 μ s	4 kV; 1.2/50 μ s
Pollution degree (IEC/EN 60664-1, VDE 0110, UL 508)	3	3	3
Overvoltage category (IEC/EN 60664-1, VDE 0110, UL 508)	III	III	III
Rated insulation voltage Ui			
Input circuit/output circuit	300V	300V	300V
Output circuit 1/output circuit 2	300 V	300 V	300 V
Basic isolation (IEC/EN 61140) input circuit/output circuit	300 V	300 V	300 V
Safe isolation (VDE 0106 Part 101 and Part 101/A1; IEC/EN 61140) input circuit/output circuit	250 V	250 V	250 V
Power-frequency withstand voltage test (test voltage, part test) between all insulated circuits	2.5 kV, 50 Hz, 1s	2.5 kV, 50 Hz, 1s	2.5 kV, 50 Hz, 1s
Directives and standards			
Product standard	IEC 61812-1, EN 61812-1 + A11, DIN VDE 0435 Part 2021	IEC 61812-1, EN 61812-1 + A11, DIN VDE 0435 Part 2021	IEC 61812-1, EN 61812-1 + A11, DIN VDE 0435 Part 2021
Low-Voltage Directive	2006/95/EC	2006/95/EC	2006/95/EC
EMC Directive	2004/108/EC	2004/108/EC	2004/108/EC
RoHS Directive	2002/95/EC	2002/95/EC	2002/95/EC
Electromagnetic compatibility			
Interference immunity			
Electrostatic discharge (ESD) IEC/EN 61000-4-2	Level 3 (6 kV/8 kV)	Level 3 (6 kV/8 kV)	Level 3 (6 kV/8 kV)
Electromagnetic field (immunity to RF interference) IEC/EN 61000-4-3	Level 3 (10 V/m)	Level 3 (10 V/m)	Level 3 (10 V/m)
Fast transients (burst) IEC/EN 61000-4-4	Level 3 (2 kV/5 kHz)	Level 3 (2 kV/5 kHz)	Level 3 (2 kV/5 kHz)
High-energy pulses (surge) IEC/EN 61000-4-5	Level 4 (2 kV L-L)	Level 4 (2 kV L-L)	Level 4 (2 kV L-L)
Cable-borne HF IEC/EN 61000-4-6	Level 3 (10 V)	Level 3 (10 V)	Level 3 (10 V)
Emitted interference			
Electromagnetic field (resistance to RF interference) IEC/CISPR 22, EN 55022	Class B	Class B	Class B
Cable-borne HF IEC/CISPR 22; EN 55022	Class B	Class B	Class B

Dimensions

Electronic timing relays

DILET...

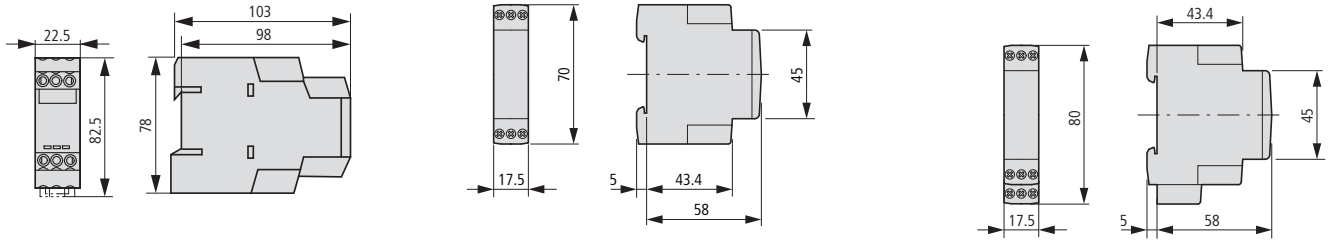
DILET... + HDILE



ETR4-...

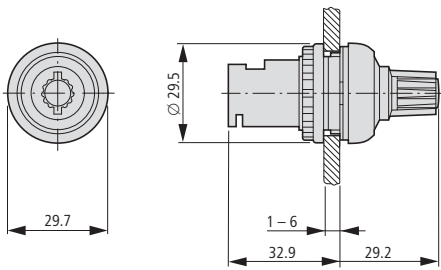
ETR2-...

ETR2-...-D

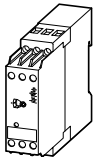
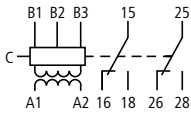



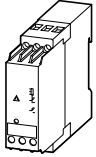
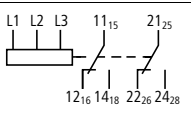

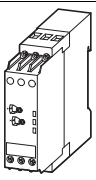
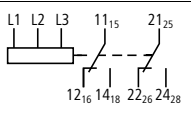

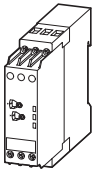
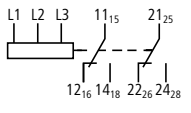



Potentiometers

M22-R...K...



Ordering

	Current measurement range I~/I= A	Contact sequences	Supply voltage connection	Part no. Article no.	Price See price list	Std. pack
Current monitoring relays EMR4-I..., single-phase						
Load limit curves → Page 11/21 Circuit and contact sequence diagrams → Instructional leaflet (AWA) under www.moeller.net/support						
 <ul style="list-style-type: none"> Switching hysteresis adjustable from 3 - 30 % Response delay 0.1 - 30 s Monitoring of one upper or lower limit Extension of the measurement range possible with current transformers 	3 - 30 mA 10 - 100 mA 0.1 - 1 A		24 - 240 V AC, 50/60 Hz 24 - 240 V DC	EMR4-I1-1-A 106942		1 off 
	0.3 - 1.5 A 1 - 5 A 3 - 15 A		24 - 240 V AC, 50/60 Hz 24 - 240 V DC	EMR4-I15-1-A 106943		1 off 
	0.3 - 1.5 A 1 - 5 A 3 - 15 A		220 - 240 V AC, 50/60 Hz	EMR4-I15-1-B 106944		1 off 
	Monitoring voltage per phase U _N V AC	Contact sequences	Supply voltage connection	Part no. Article no.	Price See price list	Std. pack
EMR4-F... phase sequence relay						
Load limit curves → Page 11/21 Circuit and contact sequence diagrams → Instructional leaflet (AWA) under www.moeller.net/support						
 <ul style="list-style-type: none"> Monitors three-phase systems for phase sequence and phase failure (< 0.6 x U_e) Supply voltage connection = monitored voltage 	200 - 500 V AC, 50/60 Hz		200 - 500 V AC, 50/60 Hz	EMR4-F500-2 221784		1 off 
	Threshold value	Contact sequences	Supply voltage connection	Part no. Article no.	Price See price list	Std. pack
EMR5-A... phase imbalance monitoring relays						
Load limit curves → Page 11/21 Circuit and contact sequence diagrams → Instructional leaflet (AWA) under www.moeller.net/support						
 <ul style="list-style-type: none"> Power supply from measuring circuit Three-phase monitoring Phase sequence Phase failure Asymmetry Imbalance threshold values adjustable 2 - 25 % of mean value of phase voltages On-delay: None = 0 or adjustable from 0.1 to 30 s 	Imbalance = 2 - 25 % of phase voltage mean value		160 - 300 V AC, 50/60 Hz	EMR5-A300-1-C 134230		1 off 
 <ul style="list-style-type: none"> Power supply from measuring circuit Three-phase monitoring Phase sequence Phase failure Asymmetry Imbalance threshold values adjustable On-delay: None = 0 or adjustable from 0.1 to 30 s 	Imbalance = 2 - 25 % of phase voltage mean value		300 - 500 V AC, 50/60 Hz	EMR5-A400-1 134222		1 off 

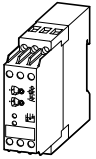
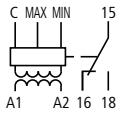

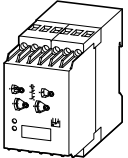
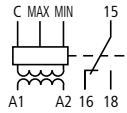

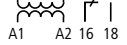

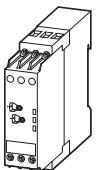
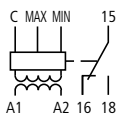

Notes

Information relevant for export to North America



Product Standards	IEC 255-6; UL 508; CSA-22.2 No. 14-05; CE marking
UL File No.	E29184
UL CCN	NKCR, NKCR7
CSA File No.	UL report valid
CSA Class No.	3211-03
NA Certification	UL Listed, Certified by UL for use in Canada
Degree of Protection	IEC: IP20, UL/CSA Type: -

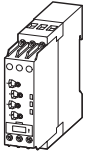
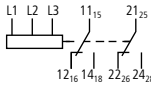

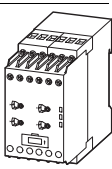
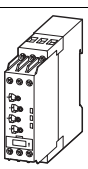
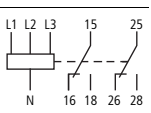

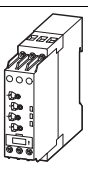
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	Response sensitivity	Contact sequences	Supply voltage connection	Part no. Article no.	Price See price list	Std. pack
Liquid level monitoring relays EMR4-N...						
Load limit curves → Page 11/21 Circuit and contact sequence diagrams → Instructional leaflet (AWA) under www.moeller.net/support						
	<ul style="list-style-type: none"> Fill level monitoring of conductive liquids Mixture ratio monitoring of conductive liquids Selectable dry-running or overflow protection 	5 kΩ - 100 kΩ		220 - 240 V AC, 50/60 Hz	EMR4-N100-1-B 221789	1 off 
	<ul style="list-style-type: none"> Fill level monitoring of conductive liquids Mixture ratio monitoring of conductive liquids Selectable on-delay or off-delay between 0.5 - 10 s 	250 Ω - 500 kΩ		24 - 240 V AC, 50/60 Hz	EMR4-N500-2-A 221791	1 off 
		250 Ω - 500 kΩ		220 - 240 V AC, 50/60 Hz	EMR4-N500-2-B 221790	1 off 
Liquid level monitoring relays EMR5N...						
Load limit curves → Page 11/21 Circuit and contact sequence diagrams → Instructional leaflet (AWA) under www.moeller.net/support						
	<ul style="list-style-type: none"> Fill level monitoring of conductive liquids Conductivity (mixture ratio) monitoring of conductive liquids 	5 kΩ - 100 kΩ		220 - 240 V AC, 50/60 Hz	EMR5-N80-1-B 134232	1 off 

Notes**Information relevant for export to North America**

Product Standards	IEC 255-6; UL 508; CSA-22.2 No. 14-05; CE marking
UL File No.	E29184
UL CCN	NKCR, NKCR7
CSA File No.	UL report valid
CSA Class No.	3211-03
NA Certification	UL Listed, Certified by UL for use in Canada
Degree of Protection	IEC: IP20, UL/CSA Type: -



	Monitoring voltage per phase	Threshold value ¹⁾	Contact sequences	Supply voltage connection	Width mm	Part no. Article no.	Price See price list	Std. pack
Phase monitoring relay EMR5-(A)W...								
Multifunctional Load limit curves → Page 11/21 Connections and contact sequence diagrams → Instructional leaflet (AWA) under www.moeller.net								
	Power supply from measuring circuit Three-phase monitoring	160 - 300 V AC, 50/60 Hz	U_{max} 220 - 300 V AC U_{min} 160 - 230 V AC		160 - 300 V AC, 50/60 Hz	22.5	EMR5-AW300-1-C 134223	1 off 
	• Phase sequence • Phase failure • Overvoltage • Undervoltage	300 - 500 V AC, 50/60 Hz	U_{max} 420 - 500 V AC U_{min} 300 - 380 V AC		300 - 500 V AC, 50/60 Hz	22.5	EMR5-AW500-1-D 134224	
	• Asymmetry • Adjustable threshold values for overvoltage/undervoltage and imbalance	350 - 580 V AC, 50/60 Hz	U_{max} 480 - 580 V AC U_{min} 350 - 460 V AC		350 - 580 V AC, 50/60 Hz	45	EMR5-AWM580-2 134235	1 off
	• On-/Off-delay: None = 0 or adjustable between 0.1 - 30 s	450 - 720 V AC, 50/60 Hz	U_{max} 600 - 720 V AC U_{min} 450 - 570 V AC		350 - 720 V AC, 50/60 Hz	45	EMR5-AWM720-2 134236	
		530 - 820 V AC, 50/60 Hz	U_{max} 690 - 820 V AC U_{min} 530 - 660 V AC		530 - 820 V AC, 50/60 Hz	45	EMR5-AWM820-2 134237	
	Power supply from measuring circuit Three-phase monitoring	90 - 170 V AC, 50/60 Hz	U_{max} 120 - 170 V AC U_{min} 90 - 130 V AC		90 - 170 V AC, 50/60/400 Hz	22.5	EMR5-AWN170-1-E 134225	1 off 
	• Phase sequence • Phase failure • Overvoltage • Undervoltage	180 - 280 V AC, 50/60 Hz	U_{max} 240 - 280 V AC U_{min} 180 - 220 V AC		180 - 280 V AC, 50/60/400 Hz	22.5	EMR5-AWN280-1 134233	
	• Asymmetry	180 - 280 V AC, 50/60 Hz	U_{max} 240 - 280 V AC U_{min} 180 - 220 V AC		180 - 280 V AC, 50/60 Hz	22.5	EMR5-AWN280-1-F 134226	
	• Neutral cable break (not EMR5-AWN500-1) • Adjustable threshold values for overvoltage/undervoltage and imbalance • On-/Off-delay: None = 0 or adjustable between 0.1 - 30 s	300 - 500 V AC, 50/60 Hz	U_{max} 420 - 500 V AC U_{min} 300 - 380 V AC		300 - 500 V AC, 50/60 Hz	22.5	EMR5-AWN500-1 134234	

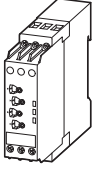
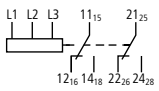

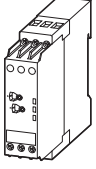
Notes 1) Imbalance = 2 - 25% of phase voltage mean value

Information relevant for export to North America



Product Standards	IEC 255-6; UL 508; CSA-22.2 No. 14-05; CE marking
UL File No.	E29184
UL CCN	NKCR, NKCR7
CSA File No.	UL report valid
CSA Class No.	3211-03
NA Certification	UL Listed, Certified by UL for use in Canada
Degree of Protection	IEC: IP20, UL/CSA Type: -

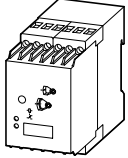
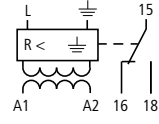

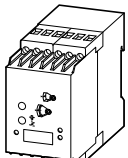
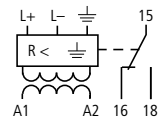

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	Monitoring voltage per phase	Threshold value ¹⁾	Contact sequences	Supply voltage connection	Width mm	Part no. Article no.	Price See price list	Std. pack
Phase monitoring relay EMR5-(A)W...								
On- and Off-delayed Load limit curves → Page 11/21 Connections and contact sequence diagrams → Instructional leaflet (AWA) under www.moeller.net								
	Power supply from measuring circuit Three-phase monitoring of phase parameters	160 - 300 V AC, 50/60 Hz 300 - 500 V AC, 50/60 Hz	U_{max} 220 - 300 V AC U_{min} 160 - 230 V AC U_{max} 420 - 500 V AC U_{min} 300 - 380 V AC		160 - 300 V AC, 50/60 Hz 300 - 500 V AC, 50/60 Hz	22.5 22.5	EMR5-W300-1-C 134227 EMR5-W500-1-D 134221	1 off 
	Power supply from measuring circuit Three-phase monitoring of phase parameters	380 V AC, 50/60 Hz 400 V AC, 50/60 Hz	U_{max} 418 V AC U_{min} 342 V AC U_{max} 440 V AC U_{min} 360 V AC		380 V, 50/60 Hz 400 V, 50/60 Hz	22.5 22.5	EMR5-W380-1 134228 EMR5-W400-1 134229	

Notes¹⁾ Imbalance = 2 - 25% of phase voltage mean value**Information relevant for export to North America**

Product Standards	IEC 255-6; UL 508; CSA-22.2 No. 14-05; CE marking
UL File No.	E29184
UL CCN	NKCR, NKCR7
CSA File No.	UL report valid
CSA Class No.	3211-03
NA Certification	UL Listed, Certified by UL for use in Canada
Degree of Protection	IEC: IP20, UL/CSA Type: -

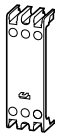
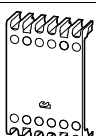


Description	Insulation resistance range Ω	Contact sequences	Supply voltage connection V AC	Part no. Article no.	Price See price list	Std. pack
Insulation monitoring relays EMR4-R...						
 <p>Monitors the insulation resistance between non-grounded AC supply systems and the protective ground conductor Insulation monitoring in 1- and 3-phase AC voltage networks Test via local test button or remote test operation Status display via LED (according to VDE 0413/Part 2) Tripping function memory</p>	1 - 110 k Ω		24 - 240 V AC, 50/60 Hz 24 - 240 V DC	EMR4-RAC-1-A 221793		1 off 
 <p>Monitors the insulation resistance in non-grounded DC supply systems Selector switch for open- or closed-circuit principle Test and reset via local test button or remote test operation Status indication via LEDs</p>	10 - 110 k Ω		24 - 240 V AC, 50/60 Hz 24 - 240 V DC	EMR4-RDC-1-A 221792		1 off 

Information relevant for export to North America



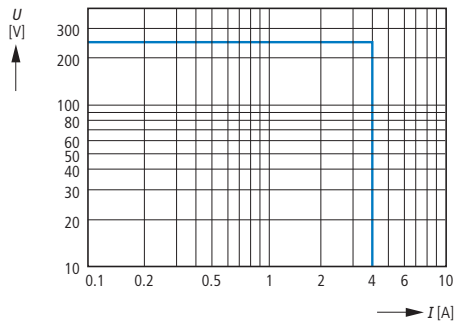
Product Standards	IEC 255-6; UL 508; CSA-22.2 No. 14-05; CE marking
UL File No.	E29184
UL CCN	NKCR, NKCR7
CSA File No.	203843
CSA Class No.	3211-03
NA Certification	UL Listed, CSA Certified
Degree of Protection	IEC: IP20, UL/CSA Type: -

	Width mm	Part no. Article no.	Price See price list	Std. pack
Sealable shroud EMR4-PH...				
	22.5	EMR4-PH22 221795		1 off
	45	EMR4-PH45 221794		1 off

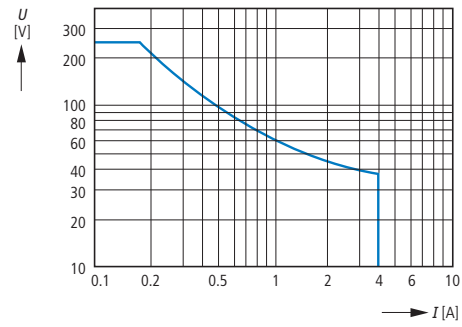
Engineering

Load limit curves, 22.5 mm range

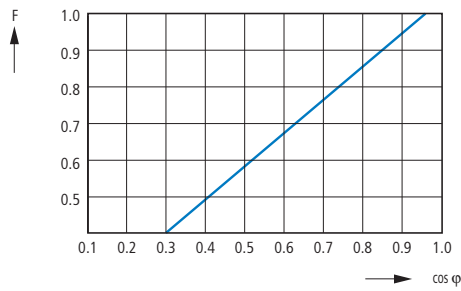
AC load (resistive)



DC load (resistive)

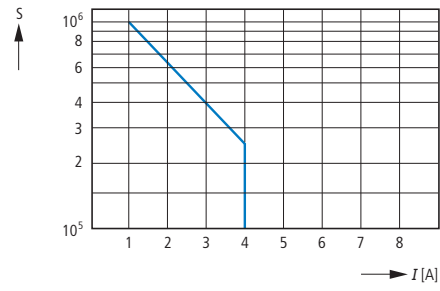


Derating factor with inductive AC load



Derating factor F with inductive load

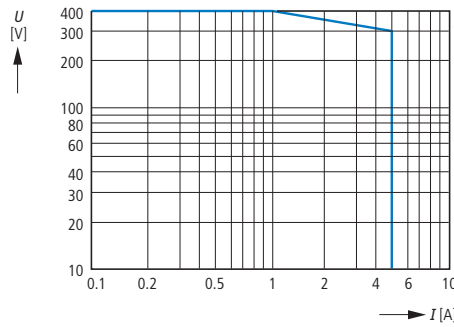
Contact life



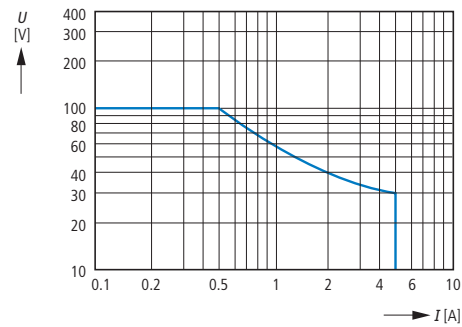
Contact life
Operations S
220 V 50 Hz AC-1
360 operations/h

Load limit curves, 45 mm range

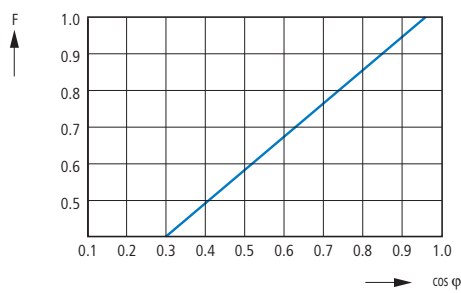
AC load (resistive)



DC load (resistive)

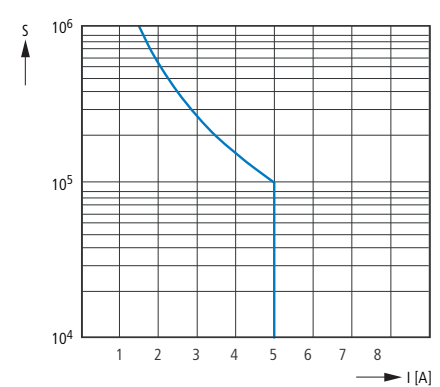


Derating factor with inductive AC load



Derating factor F with inductive load

Contact life



Contact life
Operations S
220 V 50 Hz AC-1
360 operations/h



Technical data

	EMR4-I1-1-A	EMR4-I15-1-A	EMR4-I15-1-B
Input circuit, power supply circuit A1-A2			
Rated control voltage U_S - power consumption:			
A1-A2	24 - 240 V AC/DC	24 - 240 V AC/DC	220 - 240 V AC
Tolerance of rated control voltage U_S	-15 - +10 %	-15 - +10 %	-15 - +10 %
Rated frequency			
AC versions	50/60 Hz	50/60 Hz	50/60 Hz
AC/DC versions	50/60 Hz or DC	50/60 Hz or DC	50/60 Hz or DC
Current/power consumption			
24 V DC	30 mA/0.75 W	30 mA/0.75 W	
115 V AC	24 mA/2.6 VA	24 mA/2.6 VA	
230 V AC	11 mA/2.6 VA	11 mA/2.6 VA	12 mA/2.6 VA
Duty factor (DF)	100 %	100 %	100 %
Mains failure buffering	20 ms	20 ms	20 ms
Transient overvoltage protection	Varistors	Varistors	Varistors
Input circuit measuring circuit B1/B2/B3-C			
Monitoring functions	Overcurrent or undercurrent monitoring can be configured	Overcurrent or undercurrent monitoring can be configured	Overcurrent and undercurrent monitoring
Measurement method	True RMS value measurement, any curve shapes		
Measuring inputs			
Terminal assignment B1 - C	–	–	–
Measurement ranges AC/DC	3 - 30 mA	0.3 - 1.5 A	0.3 - 1.5 A
Input resistance	3.3 Ω	0.05 Ω	0.05 Ω
Pulse overload capacity $t < 1$ s	500 mA	15 A	15 A
Long-term overload	50 mA	2 A	2 A
Measuring inputs			
Terminal assignment B2 - C	–	–	–
Measurement ranges AC/DC	10 - 100 mA	1 - 5 A	1 - 5 A
Input resistance	1 Ω	0.01 Ω	0.01 Ω
Pulse overload capacity $t < 1$ s	1 A	50 A	50 A
Long-term overload	150 mA	7 A	7 A
Measuring inputs			
Terminal assignment B3 - C	0.1 - 1 A	3 - 15 A	3 - 15 A
Measurement ranges AC/DC	0.1 Ω	0.0025 Ω	0.0025 Ω
Input resistance	10 A	100 A	100 A
Pulse overload capacity $t < 1$ s	1.5 A	17 A	17 A
Long-term overload	–	–	–
Threshold value(s)	Adjustable within specified measuring range		
Threshold value setting accuracy	0.1	0.1	0.1
Repetition accuracy (constant parameters)	± 0.07 % of full-scale value	± 0.07 % of full-scale value	± 0.07 % of full-scale value
Hysteresis relative to threshold value	3 - 30 % adjustable	3 - 30 % adjustable	3 - 30 % adjustable
Frequency range of measuring signal	DC/15 Hz - 2 kHz	DC/15 Hz - 2 kHz	DC/15 Hz - 2 kHz
Rated frequency range of measuring signal	DC/50 - 60 Hz	DC/50 - 60 Hz	DC/50 - 60 Hz
Maximum response time	AC: 80 ms/DC: 120 ms	AC: 80 ms/DC: 120 ms	AC: 80 ms/DC: 120 ms
Measuring error within control voltage tolerance	≤ 0.5 %	≤ 0.5 %	≤ 0.5 %
Measuring error within temperature range	≤ 0.06 %/°C	≤ 0.06 %/°C	≤ 0.06 %/°C
Timing circuits			
Release delay T_V	0 or 0.1 - 30 s adjustable	0 or 0.1 - 30 s adjustable	0 or 0.1 - 30 s adjustable
Repetition accuracy (constant parameters)	None	± 0.07 % of full-scale value	± 0.07 % of full-scale value
Time error within control voltage tolerance	≤ 0.5 %	≤ 0.5 %	≤ 0.5 %
Timeout error within temperature range	≤ 0.06 %/°C	≤ 0.06 %/°C	≤ 0.06 %/°C
Operating status indication			
Control voltage U/T: green LED	Continuous light: control voltage present; slow flashing: trip delay T_V active		
Measured value I: red LED	Continuous light: overcurrent; slow flashing: undercurrent		
Relay status R: yellow LED	Continuous light: relay picked up, no storage Slow flashing: duty factor long: relay picked up, active storage Slow flashing: duty factor short: relay dropped out, active storage		
Output circuits	11(15) - 12(16)/14(18), 21(25) - 22(26)/24(28) - relays	11(15) - 12(16)/14(18), 21(25) - 22(26)/24(28) - relays	11(15) - 12(16)/14(18), 21(25) - 22(26)/24(28) - relays
Output type	Two changeover contacts	Two changeover contacts	Two changeover contacts
Operating principle	Open-circuit principle: Output relays pick up when actual value exceeds or is below set threshold value.		

	EMR4-I1-1-A	EMR4-I15-1-A	EMR4-I15-1-B
Contact material	AgNi	AgNi	AgNi
Rated operating voltage (VDE 0110, IEC 947-1)	250 V	250 V	250 V
Minimum switching voltage/minimum switching current	24 V/10 mA	24 V/10 mA	24 V/10 mA
Maximum switching voltage/maximum switching current	250 V AC/4 A AC	250 V AC/4 A AC	250 V AC/4 A AC
Rated operational current (IEC 60947-5-1)			
AC12 (resistive) at 230 V	4 A	4 A	4 A
AC15 (inductive) at 230 V	3 A	3 A	3 A
DC12 (resistive) at 24 V	4 A	4 A	4 A
DC13 (inductive) at 24 V	2 A	2 A	2 A
Rating data AC (UL 508)			
Utilization category (Control Circuit Rating Code)	B 300	B 300	B 300
Max. rated operational voltage	300 V AC	300 V AC	300 V AC
Max. thermal uninterrupted current at B 300	5 A	5 A	5 A
Max. input/output rating (N/O / N/C) for B 300	3600/360 VA	3600/360 VA	3600/360 VA
Mechanical lifespan	30 x 10 ⁶ operations	30 x 10 ⁶ operations	30 x 10 ⁶ operations
Electrical lifespan (AC12, 230 V, 4 A)	0.1 x 10 ⁶ operations	0.1 x 10 ⁶ operations	0.1 x 10 ⁶ operations
Short-circuit strength/maximum fuse rating			
Normally closed contact	6 A fast	10 A fast	10 A fast
Normally open contact	6 A fast	10 A fast	10 A fast
General data			
Enclosure measurements (w x h x d)	22.5 x 78 x 100 mm (0.89 x 3.07 x 3.94 inches)	22.5 x 78 x 100 mm (0.89 x 3.07 x 3.94 inches)	22.5 x 78 x 100 mm (0.89 x 3.07 x 3.94 inches)
Mounting	DIN rail (EN 50022)	DIN rail (EN 50022)	DIN rail (EN 50022)
Mounting position	Any	Any	Any
Degree of protection of enclosures/terminals	IP50/IP20	IP50/IP20	IP50/IP20
Electrical connection			
Terminal capacities			
Flexible with/without ferrule	2 x 0.75 - 2.5 mm ² (2 x 18 - 14 AWG) With measuring currents > 10 A lateral clearance of 10 mm required		
Rigid	2 x 0.5-4 mm ² (2 x 20-12 AWG) With measuring currents > 10 A lateral clearance of 10 mm required		
Stripped length	7 mm (0.28 inches)	7 mm (0.28 inches)	7 mm (0.28 inches)
Tightening torque	0.6 - 0.8 Nm	0.6 - 0.8 Nm	0.6 - 0.8 Nm
Environmental data			
Ambient temperature range (operation/storage)	-20 - +60 °C/-40 - +85 °C	-20 - +60 °C/-40 - +85 °C	-20 - +60 °C/-40 - +85 °C
Damp heat (IEC 60068-2-30)	55 °C, 6 cycles	55 °C, 6 cycles	56 °C, 6 cycles
Vibration (sinusoidal) (IEC/EN 60255-21-1)	Class 2	Class 2	Class 2
Impact (IEC/EN 60255-21-2)	Class 2	Class 2	Class 2
Insulation data			
Rated insulation voltage (VDE 0110, IEC 60947-1, IEC/EN 60255-5)			
Power supply/measuring circuit/output	600 V	600 V	600 V
Power supply/output 1/output 2	250 V	250 V	250 V
Rated impulse withstand voltage U _{imp} (IEC/EN 60947-1, IEC/EN 60255-5)			
Power supply/measuring circuit/output	6 kV 1.2/50 μs	6 kV 1.2/50 μs	6 kV 1.2/50 μs
Power supply/output 1/output 2	4 kV 1.2/50 μs	4 kV 1.2/50 μs	4 kV 1.2/50 μs
Pollution degree (VDE 0110, IEC 664, IEC/EN 60255-5)	3	3	3
Overvoltage category (VDE 0110, IEC 664, IEC/EN 60255-5)	III	III	III
Directives and standards			
Product standard	IEC/EN 60255-6	IEC/EN 60255-6	IEC/EN 60255-6
Low-Voltage Directive	2006/95/EC	2006/95/EC	2006/95/EC
EMC Directive	2004/108/EC	2004/108/EC	2004/108/EC
Electromagnetic compatibility			
Noise immunity	IEC/EN 61000-6-2	IEC/EN 61000-6-2	IEC/EN 61000-6-2
Electrostatic discharge (ESD) IEC/EN 61000-4-2	Level 3	Level 3	Level 3
Electromagnetic field (immunity to RF interference) IEC/EN 61000-4-3	Level 3	Level 3	Level 3
Fast transients (burst) IEC/EN 61000-4-4	Level 3	Level 3	Level 3
High-energy pulses (surge) IEC/EN 61000-4-9	Level 3	Level 3	Level 3
Cable-borne HF IEC/EN 61000-4-6	Level 3	Level 3	Level 3
Interference emission	IEC/EN 61000-6-3	IEC/EN 61000-6-3	IEC/EN 61000-6-3
Electromagnetic field (immunity to RF interference) IEC/CISPR 22, EN 55022	Class B	Class B	Class B
Cable-borne HF IEC/CISPR 22; EN 55022	Class B	Class B	Class B



	EMR4-F500-2
Input circuit, measuring circuit	
Phase conductor	L1-L2-L3
Rated control voltage U_S	3 x 200 - 500 V AC
Power consumption	Approx. 15 VA
Tolerance of rated control voltage U_S	-15 - +10 %
Rated frequency	50/60 Hz
Duty factor (DF)	100%
Measuring circuit	
Monitoring functions	
Phase failure	Yes
Phase sequence	Yes
Measuring range	3 x 200 - 500 V AC
Threshold value	$0.6 \times U_N$
Frequency of measuring signal	50/60 Hz
Response time	500 ms
Measuring error within rated control voltage tolerance	$\leq 0.5 \%$
Measuring error within temperature range	$\leq 0.06 \%/^{\circ}\text{C}$
Timing circuit	
On-delay T_S	Fixed 500 ms
Operating status indication	
Relay status R: yellow LED	Continuous light: output relay picked up
Output circuits	
Output circuits	11(15) - 12(16)/14(18), 21(25) - 22(26)/24(28)
Output type	Two changeover contacts
Operating principle	Closed-circuit principle: output relays drop out when value exceeds/below set threshold value
Contact material	AgNi
Rated operating voltage (VDE 0110, IEC 60947-1)	250 V
Maximum switching voltage	250 V AC, 250 V DC
Rated operational current (IEC 60947-5-1)	
AC12 (resistive) at 230 V	4 A
AC15 (inductive) at 230 V	3 A
DC12 (resistive) at 24 V	4 A
DC13 (inductive) at 24 V	2 A
Rating data AC (UL 508)	
Utilization category (Control Circuit Rating Code)	B 300
Max. rated operational voltage	300 V AC
Max. thermal uninterrupted current at B 300	5 A
Max. input/output rating (N/O / N/C) for B 300	3600/360 VA
Mechanical lifespan	30×10^6 operations
Electrical lifespan (AC12, 230 V, 4 A)	0.1×10^6 operations
Short-circuit strength/maximum fuse rating	
Normally closed contact	4 A fast
Normally open contact	6 A fast
General data	
Enclosure measurements (w x h x d)	22.5 x 78 x 100 mm (0.89 x 3.07 x 3.94 inches)
Mounting position	Any
Degree of protection of enclosures/terminals	IP50/IP20
Mounting	DIN rail (EN 50022)
Electrical connection	
Terminal capacities	
Flexible with ferrule	2 x 0.75- 2.5 mm ² (2 x 18 - 14 AWG)
Flexible without ferrule	2 x 0.75- 2.5 mm ² (2 x 18 - 14 AWG)
Rigid	2 x 0.5 - 4 mm ² (2 x 20 - 12 AWG)
Stripped length	7 mm (0.28 inches)
Tightening torque	0.6 - 0.8 Nm



	EMR4-F500-2
Environmental data	
Ambient temperature range, operation/storage	-20 - +60 °C / -40 - +85 °C
Climatic testing (IEC 68-2-30)	24 h cycle, 55 °C, 93 % rel., 96 h
Operating safety (IEC 68-2-6)	4 g
Mechanical strength (IEC 68-2-6)	6 g
Insulation data	
Rated voltage between supply, measuring, and output circuits (VDE 0110, IEC 60947-1)	500V
Rated impulse withstand voltage U_{imp} between all insulated circuits (VDE 0110, IEC 664)	2.5 kV, 50 Hz, 1 min.
Test voltage between all insulated circuits (routine test)	4 kV, 50 Hz, 1 min.
Pollution degree (VDE 0110, IEC 664, IEC 255-5)	3
Overvoltage category (VDE 0110, IEC 664, IEC 255-5)	III
Directives and standards	
Product standard	IEC 255-6, EN 60255-6
Low-Voltage Directive	2006/95/EC
EMC Directive	2004/108/EC
Electromagnetic compatibility	
Noise immunity	EN 61000-6-2
Electrostatic discharge (ESD) IEC/EN 61000-4-2	Level 3 (6 kV/8 kV)
Electromagnetic field (immunity to RF interference) IEC/EN 61000-4-3	Level 3 (10 V/m)
Fast transients (burst) IEC/EN 61000-4-4	Level 3 (2 kV/5 kHz)
High-energy pulses (surge) IEC 1000-4-5, EN 61000-4-5	Level 4 (2 kV L-L)
Cable-borne HF IEC 100-4-6, EN 61000-4-6	Level 3 (10 V)
Interference emission	EN 61000-6-4



			EMR5-A300-1-C	EMR5-A400-1
Input circuit, measuring circuit			L1,L2,L3	L1,L2,L3
Rated control voltage, monitored voltage	U_s		3 x 160 - 300 V AC	3 x 300 - 500 V AC
Typical current/power consumption			25 mA/10 VA/230 V AC	25 mA/18 VA/400 V AC
Rated control voltage tolerance	U_s	%	-15 - +10	-15 - +10
Rated frequency		Hz	50/60	50/60
Frequency range		Hz	45 - 65	45 - 65
Measuring circuit				
Monitoring functions				
Phase failure			Yes	Yes
Phase sequence			Yes	Yes
Automatic phase sequence correction			No	No
Asymmetry			Yes	Yes
Overvoltage/undervoltage			No	No
Neutral conductor			No	No
Measuring range				
Overvoltage			No	No
Undervoltage			No	No
Asymmetry			2 - 25 % of phase voltage mean value	
Adjustable threshold values				
Overvoltage			No	No
Undervoltage			No	No
Imbalance (disconnection value)			Adjustable within measuring range	Adjustable within measuring range
Hysteresis relative to threshold value				
Overvoltage/undervoltage			No	No
Asymmetry			Fixed 20 %	Fixed 20 %
Rated frequency of measuring signal		Hz	50/60	50/60
Frequency range of measuring signal		Hz	45 - 65	45 - 65
Maximum monitoring cycle		ms	100	100
Measuring error within rated control voltage tolerance				
Measuring error within temperature range				
Measurement method			True RMS value measurement	True RMS value measurement
Timing circuit				
On-delay	T_s	ms	Fixed 200	Fixed 200
Response delay	T_v	s	On-delayed: none = 0; adjustable 0.1 - 30	On-delayed: none = 0; adjustable 0.1 - 30
Timeout error within rated control voltage tolerance		%	≤ 0.5	≤ 0.5
Timeout error within temperature range		% /°C	≤ 0.06	≤ 0.06
Repetition accuracy (constant parameters)		%	< ±0.2	< ±0.2
Operating status indication				
Relay status R: yellow LED			See instructional leaflet	See instructional leaflet
Output circuits				
Output circuits			15-16/18, 25-26/28	15-16/18, 25-26/28
Output type			2 x 1 relay (changeover contact)	2 x 1 relay (changeover contact)
Operating principle			Closed-circuit principle: output relays drop out when value above/below set threshold value	
Contact material			AgNi alloy, Cd-free	AgNi alloy, Cd-free
Rated operating voltage (VDE 0110, IEC 60947-1)		V	250	250
Minimum switching voltage/minimum switching current		No	24 V/10 mA	24 V/10 mA
Minimum switching duty		V/mA	24/10	24/10
Maximum switching voltage			→ Page 11/21	→ Page 11/21
Rated operational current (IEC 60947-5-1)				
AC12 (resistive) at 230 V		A	4	4
AC15 (inductive) at 230 V		A	3	3
DC12 (resistive) at 24 V		A	4	4
DC13 (inductive) at 24 V		A	2	2
Rating data AC (UL 508)				
Utilization category (Control Circuit Rating Code)			B 300	B 300
Max. rated operational voltage		V AC	300	300
Max. thermal uninterrupted current at B 300		A	5	5
Max. input/output rating (N/O / N/C) for B 300		VA	3600/360	3600/360
Mechanical lifespan		Operations	30 x 10 ⁶	30 x 10 ⁶
Electrical lifespan (AC12, 230 V, 4 A)		Operations	0.1 x 10 ⁶	0.1 x 10 ⁶



			EMR5-A300-1-C	EMR5-A400-1
Short-circuit strength/maximum fuse rating				
Normally closed contact			6 A fast	6 A fast
Normally open contact			10 A fast	10 A fast
General data				
Enclosure measurements (w x h x d)		mm (inch)	22.5 x 78 x 100 (0.89 x 3.07 x 3.94)	22.5 x 78 x 100 (0.89 x 3.07 x 3.94)
Mounting position			Any	
Degree of protection of enclosures/terminals			IP50/IP20	
Mounting			DIN rail (EN 60715), clip-type toolless	
Minimum distance to adjacent devices				
Horizontal (min. 10 mm of continuous voltage)		V	> 220	> 400
Vertical			None	None
Electrical connection				
Terminal capacities				
Flexible with ferrule		mm ² (AWG)	2 x 0.75-2.5 (2 x 18 - 14)	2 x 0.75-2.5 (2 x 18 - 14)
Flexible without ferrule		mm ² (AWG)	2 x 0.75-2.5 (2 x 18 - 14)	2 x 0.75-2.5 (2 x 18 - 14)
Rigid		mm ² (AWG)	2 x 0.5-4 (2 x 20 - 12)	2 x 0.5-4 (2 x 20 - 12)
Stripped length		mm (inch)	7 (0.28)	7 (0.28)
Tightening torque		Nm	0.6 - 0.8	0.6 - 0.8
Environmental data				
Ambient temperature range, operation/storage		°C	-25 - +60/-40 - +85	-25 - +60 /-40 - +85
Damp heat (IEC 60068-2-30)			55 °C, 6 cycles	55 °C, 6 cycles
Climate class			3K3	3K3
Vibration (sinusoidal) (IEC/EN 60255-21-1)		Class	2	2
Impact (IEC/EN 60255-21-2)		Class	2	2
Insulation data				
Rated voltage between supply, measuring, and output circuits (VDE 0110, IEC 60947-1)				
Rated impulse withstand voltage Uimp between all insulated circuits (VDE 0110, IEC 664)				
Rated insulation voltage Ui				
Input circuit/output circuit		V	600	600
Input circuit 1/output circuit 2		V	300	300
Rated impulse withstand voltage Uimp (VDE 0110, IEC/EN 60664)				
Input circuit			6 kV; 1.2/50 µs	6 kV; 1.2/50 µs
Output circuits			4 kV; 1.2/50 µs	4 kV; 1.2/50 µs
Test voltage between all insulated circuits (routine test)			2.5 kV, 50 Hz, 1 s	2.5 kV, 50 Hz, 1 s
Basic insulation, input circuit/output circuit		V	600	600
Safe isolation (VDE 0160 Part 101 and 101/A; IEC/EN 61140) input circuit/output circuit			No	No
Pollution degree (VDE 0110, IEC/EN 60664, UL 508)			3	3
Overvoltage category (VDE 0110, IEC 60664, UL 508)			III	III
Directives/Standards				
Product standard			IEC/EN 60255-6, EN 50178	IEC/EN 60255-6, EN 50178
Low-Voltage Directive			2006/95/EC	2006/95/EC
EMC Directive			2004/108/EC	2004/108/EC
RoHS Directive			2002/95/EC	2002/95/EC
Electromagnetic compatibility				
Noise immunity			EN 61000-6-1, EN 61000-6-2	EN 61000-6-1, EN 61000-6-2
Electrostatic discharge (ESD) IEC/EN 61000-4-2		Level	3 (6 kV/8 kV)	3 (6 kV/8 kV)
Electromagnetic field (immunity to RF interference) IEC/EN 61000-4-3		Level	3 (10 V/m)	3 (10 V/m)
Fast transients (burst) IEC/EN 61000-4-4		Level	3 (2 kV/2 kHz)	3 (2 kV/2 kHz)
High-energy pulses (surge) IEC 1000-4-5, EN 61000-4-5		Level	4 (2 kV L-L)	4 (2 kV L-L)
Cable-borne HF IEC 100-4-6, EN 61000-4-6		Level	3 (10 V)	3 (10 V)
Resistance to harmonics EN 61000-4-13		Class	3	3
Interference emission			EN 61000-6-3, EN 61000-6-4	EN 61000-6-3, EN 61000-6-4
Electromagnetic field (immunity to RF interference) IEC/CISPR 22, EN 50022		Class	B	B
Cable-borne HF		Class	B	B



	EMR5-N080-1-B	EMR4-N100-1-B	EMR4-N500-2-B	EMR4-N500-2-A
Input circuit				
Rated control voltage U_S - power consumption:				
A1 - A2	220 - 240 V AC approx. 1.5 VA	220 - 240 V AC approx. 4 VA	220 - 240 V AC approx. 3 VA	24 - 240 V AC/DC approx. 2 VA/W
Tolerance of rated control voltage U_S	-15 % - 10 %	-15 % - 10 %	-15 % - +10 %	-15 % - +10 %
Rated frequency	50 - 60 Hz	50 - 60 Hz	50 - 60 Hz or DC	50 - 60 Hz or DC
Duty factor (DF)	100 %	100 %	100 %	100 %
Measuring circuit				
Monitoring functions	MAX-MIN-C	MAX-MIN-C	MAX-MIN-C	MAX-MIN-C
Response sensitivity	Level control	Level control	Level control	Level control
Maximum electrode voltage	5 - 100 k Ω , adjustable	5 - 100 k Ω , adjustable	250 Ω - 5 k Ω , adjustable	250 Ω - 5 k Ω , adjustable
Maximum electrode current	30 V AC	30 V AC	20 V AC	20 V AC
Electrode supply cable	1 mA	1 mA	8 mA	8 mA
Cable capacity max.	10 nF	10 nF	200 nF	200 nF
Cable length max.	100 m	100 m	1000 m	1000 m
Response sensitivity			2.5-50 k Ω , adjustable	2.5-50 k Ω , adjustable
Maximum electrode voltage			20 V AC	20 V AC
Maximum electrode current			2 mA	2 mA
Electrode supply cable				
Cable capacity max.			20 nF	20 nF
Cable length max.			100 m	100 m
Response sensitivity			25 - 500 k Ω , adjustable	25 - 500 k Ω , adjustable
Maximum electrode voltage			20 V AC	20 V AC
Maximum electrode current			0.5 mA	0.5 mA
Timing circuit				
Release delay	Approx. 250 ms	Approx. 250 ms		
Delay time			0.1 - 10 s, adjustable, on-delay without off-delay	0.1 - 10 s, adjustable, on-delay without off-delay
Operating status indication				
Control voltage	U: green LED	U: green LED	U: green LED	U: green LED
Output relay energized	R MAX/MIN: yellow LED			
Alarm relay AL1	-	R AL1: yellow LED	U: green LED	U: green LED
Alarm relay AL2	-	R AL2: yellow LED	R: yellow LED	R: yellow LED
Output circuits				
Output circuits	11-12/14, 21-22, 31-32	11-12/14, 21-22, 31-32	15-16/18, 25-26/28	15-16/18, 25-26/28
Output type	1 changeover contact, 1 normally closed contact + 1 normally open contact	1 changeover contact, 1 normally closed contact + 1 normally open contact	Two changeover contacts	Two changeover contacts
Operating principle	Live current principle ¹⁾	Open ⁻¹⁾ and closed-circuit principle ²⁾	Live current principle ¹⁾	Live current principle ¹⁾
Contact material	AgCdO	AgCdO	AgCdO	AgCdO
Rated voltage (VDE 0110, IEC 60947-1)	250 V	250 V	400 V	400 V
Maximum switching voltage	250 V	250 V	400 V	400 V
Rated operational current (IEC 60947-5-1)				
AC12 (resistive) 230 V	4 A	4 A	5 A	5 A
AC15 (inductive) 230 V	3 A	3 A	3 A	3 A
DC12 (resistive) 24 V	4 A	4 A	5 A	5 A
DC13 (inductive) 24 V	2 A	2 A	2 A	2 A

Notes¹⁾ Output relays pick up when value above/below set threshold value²⁾ Output relays drop out when value above/below set threshold value

	EMR5-N080-1-B	EMR4-N100-1-B	EMR4-N500-2-B	EMR4-N500-2-A
Rated operational data AC (UL 508)				
Utilization category (Control Circuit Rating Code)	B 300	B 300	B 300	B 300
Max. rated operational voltage	300 V AC		300 V AC	300 V AC
Max. thermal uninterrupted current at B 300	5 A	5 A	5A	5A
Max. input/output rating (N/O / N/C) for B 300	3600/360 VA	3600/360 VA	3600/360 VA	3600/360 VA
Mechanical lifespan	30 x 10 ⁶ operations	30 x 10 ⁶ operations	30 x 10 ⁶ operations	30 x 10 ⁶ operations
Electrical lifespan (AC12, 230 V, 4 A)	0.3 x 10 ⁶ operations	0.3 x 10 ⁶ operations	0.1 x 10 ⁶ operations	0.1 x 10 ⁶ operations
Short-circuit rating, max. fuse rating, N/C / N/O contact	10 A fast/10 A fast	10 A fast/10 A fast	4 A fast/6 A fast	4 A fast/6 A fast
General data				
Enclosure measurements (w x h x d)	22.5 x 70 x 100 mm (0.89 x 3.07 x 3.94 in)	22.5 x 70 x 100 mm (0.89 x 3.07 x 3.94 in)	45 x 78 x 100 mm (1.77 x 3.07 x 3.94 in)	45 x 78 x 100 mm (1.77 x 3.07 x 3.94 in)
Mounting position	Any	Any	Any	Any
Degree of protection of enclosures/terminals	IP50/IP20	IP50/IP20	IP50/IP20	IP50/IP20
Ambient temperature range, operation/storage	-20 - +60 °C / -40 - +85 °C	-20 - +60 °C / -40 - +85 °C	-25 - +65°C / -40 - 85°C	-25 - +65°C / -40 - 85°C
Mounting	DIN rail (EN 50022)	DIN rail (EN 50022)	DIN rail (EN 50022)	DIN rail (EN 50022)
Electrical connection				
Terminal capacity	2 x 2.5 mm ² (2 x 14 AWG)	2 x 2.5 mm ² (2 x 14 AWG)	2 x 2.5 mm ² (2 x 14 AWG)	2 x 2.5 mm ² (2 x 14 AWG)
Flexible with ferrule				
Directives and standards				
Product standard	IEC 255 - 6, EN 60255-6	IEC 255 - 6, EN 60255-6	IEC 255-6, EN 60255-6	IEC 255-6, EN 60255-6
Low-Voltage Directive	2006/95/EC	2006/95/EC	2006/95/EC	2006/95/EC
EMC Directive	2004/108/EC	2004/108/EC	2004/108/EC	2004/108/EC
Electromagnetic compatibility (EMC)	No	No	No	No
Electrostatic discharge (ESD) IEC/EN 61000-4-2	Level 3 (6 kV/8 kV)	Level 3 (6 kV/8 kV)	Level 3 (6 kV/8kV)	Level 3 (6 kV/8kV)
Electromagnetic field (immunity to RF interference) IEC/EN 61000-4-3	Level 3 (10 V/m)	Level 3 (10 V/m)	Level 3 (10 V/m)	Level 3 (10 V/m)
Fast transients (burst) IEC/EN 61000-4-4	Level 3 (2 kV/5 kHz)	Level 3 (2 kV/5 kHz)	Level 3 (2 kV/5 kHz)	Level 3 (2 kV/5 kHz)
High-energy pulses (surge) IEC1000-4-5, EN 61000-4-5	Level 4 (2 kV L-L)	Level 4 (2 kV L-L)	Level 4 (2 kV L-L)	Level 4 (2 kV L-L)
Immunity to line-conducted interference, IEC 1000-4-6, IEC 1000-4-6, EN 61000-4-6	Level 3 (10 V)	Level 3 (10 V)	Level 3 (10 V)	Level 3 (10 V)
Operating safety (IEC 68-2-6)	4 g	4 g	5 g	5 g
Mechanical strength (IEC 68-2-6)	6 g	6 g	10 g	10 g
Insulation data				
Rated voltage between supply, measuring, and output circuits (VDE 0110, IEC 60947-1)	250 V	250 V	500 V	500 V
Rated impulse withstand voltage between all insulated circuits (VDE 0110, IEC 60947-1)	4 kV/1.2 - 50 μs	4 kV / 1.2 - 50 μs	4 kV/1.2 - 50 μs	4 kV/1.2 - 50 μs
Test voltage between all insulated circuits	2.5 kV, 50 Hz, 1 min.	2.5 kV, 50 Hz, 1 min.	2.5 kV, 50 Hz, 1 min.	2.5 kV, 50 Hz, 1 min.
Pollution degree (VDE 0110, IEC 664, IEC 255-5)	3/C	3/C	3/C	3/C
Overvoltage category (VDE 0110, IEC 664, IEC 255-5)	III/C	III/C	III/C	III/C
Climatic testing (IEC 68-2-30)	24 h cycle, 55 °C, 93 % rel., 96 h	24 h cycle, 55 °C, 93 % rel., 96 h	24 h cycle, 55 °C, 93 % rel., 96 h	24 h cycle, 55 °C, 93 % rel., 96 h



	EMR4-RDC-1-A	EMR4-RAC-1-A
Input circuit		
Rated control voltage U_S power consumption:		
A1-B2	24 - 240 V AC/DC - approx. 8 VA / 2 W	24 - 240 V AC/DC - approx. 8 VA / 2 W
Tolerance of rated control voltage U_S	-15 % - +10 %	-15 % - +10 %
Rated frequency		
AC/DC versions	15 - 400 Hz or DC	15 - 400 Hz or DC
AC versions	–	50 - 60 Hz
Duty factor (DF)	100 %	100 %
Measuring circuit L-PE		
Monitoring function, insulation monitoring for isolated AC networks	Isolated DC networks	
Measuring range, threshold value setting range min-max.	10 - 110 k Ω	1 - 11 k Ω , 10 - 110 k Ω
Minimum internal resistance	–	57 k Ω
Minimum internal AC resistance	–	100 k Ω
Internal DC resistance	–	100 k Ω
Test resistance	–	820
Max. voltage at measuring input	300 V DC	415 V AC
Max. DC measuring voltage	24 - 240 V DC	30 V DC
Max. cable length for clear-test button		10 m
Time delay	< 1 s with insulation, < 0.9 x response value	Proportional to insulation resistance and dependent on set threshold value
Operating status indication		
Control voltage	U: green LED	U: green LED
Insulation fault	L+: red LED, L-: red LED	F: red LED
Output circuits		
Output circuits	15-16/18	15-16/18
Output type	One changeover contact	One changeover contact
Operating principle	Open-circuit principle: Output relays pick up when value above/ below set threshold value Closed-circuit principle: output relays drop out when value above/below set threshold value	Open-circuit principle: Output relays pick up when value above/below set threshold value
Contact material	AgCdO	AgCdO
Rated operating voltage (VDE 0110, IEC 664-1, IEC 60947-1)	250 V	250 V
Maximum switching voltage	400 V AC, 300 V DC	400 V AC, 300 V DC
Rated operational current (IEC 60947-5-1, EN 60947-5-1)		
AC12 (resistive) 230 V	5A	5A
AC15 (inductive) 230 V	3A	3A
DC12 (resistive) 24 V	5A	5A
DC13 (inductive) 24 V	2A	2A
Rated operational data AC (UL 508)		
Utilization category (Control Circuit Rating Code)	B300	B300
Max. rated operational voltage	300 V AC	300 V AC
Max. thermal uninterrupted current at B 300	5A	5A
Max. input/output rating (N/O / N/C) for B 300	3600/360 VA	3600/360 VA
Mechanical lifespan	30 x 10 ⁶ operations	30 x 10 ⁶ operations
Electrical lifespan (AC12, 230 V, 4 A)	0.1 x 10 ⁶ operations	0.1 x 10 ⁶ operations
Short-circuit rating, max. fuse protection, N/C / N/O contact	4 A fast/6 A fast	4 A fast/6 A fast



	EMR4-RDC-1-A	EMR4-RAC-1-A
General data		
Enclosure measurements	45 x 78 x 100 mm (1.77 x 3.07 x 3.94 in)	45 x 78 x 100 mm (1.77 x 3.07 x 3.94 in)
Weight	approx. 0.3 kg (0.66 lb)	approx. 0.3 kg (0.66 lb)
Mounting position	Any	Any
Degree of protection of enclosures/terminals	IP50/IP20	IP50/IP20
Ambient temperature range, operation/storage	-25 - +65 °C / -40 - +85 °C	-25 - +65 °C / -40 - +85 °C
Mounting	DIN rail (EN 50022)	DIN rail (EN 50022)
Electrical connection		
Terminal capacity		
Flexible with ferrule	2 x 2.5 mm ² (2 x 14 AWG)	2 x 2.5 mm ² (2 x 14 AWG)
Directives and standards		
Product standard	IEC 255-6, EN 60255-6	IEC 255-6, EN 60255-6
Low-Voltage Directive	2006/95/EC	2006/95/EC
EMC Directive	2004/108/EC, 91/263/EEC, 92/31/EEC, 93/68/EEC, 93/67/EEC	2004/108/EC, 91/263/EEC, 92/31/EEC, 93/68/EEC, 93/67/EEC
Electromagnetic compatibility (EMC)	EN 61000-6-2, EN 61000-6-4	EN 61000-6-2, EN 61000-6-4
Electrostatic discharge (ESD) IEC/EN 61000-4-2	Level 3 (6 kV/8 kV)	Level 3 (6 kV/8 kV)
Electromagnetic field (immunity to RF interference) IEC/EN 61000-4-3	Level 3 (10(3)V/m)	Level 3 (10(3)V/m)
Fast transients (burst) IEC/EN 61000-4-4	Level 3 (2(1) kV/5 kHz)	Level 3 (2(1) kV/5 kHz)
High-energy pulses (surge) IEC 1000-4-5, EN 61000-4-5	Level 3 (2(1) kV L-L)	Level 3 (2(1) kV L-L)
Immunity to line-conducted interference, IEC 1000-4-6, EN 61000-4-6	Level 3 (10(3) V)	Level 3 (10(3) V)
Operating safety (IEC 68-2-6)	5 g	5 g
Mechanical strength (IEC 68-2-6)	10 g	10 g
Climatic testing (IEC 68-2-30)	24 h cycle, 55 °C, 93 % rel., 96 h	24 h cycle, 55 °C, 93 % rel., 96 h
Insulation data		
Rating (HD 625.1 S1, VDE 0110, IEC 664-1, IEC 60255-5)		
Rated voltage between supply, measuring, and output circuits	250 V	250 V
Rated impulse withstand voltage between all insulated circuits	4 kV / 1.2 - 50 µs	4 kV / 1.2 - 50 µs
Test voltage between all insulated circuits	2.5 kV, 50 Hz, 1 min.	2.5 kV, 50 Hz, 1 min.
Pollution degree	3	3
Overvoltage category	III	III



	EMR5-W300-1-C	EMR5-W380-1	EMR5-W400-1	EMR5-W500-1-D	EMR5-AW300-1-C
Input circuit, measuring circuit					
Main pole, neutral conductor	L1,L2,L3	L1,L2,L3	L1,L2,L3	L1,L2,L3	L1, L2, L3
Rated control voltage U_S = monitored voltage	3 x 160 - 300 V AC	3 x 380 V AC	3 x 400 V AC	3 x 300 - 500 V AC	3 x 160 - 300 V AC
Tolerance of rated control voltage U_S	-15 - +10 %	-15 - +10 %	-15 - +10 %	-15 - +10 %	-15 - +10 %
Rated frequency	50/60 Hz	50/60 Hz	50/60 Hz	50/60 Hz	50/60 Hz
Frequency range	45 - 65 Hz	45 - 65 Hz	45 - 65 Hz	45 - 65 Hz	45 - 65 Hz
Typical current/power consumption	25 mA/10 VA /at 250 V AC	25 mA/18 VA /at 380 V AC	25 mA/18 VA /at 400 V AC	25 mA/18 VA /at 400 V AC	25 mA/10 VA (230 V AC)
Duty factor (DF)					
Measuring circuit					
Monitoring functions					
Phase failure	Yes	Yes	Yes	Yes	Yes
Phase sequence	Can be deactivated	Can be deactivated	Can be deactivated	Can be deactivated	Can be deactivated
Automatic phase sequence correction	No	No	No	No	No
Asymmetry	No	No	No	No	Yes
Overvoltage/undervoltage	Yes	Yes	Yes	Yes	Yes
Neutral conductor/break					No
Neutral conductor	No	No	No	No	
Measuring range					
Overvoltage	3 x 220 - 300 v AC	3 x 418 V AC	3 x 440 V AC	3 x 420 - 500 V AC	3 x 220 - 300 V AC
Undervoltage	3 x 160 - 230 V AC	3 x 342 V AC	3 x 360 V AC	3 x 300 - 380 V AC	3 x 160 - 230 V AC
Asymmetry	No	No	No	No	2 - 25 % of phase voltage mean value
Adjustable threshold values					
Overvoltage	Adjustable within measuring range	Fixed	Fixed	Adjustable within measuring range	Adjustable within measuring range
Undervoltage	Adjustable within measuring range	Fixed	Fixed	Adjustable within measuring range	Adjustable within measuring range
Imbalance (disconnection value)	No	No	No	No	Adjustable within measuring range
Asymmetry					
Hysteresis relative to threshold value					
Overvoltage/undervoltage	Fixed 5 %	Fixed 5 %	Fixed 5 %	Fixed 5 %	Fixed 5 %
Asymmetry	No	No	No	No	Fixed 20 %
Rated frequency of measuring signal	50/60 Hz	50/60 Hz	50/60 Hz	50/60 Hz	50/60 Hz
Frequency range of measuring signal	45 - 65 Hz	45 - 65 Hz	45 - 65 Hz	45 - 65 Hz	45 - 65 Hz
Reaction time	No	No	No	No	
Maximum monitoring cycle	100 ms	100 ms	100 ms	100 ms	100 ms
Measuring error within rated control voltage tolerance	≤ 0.5 %	≤ 0.5 %	≤ 0.5 %	≤ 0.5 %	≤ 0.5 %
Measuring error within temperature range	≤ 0.06 %/°C	≤ 0.06 %/°C	≤ 0.06 %/°C	≤ 0.06 %/°C	≤ 0.06 %/°C
Measurement method	True RMS value measurement				
Timing circuit					
On-delay T_s	Fixed 200 ms	Fixed 200 ms	Fixed 200 ms	Fixed 200 ms	Fixed 200 ms
On-delay T_{s1}					
Response delay T_v	On- or off-delay; 0; 0, 1-30 s adjustable	On- or off-delay; 0; 0, 1-30 s adjustable	On- or off-delay; 0; 0, 1-30 s adjustable	On- or off-delay; 0; 0, 1-30 s adjustable	On- or off-delay; none = 0, adjustable 0.1 - 30 s
Timeout error within rated control voltage tolerance	≤ 0.5 %	≤ 0.5 %	≤ 0.5 %	≤ 0.5 %	≤ 0.5 %
Timeout error within temperature range	≤ 0.06 %/°C	≤ 0.06 %/°C	≤ 0.06 %/°C	≤ 0.06 %/°C	≤ 0.06 %/°C
Repetition accuracy (constant parameters)	±0.2 %	±0.2 %	±0.2 %	±0.2 %	±0.2 %
Operating status indication					
Relay status R: yellow LED	See instructional leaflet	See instructional leaflet	See instructional leaflet	See instructional leaflet	See instructional leaflet

EMR5-AW500-1-D	EMR5-AWM580-2	EMR5-AWM720-2	EMR5-AWM820-2	EMR5-AWN170-1-E	EMR5-AWN280-1	EMR5-AWN280-1-F	EMR5-AWN500-1
L1, L2, L3	L1, L2, L3	L1, L2, L3	L1, L2, L3	L1, L2, L3, N	L1,L2,L3 N	L1, L2, L3, N	L1,L2,L3
3 x 300 - 500 V AC	3 x 350 - 580 V AC	3 x 450 - 720 V AC	3 x 530 - 820 V AC	3 x 90 - 170 V AC	3 x 180 - 280 V AC	3 x 180 - 280 V AC	3 x 300 - 500 V AC
-15 - +10 %	-15 - +10 %	-15 - +10 %	-15 - +10 %	-15 - +10 %	-15 - +10 %	-15 - +10 %	-15 - +10 %
50/60 Hz	50/60 Hz	50/60 Hz	50/60 Hz	50/60 Hz	50/60/400 Hz	50/60 Hz	50/60/400 Hz
45 - 65 Hz	45 - 65 Hz	45 - 65 Hz	45 - 65 Hz	45 - 65 Hz	45 - 440 Hz	45 - 65 Hz	45 - 440 Hz
25 mA/18 VA (400 V AC)	29 mA/41 VA (480 V AC)	29 mA/52 VA (600 V AC)	29 mA/59 VA (690 V AC)	25 mA / 10 VA (115 V AC)	5 mA/4 VA (230 V AC)	25 mA/18 VA (230 V AC)	5 mA/4 VA (400 V AC)
	100%	100%	100%		100%		100%
Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Can be deactivated	Can be deactivated	Can be deactivated	Can be deactivated	Can be deactivated	Can be deactivated	Can be deactivated	Can be deactivated
No	Yes	Yes	Yes	No	Yes	No	Yes
Yes	Yes	Yes	Yes	Yes		Yes	
Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
No	No	No	No	Yes	Yes	Yes	No
3 x 420 - 500 V AC	3 x 480 - 580 V AC	3 x 690 - 820 V AC	3 x 690 - 820 V AC	3 x 120 - 170 V AC	3 x 240 - 280 V AC	3 x 240 - 280 V AC	3 x 420 - 500 V AC
3 x 300 - 380 V AC	3 x 450 - 570 V AC	3 x 530 - 660 V AC	3 x 530 - 660 V AC	3 x 90 - 130 V AC	3 x 180 - 220 V AC	3 x 180 - 220 V AC	3 x 300 - 380 V AC
2 - 25 % of phase voltage mean value	2 - 25 % of phase voltage mean value	2 - 25 % of phase voltage mean value	2 - 25 % of phase voltage mean value	2 - 25 % of phase voltage mean value	2 - 25 % of phase voltage mean value	2 - 25 % of phase voltage mean value	2 - 25 % of phase voltage mean value
Adjustable within measuring range	Adjustable within measuring range	Adjustable within measuring range	Adjustable within measuring range	Adjustable within measuring range	Adjustable within measuring range	Adjustable within measuring range	Adjustable within measuring range
Adjustable within measuring range	Adjustable within measuring range	Adjustable within measuring range	Adjustable within measuring range	Adjustable within measuring range	Adjustable within measuring range	Adjustable within measuring range	
Adjustable within measuring range	2 - 25 % of phase voltage mean value	2 - 25 % of phase voltage mean value	2 - 25 % of phase voltage mean value	Adjustable within measuring range	Adjustable within measuring range	Adjustable within measuring range	Adjustable within measuring range
	Adjustable within measuring range	Adjustable within measuring range	Adjustable within measuring range	Adjustable within measuring range	Adjustable within measuring range	Adjustable within measuring range	Adjustable within measuring range
Fixed 5 %	Fixed 5 %	Fixed 5 %	Fixed 5 %	Fixed 5 %	Fixed 5 %	Fixed 5 %	Fixed 5 %
Fixed 20 %	Fixed 20 %	Fixed 20 %	Fixed 20 %	Fixed 20 %	Fixed 20 %	Fixed 20 %	Fixed 20 %
50/60 Hz	50/60 Hz	50/60 Hz	50/60 Hz	50/60 Hz	50/60/400 Hz	50/60 Hz	50/60/400 Hz
45 - 65 Hz	45 - 65 Hz	45 - 65 Hz	45 - 65 Hz	45 - 65 Hz	45 - 440 Hz	45 - 65 Hz	45 - 440 Hz
100 ms	100 ms	100 ms	100 ms	100 ms	100 ms	100 ms	100 ms
≤ 0.5 %	≤ 0.5 %	≤ 0.5 %	≤ 0.5 %	≤ 0.5 %	≤ 0.5 %	≤ 0.5 %	≤ 0.5 %
≤ 0.06 %/°C	≤ 0.06 %/°C	≤ 0.06 %/°C	≤ 0.06 %/°C	≤ 0.06 %/°C	≤ 0.06 %/°C	≤ 0.06 %/°C	≤ 0.06 %/°C
True RMS value measurement							
Fixed 200 ms	Fixed 200 ms	Fixed 200 ms	Fixed 200 ms	Fixed 200 ms	Fixed 200 ms	Fixed 200 ms	Fixed 200 ms
	Fixed 250 ms	Fixed 250 ms	Fixed 250 ms		Fixed 250 ms		Fixed 250 ms
On- or off-delay; none = 0, adjustable 0.1 - 30 s	On- or off-delay; none = 0, adjustable 0.1 - 30 s	On- or off-delay; none = 0, adjustable 0.1 - 30 s	On- or off-delay; none = 0, adjustable 0.1 - 30 s	On- or off-delay; none = 0, adjustable 0.1 - 30 s	On- or off-delay; none = 0, adjustable 0.1 - 30 s	On- or off-delay; none = 0, adjustable 0.1 - 30 s	On- or off-delay; none = 0, adjustable 0.1 - 30 s
≤ 0.5 %	≤ 0.5 %	≤ 0.5 %	≤ 0.5 %	≤ 0.5 %	≤ 0.5 %	≤ 0.5 %	≤ 0.5 %
≤ 0.06 %/°C	≤ 0.06 %/°C	≤ 0.06 %/°C	≤ 0.06 %/°C	≤ 0.06 %/°C	≤ 0.06 %/°C	≤ 0.06 %/°C	≤ 0.06 %/°C
±0.2 %	±0.2 %	±0.2 %	±0.2 %	±0.2 %	±0.2 %	±0.2 %	±0.2 %
See instructional leaflet							

	EMR5-W300-1-C	EMR5-W380-1	EMR5-W400-1	EMR5-W500-1-D	EMR5-AW300-1-C
Output circuits					
Output circuits	15-16/18, 25-26/28	15-16/18, 25-26/28	15-16/18, 25-26/28	15-16/18, 25-26/28	15-16/18, 25-26/28
Output type	2 x 1 relay (changeover contact)	2 x 1 relay (changeover contact)	2 x 1 relay (changeover contact)	2 x 1 relay (changeover contact)	1 x 2 relays (changeover contact)
Operating principle	Closed-circuit principle: Output relays drop out when value above/below set threshold value				
Contact material	AgNi alloy, Cd-free				
Rated operating voltage (VDE 0110, IEC 60947-1)	250 V	250 V	250 V	250 V	250 V
Minimum switching voltage/minimum switching current	No	No	No	No	
Minimum switching duty	24 V/10 mA	24 V/10 mA	24 V/10 mA	24 V/10 mA	24 V/10 mA
Maximum switching voltage	See TB_EMR_PRO_01	See TB_EMR_PRO_01	See TB_EMR_PRO_01	See TB_EMR_PRO_01	See TB_EMR_PRO_01
Rated operational current (IEC 60947-5-1)					
AC12 (resistive) at 230 V	4 A	4 A	4 A	4 A	4 A
AC15 (inductive) at 230 V	3 A	3 A	3 A	3 A	3 A
DC12 (resistive) at 24 V	4 A	4 A	4 A	4 A	4 A
DC13 (inductive) at 24 V	2 A	2 A	2 A	2 A	2 A
Rated operational data AC (UL 508)					
Utilization category (Control Circuit Rating Code)	B 300	B 300	B 300	B 300	B 300
Max. rated operational voltage	300 V AC	300 V AC	300 V AC	300 V AC	300 V AC
Max. thermal uninterrupted current at B 300	5 A	5 A	5 A	5 A	5 A
Max. input/output rating (N/O / N/C) for B 300	3600/360 VA	3600/360 VA	3600/360 VA	3600/360 VA	3600/360 VA
Mechanical lifespan					
	30 x 10 ⁶ operations	30 x 10 ⁶ operations	30 x 10 ⁶ operations	30 x 10 ⁶ operations	30 x 10 ⁶ operations
Electrical lifespan (AC12, 230 V, 4 A)					
	0.1 x 10 ⁶ operations	0.1 x 10 ⁶ operations	0.1 x 10 ⁶ operations	0.1 x 10 ⁶ operations	0.1 x 10 ⁶ operations
Short-circuit strength, maximum fuse rating					
Normally closed contact	6 A fast	6 A fast	6 A fast	6 A fast	6 A fast
Normally open contact	10 A fast	10 A fast	10 A fast	10 A fast	10 A fast
Duty factor (DF)	100 %	100 %	100 %	100 %	100 %
General data					
Enclosure measurements (w x h x d)	22.5 x 78 x 100 mm (0.89 x 3.07 x 3.94 inches)	22.5 x 78 x 100 mm (0.89 x 3.07 x 3.94 inches)	22.5 x 78 x 100 mm (0.89 x 3.07 x 3.94 inches)	22.5 x 78 x 100 mm (0.89 x 3.07 x 3.94 inches)	22.5 x 78 x 100 mm (0.89 x 3.07 x 3.94 inches)
Mounting position	Any	Any	Any	Any	Any
Weight					0.13 kg (0.29 lb)
Degree of protection of enclosures/terminals	IP50/IP20	IP50/IP20	IP50/IP20	IP50/IP20	IP50/IP20
Mounting	DIN rail (IEC/EN 60715), clip-type toolless				
Minimum distance to adjacent devices					
Horizontal (min. 10 mm from continuous voltage)	> 220 V	> 400 V	> 400 V	> 400 V	> 220 V
Vertical	None	None	None	None	None
Electrical connection					
Terminal capacities					
Flexible with ferrule	2 x 0.75-2.5 mm ² (2 x 18 - 14 AWG)				
Flexible without ferrule	2 x 0.75-2.5 mm ² (2 x 18 - 14 AWG)				
Rigid	2 x 0.5-4 mm ² (2 x 20 - 12 AWG)				
Stripped length	7 mm (0.28 inches)	7 mm (0.28 inches)	7 mm (0.28 inches)	7 mm (0.28 inches)	7 mm (0.28 inches)
Tightening torque	0.6 - 0.8 Nm	0.6 - 0.8 Nm	0.6 - 0.8 Nm	0.6 - 0.8 Nm	0.6 - 0.8 Nm
Environmental data					
Ambient temperature range, operation/storage					
	-25 - +60 °C / -40 - +85 °C				
Damp heat (IEC 60068-2-30)	55 °C, 6 cycles	55 °C, 6 cycles	55 °C, 6 cycles	55 °C, 6 cycles	55 °C, 6 cycles
Climatic class	3K3	3K3	3K3	3K3	3K3
Vibration (sinusoidal) (IEC/EN) 60255-21-1)	Class 2	Class 2	Class 2	Class 2	Class 2
Impact (IEC/EN 60255-21-2)	Class 2	Class 2	Class 2	Class 2	Class 2

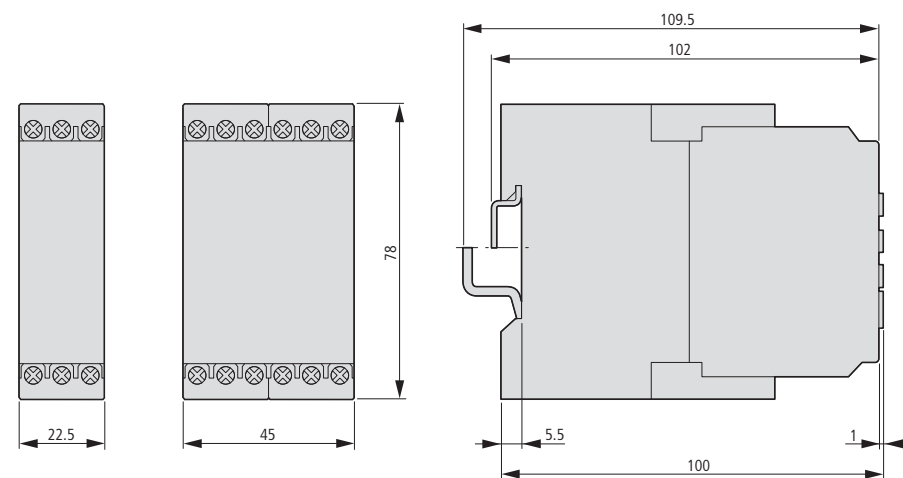
EMR5-AW500-1-D	EMR5-AWM580-2	EMR5-AWM720-2	EMR5-AWM820-2	EMR5-AWN170-1-E	EMR5-AWN280-1	EMR5-AWN280-1-F	EMR5-AWN500-1
15-16/18, 25-26/28	15-16/18, 25-26/28	15-16/18, 25-26/28	15-16/18, 25-26/28	15-16/18, 25-26/28	15-16/18, 25-26/28	15-16/18, 25-26/28	15-16/18, 25-26/28
1 x 2 relays (changeover contact)	2 x 1 or 1 x 2 changeover contact, selectable (relay)	2 x 1 or 1 x 2 changeover contact, selectable (relay)	2 x 1 or 1 x 2 changeover contact, selectable (relay)	1 x 2 relays (changeover contact)	2 x 1 or 1 x 2 changeover contact, selectable (relay)	1 x 2 relays (changeover contact)	2 x 1 or 1 x 2 changeover contact, selectable (relay)
250 V	250 V	250 V	250 V	250 V	250 V	250 V	250 V
24 V/10 mA	24 V/10 mA	24 V/10 mA	24 V/10 mA	25 V/10 mA	26 V/10 mA	27 V/10 mA	28 V/10 mA
See TB_EMR_PRO_01	See TB_EMR_PRO_02	See TB_EMR_PRO_02	See TB_EMR_PRO_02	See TB_EMR_PRO_01	See TB_EMR_PRO_01	See TB_EMR_PRO_01	
4 A	4 A	4 A	4 A	4 A	4 A	4 A	4 A
3 A	3 A	3 A	3 A	3 A	3 A	3 A	3 A
4 A	4 A	4 A	4 A	4 A	4 A	4 A	4 A
2 A	2 A	2 A	2 A	2 A	2 A	2 A	2 A
B 300	B 300	B 300	B 300	B 300	B 300	B 300	B 300
300 V AC	300 V AC	300 V AC	300 V AC	300 V AC	300 V AC	300 V AC	300 V AC
5 A	5 A	5 A	5 A	5 A	5 A	5 A	5 A
3600/360 VA	3600/360 VA	3600/360 VA	3600/360 VA	3600/360 VA	3600/360 VA	3600/360 VA	3600/360 VA
30 x 10 ⁶ operations	30 x 10 ⁶ operations	30 x 10 ⁶ operations	30 x 10 ⁶ operations	30 x 10 ⁶ operations	30 x 10 ⁶ operations	30 x 10 ⁶ operations	30 x 10 ⁶ operations
0.1 x 10 ⁶ operations	0.1 x 10 ⁶ operations	0.1 x 10 ⁶ operations	31 x 10 ⁶ operations	31 x 10 ⁶ operations	0.1 x 10 ⁶ operations	0.1 x 10 ⁶ operations	0.1 x 10 ⁶ operations
6 A fast	10 A fast	10 A fast	10 A fast	6 A fast	6 A fast	6 A fast	6 A fast
10 A fast	10 A fast	10 A fast	10 A fast	10 A fast	10 A fast	10 A fast	10 A fast
100 %	100 %	100 %	100 %	100 %	100 %	100 %	100 %
22.5 x 78 x 100 mm (0.89 x 3.07 x 3.94 inches)	45 x 78 x 100 mm (1.78 x 3.07 x 3.94 inches)	45 x 78 x 100 mm (1.78 x 3.07 x 3.94 inches)	45 x 78 x 100 mm (1.78 x 3.07 x 3.94 inches)	22.5 x 78 x 100 mm (0.89 x 3.07 x 3.94 inches)	22.5 x 78 x 100 mm (0.89 x 3.07 x 3.94 inches)	22.5 x 78 x 100 mm (0.89 x 3.07 x 3.94 inches)	22.5 x 78 x 100 mm (0.89 x 3.07 x 3.94 inches)
Any	Any	Any	Any	Any	Any	Any	Any
0.13 kg (0.29 lb)	0.22 kg (0.49 lb)	0.22 kg (0.49 lb)	0.22 kg (0.49 lb)	0.14 kg (0.31 lb)	0.14 kg (0.31 lb)	0.14 kg (0.31 lb)	0.13 kg (0.29 lb)
IP50/IP20	IP50/IP20	IP50/IP20	IP50/IP20	IP50/IP21	IP50/IP20	IP50/IP20	IP50/IP20
> 400 V	None	None	None	> 120 V	None	> 240 V	None
None	None	None	None	None	None	None	None
7 mm (0.28 inches)	7 mm (0.28 inches)	7 mm (0.28 inches)	7 mm (0.28 inches)	7 mm (0.28 inches)	7 mm (0.28 inches)	7 mm (0.28 inches)	7 mm (0.28 inches)
0.6 - 0.8 Nm	0.6 - 0.8 Nm	0.6 - 0.8 Nm	0.6 - 0.8 Nm	0.6 - 0.8 Nm	0.6 - 0.8 Nm	0.6 - 0.8 Nm	0.6 - 0.8 Nm
55 °C, 6 cycles	55 °C, 6 cycles	55 °C, 6 cycles	55 °C, 6 cycles	55 °C, 6 cycles	55 °C, 6 cycles	55 °C, 6 cycles	55 °C, 6 cycles
3K3	3K3	3K3	3K3	3K3	3K3	3K3	3K3
Class 2	Class 2	Class 2	Class 2	Class 2	Class 2	Class 2	Class 2
Class 2	Class 2	Class 2	Class 2	Class 2	Class 2	Class 2	Class 2

	EMR5-W300-1-C	EMR5-W380-1	EMR5-W400-1	EMR5-W500-1-D	EMR5-AW300-1-C
Insulation data					
Rated insulation voltage U _i					
Input circuit/output circuit	600 V	600 V	600 V	600 V	600 V
Input circuit 1/output circuit 2	300 V	300 V	300 V	300 V	300 V
Rated impulse withstand voltage U _{imp} (VDE 0110, IEC/EN 60664)					
Input circuit	6 kV; 1.2/50 μs	6 kV; 1.2/50 μs	6 kV; 1.2/50 μs	6 kV; 1.2/50 μs	6 kV; 1.2/50 μs
Output circuits	4 kV; 1.2/50 μs	4 kV; 1.2/50 μs	4 kV; 1.2/50 μs	4 kV; 1.2/50 μs	4 kV; 1.2/50 μs
Test voltage between all insulated circuits (routine test)					
	2.5 kV, 50 Hz, 1 s	2.5 kV, 50 Hz, 1 s	2.5 kV, 50 Hz, 1 s	2.5 kV, 50 Hz, 1 s	2.5 kV, 50 Hz, 1 s
Input circuit and insulated output circuits					
Basic insulation, input circuit/output circuit	600 V	600 V	600 V	600 V	600 V
Safe isolation (VDE 0160 Part 101 and 101/A1, IEC/EN 61140) input circuit/output circuit	No	No	No	No	No
Pollution degree (VDE 0110, IEC/EN 60664, UL 508)					
	3	3	3	3	3
Overvoltage category (VDE 0110, IEC 60664, UL 508)					
	III	III	III	III	III
Directives and standards					
Product standard IEC/EN 60255-6, EN 50178					
Low-Voltage Directive	2006/95/EC	2006/95/EC	2006/95/EC	2006/95/EC	2006/95/EC
EMC Directive	2004/108/EC	2004/108/EC	2004/108/EC	2004/108/EC	2004/108/EC
RoHS Directive	2002/95/EC	2002/95/EC	2002/95/EC	2002/95/EC	2002/95/EC
Electromagnetic compatibility					
Interference immunity EN 61000-6-1, EN 61000-6-2					
Electrostatic discharge (ESD) IEC/EN 61000-4-2	Level 3 (6 kV/8 kV)	Level 3 (6 kV/8 kV)	Level 3 (6 kV/8 kV)	Level 3 (6 kV/8 kV)	Level 3 (6 kV/8 kV)
Electromagnetic field (immunity to RF interference) IEC/EN 61000-4-3	Level 3 (10 V/m)	Level 3 (10 V/m)	Level 3 (10 V/m)	Level 3 (10 V/m)	Level 3 (10 V/m)
Fast transients (burst) IEC/EN 61000-4-4	Level 3 (2 kV/2 kHz)	Level 3 (2 kV/2 kHz)	Level 3 (2 kV/2 kHz)	Level 3 (2 kV/2 kHz)	Level 3 (2 kV/2 kHz)
High-energy pulses (surge) IEC 1000-4-5, EN 61000-4-5	Level 4 (2 kV L-L)	Level 4 (2 kV L-L)	Level 4 (2 kV L-L)	Level 4 (2 kV L-L)	Level 4 (2 kV L-L)
Cable-borne HF IEC 100-4-6, EN 61000-4-6	Level 3 (10 V)	Level 3 (10 V)	Level 3 (10 V)	Level 3 (10 V)	Level 3 (10 V)
Resistance to harmonics EN 61000-4-13	Class 3	Class 3	Class 3	Class 3	Class 3
Emitted interference EN 61000-6-3, EN 61000-6-4					
Electromagnetic field (immunity to RF interference) IEC/CISPR 22, EN 50022	Class B	Class B	Class B	Class B	Class B
Cable-borne HF	Class B	Class B	Class B	Class B	Class B

Dimensions

Measuring and monitoring relays

EMR...



EMR5-AW500-1-D	EMR5-AWM580-2	EMR5-AWM720-2	EMR5-AWM820-2	EMR5-AWN170-1-E	EMR5-AWN280-1	EMR5-AWN280-1-F	EMR5-AWN500-1
Rated insulation voltage U _i							
600 V	1000 V	1000 V	1000 V	600 V	600 V	600 V	600 V
300 V	300 V	300 V	300 V	300 V	300 V	300 V	300 V
Rated impulse withstand voltage U _{imp} (VDE 0110, IEC/EN 60664)							
6 kV; 1.2/50 μs	8 kV; 1.2/50 μs	8 kV; 1.2/50 μs	8 kV; 1.2/50 μs	6 kV; 1.2/50 μs	6 kV; 1.2/50 μs	6 kV; 1.2/50 μs	6 kV; 1.2/50 μs
4 kV; 1.2/50 μs	4 kV; 1.2/50 μs	4 kV; 1.2/50 μs	4 kV; 1.2/50 μs	4 kV; 1.2/50 μs	4 kV; 1.2/50 μs	4 kV; 1.2/50 μs	4 kV; 1.2/50 μs
2.5 kV, 50 Hz, 1 s	2.5 kV, 50 Hz, 1 s	2.5 kV, 50 Hz, 1 s	2.5 kV, 50 Hz, 1 s	2.5 kV, 50 Hz, 1 s	2.5 kV, 50 Hz, 1 s	2.5 kV, 50 Hz, 1 s	2.5 kV, 50 Hz, 1 s
	4 kV, 50 Hz, 1 s	4 kV, 50 Hz, 1 s	4 kV, 50 Hz, 1 s		2.5 kV, 50 Hz, 1 s		2.5 kV, 50 Hz, 1 s
600 V	1000 V	1000 V	1000 V	600 V	600 V	600 V	600 V
No	No	No	No	Yes	No	Yes	No
3	III	III	III	3	III	3	III
III	3	3	3	III	3	III	3
Product standard IEC/EN 60255-6, EN 50178							
2006/95/EC	2006/95/EC	2006/95/EC	2006/95/EC	2006/95/EC	2006/95/EC	2006/95/EC	2006/95/EC
2004/108/EC	2004/108/EC	2004/108/EC	2004/108/EC	2004/108/EC	2004/108/EC	2004/108/EC	2004/108/EC
2002/95/EC	2002/95/EC	2002/95/EC	2002/95/EC	2002/95/EC	2002/95/EC	2002/95/EC	2002/95/EC
Interference immunity EN 61000-6-1, EN 61000-6-2							
Level 3 (6 kV/8 kV)	Level 3 (6 kV/8 kV)	Level 3 (6 kV/8 kV)	Level 3 (6 kV/8 kV)	Level 3 (6 kV / 8 kV)	Level 3 (6 kV/8 kV)	Level 3 (6 kV/8 kV)	Level 3 (6 kV/8 kV)
Level 3 (10 V/m)	Level 3 (10 V/m)	Level 3 (10 V/m)	Level 3 (10 V/m)	Level 3 (10 V/m)	Level 3 (10 V/m)	Level 3 (10 V/m)	Level 3 (10 V/m)
Level 3 (2 kV/2 kHz)	Level 3 (2 kV/2 kHz)	Level 3 (2 kV/2 kHz)	Level 3 (2 kV/2 kHz)	Level 3 (2 kV / 2 kHz)	Level 3 (2 kV/2 kHz)	Level 3 (2 kV/2 kHz)	Level 3 (2 kV/2 kHz)
Level 4 (2 kV L-N)	Level 4 (2 kV L-L)	Level 4 (2 kV L-L)	Level 4 (2 kV L-L)	Level 4 (2 kV L-N)	Level 4 (2 kV L-N)	Level 4 (2 kV L-N)	Level 4 (2 kV L-L)
Level 3 (10 V)	Level 3 (10 V)	Level 3 (10 V)	Level 3 (10 V)	Level 3 (10 V)	Level 3 (10 V)	Level 3 (10 V)	Level 3 (10 V)
Class 3	Class 3	Class 3	Class 3	Class 3	Class 3	Class 3	Class 3
Emitted interference EN 61000-6-3, EN 61000-6-4							
Class B	Class B	Class B	Class B	Class B	Class B	Class B	Class B
Class B	Class B	Class B	Class B	Class B	Class B	Class B	Class B

Sealable shrouds

EMR4-PH...

