



Phase monitoring relays, Multi-functional, 90 - 170 V AC, 50/60 Hz

Part no. **EMR6-AWN170-E-1**  
 Catalog No. **184768**  
 Eaton Catalog No. **EMR6-AWN170-E-1**

## Technical data

### General

Standards			IEC, UL, CSA, CCC, GL
Lifespan, mechanical	Operations	$\times 10^6$	30
Climatic proofing			Damp heat, cyclical to IEC 60068-2-30: 24 h cycle, 55° C, 93% relative humidity, 96 h
Ambient temperature			
Operation		°C	
Operating ambient temperature min.		°C	-25
Operating ambient temperature max.		°C	+60
Storage		°C	-40 - 85
Mounting position			As required
Shock resistance			Class 2
Degree of protection			
Terminals			IP20
Enclosures			IP50
Terminal capacities		mm <sup>2</sup>	
Solid		mm <sup>2</sup>	1 x 0.5-2.5 (1 x 18-14 AWG)
Flexible with ferrule		mm <sup>2</sup>	2 x 0.5-1.5 (2 x 18-16 AWG)
Standard screwdriver		mm	5.5 x 0.8
Tightening torque		Nm	0.6 - 0.8
Fixing			Snap fixing, top-hat rail IEC/EN 60715
MTBF (mean time between failures)			382977 h

### Contacts

Rated impulse withstand voltage	$U_{imp}$	V AC	4000
Overvoltage category/pollution degree			III/3

### Power supply

Supply voltage			90 - 170 V AC, 50/60 Hz
Voltage tolerance		$\times U_c$	0.85 - 1.1
Power consumption		VA	3
Rated frequency	f	Hz	50 - 60
Duty factor		% DF	100

### Timing cycle

Response delay time		s	0.2
Reset delay/Off-delay time		s	Adjustable from 0.1 – 30
Time error within supply voltage		%	0.5
Time error within temperature range		%/°C	0.06

### Measuring circuits

Frequency		Hz	50/60 ± 10 %
Hysteresis		%	0 ... 5
Frequency		Hz	50/60 ± 10 %
Measuring cycle		ms	50
Temperature error		%/°C	0.06
Error within supply voltage		%	0.5

### Status indication

Supply voltage			LED green: R on
Output relay energized			LED green: R flashes

Overvoltage			LED red: F1 on
Undervoltage			LED red: F2 on
Status indicator (LED)			Green, solid: Supply voltage Yellow, solid: Relay energized Yellow, flashing: Delay time running Red, solid (F1 & F2): Imbalance Red, solid (F1): Overvoltage Red, solid (F2): Undervoltage Red: F1 solid, F2 flashing: Phase failure Red, F1 solid & F2 flashing: Open neutral conductor Red, flashing (F1 & F2 alternating): Phase sequence fault

### Relay output contacts

Rated operational voltage	$U_e$	V AC	250
Rated operational current	$I_e$	A	
AC-12 at 230 V	$I_e$	A	4
AC-15 with 230 V	$I_e$	A	3
DC-12 at 24 V	$I_e$	A	4
DC-13 at 24 V	$I_e$	A	2
Lifespan, electrical (AC-12/230 V/4 A)	Operations	$\times 10^6$	
Lifespan, electrical	Operations	$\times 10^6$	0.1
Short-circuit rating			
max. fuse	Fast/gL	A	5

### Electromagnetic compatibility (EMC)

Electromagnetic compatibility			IEC/EN 60947-6-2
ESD	Air/contact discharge	kV	IEC/EN 61000-4-2 level 3
HF-immunity to radiation			IEC/EN 61000-4-3 level 3
Burst			IEC/EN 61000-4-4 level 3
Surge			IEC/EN 61000-4-5 Level 4
HF-immunity to line-conducted interference			IEC/EN 61000-4-6 level 3

### Design verification as per IEC/EN 61439

Technical data for design verification			
Operating ambient temperature min.		°C	-25
Operating ambient temperature max.		°C	60

### Technical data ETIM 7.0

Relays (EG000019) / Phase monitoring relay (EC001441)			
Electric engineering, automation, process control engineering / Low-voltage switch technology / Monitoring equipment (low-voltage switch technology) / Asymmetry monitoring equipment (ecl@ss10.0.1-27-37-18-03 [AKF097014])			
Type of electric connection			Screw connection
With detachable clamps			No
Rated control supply voltage $U_s$ at AC 50HZ		V	90 - 170
Rated control supply voltage $U_s$ at AC 60HZ		V	90 - 170
Rated control supply voltage $U_s$ at DC		V	0 - 0
Voltage type for actuating			AC
Phase sequence monitoring			Yes
Phase failure detection			Yes
Function under voltage detection			Yes
Function over voltage detection			Yes
Phase imbalance monitoring			Yes
Voltage measurement range		V	90 - 170
Min. adjustable delay-on energization time		s	0.1
Max. permitted delay-on energization time		s	30
Min. adjustable off-delay time		s	0.1
Max. permitted off-delay time		s	30
Number of contacts as normally closed contact			0
Number of contacts as normally open contact			0
Number of contacts as change-over contact			2

Width	mm	23
Height	mm	85
Depth	mm	110

## Dimensions

