

Electronic Measuring Relays

Measuring relays for AC/DC voltages / over- and undervoltages



Measuring relays for AC/DC voltages

Type AUN1/510ca - 1.60 - (Uv) Ref. no 16.28-01
Type AUN1/511cq - 1.60 - (Uv) Ref. no 16.28-02

Task

Monitors voltages of AC or DC circuits for exceeding or falling below an adjustable threshold S.

Use

Monitor for dry and storage batteries, emergency power sources, solar generators; monitoring electrical drives for standstill.

Range extensions

Voltages exceeding 300 V with series resistor at terminal 1 (3.67 kΩ per 1 V range extension).

Hysteresis H and times X, Y and Z

Version /510ca: H fixed 5 % of S, no times.

Version /511cq: H adjustable 5 ... 50 % of S, start time delay X adjustable up to approx. 5 s, pull-in delay Y and dropout delay Z adjustable together up to approx. 0.5 s.

See catalog pages 2.1.1 and 2.1.2

Measuring relays for over- and undervoltages

Type AUNF1/510ca - 1.60 - (Uv) Ref. no 16.28-03
Type AUNF1/510cq - 1.60 - (Uv) Ref. no 16.28-04

Task

Monitors over- and undervoltages of AC/DC circuits by using a window comparator.

Use

Monitor for dry and storage batteries, emergency power sources, solar generators; monitoring electrical drives for standstill.

Range extensions

Voltages exceeding 300 V with series resistor at terminal1 (3.67 kΩ per 1 V range extension).

Hysteresis H and times X, Y and Z

Version /510ca: H fixed 5 % of S, no times.

Version /510cq: H fixed 5 % of S, start time delay X adjustable up to approx. 5 s, pull-in delay Y and dropout delay Z adjustable together up to approx. 0.5 s.

See catalog pages 2.1.3 and 2.1.4

Measuring relays for AC/DC voltages

Type	Ref. no.	Page	Voltage range	Operating voltage U_V	Version
AUN1/510ca - 1.60 - 42VAC	16.28-01-003	2.1.1	4 mV ... 300 V	42 V AC	threshold adjustable, H fixed, no times
AUN1/510ca - 1.60 - 24VAC	16.28-01-005	2.1.1	4 mV ... 300 V	24 V AC	threshold adjustable, H fixed, no times
AUN1/510ca - 1.60 - 115/230VAC	16.28-01-007	2.1.1	4 mV ... 300 V	115 / 230 V AC	threshold adjustable, H fixed, no times
AUN1/511cq - 1.60 - 42VAC	16.28-02-003	2.1.2	4 mV ... 300 V	42 V AC	threshold adjustable, H adjustable
AUN1/511cq - 1.60 - 24VAC	16.28-02-005	2.1.2	4 mV ... 300 V	24 V AC	threshold adjustable, H adjustable
AUN1/511cq - 1.60 - 115/230VAC	16.28-02-007	2.1.2	4 mV ... 300 V	115 / 230 V AC	threshold adjustable, H adjustable

Measuring relays for over- and undervoltages

Type	Ref. no.	Page	Voltage range	Operating voltage U_V	Version
AUNF1/510ca - 1.60 - 42VAC	16.28-03-003	2.1.3	4 mV ... 300 V	42 V AC	threshold adjustable, H fixed, no times
AUNF1/510ca - 1.60 - 24VAC	16.28-03-005	2.1.3	4 mV ... 300 V	24 V AC	threshold adjustable, H fixed, no times
AUNF1/510ca - 1.60 - 115/230VAC	16.28-03-007	2.1.3	4 mV ... 300 V	115 / 230 V AC	threshold adjustable, H fixed, no times
AUNF1/510cq - 1.60 - 42VAC	16.28-04-003	2.1.4	4 mV ... 300 V	42 V AC	threshold adjustable, H fixed
AUNF1/510cq - 1.60 - 24VAC	16.28-04-005	2.1.4	4 mV ... 300 V	24 V AC	threshold adjustable, H fixed
AUNF1/510cq - 1.60 - 115/230VAC	16.28-04-007	2.1.4	4 mV ... 300 V	115 / 230 V AC	threshold adjustable, H fixed

Electronic Measuring Relays

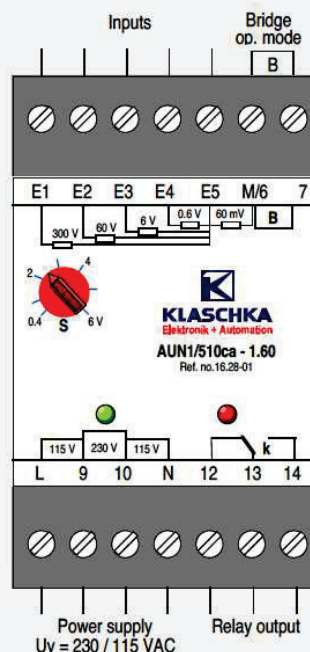
AUN measuring relays for AC/DC voltages

Device		measuring relay for AC and DC voltages
For the exact type designation and ref. no. please see page 2.0.2		AUN1/510ca-1.60 - (Uv) 16.28-01-xxx
Technical data		
Line voltage U_v	please indicate when ordering	
Alternating voltage	230 / 115, 42, 24 V AC	
Tolerance	$\pm 10 \%$	
Frequency	50 ... 60 Hz	
Operating temperature	0 ... + 60 °C	
Power consumption	approx. 4 VA	
Housing	60 (page 0.0.1)	
Weight	approx. 300 g	
(see table) Input (E)	5 voltage ranges selectable	
Output		
Relay output	1 changeover switch	
Switching voltage	24 ... 250 V AC or DC	
Switching current	0.05 ... 6 A	
Switching capacity for AC	max. 1250 VA	
Switching capacity for DC	max. 50 W	
Switching frequency	max. 5000 / h	
Switching cycles	30 x 10 ⁶	
Response times		
Exceeding threshold / falling below threshold	approx. 25 ms / approx. 100 ms	
Indicators		
1 green LED	Power ON	
1 red LED	Relay pulled-in	
Accuracy		
Setting accuracy	$\pm 5 \%$	
Repeatability	$\pm 0.5 \%$	
Temperature dependance	$\pm 0.1 \%$ / °C	
Operation mode		
a Overvoltage monitor	without bridge B between the terminals 6-7 the relay drops out when exceeding treshold S	
b Undervoltage monitor	with bridge B between the terminals 6-7 the relay pulls in when exceeding treshold S	
Hysteresis (H)	fixed 5 % of S, no times	

For general description see catalog page 2.0.1	

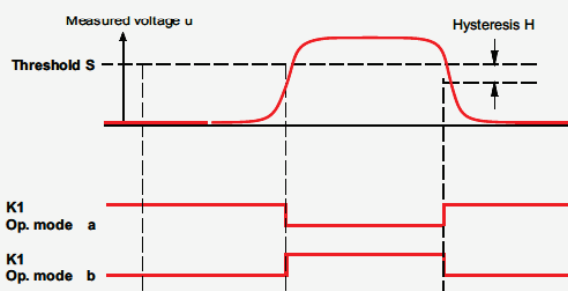
Input	Range	Input resistance	Overload capability	
			continuous	3 s, 5 % DF
E1	20 ... 300 V	1 MΩ	400 V	400 V
E2	4 ... 60 V	220 kΩ	250 V	330 V
E3	0.4 ... 6 V	22 kΩ	80 V	100 V
E4	40 ... 600 mV	2.2 kΩ	25 V	33 V
E5	4 ... 60 mV	220 Ω	8 V	10 V

For general description see catalog page 2.0.1



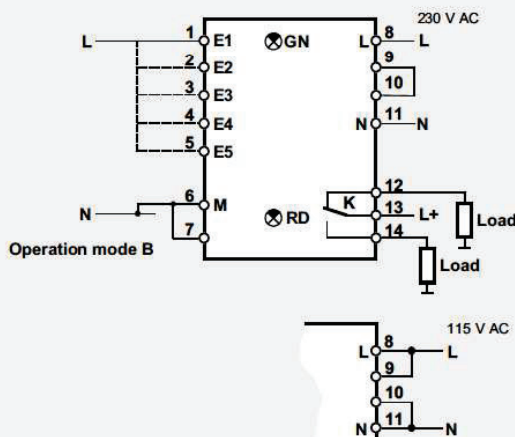
Input	Range	Input resistance	Overload capability	
			continuous	3 s, 5 % DF
E1	20 ... 300 V	1 M Ω	400 V	400 V
E2	4 ... 60 V	220 k Ω	250 V	330 V
E3	0.4 ... 6 V	22 k Ω	80 V	100 V
E4	40 ... 600 mV	2.2 k Ω	25 V	33 V
E5	4 ... 60 mV	220 Ω	8 V	10 V

Diagram



Wiring
AC/DC 2-pole

AC and DC voltage measuring relay
with LED display



2.1.1

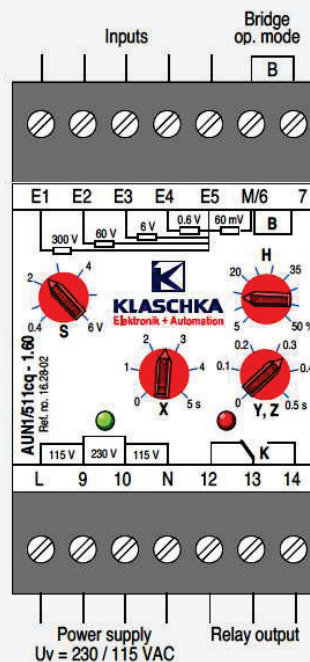
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AUN measuring relays for AC and DC voltages

Device	measuring relay for AC and DC voltages
For the exact type designation and ref. no. please see page 2.0.2	AUN1/511cq-1.60 -(Uv) 16.28-02-xxx

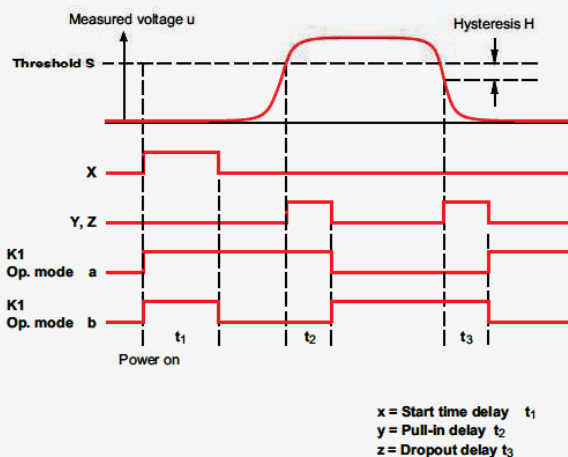
Technical data	
Line voltage Uv	please indicate when ordering
Alternating voltage	230 / 115, 42, 24 V AC
Tolerance	± 10 %
Frequency	50 ... 60 Hz
Operating temperature	0 ... + 60 °C
Power consumption	approx. 4 VA
Housing	60 (page 0.0.1)
Weight	approx. 300 g
(see table) input (E)	5 voltage ranges selectable
Output	
Relay output	1 changeover switch
Switching voltage	24 ... 250 V AC or DC
Switching current	0.05 ... 6 A
Switching capability, AC	max. 1.250 VA
Switching capability, DC	max. 50 W
Switching frequency	max. 5000 / h
Switching cycles	30 x 10 ⁶
Time delays	
Exceeding threshold / falling below threshold	approx. 25 ms / approx. 100 ms
Indicators	
1 LED green	Power ON
1 LED yellow	Relay pulled-in
Accuracy	
Setting accuracy	± 5 %
Repeatability	± 0.5 %
Temperature dependence	± 0.1 % / °C
Operation mode	
a Overvoltage monitor	without bridge B between the terminals 6-7 the relay drops out when exceeding threshold S
b Undervoltage monitor	with bridge B between the terminals 6-7 the relay pulls in when exceeding threshold S
Hysteresis (H)	adjustable 5 ... 50 % of S
Start time delay (X)	adjustable up to approx. 5 s
Pull-in (Y) / dropout delay (Z)	adjust. together up to approx. 0.5 s

For general description see catalog page 2.0.1



Input	Range	Input resistance	Overload capability	
			continuous	3 s, 5 % DF
E1	20 ... 300 V	1 MΩ	400 V	400 V
E2	4 ... 60 V	220 kΩ	250 V	330 V
E3	0.4 ... 6 V	22 kΩ	80 V	100 V
E4	40 ... 600 mV	2.2 kΩ	25 V	33 V
E5	4 ... 60 mV	220 Ω	8 V	10 V

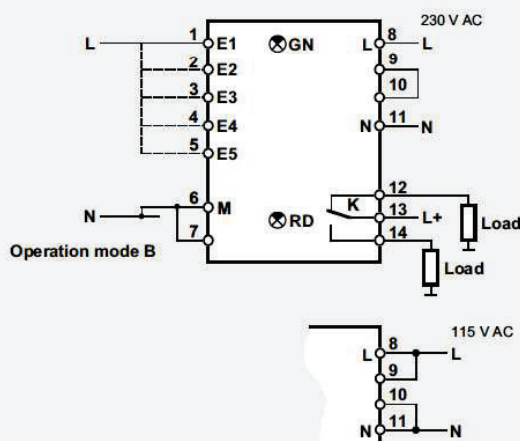
Diagram



Wiring

AC/DC 2-pole

AC and DC voltage measuring relay with LED display



Electronic Measuring Relays

AUNF measuring relays for over- and undervoltages

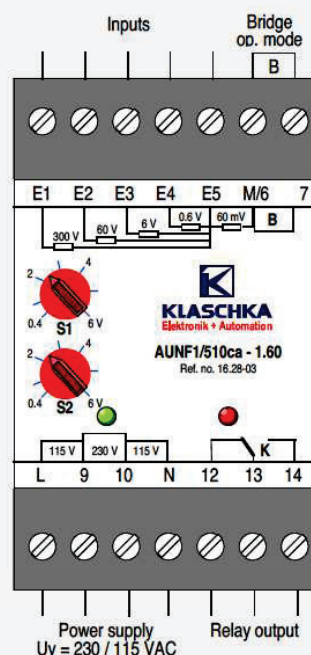
Device	
For the exact type designation and ref. no. please see page 2.0.2	

Technical data	
Line voltage Uv	please indicate when ordering
Alternating voltage	230 / 115, 42, 24 V AC
Tolerance / frequency	± 10 % / 50 ... 60 Hz
Operating temperature	0 ... + 60 °C
Power consumption	approx. 4 VA
Housing	.60 (page 0.0.1)
Weight	approx. 300 g
(see table) Input (E)	5 voltage ranges selectable
Output	
Relay output	1 changeover switch
Switching voltage	24 ... 250 V AC or DC
Switching current	0.05 ... 6 A
Switching capacity, AC	max. 1250 VA
Switching capacity, DC	max. 50 W
Switching frequency / switching cycles	max. 5000 / h / 30 x 10 ⁶
Response times	
Exceeding threshold / falling below threshold	approx.25 ms / approx. 100 ms
Indicators	
1 green LED	Power ON
1 red LED	Relay pulled-in
Accuracy	
Setting accuracy	± 5 %
Repeatability	± 0.5 %
Temperature dependance	± 0.1 % / °C
Operation mode	
a	without wire bridge B between the terminals 6-7 the relay drops out when exceeding the low threshold S and pulls-in again when exceeding the high one.
b	without wire bridge B between the terminals 6-7 the relay pulls-in when exceeding the low threshold S and drops out again when exceeding the high one.
Hysteresis (H)	fixed 5 % of S, no times

AUNF measuring relay for over- and undervoltages
AUNF1/510ca-1.60 - (Uv)
16.28-03-xxx

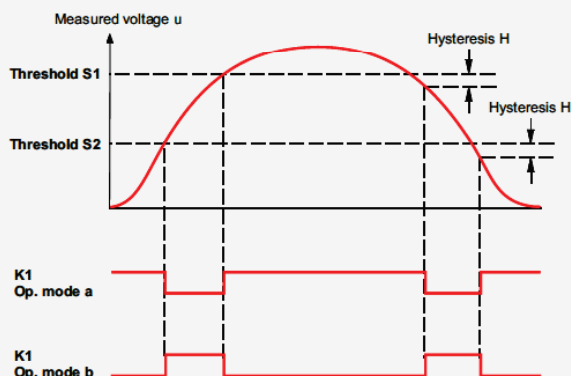
For general description see catalog page 2.0.1				
Inputs Bridge op. mode B E1 E2 E3 E4 E5 M/6 7 300 V 60 V 6 V 0.6 V 60 mV B 2 0.4 S1 6 V 2 0.4 S2 6 V 115 V 230 V 115 V N 12 13 14 K L 9 10 12 13 14 Power supply Uv = 230 / 115 VAC Relay output KLASCHKA Elektronik + Automation AUNF1/510ca - 1.60 Ref. no. 16.28-03				
Input	Range	Input resistance	Overload capability	
E1	20 ... 300 V	1.1 MΩ	continuous	3 s, 5 % DF
E2	4 ... 60 V	220 kΩ	400 V	400 V
E3	0.4 ... 6 V	22 kΩ	250 V	330 V
E4	40 ... 600 mV	2.2 kΩ	80 V	100 V
E5	4 ... 60 mV	220 Ω	25 V	33 V
			8 V	10 V

For general description see catalog page 2.0.1



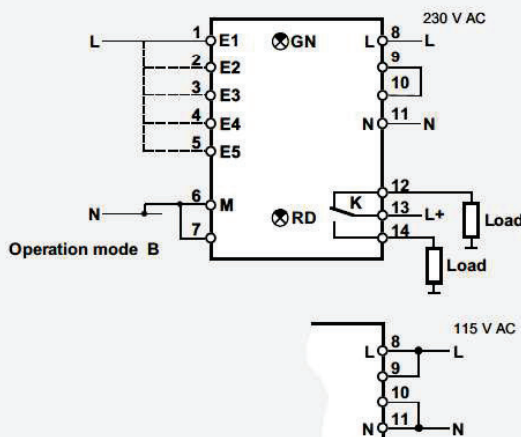
Input	Range	Input resistance	Overload capability	
			continuous	3 s, 5 % DF
E1	20 ... 300 V	1.1 M Ω	400 V	400 V
E2	4 ... 60 V	220 k Ω	250 V	330 V
E3	0.4 ... 6 V	22 k Ω	80 V	100 V
E4	40 ... 600 mV	2.2 k Ω	25 V	33 V
E5	4 ... 60 mV	220 Ω	8 V	10 V

Pulse diagram



Wiring
AC/DC 2-pole

AC and DC voltage measuring relay
with LED display



2.1.3

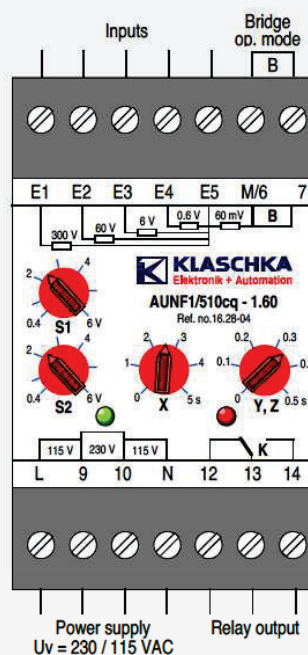
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AUNF meas. relays for over- and undervoltages

Device	AUNF measuring relay for over- and undervoltages
For the exact type designation and ref. no. please see page 2.0.2	AUNF1/510cq-1.60 - (Uv) 16.28-04-xxx

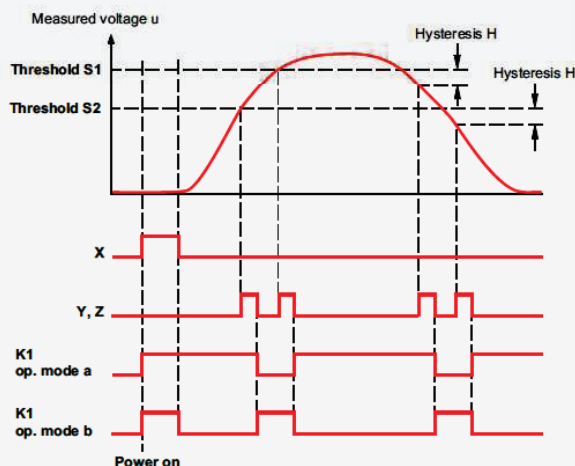
Technical data	
Line voltage Uv	please indicate when ordering
Alternating voltage	230 / 115, 42, 24 V AC
Tolerance / frequency	± 10 % / 50 ... 60 Hz
Operating temperature / power consumption	0 ... + 60 °C / approx. 4 VA
Housing	.60 (page 0.0.1)
Weight	approx. 300 g
(see table) Input (E)	5 voltage ranges selectable
Output	
Relay output	1 changeover switch
Switching voltage	24 ... 250 V AC or DC
Switching current	0.05 ... 6 A
Switching capability AC / switch. capability DC	max. 1.250 VA / max. 50 W
Switching frequency / switching cycles	max. 5000 / h / 30 x 10 ⁶
Response times	
Exceeding threshold / falling below threshold	approx. 25 ms / approx. 100 ms
Indicators	
1 LED green	Power ON
1 LED yellow	Relay pulled-in
Accuracy	
Setting accuracy	± 5 %
Repeatability	± 0.5 %
Temperature dependence	± 0.1 % / °C
Operation mode	
a	without wire bridge B between the terminals 6-7 the relay drops out when exceeding the low threshold S and pulls-in again when exceeding the high one.
b	without wire bridge B between the terminals 6-7 the relay pulls-in when exceeding the low threshold S and drops out again when exceeding the high one.
Hysteresis (H)	adjustable 5 % of S
Start time delay (X)	adjustable up to approx. 5 s
Pull-in (Y) / dropout delay (Z)	adjust. together up to approx. 0.5 s

For general description see catalog page 2.0.1



Input	Range	Input resistance	Overload capability	
			continuous	3 s, 5 % DF
E1	20 ... 300 V	1.1 MΩ	400 V	400 V
E2	4 ... 60 V	220 kΩ	250 V	330 V
E3	0.4 ... 6 V	22 kΩ	80 V	100 V
E4	40 ... 600 mV	2.2 kΩ	25 V	33 V
E5	4 ... 60 mV	220 Ω	8 V	10 V

Pulse diagram



Wiring
AC/DC 2-pole

AC and DC voltage measuring relay
with LED display

