



sifam tinsley
PRECISION INSTRUMENTATION

Analogue Meter Relay
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DATASHEET

Issue 1.0



Multifunction Meters

Transducers & Isolators

Temperature Controllers

Converters & Recorders

Digital Panel Meters

Current Transformers

Analogue Panel Meters

Shunts

Digital Multimeters

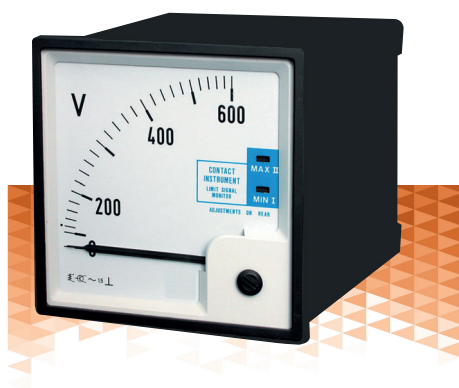
Clamp Meters

Insulation Testers

ANALOGUE METER RELAY

SUBJECT TO CHANGE WITHOUT NOTICE

This manual superseded all previous versions – please keep for future reference



Contents:

1. Short description of signaling apparatus
2. Operating description
3. Technical data
4. Characteristic data of signaling apparatus
5. General data
6. Wiring of instrument

1. Short Description of Signaler

This is electronic signaling instrument with analog display. Electronic is mounted in plastic housing. On the front the analog instrument displays measuring value. Signaling LED-s MAX II and MIN I indicates when measuring value is greater or lower then limit value. On the back side of the instrument are two potentiometers for adjusting a lower limit (CHANNEL 1) and upper limit (CHANNEL 2) of set value. Also, there are potentiometers for delay time adjusting (DELAY 1 and DELAY 2).

2. Operating Description

Versions of instrument provide use in various applications. Versions of inputs provide measuring of different physical quantities. Relay outputs can control signals or control elements. The Limit value for lower and upper limit can be adjusted on rear of the instrument by potentiometers in range of 0 ... 100%.

Delay of activating of relay outputs can be adjusted on rear by potentiometers in range 0,5 ... 30 s. Pointer on scale displays value of measuring input. LED on scale illuminates when input value becomes greater then MAX 2 limit value or lower then MIN 1 limit value. After delay time interval if input value stays out of limit relay energies. Relay 2 deenergizes when input value is lower than MAX 2 limit value. Relay 1 deenergizes when input value is greater than MIN 1 limit value.

3. Technical Data

3.1. INPUTS

3.1.1 DC voltage and DC current inputs

Measuring system:	Instrument with moving coil for measuring DC current.
DC V - meter ranges:	40 mV ... 600V
Accuracy class:	1,5 %
Input resistance:	> 10 MW for ranges 40 mV ... 4 V > 1 MW for ranges 5 V ... 600 V
DC A - meter ranges:	25 mA ... 5 A
Accuracy class:	1,5 % Input resistance is range dependent on ranges. Shunt voltage is 100 mV

3.1.2 AC voltage and AC current inputs

Measuring system:	Instrument with moving coil and rectifier for measuring AC current and voltages.
AC V - meter ranges:	100 mV ... 600 V
AC A - meter ranges:	1 mA ... 5 A
Accuracy class:	1,5 %
Frequency range:	40 ... 400 Hz
Input resistance:	> 1 MW; < 50 pF

3.1.3 Measuring of AC effective values

Measuring system:	Instrument with moving iron for effective values measuring.
AC Vef - meter ranges:	6 V ... 600 V
AC Aef - meter ranges:	100 mA ... 5 A (5/10 A) Accuracy class:
	1,5 %
Frequency range:	30 ... 100 Hz

NOTE: The signaling electronic is calibrated on r.m.s. values, at a sine shaped wave

3.1.4 Frequency meter

Measuring ranges:	45 ... 55 Hz Accuracy class: 0,5 % 48 ... 52 Hz Accuracy class: 0,5 % 45 ... 65 Hz Accuracy class: 1 % 55 ... 65 Hz Accuracy class: 0,5 % 58 ... 62 Hz Accuracy class: 0,5 %
Input voltage:	60 ... 500 V AC

3.1.5 Thermometer with thermocouple probe

Temperature probe:	thermocouple - IEC 584-1
Measuring ranges:	0 ... 250 °C (Fe - const) J 0 ... 600 °C (Fe - const) J 0 ... 1200 °C (NiCr - Ni) K 0 ... 1600 °C (PtRh - Pt) S
Temperature compensation:	built-in, reference temperature 20 °C
Accuracy class:	1,5 %

3.1.6 Thermometer with Pt 100 resistance probe

Temperature probe:	Pt 100 - IEC 751
Measuring ranges:	-200 ... 0 ...+ 50°C 0 ... 250°C 200 ... 450°C 400 ... 650°C
Connecting:	Two wires
Accuracy class:	1,5 %

3.2 OUTPUTS

Signaller has two output relays.

Switching element:	potential free alternating relay contacts. Maximal switching power at resistive load: $\leq 600 \text{ VA}$ ($\leq 3 \text{ A}$, $\leq 250 \text{ V}$)
- Output CHANNEL 1:	adjustable by MIN limit value
- Output CHANNEL 2:	adjustable by MAX limit value

4. CHARACTERISTIC DATA OF SIGNALING APPARATUS

4.1 LIMIT VALUE AND DELAY TIME ADJUSTING

Adjusting elements are on rear side of housing:

	Range of limit value adjusting (MIN, MAX) 0 ... 100 % F.S.D.
Setting accuracy:	$\pm 5 \%$ (25 ... 75 %), $\pm 15 \%$ (0...25 %, 75 ... 100 %)
Setting reproducibility:	$< 2 \%$
Hysteresis:	$< 1 \%$ F.S.D Delay time adjusting range: 0,5 ... 30 s Setting accuracy: $\pm 20\% \pm 2\text{s}$
Setting reproducibility:	$< 2 \%$

ATTENTION: Isolate supplies before adjusting % F.S.D. or DELAY settings!

5. GENERAL DATA

5.1 SUPPLY

110/230 V $\pm$	10 % 45 ... 65 Hz or 24 V DC
Power consumption:	2 VA

5.2 TEMPERATURE LIMITS

Operating temperature range:	0 ... 55 °C
Storage temperature range:	-20 ... 60 °C
Relative humidity:	$\leq 75\%$ yearly average, no condensation

5.2.1 Supply voltage influence:

$< 0,2 \%$ for $\pm 10 \%$ Un	
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5.3 HOUSING

Material:	plastics flame - retardant (flammability class UL 94 V - O)
Front dimensions:	96 mm x 96 mm (DIN 43700)
Panel cut-out dimensions:	92 mm x 92 mm
Installation depth:	max. 120 mm

5.4 PROTECTION DEGREE

Corresponding to DIN 40 050:	
Housing	IP 52
Connector	IP 00
Safety class II in accordance to IEC 348, DIN 57411	

5.5 ELECTRICAL CONNECTIONS

Screw Connector:	for wires 2,5mm ²
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5.6 MOUNTING METHOD

Into panel cut-out, held by fixing elements Mounting position must be rectangular to basis.

ATTENTION: Before inserting the instrument into panel cut-out remove the connector.

5.7

WEIGHT

Approx.:	0,6 kg
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6. WIRING OF INSTRUMENT

6.1 POWER SUPPLY CONNECTING

Signaller is constructed for power supply:	
	230 V $\pm 10 \%$ 45 ... 65 Hz or
	110 V $\pm 10 \%$ 45 ... 65 Hz or
	24 V DC

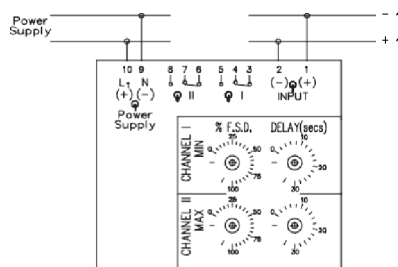
6.2. CONNECTION DIAGRAMS

6.2.1

DC V - meter

AC V - meter AC

Veff- meter

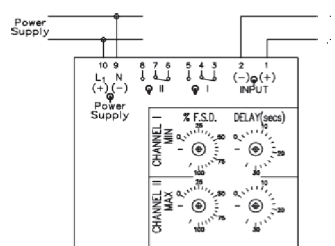


6.2.2

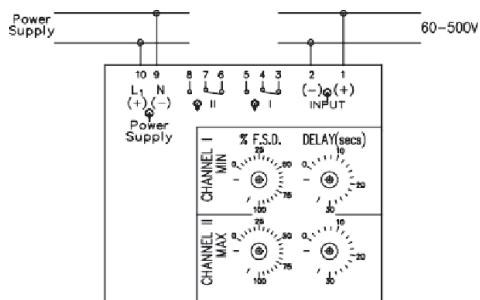
DC A - meter

AC A - meter AC

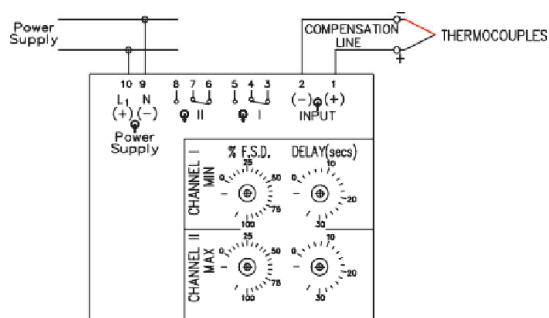
Aeff- meter



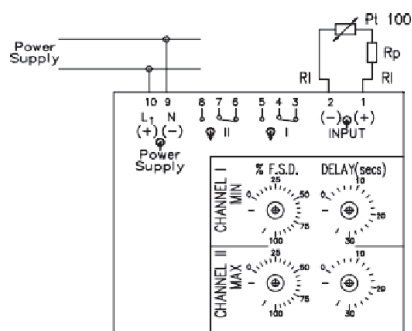
6.2.3 Frequency meter



6.2.4 Thermometer with thermocouple probe



6.2.5 Thermometer with Pt 100 probe



**ATTENTION: Wires resistively plus compensation resistor = 10 Ω .
Otherwise the instrument will display incorrect value.**

Pt 100 (RTD probe)

Rp = wires resistively compensation resistor: built-in potentiometer RI =
wires resistively

Rp + RI = 10 Ω

Contact



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