

# MI7350

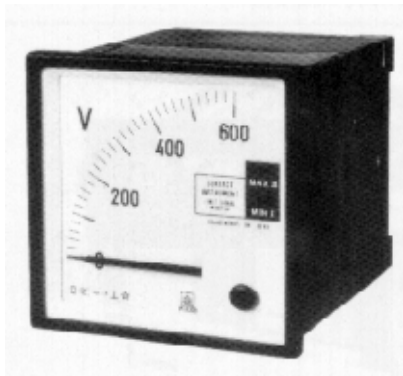
## ELECTRONIC SIGNALER



### USERS MANUAL

#### Contents:

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



## 1. SHORT DESCRIPTION OF SIGNALER

This is electronic signalling instrument with analog display. Electronic is mounted in plastic housing. On the signaller front the analog instrument displays measuring value. Signalling 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 I) and upper limit (CHANNEL II) of signaller. Also there are potentiometers for delay time adjusting (DELAY I and DELAY II).

## 2. OPERATING DESCRIPTION

Versions of signalling instrument provide use in various applications. Versions of inputs provide measuring and signalling of different physical quantities. Relay outputs can control signalling or control elements. 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 II limit value or lower then MIN I limit value. After delay time interval if input value stays out of limit relay energies. Relay II deenergizes when input value is lower then MAX II limit value. Relay I deenergizes when input value is greater then MIN I 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 M $\Omega$ for ranges 40 mV ... 4 V<br>> 1 M $\Omega$ for ranges 5 V ... 600 V |
| DC A - meter ranges:                           | 25 $\mu$ A ... 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 M $\Omega$ ; < 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 signalling 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 %<br>48 ... 52 Hz Accuracy class: 0,5 %<br>45 ... 65 Hz Accuracy class: 1 %<br>55 ... 65 Hz Accuracy class: 0,5 %<br>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<br>0 ... 600 °C ( Fe - const) J<br>0 ... 1200 °C ( NiCr - Ni) K<br>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<br>0 ... 250 °C<br>200 ... 450 °C<br>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:  $\leq 600$  VA ( $\leq 3$  A,  $\leq 250$  V)

- Output CHANNEL I: adjustable by MIN limit value
- Output CHANNEL II: 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:                               | $\pm 20$ % $\pm 2$ 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  $\pm 10$  %  $U_n$

### 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 2,5 mm<sup>2</sup>

### 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

## 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

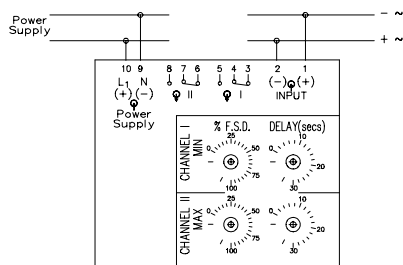
24 V DC

### 6.2. CONNECTION DIAGRAMS

#### 6.2.1 DC V - meter

AC V - meter

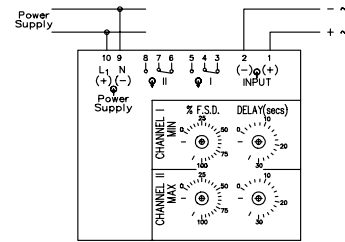
AC Veff- meter



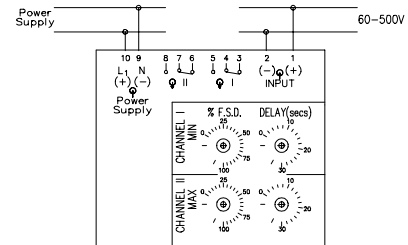
#### 6.2.2 DC A - meter

AC A - meter

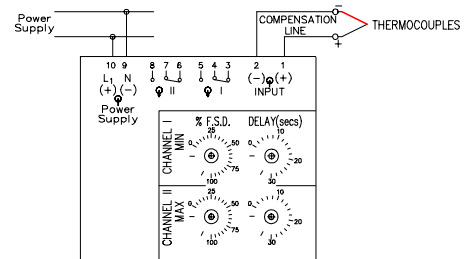
AC Aeff- meter



#### 6.2.3 Frequency meter

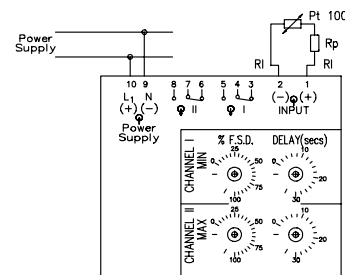


#### 6.2.4 Thermometer with thermocouple probe



#### 6.2.5 Thermometer with Pt 100 probe

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



Pt 100 (RTD probe)

Rp = wires resistively compensation resistor: built-in potentiometer

Rl = wires resistively

Rp + Rl = 10  $\Omega$



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