process controler and indicator type ENA 100 NF

- ★ **Green fluorescent analogue display.**
- ★ **Voltage and current measurements.**
- ★ **Digital indicator.**
- ★ **Two alarm setpoints per channel.**

application

The ENA 100 NF Panel mounted bar graph indicators are used to measure voltage and current on DC or AC sources. The value is displayed as an illuminated bar.

Some models incorporate a digital indicator with two alarm setpoints on each channel.

functions

Standard models

The ENA 100 NF indicator and controller is available in the following configuration :

- Single channel (code 1)
- Single channel plus two alarm setpoints (code 2)
- Single channel plus digital indicator (code 10)
- Single channel plus digital indicator plus 2 alarm setpoints (code 12)
- Dual channel plus two alarm setpoints on the lefthand channel (code 22)
- Dual channel plus two alarm setpoints on each channel (code 24)

Inputs

- 0.2 to 1 V, 1 to 5 V or 4 to 20 mA DC (all models)
- 0.1 V, 1 V, 10 V and 4 to 20 mA DC, switched (codes 1 and 2)
- 10 mV to 200 V DC (codes 1 and 2)
- 100 mV to 200 V DC (codes 10, 12, 20, 22, 24)
- 10 μA to 200 mA DC (all models)
- 1 V to 200 V AC (codes 1 and 2)
- 10 μA to 200 μA AC (codes 1 and 2).

general characteristics

100-segment, green fluorescent display.
Height of bar array 100 mm.
Graduated at 10-segment intervals.
Graduation digits and measurement units marked in white on black background.
Vertical or horizontal readout.
Flashing array to indicate over range.
Accuracy : 1 % of measured value.
Temperature coefficient : 100 ppm/°C.
Response time : 50 ms for 1 V range (FSD).
Operating temperature range : —10 to + 55°C.
Storage temperature range : —20 to + 70°C.
Power supplies : 220 V (—15 % / + 10 %) 50/60 Hz (standard model) ; 24, 48, 110 V AC 240 VAC (optional). 50/60 Hz
Power consumption : 3 VA approx.
Impact and vibration resistant, to GAMT4. (French milatary norm).
Dimensions : front panel 36 x 144 mm, depth 126 mm behind bezel.

special characteristics

Voltage input impedance : 1 Mohm.
Voltage drop during current measurements : 1 V.

AC measurements :
rms value on sinewave.
Bandwidth 5 Hz to 30 kHz.

Digital indicator :
± 3—digit display, 7 x 8 segments.
Accuracy : 0.1 % ± 1 digit.

Two channel models :
Isolated input channels.
Insulation resistance : 100 Mohms at 500 V DC.
Inputs can be mixed.

Thresholds

Two setpoints per band, indicated by highlighted segments.
Can be adjusted across the entire scale using front panel potentiometers (screwdriver adjusted).
Output to relay with single changeover contact per setpoint.
Rated capacity 3 A/250 V AC, with programmable operating direction (positive or negative protection).

Centre zero for DC current or voltage, on models 1 and 2 only.

options

- 35 V, 20 mA transducer supply (two-wire system) on model 1 only.
- Setpoint outputs to optocouplers.

modification

BAR GRAPH INDICATOR
TYPE ENA 100 NF

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Code

1 channel	1
1 channel + 2 setpoints	2
1 channel + dig. ind.	10
1 channel + dig. ind. + 2 setpoints	12
2 channels	20
2 channels + 2 setpoints on lefthand channel	22
2 channels + 2 setpoints on each band	24

Range :
Uncoded (see input types)

Power supplies :

Standard : 220 V AC	220 V
Optional : 24 V AC	24 V
48 V AC	48 V
110 V AC	110 V
240 V AC	240 V

Readout :

Vertical	Vert
Horizontal	Hor

Options :
Transducer power supply : uncoded (code 1 only)

Setpoint outputs to optocouplers uncoded

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AOIP MESURES

3. Specifications

Mechanical and general characteristics

bargraphs are profiled apparatus, that can be fitted into panels. Size of front panel is 36 x 144 mm (Din 46100 standard) and back clearance needed is 126 mm with wiring. Casing is of grey molded plastic with black front (ABS-TN 10603 or ABS KJX). Shock and vibration resistant.

Wiring is done by mean of a removable terminal with screws for 1.5 mm^2 wires.

Operating temperature is 0 to 50 °C and Storage temperature -20°C to 70°C.

Power supply directly on main 110V AC (+10% -15%; 50/60 Hz) is standard. Consumption varies upon model: single scale models 4VA (36 mA), dual scale models 6VA (55 mA) and single scale with digital display models 6.5VA (60 mA).

Display characteristics

Display is provided by mean of a bright green vacuum fluorescent tube (with polarizing filter as an option) with 100 mm luminous column (one or two channel models) or 84 mm (model with digital display). Fluorescent display provides three levels of luminosity:

- Low intensity for signal measurement segments,
- Medium intensity for pre-marked scale (every 10^{th} segment),
- High intensity for threshold indication.

Overload is indicated by flickering.

Digital display provides 3 digits, 999 counts with polarity indication by LED on zero center bargraph. Height of digits for digital display is 8 mm.

Scale are provided on a standard or customized basis with either a vertical or horizontal reading. They are interchangeable without dismantling apparatus.

Response time of bargraph form zero to full scale is 50 ms

Digital display is refreshed at a rate of 2.5 time per second

Electrical inputs characteristics

The whole model range provides for measurement of current or voltage (AC or DC). Alternate current voltage measurement is the average value it is possible to measure true RMS value with an option.

Accuracy is 1% of full scale for analog display and 0.1% for digital display. Common mode rejection at 1 VDC is 95 dB at 60 Hz and normal mode rejection at 1 VDC is 25 dB at 60 Hz. Temperature coefficient in the operating range: 100 ppm / °C for bargraph and 50 ppm / °C for digital display.

Instantaneous protection is ±200V non repetitive and protection in steady operation is 20 times input range with a maximum of 200V

The dielectric circuit rigidity (power at terminal to case) is 1500V at 60 Hz for 1 mn and electrical insulation is 100 MΩ under 500VDC.

For dual channels models isolation between channels is 100 MΩ. / 500VDC

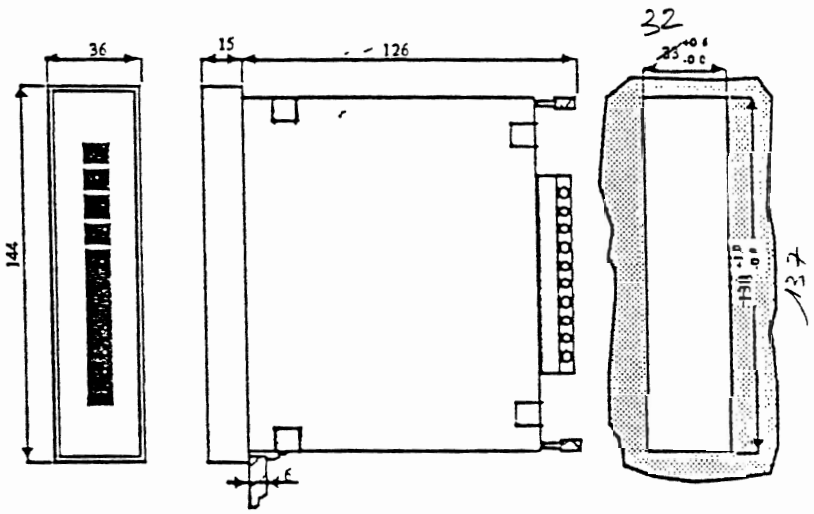
4. Size, cutout and installation instructions

Installation of bargraph into panel

1- Unfasten both fixation straps by first unscrewing the releasing knob and then pulling back the straps.

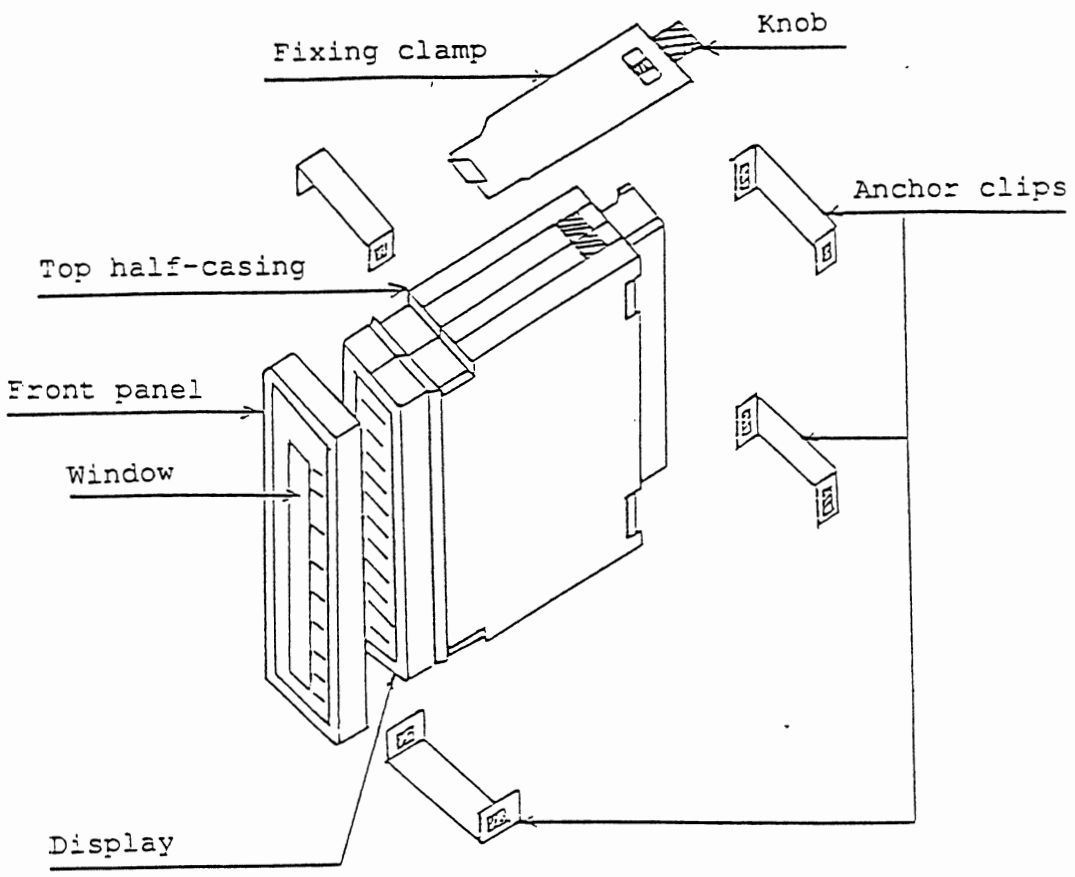
2- Slip the apparatus into panel cutout

3- Slide both fixation straps from behind the panel and screw the releasing knobs so as to be assured that the apparatus holds well in place.



All dimension are in millimeters

HOW TO DISMANTLE THE UNIT



1- Unscrew the two knobs of the fixing clamps from each side of the unit.
   Slide the clamps to the back of the unit.

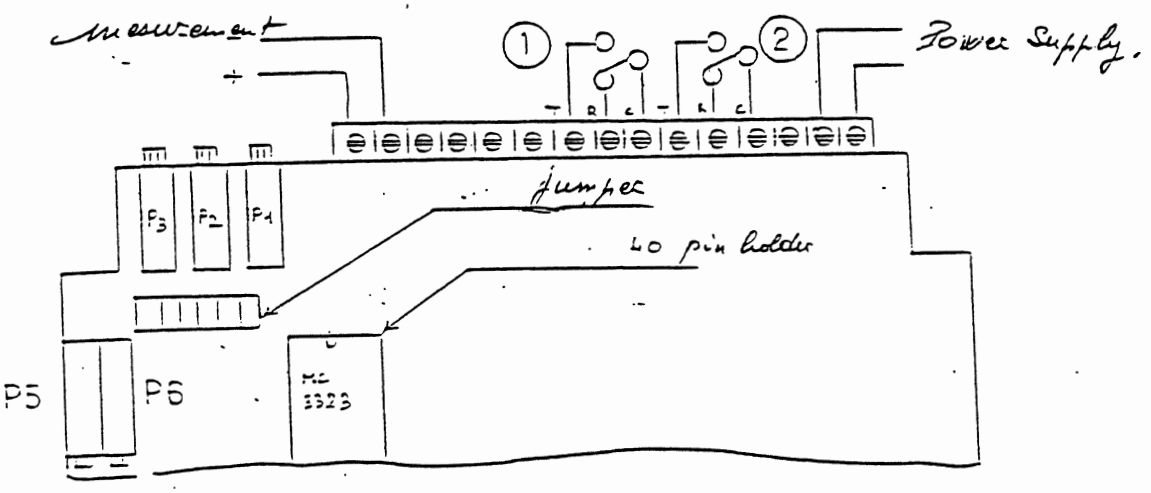
2- Remove the front panel by pulling off both sides gently.

3- Remove the 4 anchor clips using a screwdriver.

3- Open the top half-casing of the unit.

9/ - ADJUSTMENT INSTRUCTION ENA F1 - F2

1/ Connect the power supply and the measurement (see drawing below)



2/ Adjust VDD on the 40 pin at 13 V with potentiometer 1.

3/ After disconnected the unit, put the integrated circuit (MC 3323) on its holder.

4/ Reconnect the unit and put 0 V at the input measurement.

5/ Get a deviation turning the P2 potentiometer which adjust the zero of the scale.

6/ Stabilize the scale turning P3 potentiometer which adjust the lower limit. The scale must be stable and the first measurement should be very bright.

7/ Put the scale at zero with potentiometer P2.

8/ Apply the requested voltage to get the full scale.

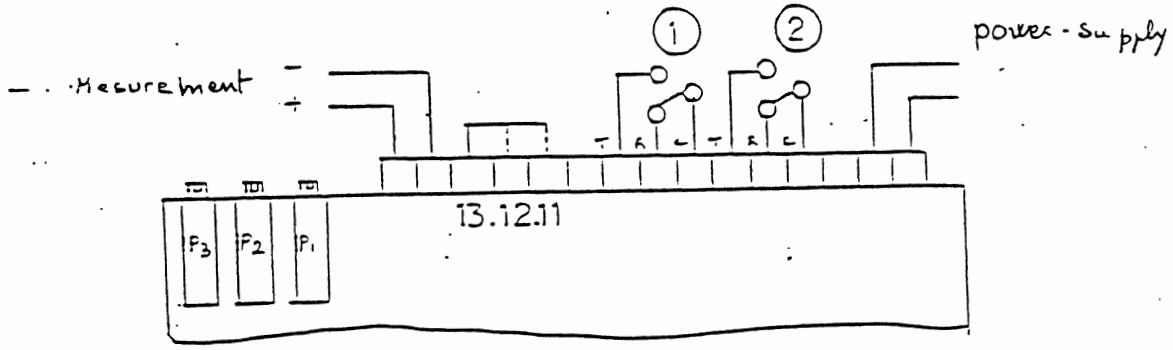
9/ Adjust P1 for the end of scale.

10/ Check again all the adjustments.

11/ Modify thresholds 1 and 2 with P6 and P5 potentiometers.

12/ Put the measurement more than the threshold 1 and control the relay's commutation. Do the same for threshold 2.

10/ - RELAY CONTACT DESCRIPTION



The selected configuration of the threshold can be modified with strapps on the screw terminal of the unit (screws 11, 12 and 13).

A/ Relay contacts without any strapp on the screw connector

The relay 1 is open when the measurement is lower the threshold.

The relay 2 is closed when the measurement is lower the threshold.

B/ Relay contacts with a strapp between 13 and 12 off the connector

The relay 1 is closed when the measurement is lower the threshold.

The relay 2 is closed when the measurement is lower the threshold.

C/ Relay contacts with a strapp between 13 and 11 of the connector

The relay 1 is open when the measurement is lower the threshold.

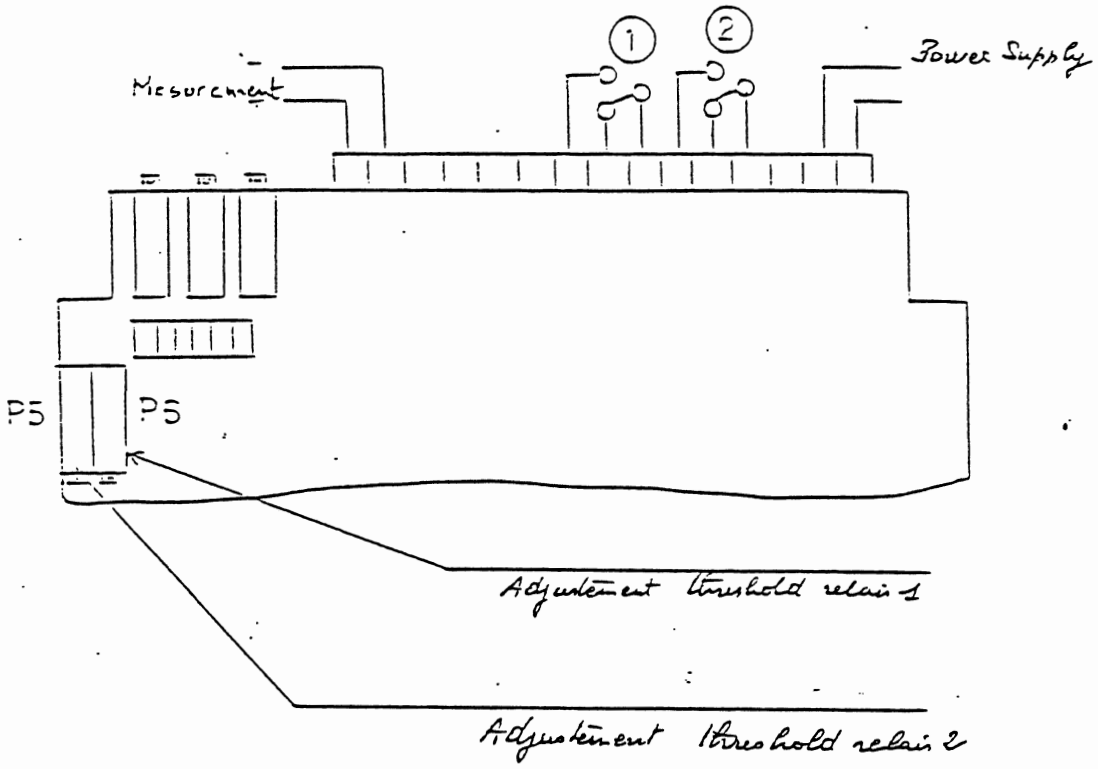
The relay 2 is open when the measurement is lower the threshold.

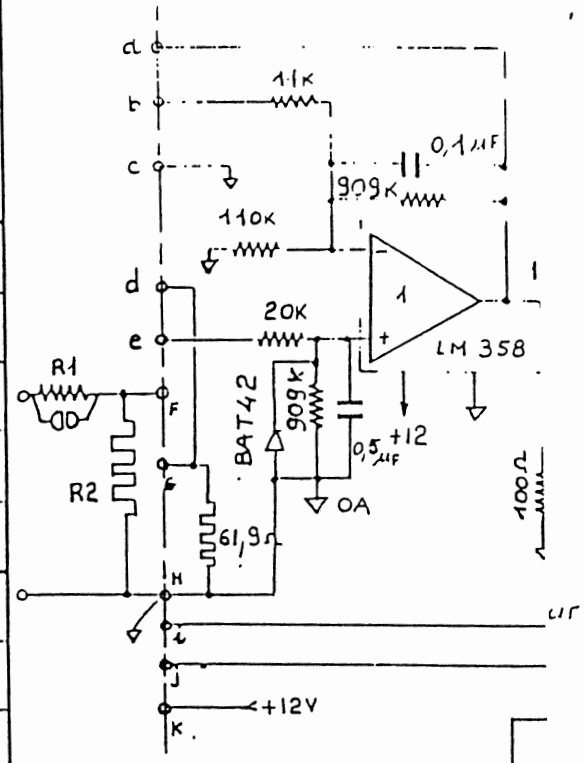
D) Relay contact description with a strapp betweèn 13 and 11 and a strapp between 13 and 12 of the connector

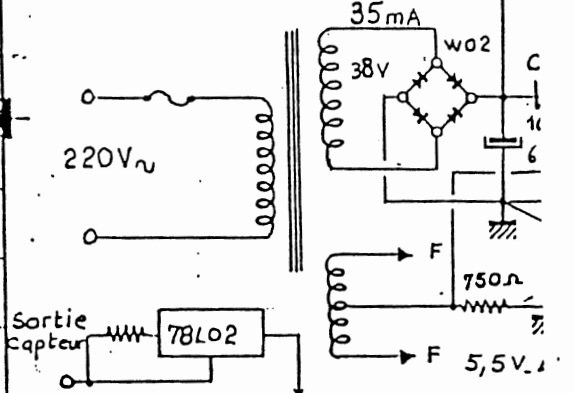
Relay 1 contact is closed when the measurement is lower the threshold level.

Relay 2 contact is open when the measurement is lower the threshold level.

E) Adjustment of the thresholds 1 and 2

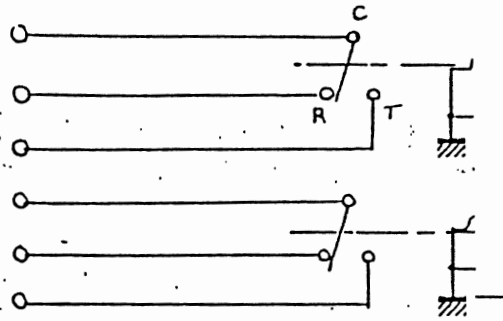






STRAP Maxi repos

STRAP Mini travail



strap	n°1	n°2	n°3	n°4	n°5	n°6	n°7
OPTION							
1V		e, F	H, i				
10V	a, b	e, F	H, i				
100mV		e, F	H, i	b, c			
4-20mA					d, e	F, G	i, j

± 2 setpoints

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