Read this document carefully before using this device. The guarantee will be expired by device damages if you don't attend to the directions in the user manual. Also we don't accept any compensations for personal injury, material damage or capital disadvantages.

ENDA EI7412 PROGRAMMABLE INDICATOR WITH RELAY

Thank you for choosing **ENDA EI7412** INDICATOR.

*** 72x72mm sized.**
*** 4 digits display.**
*** On - Off control.**
*** Relays for Out and Alarm control.**
*** Upper and Lower Set value limits can be configured.**
*** Decimal point can be adjusted between 1. and 3. digits.**
*** Display scale can be adjusted between -1999 and 4000.**
*** Measurement unit can be displayed.**
*** Selectable four different standard input types (0-20mA, 4-20mA, 0-1V, 0-10V).**
*** User can calibrate the device according to specified input type.**
*** Sampling time can be adjusted in four steps.**
*** Selectable control option below and above the set value.**
*** Selectable independent, deviation or band alarms.**
*** Maximum and minimum values are registered and can be hold on the display.**
*** Current and voltage calibration can be performed.**
*** Selectable parameter access protection.**
*** CE marked according to European Norms.**

CE **RoHS Compliant**

Order Code : EI7412 -□□□□□ -□□□□
1 2

1 - Supply Voltage
230VAC...230V AC
24VAC.....24V AC
SM.....9-30V DC / 7-24V AC

2 - Auxilary Supply OUT
AS24.....24V DC 50mA
AS12.....12V DC 50mA
AS08.....8V DC 50mA
AS05.....5V DC 50mA
None.....No auxilary supply out

TECHNICAL SPECIFICATIONS

ENVIRONMENTAL CONDITIONS	
Ambient/storage temperature	0 ... +50°C/-25 ... +70°C (with no icing)
Max. relative humidity	80% Relative humidity for temperatures up to 31°C, decreasing linearly to 50% at 40°C.
Rated pollution degree	According to EN 60529 Front panel : IP65 Rear panel : IP20
Height	Max. 2000m

⚠ Do not use the device in locations subject to corrosive and flammable gases.

ELECTRICAL CHARACTERISTICS	
Supply	230V AC +10% -20%, 50/60Hz or 24V AC ±10%, 50/60Hz or optional 9-30V DC / 7-24V AC ±10% SMPS
Power consumption	Max. 7VA
Wiring	2.5mm² screw-terminal connections
Date retention	EEPROM (Min. 10 years)
EMC	EN 61326-1: 2006
Safety requirements	EN 61010-1: 2010 (Pollution degree 2, overvoltage category II, measurement category I) ⚠ EI7412 cannot be used if measurement category II, III or IV is required.

Input type	Measurement range		Measurement accuracy	Input empedance
	Min.	Max.		
0-1V DC voltage	0V	1.1V	±0,5% (of full scale)	Approx. 11kΩ (terminal voltage limits: min. = -2V, max. = 30V)
0-10V DC voltage	0V	14V	±0,5% (of full scale)	Approx. 11kΩ (terminal voltage limits: min. = -2V, max. = 30V)
0-20mA DC current	0mA	25mA	±0,5% (of full scale)	Approx. 5Ω (applicable terminal voltage is max. 50mA.)
4-20mA DC current	0mA	25mA	±0,5% (of full scale)	Approx. 5Ω (applicable terminal voltage is max. 50mA.)

⚠ While the current measuring mode, input impedance becomes 5Ω . Therefore, in current mode, the device must not be connected any voltage input. Otherwise, the device is broken. While the device is running in the voltage measurement mode and if required to change to current measurement mode, then firstly the voltage inputs must be removed and after that, input type must be changed to one of the current measurement modes.

OUTPUTS	
Auxilary power supply	All auxilary power supplies supply maximum 50mA (Regulated and isolated)
Out	Relay: 250V AC, 8A (for resistive load), NO; 1/2 HP 240V AC CosΦ = 0.4 (for inductive load)
Alarm	Relay: 250V AC, 8A (for resistive load), NO; 1/2 HP 240V AC CosΦ = 0.4 (for inductive load)
Life expectancy for relay	Mechanical 30.000.000 operation; 100.000 operation at 250V AC, 8A resistive load.

CONTROL	
Control type	Single set-point and alarm control
Control algorithm	On-Off control
Hysteresis	Adjustable between 1 ... 200

HOUSING	
Housing type	Suitable for flush-panel mounting according to DIN 43 700.
Dimentions	W72xH72xD97mm
Weight	Approx. 350g (after packaging)
Enclosure material	Self extinguishing plastics.

⚠ While cleaning the device, solvents (thinner, benzine, acid etc.) or corrosive materials must not be used.

SİSEL MÜHENDİSLİK ELEKTRONİK SAN. VE TİC. A.Ş.
Şerifali Mah. Barbaros Cad. Kutup Sok. No:18 Y.Dudullu
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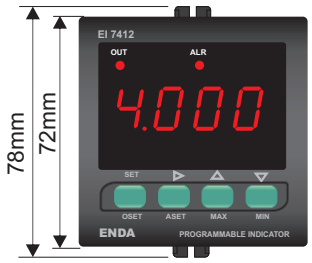
url : www.enda.com.tr

TERMS

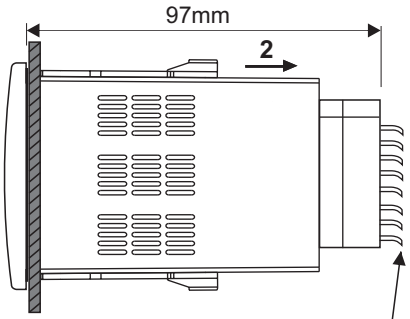
1) Shows out status.
2) Shows alarm status.
3) Shows measurement value, measurement unit and maximum and minimum measured values. (Run mode)
Shows name, value and unit of parameters. (Programming mode)
4) Shows maximum measured value. (Run mode)
Increases value or adjusts parameter. (Programming mode)
5) Shows minimum measured value. (Run mode)
Decreases value or adjusts parameter. (Programlama modu)
6) Shows alarm set value. (Run mode)
Menu selection key. (Programming mode)
7) Shows out set value. (Run mode)
Parameter adjustment key. (Programming mode)

(1),(2) Out and Alarm LED	3mm bright red LED
(3) Digital display	4 digits 7 segment red LED display
Character height	14.2mm
(4),(5),(6),(7) Key pad	Micro switch

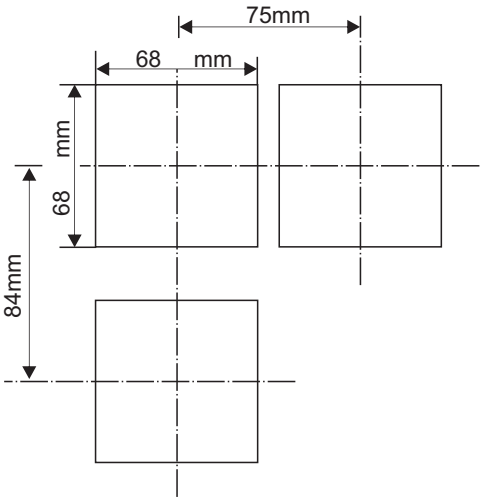
DIMENSIONS

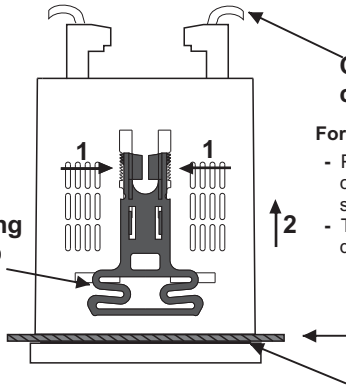


Depth



Panel cut-out





Flush mounting clamp

Connection cables

For removing mounting clamps:

- Push the flush-mounting clamp in direction **1** as shown in the figure left.
- Then, pull out the clamp in direction **2.**

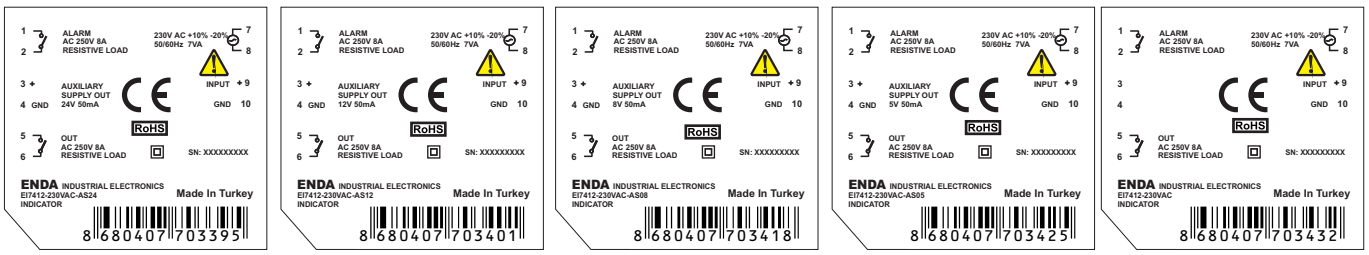
Panel

Rubber packing

Note : 1) While panel mounting, additional distance required for connection cables should be considered.
2) Panel thickness should be maximum 10mm.
3) If there is no 90mm free space at back side of the device, it would be difficult to remove it from the panel.

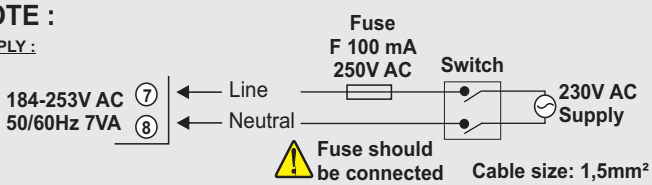
CONNECTION DIAGRAM

ENDA EI7412 is intended for installation in control panels. Make sure that the device is used only for intended purpose. The shielding must be grounded on the instrument side. During an installation, all of the cables that are connected to the device must be free of energy. The device must be protected against inadmissible humidity, vibrations, severe soiling.Make sure that the operation temperature is not exceeded. All input and output lines that are not connected to the supply network must be laid out as shielded and twisted cables. These cables should not be close to the power cables or components. The installation and electrical connections must be carried on by a qualified staff and must be according to the relevant locally applicable regulations.



NOTE :

SUPPLY :



Holding screw
0.4-0.5Nm

Equipment is protected throughout by DOUBLE INSULATION.

Note : 1) Mains supply cords shall meet the requirements of IEC 60227 or IEC 60245.
2) In accordance with the safety regulations, the power supply switch shall bring the identification of the relevant instrument and it should be easily accessible by the operator.

Run mode

1000 Measured value

SET/OSET → 500 Out set value → 499 Out set value → 500 Out set value

While holding SET/OSET key out set value flashes and by using MAX/MIN keys the value can be adjusted.

Out set value changes fastly if increase or decrease key is pressed for 0.6 second.

ASET → 1000 Alarm set value → 999 Alarm set value → 1000 Alarm set value

While holding SET/OSET key out set value flashes and by using MAX/MIN keys the value can be adjusted.

Out set value changes fastly if increase or decrease key is pressed for 0.6 second.

If first MAX and then MIN keys are pressed together, the maximum and the minimum measurement values become equal to the measured value at that time and the message rES. appears on the display.

SET/OSET & ASET If first SET/OSET and then ASET keys are pressed together programming mode is entered.

Programming mode

out. → ALr. → d.CnF. → U.oPt. → d.CAL. → SECU.

out.

o.HYS. = Out hysteresis value. Can be adjusted between 1 and 200. See NOTE 1 for programming.

o.StA. = State of out. If H I is selected then out output is energized above the out setpoint . If Lo is selected then out output is energized below the out setpoint . See NOTE 1 for programming.

o.UPL. = Out value upper limit. Can be adjusted between out value lower limit (o.LoL.) and upper limit for scale (H.SCL.). See NOTE1 for programming.

o.LoL. = Out value lower limit. Can be adjusted between lower limit for scale (L.SCL.) and out value upper limit (o.UPL.) See NOTE1 for programming.

ALr.

A.HYS. = Alarm hysteresis value. Can be adjusted between 1 and 200. See NOTE 1 for programming.

A.tYP. = Function of alarm output. Three kinds of functions can be selected. indE = Independent. dE = Deviation. bAnd = Band. See NOTE 1 for programming.

A.StA. = State of alarm output. If independent or deviation alarm is selected the alarm output can be Lo and H I. For Lo, alarm output is energized below the alarm setpoint. For H I, alarm output is energized above the alarm setpoint. If band alarm is selected this parameter can be b IH I and boH I. For b IH I, alarm output is energized between the band. For boH I, alarm output is energized out of the band. See NOTE1 for programming.

A.UPL. = Alarm value upper limit. Can be adjusted between higher limit for scale (H.SCL.) and alarm value lower limit (A.LoL.). See NOTE1 for programming.

A.LoL. = Alarm value lower limit. Can be adjusted between lower limit for scale (L.SCL.) and alarm value upper limit (A.UPL.). See NOTE1 for programming.

d.CnF.

I.tYP. = Input type. Input type can be selected as 0-20mA, 4-20mA, 0-1V or 0-10V. See NOTE 1 for programming.

d.P.C. = Display configuration. Selectable as Proc. or Pr.Un. . If Proc. is selected, process value appears. If Pr.Un. is selected, process value and then measurement unit are displayed 4 and 2 seconds successively. See NOTE 1 for programming.

rAtE = Sampling rate. Measurement is performed at each 200ms. However, for FASt rate, each measurement is displayed. for SLo.1 rate, the average of 4 successive measurements is displayed. for SLo.2 rate, the average of 8 successive measurements is displayed. for SLo.3 rate, the average of 16 successive measurements is displayed. See NOTE 1 for programming.

Hold = Display holding parameter. Selecting nonE, this parameter becomes inactive. Selecting Lo., always the minimum measured value is displayed. Selecting H I, always the maximum measured value is displayed.

Unit = Measurement unit. A constant, a message etc. to be displayed can be entered. If a decimal point is desired, it should be included before entering the character.

For including decimal point first, SET/OSET then, MAX keys are pressed and held together.

And then, by using MIN key decimal point can be adjusted.

U.oPt.

CAL.t = Calibration type. Selectable as S. inP or U. inP. If S. inP is selected, input type is one the four standard input types. If U. inP is selected, input types can be modified. See NOTE 1 for modification.

d.Pnt. = Decimal point. Decimal point can be adjusted between 1. and 3. digits. See NOTE 1 for programming.

L.SCL. = Lower limit for the scale. It can be adjusted between -1999 and (H.SCL. -100). See NOTE 1 for programming.

H.SCL. = Upper limit for scale. It can be adjusted between (L.SCL. +100) and 4000. See NOTE 1 for programming.

CAL.t=U.inP. No / Yes

L. inP. At this state, the reference voltage or current that corresponds to L.SCL. parameter is applied to the input.

To initialize calibration, first SET/OSET then MAX keys are pressed together and held until 'CAL' message appears. See NOTE 2.

H. inP. At this state, the reference voltage or current that corresponds to H.SCL. parameter is applied to the input.

To initialize calibration, first SET/OSET then MAX keys are pressed together and held until 'CAL' message appears. See NOTE 2.

d.CAL.

S.Cod. = Access code for calibration menu. This parameter should be 222. See NOTE 1 for programming.

A.CAL. = Current calibration. At this state, 20mA current is applied to the input of the device. To initialize calibration, first SET/OSET then MAX keys are pressed together and held until 'CAL' message appears. See NOTE 3.

I.CA. = 1V input calibration. At this state, 1V is applied to the input of the device. To initialize calibration, first SET/OSET then MAX keys are pressed together and held until 'CAL' message appears. See NOTE 3.

10.CA. = 10V input calibration. At this state, 10V is applied to the input of the device. To initialize calibration, first SET/OSET then MAX keys are pressed together and held until 'CAL' message appears. See NOTE 3.

SECU.

S.Cod. = Access code for safety menu. This parameter should be 333. See NOTE 1 for programming.

ou.SC. = out. menu protection level parameter. nonE = No menu is seen. P. no = Menu is seen but can not be programmed. PyES. = Menu is seen and programming is possible. See NOTE 1 for programming.

AL.SC. = ALr. menu protection level parameter. nonE = No menu is seen. P. no = Menu is seen but can not be programmed. PyES. = Menu is seen and programming is possible. See NOTE 1 for programming.

d.C.SC. = CnF. menu protection level parameter. nonE = No menu is seen. P. no = Menu is seen but can not be programmed. PyES. = Menu is seen and programming is possible. See NOTE 1 for programming.

Uo.SC. = UoPt. menu protection level parameter. nonE = No menu is seen. P. no = Menu is seen but can not be programmed. PyES. = Menu is seen and programming is possible. See NOTE 1 for programming.

dCA.S. = dCAL. menu protection level parameter. nonE = No menu is seen. P. no = Menu is seen but can not be programmed. PyES. = Menu is seen and programming is possible. See NOTE 1 for programming.

NOTE 1

Parameter adjustment method

L.SCL. → 1000 → 999 → 1000

While holding SET/OSET key out set value flashes and by using MAX/MIN keys the value can be adjusted.

If increment key is pressed and held 0.6 seconds, the value of the selected parameter changes rapidly. If waited enough, the value increases 100 at each step. After 1 second following the release of the key, initial condition is returned. The same procedure is valid for the decrement key.

NOTE 2

CAL. The message on the left flashes approximately 5 seconds and calibration is completed.

CAL okey? No / Yes

If calibration is success, the C.End message appears for 1 second. If calibration is unsuccess, the S.Err. message appears for 1 second and passed to the next step.

C.End / S.Err.

NOTE 3

CAL. The message on the left flashes approximately 5 seconds and calibration is completed.

CAL okey? No / Yes

If calibration is success, the C.End message appears for 1 second. If calibration is unsuccess, the S.Err. message appears for 1 second and passed to the next step.

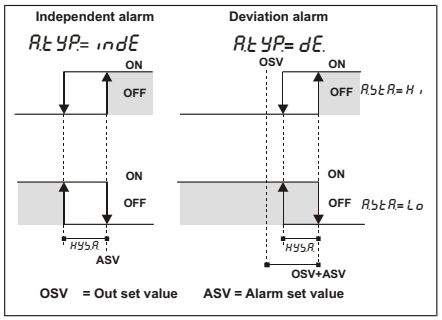
C.End / C.Err.

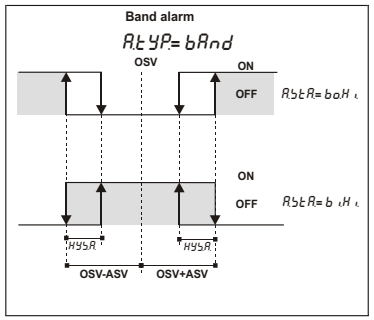
ERROR MESSAGES

S.Err. / C.Err.

If the difference between the reference voltages or currents applied for the calibration of H. inP and L. inP is lower than one half of the full scale, this error message appears on the display. For example: Assume that the selected input type is 0-1V. In this case, if the difference between the reference voltages applied for calibration of H. inP and L. inP is lower than 0.5V, this error message appears.

If the reference voltage or current applied to the input for calibration is too high or too low, this error message appears.





Run Mode Error Messages

---- Measured value is below scale

L. inP. Input voltage or input current is below zero

---- Measured value is above scale

H. inP. Input voltage is above 14V or input voltage is above 25mA

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