Read this document carefully before using this device. The guarantee will be expired by damaging of the device 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-offcontrol.
* Relays for Out and Alarm control.
* Up and low limits of Set values 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 standart input types (0-20mA, 4-20mA, 0-1V, 0-10V).
* User can calibrate the device according to his/her own 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 made.
* Selectable parameter access protection.
* CE marked according to European Norms.

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

CE RoHS Compliant

TECHNICAL SPECIFICATIONS

ENVIRONMENTAL CONDITIONS	
Ambient/storage temperature	0 ... +50°C/-25 ... +70°C (with no icing)
Max. relative humidity	80% up to 31°C decreasing linearly 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	230VAC +10%/-20%, 50/60Hz, 24VAC±10%,50/60Hz or 24Vac/dc (9-30Vdc or 7-24Vac)
Power consumption	Max. 7VA
Wiring	2.5mm² screw-terminal connections
Date retention	EEPROM (Min. 10 years)
EMC	EN 61326-1: 1997, A1: 1998, A2: 2001 (Performance criterion B for the EMC standard)
Safety requirements	EN 61010-1: 2001 (pollution degree 2, overvoltage category II, measurement category I) EI7412 must not be used in location where measurement category is II, III or IV.

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

In the current measurement mode input impedance is 5 Therefore, in the current measurement mode, any voltage input should not be connected to the input terminals. Otherwise, the device will be broken down. To change the input type from voltage to a current measurement mode while the device is operating, first, leave out the voltage inputs. Then, change input type 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 Cos = 0.4 (for inductive load)
Alarm	Relay: 250V AC, 8A (for resistive load), NO; 1/2 HP 240V AC Cos = 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.

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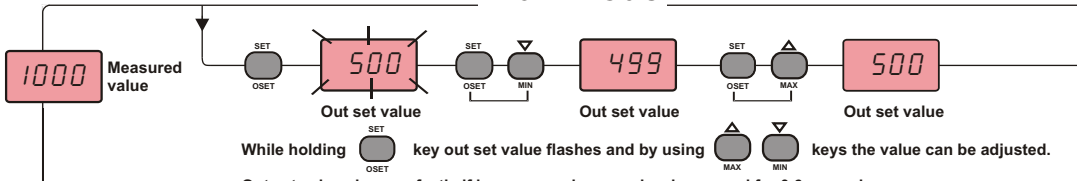
Internet : www.suran-elektronik.de

Run mode



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If first SET (OSET) and then ASET keys are pressed together programming mode is entered

Programming mode

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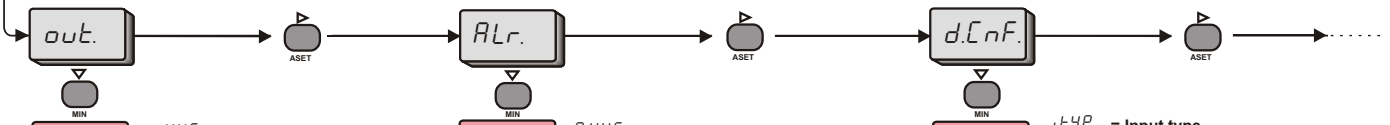


o.HYS. = Out hysteresis value.
Can be adjusted between 1 and 200.
See NOTE 1 for programming.

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

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

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 bo.H i. For b iH i, alarm output is energized between the band.
For bo.H i, alarm output is energized out of the band.
See NOTE1 for programming.

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

A.Lo.L. = Alarm value lower limit.
Can be adjusted between lower limit for scale (L.SCL) and alarm value upper limit (A.UP.L).

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

dSP.C. = Display configuration.
Selectable as PrcS. or Pr.Un. . If PrcS. 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.

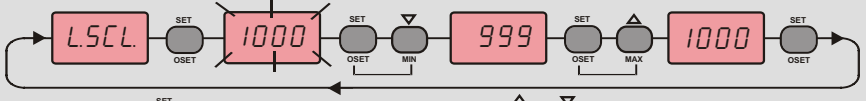
HoLd = Display holding parameter.
Selecting nonE , this parameter becomes inactive.
Selecting Lo. , always the minimum measured value is displayed.
Selecting H i. , always the maximum measured value is displayed.

Un it = 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.

NOTE 1

Parameter adjustment method



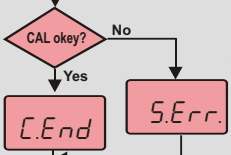
While holding SET (OSET) key out set value flashes and by using MAX MIN keys the value can be adjusted.

If increment key MAX 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

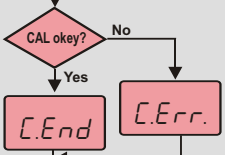
The message on the left flashes approximately 5 seconds and calibration is completed.



If calibration is error free, the message C.End appears for 1 seconds. However, if it is wrong, the message S.Err. appears for 1 seconds and the program is shifted to the next step.

NOTE 3

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



If calibration is error free, the message C.End appears for 1 seconds. However, if it is wrong, the message C.Err. appears for 1 seconds and the program is shifted to the next step.

ERROR MESSAGES

S.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.

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

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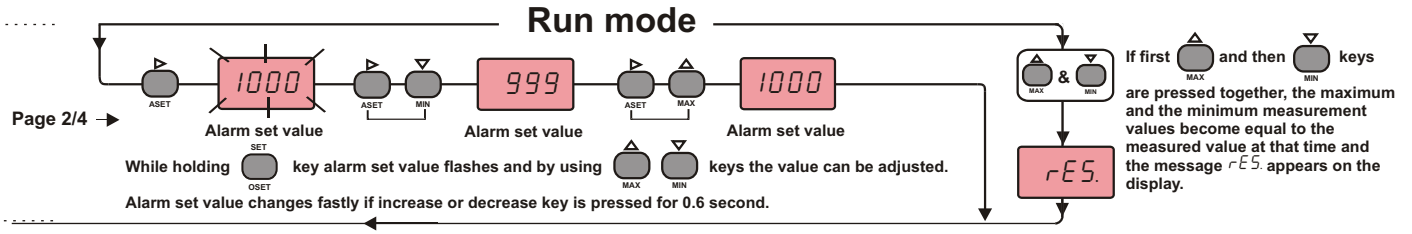
Run mode



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

Alarm 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.

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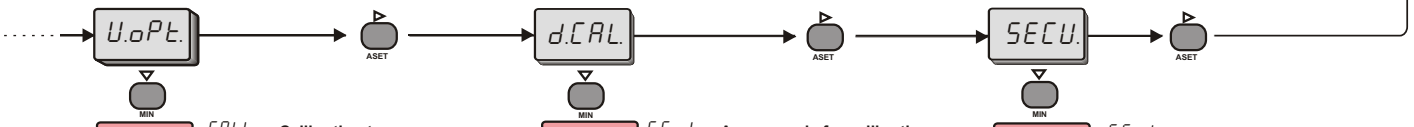
Programming mode



CALt. = 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.

No / Yes: CAL.t.=U.inP.

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.

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

A.CAL. = Current calibration.
At this state, 20.000 mA current is applied to the input of the device.
For initializing 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, 1.0000V 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, 10.000V 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.

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

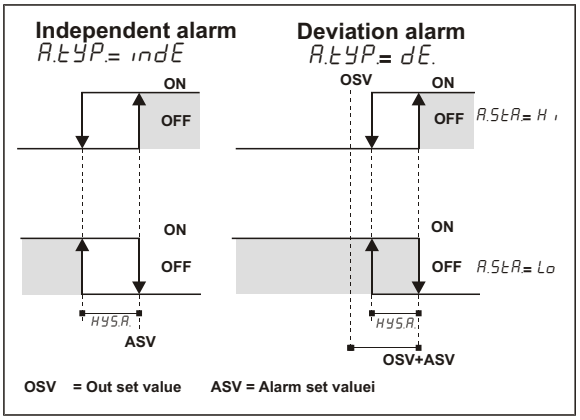
ou.SC. = out. menu protection level parameter.
nonE = No menu is seen.
P. no = Menu is seen but can not be programmed.
P.YES. = Menu is seen and programming is possible.
See NOTE 1 for programming.

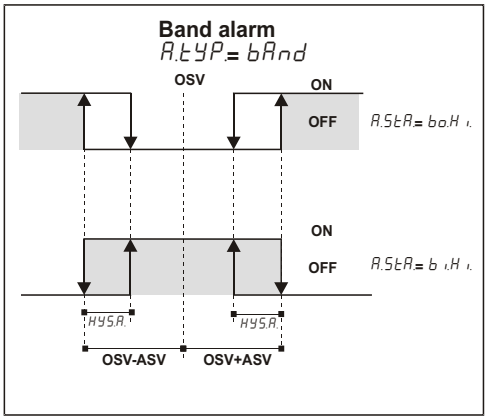
AL.SC. = ALr. menu protection level param.eter.
nonE = No menu is seen.
P. no = Menu is seen but can not be programmed.
P.YES. = Menu is seen and programming is possible.
See NOTE 1 for programming.

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

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

d.CA.S. = d.CAL. menu protection level parameter.
nonE = No menu is seen.
P. no = Menu is seen but can not be programmed.
P.YES. = Menu is seen and programming is possible.
See NOTE 1 for programming.





Run mode Error messages

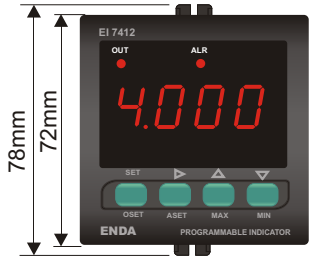
- ---- Measured value is below scale
- L. inP. Input voltage or input current is below zero
- H. inP. Input voltage is above 14V or input voltage is above 25mA

TERMS

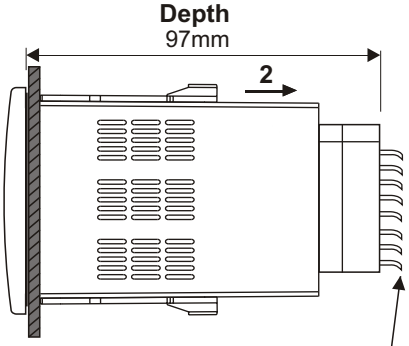
1) Shows out status.
2) Shows alarm status.
3) Shows measurement value, measurement unit and maximum and minimum measured values. (Run mode)
Shows name, value and unit of parameters. (Programming mode)
4) Shows maximum measured value. (Run mode)
Increases value or adjusts parameter. (Programming mode)
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	Mikro switch

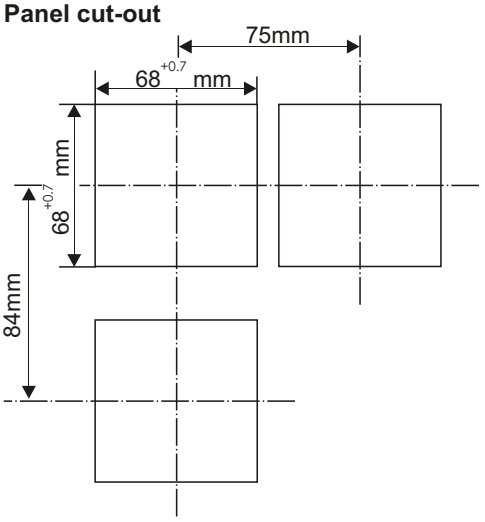
DIMENSIONS

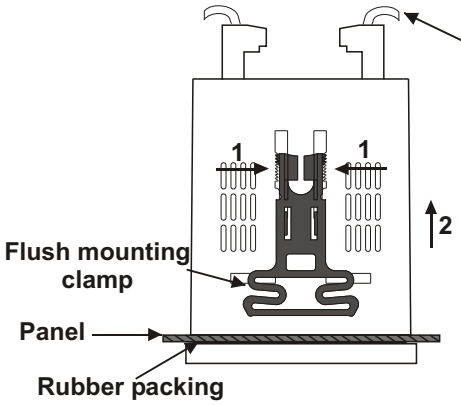


Depth



Panel cut-out





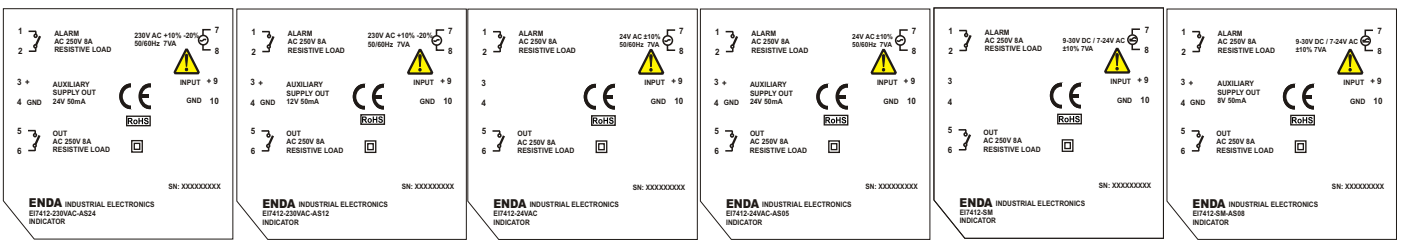
Connection cables

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.**

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.

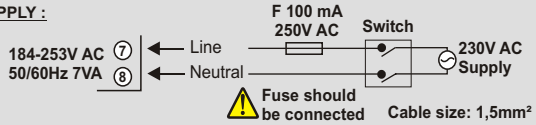
CONNECTION DIAGRAM

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 and 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.