Read this document carefully before using this device. The guarantee will be expired by 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 EDP2041 DIGITAL POTENTIOMETER

Thank you for choosing ENDA EDP2041 potentiometer.

- **35x77mm sized.**
- **4 digits display.**
- **Easy to use by front panel keypad.**
- **Communication via RS-485 Modbus protocol or synchronous running between two or more potentiometers. (Optional)**
- **Preset value can be adjusted from external buttons.**
- **Display scale can be adjusted between -1999 and 9999.**
- **(Full scale can not be higher than a 9999)**
- **Decimal point can be adjusted between 1. and 3. digits.**
- **0-10V,0-20 mA a and 4-20mA output with adjustable minimum and maximum values.**
- **'Soft on' and 'soft off' properties can be selected.**
- **Parameter access protection on 3 levels.**
- **CE marked according to European Norms.**

RoHS Compliant

Order Code : EDP2041-_____-__
1 2

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

2- Modbus Option
RS.....With RS-485 Modbus communication
Empty.....Without RS-485 Modbus communication

TECHNICAL SPECIFICATIONS

ENVIRONMENTAL CONDITIONS	
Ambient/storage temperature	0 ... +50°C/-25 ... +70°C (without 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 (Performance criterion B for the EMC standards)
Safety requirements	EN 61010-1: 2010 (pollution degree 2, overvoltage category II, measurement category I)

INPUTS	
Upwards input (UP)	Contact input or max. 24VDC logic input (active low)
Downwards input (DOWN)	Contact input or max. 24VDC logic input (active low)

OUTPUT	
0-10V output	Digitally adjusted maximum 10mA, max. 10V potentiometer output. Accuracy :%0.1 Resolution : 1mV Fluctuation : Maximum 30mV Rise time from 0 to 10V is maximum 300ms

OUTPUT	
0-20mA output	Digitally adjusted maximum 12V, max.20 mA potentiometer output. Accuracy: %0.1 Resolution : 2µA Fluctuation : Maximum 60µA Rise time from 0 to 20mA is maximum 300ms

HOUSING	
Housing type	Suitable for flush-panel mounting according to DIN 43 700.
Dimensions	W77xH35xD71mm
Weight	Approx. 350g (after packing)
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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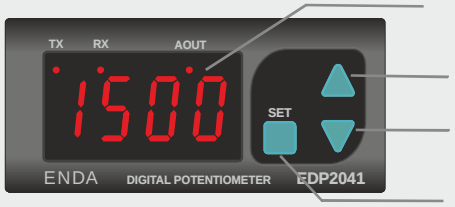
TERMS



1) Adjusted potentiometer value is seen in run mode
Parameter name, value or its unit in programming mode.

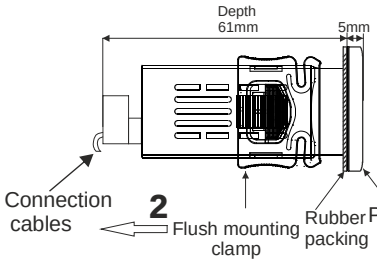
2) Increment key during run mode.
Increment or parameter selection key during programming mode.

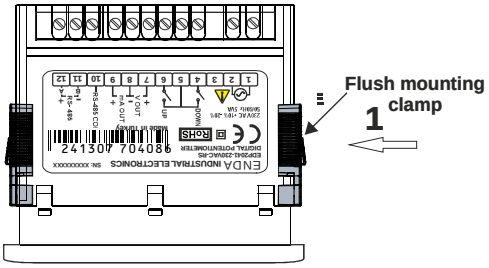
3) Decrement key during run mode.
Decrement or parameter selection key during programming mode.

4) Used for selecting run or programming modes and for adjusting parameters.

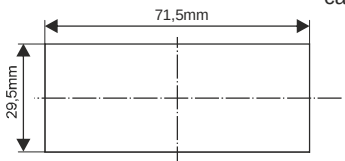
(1) Digital display	12,5 mm 4 digits 7 segment red LED display
(2),(3),(4) Keypad	Micro switch

DIMENSIONS





Panel cut-out

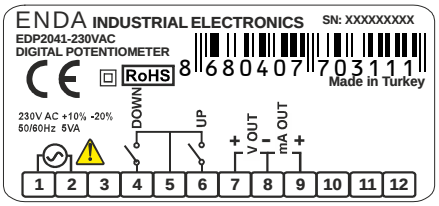


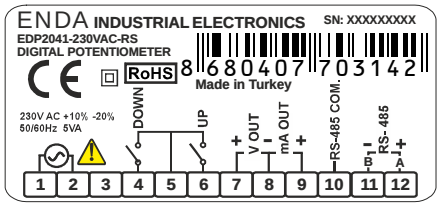
To remove the device from panel:
- While pushing the the flush-mounting clamp in direction **1,**pull out it in direction **2.**

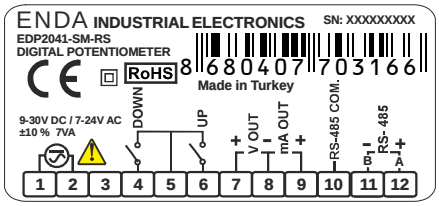
Note :
1) Panel thickness should be maximum 7mm.
2) There must be at least 60mm free space behind the device, otherwise it would be difficult to remove it from the panel.

CONNECTION DIAGRAM

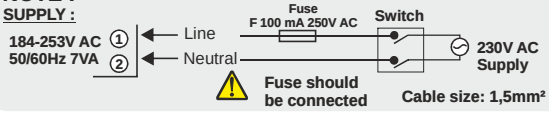
ENDA EDP2041 is intended for installation in control panels. Make sure that the device is used only for intended purpose. The electrical connections must be carried out by a qualified staff and must be according to the relevant locally applicable regulations. During an installation, all of the cables that are connected to the device must be free of electrical power. The device must be protected against inadmissible humidity, vibrations, severe soiling.Make sure that the operation temperature is not exceeded. The cables should not be close to the power cables or components.







NOTE :
SUPPLY :



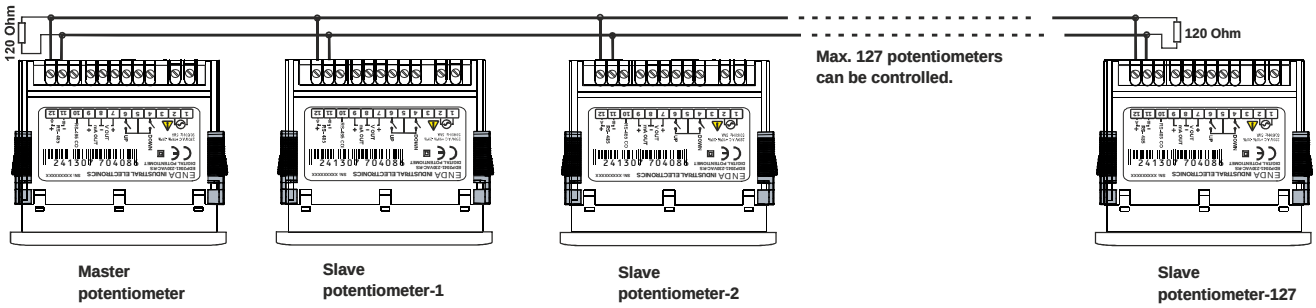
Equipment is protected throughout by DOUBLE INSULATION.

RoHS Compliant

Holding screw 0.4-0.5Nm

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.

CONNECTION DIAGRAM FOR SYNCHRONOUS RUNNING



NOTE :

- dAdr. parameter should be selected C.Pot in master potentiometer. In this case dAdr. parameter of other potentiometers aren't used. But be sure that C.Pot isn't selected in slave potentiometers to prevent confusion. Settings of slave potentiometers change proportional to setting of master potentiometer. For example; When Max. output of master potentiometer is changed from 10V to 5V, max. output of slave potentiometers decrease half of previous value proportional to this. If previous output of slave potentiometer is 6V, it decreases 3V. Ponc parameter of slave potentiometer should be selected oFF in order to understand master potentiometer when slave is energized.

- Computer should be used to change only a few potentiometers. In this case, there is not master potentiomer. Output of the required potentiometer is changed according to dAdr. parameter.

- Baud rate of potentiometers must be same in both conditions. 120 Ohm termination resistor should be used at the ends and beginning of transmission line. See **www.enda.com.tr/EDP2041.htm** for detailed information.

Run mode

Active output value: 1000 → SET → PrSt. → or → Preset value: 1000 → 1001 → 1002 → 1003 → 1002

If no key is pressed for 3 seconds

If oEtY and odtY parameters are adjusted to any value expect dSAb parameter, output can be controlled with ▲ and ▼ buttons.

SET key is pressed whole in the run mode,preset setup mode is entered and PrSt. message is displayed. Message appears when the ▲ or ▼ button is pressed, the preset value starts to flash. ▲▼ By using keys ,preset value can be adjusted.Preset value can be adjusted by using external buttons as well.External buttons become disable in programming mode.If the device is also controlled by a potentiometer, adjustable preset value appears as above.

SET + ▲ — SET key is pressed while holding down to ▲ key the programming mode is entered

Entering from programming mode to run mode:
If no key is pressed within 20 seconds during programming mode data is stored automatically and the run mode is entered.After pressing ▲ button and ▼ then passed to the program menu by pressing ▼ key is pressed in combination with SET ▲ keys and the information is recorded.

SET + ▲

Programming mode

UCnF. → SET → oCnF. → SET → SECu. → SET

UCnF.

Default Parameters

0 dPnt. — dPnt.= Display decimal point parameter
Decimal point can be adjusted between 1. and 3. digits.
See NOTE 1 for programming.

0 L.SCL. — LSCL.= Lower value of the scale.Adjustable between -1999 and (HSCL.-10).
Scale the lower value of the output,based on oEYP. parameter selection, it is 0V,0mA or 4mA
See NOTE 1 for programming.

9999 H.SCL. — HSCL.= Upper value of the scale.
Adjustable between (LSCL.+10) and 9999.
Scale the upper value of the output based on, oEYP. parameter selection;it is 10V or 20 mA. HSCL. and LSCL. difference can not be greater than 9999.See NOTE 1 for programming.

0 LoL. — LoL.= The lower limit of the preset value.
Adjustable between LSCL. and **(HiL.-10).**
See NOTE 1 for programming.

1500 HiL. — HiL.= The upper limit of the preset value.
Adjustable between (LoL.**+10)** and HSCL.
See NOTE 1 for programming.

1 dAdr. — dAdr.=Device address for ModBus.
Adjustable between 1-247 or selectable cPoE. .When cPoE. is selected,the device will be master potentiometer and slave potentiometers can be adjusted dependent on it.
See NOTE 1 for programming
⚠ This parameter is active device with RS485 communication option.

9.60 bAud — bAud = Baud rate for the RS485 connection.
Adjustable;off,2400,4800,9600,19200 and 38400.
⚠ This parameter is active device with RS485 communication option.

oCnF. Return to the menu. — ⚠ While the parameter names appear, ▲ and ▼ keys are pressed together,the program will return to the menu display.

oCnF.

Default parameters

oFF PonC. — PonC.= Selection of the output parameter behavior
⚠ oFF= When first energized, output is the voltage or current that lower limit value is indicated.
Attention: If this parameter is selected, the set value that was adjusted before is seen when set button is pressed at first. In addition,if increasing or decreasing that value is wanted the set value is equalized to lower limit value and then adjustment can be done.
on= When first energized, output is the voltage or current hat the set value is indicated.
SStr.= When first energized, output is increased slowly from the voltage or current that lower limit value is indicated to the voltage or current that set value is indicated during rt .
See NOTE 1 for programming.

dSAb oEtY — oEtY = Adjusted type of the output to preset value with ▲ button.
dSAb.= Output can not be adjusted to preset value with ▲ button.
Enb. = Output can be adjusted to preset value with ▲ button.
SonI = Output is increased to voltage that set value is displayed with ▲ button during rt .
See NOTE 1 for programming.

dSAb odtY — odtY = Adjusted type of the output to lower limit value with ▼ button.
dSAb.= Output can not be adjusted to lower limit value with ▼ button.
Enb. = Output can be adjusted to lower limit value with ▼ button.
SoFF = Output is increased to voltage that lower limit value is displayed with ▼ button during dt .
See NOTE 1 for programming.

dSAb EEtY — EEtY = Returning method of the output to preset value with the external "Up" input.
oEtY is set like the output parameter.

dSAb EdtY — EdtY = Returning method of the output to preset value with the external "Down" input.
odtY is set like the output parameter.

30 rt . — rt . = Increasing time for output.
Adjustable between 1-250 seconds.Output is increased slowly to the lower limit value during adjusted time.
See NOTE 1 for programming.

30 dt . — dt . = Decreasing time for output value.
Adjustable between 1-250 seconds.
Output is decreased slowly the lower limit value during adjusted time.
See NOTE 1 for programming.

1 P.rt. — P.rt. = Increasing and decreasing speed of preset value.
It is adjustedl dSAb. ,1, 10,100 ve 1000 values. dSAb is selected,the preset value can not be changed.
Selected according to the value increase or decrease the preset buttons for fast switching mode,the preset value speedy is increased or decreased "one by one",10 at each step,100 at each step,1000 at each step.
See NOTE 1 for programming.

0-10 oEYP. — oEYP. = Output type selection parameter
0-10 = 0-10V output usable
4-20 = 4-20mA output usable
0-20 = 0-20mA output usable
See NOTE 1 for programming

SECu. Return to the menu

SECu.

Default parameters

SCod. — SCod = Access code for safety menu.
This parameter should be **2041**.
Security code is 0; If ▼ key is pressed continuously for 5 seconds, dEFP message is displayed and return to the factory settings.

PYES UC.SC. — Uc.Sc. = UCnF. menu protection level parameter.
nonE = No menu is seen
PYES = Modification feasible
P no = Only traceable

PYES oC.SC. — oC.Sc. = oCnF. Menu protection level parameter.
nonE = No menu is seen
PYES = Modification feasible
P no = Only traceable
Pno = Menu visible.

UCnF. Return to the menu

NOTE 1

Parameter adjustment method

LoL. SET 6 SET 5 SET 6 SET

For adjusting a selected parameter first press and hold SET key. Then, by using ▼▲ keys, adjustment can be made.

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.

OUTPUT DIAGRAM