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 ETS1410 PULSE INPUT TACHOMETER

Thank you for choosing **ENDA ETS1410** Tachometer devices.

- 35x77 Sized.
- Easy to use.
- Decimal place can be set.
- Divider value assignment between 1 and 999.
- Automatic sampling time according to input frequency. (Sampling time will performed between 1 to 16 automatically).
- CE Marked according to European Norms.

Order Code : ETS1410 - [ ][ ][ ][ ][ ][ ][ ] - [ ][ ]
(1 = 7 positions, 2 = 2 positions)

1 - Supply Voltage
230VAC....230V AC
110VAC....110V AC
24VAC.....24V AC
SM.....9-30V DC
7-24V AC

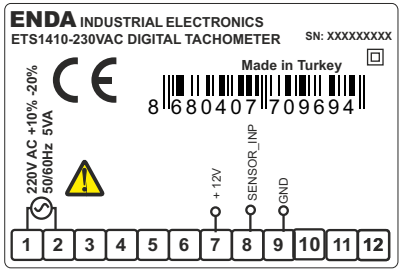
2 - Modbus
RS.....RS485 Modbus
(Specify at Order)
Blank.....N/A

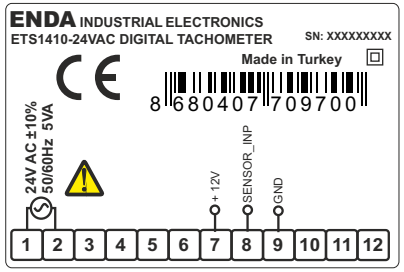
RoHS Compliant

CE

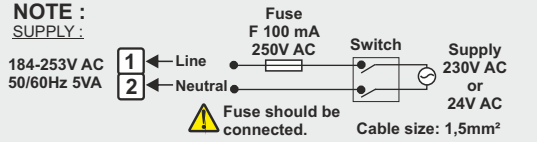
CONNECTION DIAGRAM

ENDA ETS1410 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 and make sure that the operation temperature is not exceeded. The cables should not be close to the power cables or components.





NOTE :
SUPPLY :

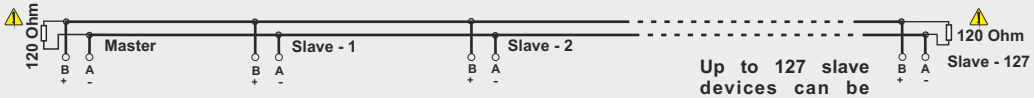


Note :
1) Mains supply cords shall meet the requirements of IEC 60227 or IEC 60245.
2) In accordance with the safety regulations, the power supply switch shall bring the identification of the relevant instrument and it should be easily accessible by the operator.

Equipment is protected throughout by DOUBLE INSULATION.

Holding screw 0.4-0.5Nm

* MODBUS CONNECTION DIAGRAM



Up to 127 slave devices can be controlled.

Termination should be accomplished by attaching 120 Ohm resistors to the start and at the end of the communication line.

** Applies to devices with Modbus function.*

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Şerifali Mah. Barbaros Cad. No:18 Y.Dudullu 34775
ÜMRANİYE/İSTANBUL-TURKEY
Tel : +90 216 499 46 64 Pbx. Fax : +90 216 365 74 01
url : www.enda.com.tr

TECHNICAL SPECIFICATIONS

ENVIRONMENTAL CONDITIONS

Ambient / Storage Temperature	0 ... +50°C/-25 ... +70°C (with no icing)
Relative Humidity	80% Relative humidity for temperatures up to 31°C, decreasing linearly to 50% at 40°C.
Protection Class	According to EN 60529 ; Front Panel : IP65, Rear Panel : IP20
Height	Max.2000m

KEEP AWAY device from exposed to corrosive, volatile and flammable gases or liquids and DO NOT USE the device in similar hazardous locations.

ELECTRICAL CHARACTERISTICS

Supply	230V AC +%10-%20, 50/60Hz ; 110V AC +%10-%20, 50/60Hz ; 24V AC ±%10 or 9-30VDC / 7-24VAC ±%10 SMPS
Power Consumption	Max. 5VA
Wiring	2.5mm² screw-terminal connections
Scale	4 Digits, 9.1mm, 7 Segment Red Display LED.
Accuracy	%0,01
EMC	EN 61326-1: 2013 (Performance criteria B has been satisfied for EN 61000-4-3 standard).
Safety Requirements	EN 61010-1: 2010 (Pollution degree 2, overvoltage category II). **ETS1410 should not be used when measurement categories II, III or IV are required.**

INPUTS

Sensor Input	5 to 30V pulses
Measurement Frequency	Measures frequencies between 0.07Hz and 10000Hz.
Sampling Time	Automatically adjusted according to input frequency. Minimum: 1s, Maximum: 16s

OUTPUT

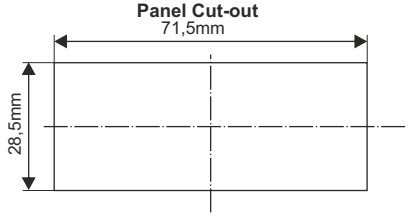
Sensor Supply Output	12V DC, Max. 30mA (unregulated)

HOUSING

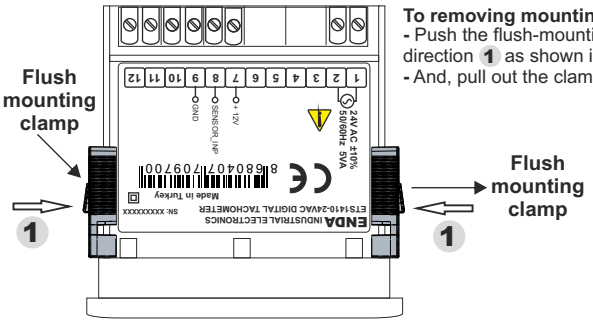
Housing Type	Suitable for flush-panel mounting.
Dimensions	W77xH35xD61mm
Weight	Approx. 190g (after packing the device)
Enclosure Material	Self extinguishing plastics

Avoid any liquid contact when the device is switched on.
DO NOT clean the device with solvent (thinner, gasoline, acid etc.) and / or abrasive cleaning agents.

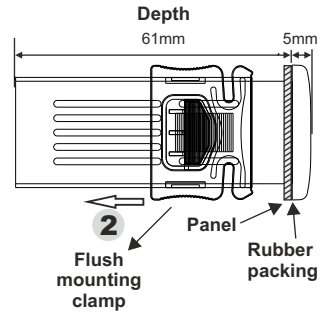
DIMENSIONS



Note :
1) While panel mounting, additional distance required for connection cables should be considered.
2) Panel thickness should be 7mm maximum.
3) If there is no free space at back side of the device, it would be difficult to remove it from the panel. 60mm clearance should be left behind the device.



To removing mounting clamps :
- Push the flush-mounting clamps in direction **1** as shown in the figure.
- And, pull out the clamp in direction **2**



TERMS

(1) Indicates measured value and set values in “Running Mode”.
Indicates the parameters and names in “Programming Mode”.

(2) Increment key in “Running Mode” and “Programming Mode”.
Parameter selection key in “Programming Mode”.
By pressing continuously, parameter value increases rapidly.

(3) Decrement key in “Running Mode” and “Programming Mode”.
Parameter selection key in “Programming Mode”.
By pressing continuously, parameter value decreases rapidly.

(4) Parameter set key in “Programming Mode”

(1) PV Göstergesi	7 Segment, 4 Digits Red LED display
Character Heights	12,5 mm
(2),(3),(4) Keypad	Micro switch

SETTING UP THE PARAMETERS

By pressing ▲▼ keys together for 2 seconds, “Programming Mode” is enterd.

During a selected parameter, by pressing SET key, parameter value can be displayed. Parameter value can be changed with ▲▼ keys. If no operation performed for 3 seconds or during this time, if SET key is pressed while the parameter value displayed, parameter name will be displayed again. While parameter name displayed, if by pressing together ▲▼ keys, "Running Mode" is entered.

▲ Provides to access to the next parameter in "Programming Mode". Increases the selected parameter value. By pressing continuously, parameter valuie increases rapidly.

▼ Provides to access to the previous parameter in "Programming Mode". Decreases the selected parameter value. By pressing continuously, parameter valuie decreases rapidly.

VIEWING THE REVISION DATE

If SET ▲▼ keys are pressed together, the revision date is displayed consecutively in days, months and years. If any of the pressed buttons are released while the revision date is displayed, the measurement value is displayed again.

DEVICE PARAMETERS

Parameter Name	Description	Min.	Max.	Unit	Default Value
c	Dividing parameter value	1	999		1
dP	Decimal place parameter	0	3		0

MODBUS PARAMETERS

Parametre Adı	Description	Min.	Max.	Unit	Default Value
bAud	Modbus Baudrate. 0 : oFF , 1 : 1200 , 2 : 2400, 3 : 4800 , 4 : 9600, 5 : 19200)	oFF	19200	Bps	9600
Adr5	Modbus, slave device address.	1	247		1

EXAMPLES FOR USING DIVISOR PARAMETER

ENDA ETS1410 Pulse Input Tachometer divides the pulses from the input to the display by dividing it with the calibration value. The divisor value can be selected between 1 and 999. This feature allows the device to be used in precise speed measurements, instantaneous flow measurements and speed measurement applications. According to this, 1 as the divisor value must be entered for the one-to-one flow rate measurement. Calculation of dividing information can be formulated as follows :

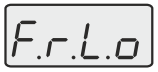
$$\text{CAL(divider value)} = \frac{\text{Number of pulses per minute}}{\text{Desired value on the display}}$$

DIVISOR VALUE FOR LINE SPEED MEASUREMENT

25cm circumference of cylinder has 3 rpm turn. Speed of the belt passing over this cylinder will be measured in meter/min.
To measure the rotation of the cylinder, 50 pulse/cycle encoder will be used.
The dividing value is calculated as follows ;
Display value : 3cycles/min X 25cm/rpm = 75cm/min
Number of pulses per minute : 3cycles/minute X 50pulses/rpm = 150 pulses/minute
Then ;

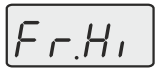
$$\text{CAL(divider value)} = \frac{150\ \text{pulse/minute}}{75\ \text{cm/minute}} = 2$$

ERROR MESSAGES



Input frequency too low or no signal

Measured value is higher than 9999



High input frequency

ENDA ETS1410 TACHOMETER MODBUS PROTOCOL ADDRESS MAP

1. HOLDING REGISTERS

Holding Register Addresses		Data Type	Parameter Description	Parameter Name	Read / Write Permission
Decimal	Hex				
0000d	0x0000	word	ModBus device address (Can be adjusted between 1 and 247)	Adr5	R / W
0001d	0x0001	word	Modbus communication speed (Baudrate) (0 = Modbus cancel, 1 = 2400 bps, 2 = 4800 bps, 3 = 9600 bps, 4 =19200 bps, 5 = 38400 bps)	bAud	R / W
0002d	0x0002	word	Decimal place parameter	dP	R / W
0003d	0x0003	word	Divider parameter	c	R / W

1. INPUT REGISTERS

Input Register Addresses		Data Type	Parameter Description	Parameter Name	Read / Write Permission
Decimal	Hex				
0000d	0x0000	word	Measured frequency	- -	R

sisel
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