Electron

POSITION INDICATOR TAP-IPTE

CATALOGUE

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INTRODUCTION

The IPTE TAP Position Indicator is intended for the Remote TAP Position Indication of Transformers using On-Load Changers with Potentiometric Crown.

The IPTE has an input that allows the receipt of the signal from a Potentiometric Crown, being compatible with both resistive signals and current signals from 4 to 20mA. In this way, it is possible to indicate the current PAT position on the instrument display in simple numerical form (1...51) or (-24...0...24), programmable. In addition, the equipment offers a universal analog output that can be configured for 0 to 1V, 0 to 5V, 0 to 10V, 0 to 20mA or 4 to 20mA (or other as requested), and also a digital output (RS485) with Modbus RTU and DNP3 (L1) protocol, allowing remote access to all configuration parameters, plus commands to raise and lower TAP, change the status of Automatic/Manual and Remote/Local.

The IPTE also has a signal reading failure indication feature, activated if the TAP change takes more than 10 seconds or if there are failures in the reading of the Potentiometric Crown, such as cable breakage, resistor burnout, among other problems.

Its robust structure is built in aluminum, following DIN standards for panel fixing, with dimensions 98x50x82.5mm

IPTE was developed following strict quality standards and designed to withstand severe working conditions, and can be installed in power substation yards, maritime platforms and chemical industries. Meets the requirements for ensurability and reliability according to IEC, DIN, IEEE and ABNT standards.

KEY FEATURES

- High-brightness 4-digit display, 20mm height and 13mm decimal place (red);
- Measurement range from 0 to 50 Positions (0 to 5000 Ohms) maximum pitch of 100 Ohms;
- Signal input from the Potentiometric Crown (mA and Resistive);
- Universal power supply 48 to 265 Vdc/Vac;
- RS-485 Digital Output **(ANSI/TIA/EIA-485-A)** with Modbus RTU and DNP 3 (Level 1) protocol for remote access to all measured parameters;
- Analog output from 0 to 1 mA, 0 to 5 mA, 0 to 10 mA, 0 to 20 mA and 4 to 20 mA configurable directly on the front;
- Front USB Type-C for parameterization via UseEasy™ software;
- Stores in memory the maximum and minimum TAP reached in the period;
- Contact for Failure Indication (Watchdog);
- High mechanical resistance case, built entirely in aluminum;
- IP20 degree of protection **(NBR IEC 60529);**
- Auto Baud Rate from 2400 to 57,600 bps (Automatically Detects Communication Network Speed);
- High mechanical strength housing, built entirely in DIN IEC **61554 standard aluminum;**
- Reduced size 98x50x82.5mm;
- Easy parameterization and use;
- 2 years warranty;

TECHNICAL DATA

DIGITAL TAP POSITION INDICATOR – IPTE	
Operating Voltage	48 a 265 Vcc/Vca 50/60 Hz
Operating Temperature	-40 to +85°C
Consumption	< 15 W
Tap Measurement Input	Resistive Crown from 0 to 5000 Ohms 0 to 20 mA or 4 to 20 mA transducer
Measurement Range	-50 to 50 TAP's – Programmable (50 pos.)
Analog Output and Maximum Load Options	0 ... 1 mA – 8000 Ohms
	0 ... 5 mA – 1600 Ohms
	0 ... 10 mA – 800 Ohms
	0 ... 20 mA – 400 Ohms
	4 ... 20 mA – 400 Ohms
Maximum Analog Output Error	0.25% of end-of-scale
Outgoing Contacts	8 – Free of Potential
Maximum Switching Power	70 W / 250 VA
Maximum Switching Voltage	250 Vdc/Vac
Maximum Driving Current	6.0 A
Serial Communication Port	RS-485 **(ANSI/TIA/EIA-485-A)**
Communication Protocol	Modbus RTU e DNP 3.0 (Slavic)
Auto Baud Rate	2400 to 57600 bps
Box (DIN EIC 61544)	48 x 96 x 140 mm – Aluminium
Equipment Attachment	Flush Panel Mounting
Degree of Protection (NBR IEC 60529)	IP 20

Table 1 – Technical data of the EP3 thermal protection relay.

TYPE TEST PERFORMED

- Applied Voltage (IEC 60255-5): 2kV / 60Hz / 1 min. (against land);
- Immunity and Electrical Transients (IEC 60255-22-1): 2.5kV / 1.1MHz / 2 sec. / 400 outbreaks/sec;
- Electrostatic Discharges (IEC 60255-22-2): Air mode = 8kV / Counted mode = 6 kV;
- Immunity to radiated electromagnetic disturbance (IEC61000-4-3): 80 to 1000 MHz / 10V/m;
- Immunity to Fast Electrical Transients (IEC60255-22-4): Alim/Input/Outputs =4KV/ common 2kV;
- Immunity to Surtos (IEC60255-22-5): phase/neutral 1KV, 5 per polar. (±) – phase-ground/neutral-ground 2KV, 5 per polar (±);
- Immunity to conducted Electromagnetic disturbances (IEC 61000-4-6): 0.15 to 80 MHz / 10V/m;
- Climate Ensaio (IEC 60068-21-14):- 40ºC + 80ºC / 72 hours;
- Vibration Resistance (IEC 60255-21-1): 3-axis / 10 to 150Hz / 2G / 160min/axis;
- Vibration Response (IEC 60255-21-1): 3-axis / 0.075mm-10 at 58 Hz / 1G from 58 to 150 Hz / 8min/axis;

DIMENSIONS

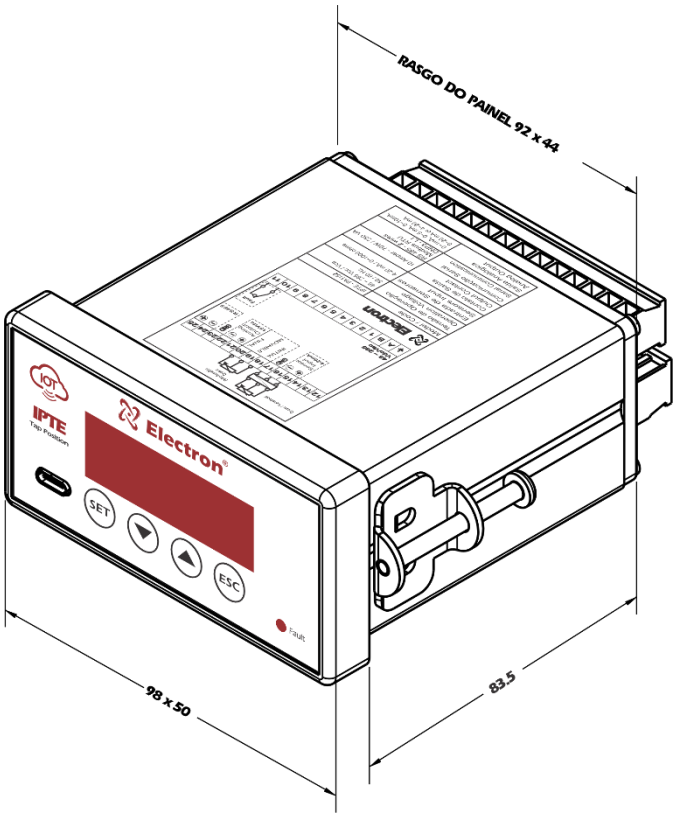

Figure 1 – Dimensions

CONNECTION DIAGRAM

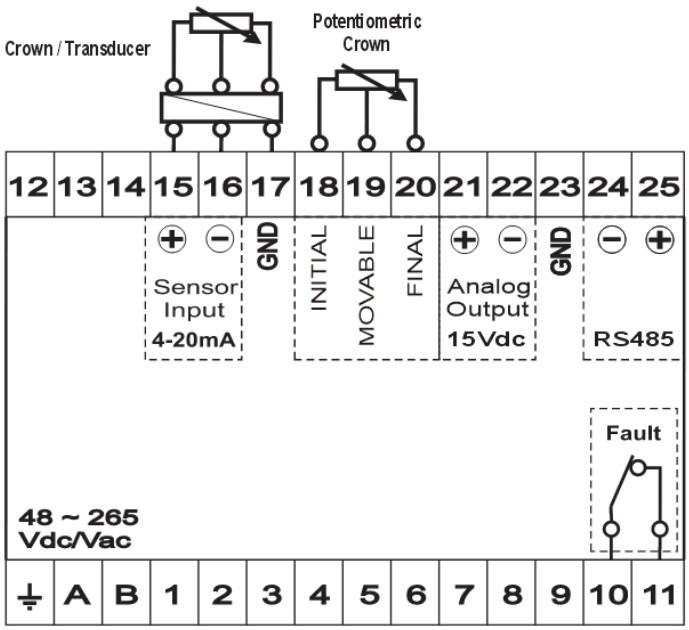

Figure 2 – Connection diagram

APPLICATION EXAMPLES

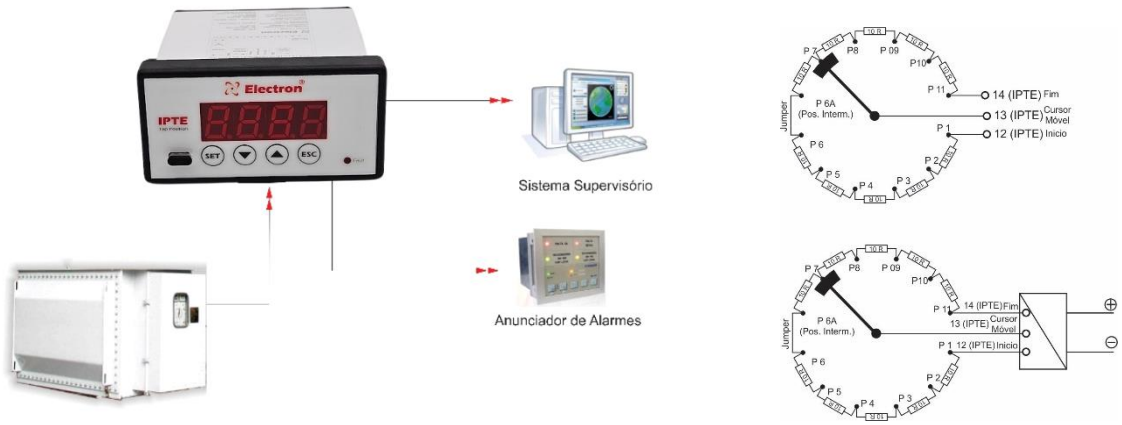

Figure 3 – Application Example

PREVENTIVE MAINTENANCE

PREVENTIVE AND CORRECTIVE MAINTENANCE							
Items to be checked preventively			Verification Frequency				Corrective action
SHARE	Verification Elements	ACTIVITIES	Every Month	Every 3 Months	Every 6 Months	Every 1 Year	When Needed
VERIFICATION	Fastening clip and snapping to the rail	Fixing to the panel door or panel bottom		X			Retightening, Fitting, Terminal Change, or Screw Change
	Terminal blocks and connector pente	Attachment and attachment to equipment		X			
		Tightening of the screws in the fastening of the conductors		X			
	Sensors	Integrity / Positioning / Fastening			X		Replacement, repositioning and/or fixing of sensors
	Sensor well in oil transformers	Oil level in the well			X		Oil filling to indicated level
TESTS & MEASUREMENTS	Relays and Digital Outputs	Individual drive test			X		Forward to Electron do Brasil technical assistance
	Led's e Displays	Test Triggering Led's and Display Segments			X		
	Navigation buttons	Navigation test of the navigation buttons			X		
	Sensor Input	Gauge sensor inputs using a standard				X	
	Input voltage of equipment supply	Measure Supply Input Voltage			X		Override voltage input values according to equipment model
	RS-485 Communication Outputs	Communication and command testing in the supervisory system			X		Forward to Electron do Brasil technical assistance
	Milliampere running Sinal inputs	Measure, compare and measure input signal in passive and/or active mode			X		
	Signal Outputs of milliampere current	Measure, compare and measure input signal in passive and/or active mode			X		
CLEANING	Terminal blocks and connector comb and connection box	Debris, Impurities and Moisture	X				Cleaning with a dry cloth, compressed air and vacuum cleaner
	Aluminum Equipment Enclosure		X				
	Front of the Equipment Display		X				
ATENÇÃO	**1 - Keeping the equipment within the ideal working temperature (50°C to 60°C) extends the useful life and avoids corrective maintenance.** **2 - The accumulation of dust and impurities in the facilities can cause short-circuiting and burning of equipment and sensors.** **3 - After 10 years of use, it is recommended to replace the equipment.**						

Table 2 – Preventive maintenance

IMPORTANT RECOMMENDATIONS

Before putting the equipment into operation, check the following recommendations:

1. All sensors as well as the equipment must be grounded, do not use the same grounding point for power supply and for the sensor so that there is no difference in potential.

2. Properly grounded sensors and power prevent malfunctions or damage in cases of disturbances, surges, and inductions in the equipment.

3. Use in the communication network (RS-485) resistors of 120 Ohms at the 2 ends of the transmission line (start and end) in order to generate the potential difference necessary for the correct operation of the communication network.

4. Do not use the IPTE directly on the SOL, whenever it is installed in the field it is important to have a panel with smoked glass, in order to filter the ultraviolet rays that attack the front polycarbonate, in this way the life of the equipment will be prolonged.

WARRANTY TERM

The Digital Electron TAP Position Indicator has a warranty period of two years from the date of sale stated on the invoice, with coverage for any manufacturing defects that make it unsuitable or unsuitable for the applications it is intended for.

Disclaimer of Warranty

The warranty does not cover transportation expenses for technical assistance, freight and insurance for shipment of a product with evidence of defect or malfunction. The following events are also not covered: Natural wear and tear of parts due to continuous and frequent use, damage to the outside caused by falls or improper packaging; attempt to repair/break a seal with damage caused by persons not authorized by Electron and in disagreement with the instructions that are part of the technical description.

WARRANTY TERM

Loss of Warranty

The product will automatically lose its warranty when:

The instructions for use and assembly contained in this manual and the installation procedures contained in the NBR 5410 Standard are not observed;

Subjected to conditions outside the limits specified in the respective technical descriptions.

Tampered with or repaired by a person other than Electron's technical staff;

The damage is caused by a drop or impact;

Infiltration of water or any other liquid occurs;

Overload occurs that causes degradation of the components and parts of the product.

Use of the Warranty

To enjoy this warranty, the customer must send the product to Electron along with a copy of the purchase invoice properly packaged so that there is no damage in transport. For emergency care, it is recommended to send as much information as possible regarding the defect detected. It will be analyzed and subjected to complete functional tests.

The analysis of the product and its eventual maintenance will only be carried out by the technical team of Electron do Brasil at its headquarters.

SPECIFICATION FOR ORDER

Equipment: TAP Position Indicator - IPTE
Product Code:

SUPPORT & CONTACT

For other questions, suggestions, questions or for any other matter related to this or other products manufactured by Electron do Brasil, please consult us through the following contacts:

→ Address: Avenida Brasil n. 2436, Bairro Lagoa, Itupeva–SP - 13.296-122

→ Phone: (11) 4496-3627

→ Mobile: +55 (11) 94133-7472 (Sales) / +55 (11) 93745-6828 (Technical Support)

→ website: www.electron.com.br

→ e-mail: vendas@electron.com.br (For commercial dealings)

→ E-mail: tecnico@electron.com.br (For questions, information and technical inquiries/application)

DECLARATION OF CONFORMITY

Available for Downloads on the Website:

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