



IPTP - TRANSFORMER PARALLELISM INDICATOR AND CONTROLLER

Catalogue

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INTRODUCTION

The IPTP TAP Position Indicator and Parallelism Control is intended for Remote TAP Position Indication of Transformers using potentiometric crown on-load exchangers. Manages parallelism through the Master-follower method in three-phase and single-phase transformers with up to 32 networked equipment where only 1 (one) is listed as MASTER and this supervises all the others through an intelligent communication protocol that is capable of detecting and indicating which of the networked equipment has failures and even making autonomous decisions, as well as providing information to automatically generate a self-diagnosis of the entire system, in order to speed up possible operator intervention or maintenance.

IPTP was built to strict quality standards and designed to withstand severe working conditions. It can be installed in power substation yards, offshore platforms and chemical industries. Meets the levels of demands, supportability and reliability according to **IEC, DIN, IEEE, ABNT standards**.

The IPTP has an input that is intended to receive the signal from a potentiometric crown, in this way it is possible to indicate on the instrument display the current TAP position in a simple numerical (1...51) or bilateral (-24...0...24) way, programmable, and it is also possible to provide the indication through an analog universal output that can be from 0 to 1, 0 to 5, 0 to 10, 0 to 20 or 4 to 20mA (or other as requested) and or digital output (RS485) with Modbus RTU and DNP 3(L1) protocol that allows to remotely access all configuration parameters as well as commands to raise and lower TAP, change the Status of Automatic / Manual and Remote / Local. The IPTP is also equipped with a resource to indicate a failure to read the signal that occurs if the TAP change has a time of more than 10 seconds or there is some type of failure in the reading of the potentiometric crown, such as cable breakage, resistor burnout, etc.

KEY FEATURES

- High-brightness 3-digit display, 20mm height and 13mm decimal place;
- Measurement range from 0 to 50 Positions (0 to 5000 Ohms) maximum pitch of 100 Ohms;
- Potentiometric (mA or Resistive) Signal Input;
- Universal power supply 48 to 265 Vdc/Vac;
- RS485 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, 0 to 5, 0 to 10, 0 to 20 and 4 to 20 mA configurable via front;
- Front USB 2.0 for parameterization via UseEasy™ software;
- Stores in memory the maximum and minimum TAP reached in the period;
- Contact for Failure Indication (Watchdog);
- Activation to raise and lower TAP directly on the front or via RS485;
- 2 NA contacts to go up and down TAP;
- 3 Contacts for remote indication of the status of the Monitor;
- 2 Contacts for remote access programming;
- 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 98x98x52mm;
- 2 years warranty;

TECHNICAL DATA

TAP AND PARALLELISM POSITION INDICATOR – IPTP	
Operating Voltage	48 to 265 Vdc/VAC 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	4 – Free of potential
Maximum Switching Power	70 W / 250 VA
Maximum Switching Voltage	6.0 A
Maximum Driving Current	RS485 (ANSI/TIA/EIA-485-A)
Serial Communication Port	Modbus RTU and DNP 3 Level 1
Auto Baud Rate	2,400 to 57,600 bps
Housing (DIN IEC 61544)	98 x 98 x 52 mm - Aluminum
Equipment Attachment	Flush Panel Mounting
Degree of Protection (NBR IEC 60529)	IP 20

Table 1 – IPTP technical data

TYPE TESTS 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 /Entr./ Outputs =4KV/ common 2kV;
- Surge Immunity (IEC60255-22-5): phase/neutral 1KV, 5 per polar. ($\pm$) - 2KV phase-to-ground/neutral-to-ground, 5 per polar ($\pm$);
- Immunity to conducted Electromagnetic disturbances (IEC61000-4-6): 0.15 to 80 MHz / 10V/m;
- Climate Test (IEC60068-21-14):- 40°C + 80°C / 72 hours;
- Vibration Resistance (IEC60255-21-1): 3 axes / 10 to 150Hz / 2G / 160min/axis;
- Vibration Response (IEC60255-21-1): 3-axis / 0.075mm-10 at 58 Hz / 1G from 58 to 150 Hz / 8min/axis;

DIMENSIONS

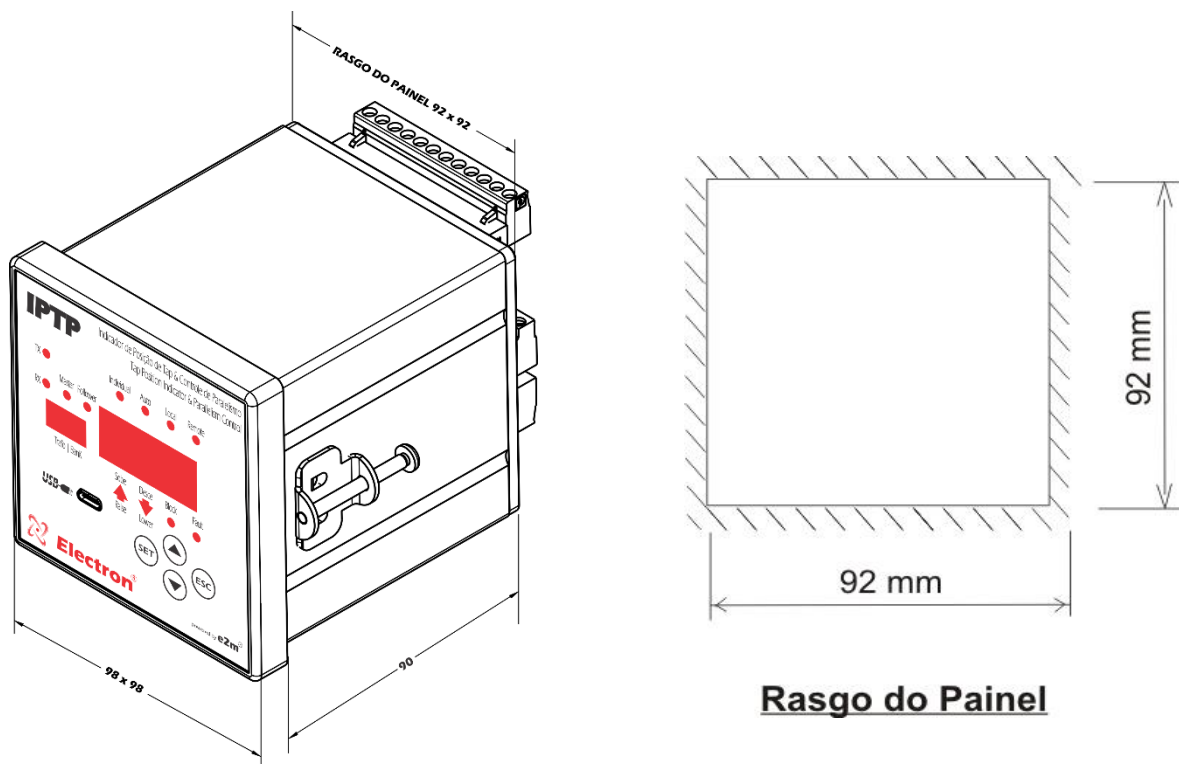


Figure 1 – IPTP Dimension

CONNECTION DIAGRAM - IPTP

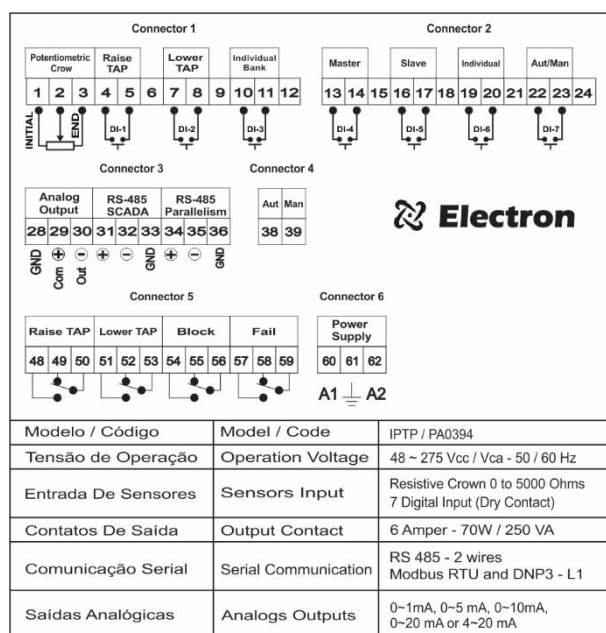


Figure 2 – IPTP Connection Diagram

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 Comb	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 and 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 Current Signal 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

APPLICATION EXAMPLES

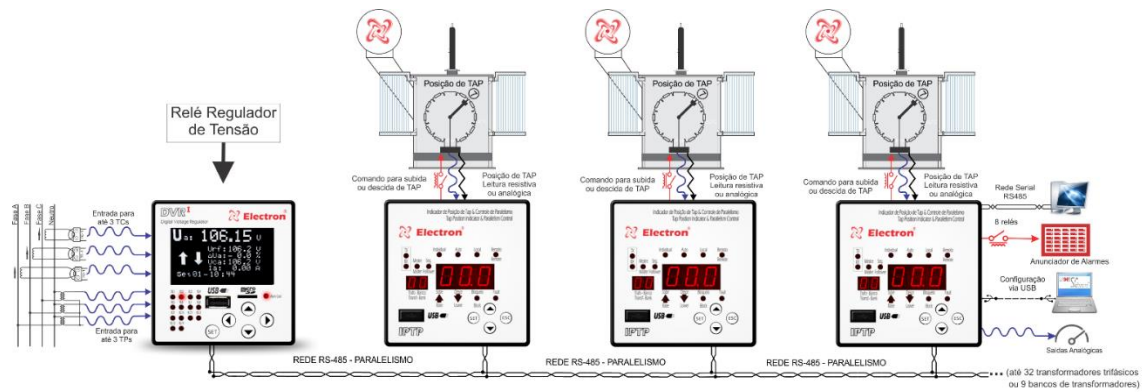


Figure 3 – Application example 1

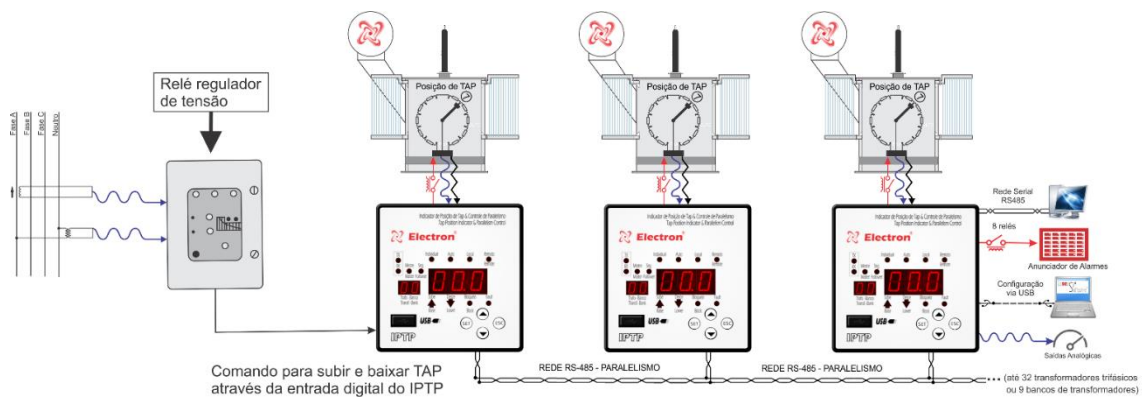


Figure 4 – Application example 2

MÓDULO TRANSMISSOR DE ATÉ 35 POSIÇÕES



Figure 5 – transmission module of up to 35 positions

PURCHASING SPECIFICATION

INDICADOR E CONTROLADOR DE PARALELISMO IPTP -

