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PRECISION INSTRUMENTATION

TRANSducers & ISOLATORS
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DATASHEET

Issue 1

**NEW
PRODUCT**



Multifunction Meters

Transducers & Isolators

Temperature Controllers

Converters & Recorders

Digital Panel Meters

Current Transformers

kWh Energy Meters

Analogue Panel Meters

Shunts

Digital Bargraphs

Digital Multimeters

Protection Relays

Synchroscope Series

Rotary Switches

Power Supplies

Test & Measurement



THETA TPT PROGRAMMABLE TAP POSITION TRANSDUCER WITH DUAL OUTPUT, DISPLAY AND MODBUS

SUBJECT TO CHANGE WITHOUT NOTICE

This datasheet superseded all previous versions – please keep for future reference

Product Features:

- Electrically isolated analog outputs prevent interference voltage and current
- High electric isolation between input and output
- Input measuring range can be programmed using PC
- Electrically isolated Dual outputs
- Tap number is programmable
- Tap position is displayed on front LED display
- Analogue output signal also programmed using the PC
- Galvanic and optical isolation between Power supply, Input and outputs

THETA TPT

Programmable Tap position transducer with dual output, display and modbus



Application

The purpose of the Tap position transducer is to convert tap position of transformers to equivalent analogue output. Outputs can be given as input to either RTU or indicator or recording instrument. Input variable and measuring range are programmed with the aid of a PC and the configuration software.

The device has one input channel and two independent outputs.

Function

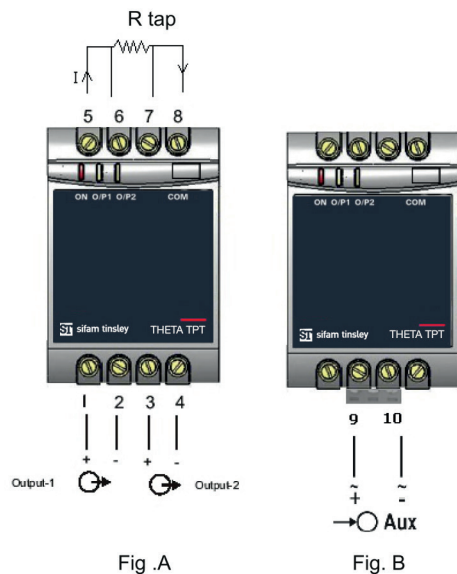
Tap position transducers receives resistance input, which corresponds to tap position of transformer. Output is proportional to tap position.

Product Features

Electric Isolation

- Electrically isolated analog outputs prevent interference voltage and current. Solves grounding problem in meshed signal networks.
- High electric isolation between input and output-2.3 kV, and power supply versus all other circuits -3.7 kV.
- Input measuring range can be programmed using PC / Simplifies project planning and engineering (the final range can be determined during commissioning).
- Electrically isolated Dual outputs.
- Tap number is programmable from 1 to 100 using software.
- Tap position is displayed on front LED display (Optional)
- Analogue output signal also programmed using the PC (impressed current or superimposed voltage for all ranges between -20 and + 20mA DC resp. -12 and + 15 V DC)
- Galvanic and optical isolation between Power supply, Input and outputs
- 3,4 wire measurement to compensate lead resistance automatically.
- 2 wire measurement with lead resistance compensation through software.

Electrical Connections:



Technical Specifications

Standards	
Electromagnetic compatibility	Acc. to IEC 61326-1 IEC 61000-4-3, Level 3 IEC 61000-4-4, Level 3
Protection (acc. to IEC 60529 resp EN 60 529)	For Housing: IP40, For terminals: IP20 as per IEC60529
Electrical standards	Acc. to IEC 1010 resp. EN 61010
Over voltage category	Acc. to IEC 664: III for power supply, II for measuring input and measuring output.
Double Insulation	1. Power supply versus all other circuit. 2. Measuring input versus measuring output.
Test Voltage	- Power supply versus: All 3.7 kV, 50 Hz 1 min - Measuring inputs versus: Measuring output 2.3 kV, 50 Hz 1 min - Measuring output 1 versus - Measuring output 2: 500 V, 50 Hz 1 min
Common mode voltage	100V
Pollution degree	2

Measuring Input $\rightarrow$

Measured Variable	Measuring ranges		
	Limits	Min. span	Max. span
Low Resistance Range	0...3700Ω	500Ω	3700Ω
High Resistance Range	0...25000Ω	500Ω	25000Ω

Measuring current	= 0.081mA for measuring range 0...3700Ω. or = 0.012mA for measuring range 0...25000Ω.
Output Signals: Output1 and Output 2	
DC current:	Standard ranges: 0-20mA or 4-20mA
Non-standard ranges:	-20 to +20mA Min. Span 5mA, Max Span 40mA
Burden voltage:	Negative > -19 V, Positive < 22 V
External Resistance	$R_{ext\ max.} [k\Omega] = 15V/I_{AN} (mA)$ or $12V/I_{AN}(mA)$ $I_{AN}(mA) = \text{Full scale current}$
DC Voltage	Standard ranges: 0-5V, 1-5V, 0-10V, 2-10V
External Resistance	$R_{ext\ min.} [k\Omega] = U_A(V)/20mA$, $U_A(V)=15V$ or $-12V$
Residual ripple in Output current	< 0.5% p.p.
Response time	< 4 s
Power supply	60 ... 230...300 VAC/VDC, (45...66 Hz) 20 .. 24 ...40 VAC, 20..48..60VDC (45...66 Hz)
Power consumption	<3W or <4.7 VA
Mounting	DIN Rail mounting or wall mounting.
Mounting Position	Any
Accuracy Data (Acc to IEC 60688)	
Basic Accuracy	± 0.2% of range
Reference Conditions	Ambient temperature: 23 °C ± 2K
Nominal value of Aux	230V 50Hz or 60 Hz AC/DC
supply voltage:	48V 50Hz or 60 Hz AC/DC
Output burden	0.5 * $R_{ext\ max.}$
Influence factors	
Temperature	± 0.15% per 10 K
Burden influence	< ±0.1 % for current output < ±0.1 % for voltage output
Magnetic field	< ±0.2 % (400A/T)

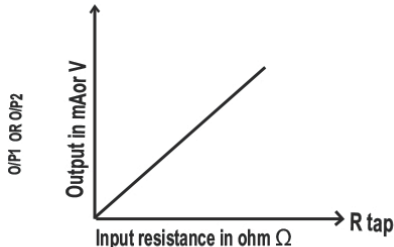
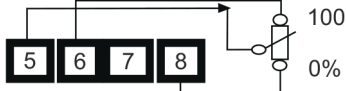
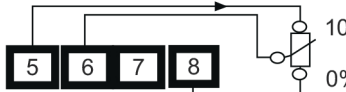
Regulations	
Electromagnetic Compatibility	Acc. to IEC 61326-1, IEC 61000-4-3, Level 3, IEC 61000-4-4, Level 3
Shock Resistance	IEC 60068-2-27, Min. Severity 50 G
Vibration Strength	IEC 60068-2-6, 10-150-10 Hz, 0.15mm, 2G
Electrical standards	Acc. to IEC 1010 resp. EN 61010
Operating voltages	<300 V between all Insulated circuits
Climatic rating	Climate case 3Z acc. to VDI / VDE 3540
Nominal range of use	0°C to 45 °C (Usage Group II)
Operating temperature	-20 to 65 °C
Storage temperature	-40 to 70 °C
Annual mean relative humidity	< 75% standard Climatic rating.
Output characteristics	
	

Table: Alternative connection types

Measurement	Measuring Range Limit	Measuring Span	No.	Wiring Diagram
Two-wire connection	0...3700Ω/ 0...25000Ω	500...3700Ω/ 500...25000Ω	1	
Resistance Measurement three-wire connection	0...3700Ω/ 0...25000Ω	500...3700Ω/ 500...25000Ω	2	
Resistance Measurement four-wire connection	0...3700Ω/ 0...25000Ω	500...3700Ω/ 500...25000Ω	3	
Resistance Transmitter WF	0...3700Ω/ 0...25000Ω	500...3700Ω/ 500...25000Ω	4	
Resistance Transmitter WF DIN	0...3700Ω/ 0...25000Ω	500...3700Ω/ 500...25000Ω	5	

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