ELECTRICAL NETWORK TRANSDUCER

Single or 3 phase balanced networks, Wave train and phase angle

TRM1 TA

The TRM1 TA is an insulated **measure transducer** which allows converting parameters from AC electrical networks of any kind of shape : wave train, phase angle, syncopate..., for single or 3-phase loads supplied by thyristor gradators. Measurement of RMS values, active power, power factor, energies, current and voltage peaks.

More than **12 measurable parameters** which can be assigned on choice by programming on the output channels.
Moreover, it is fully configurable by the user with the PC software or by µconsole connected on the front face. It allows visualization of the measure and modifications of the programming, as well as teleloading of programming files for duplication to other converters.

Functions
♦ **Programmable input calibers** :
1A and 5A$_{AC}$ current,
(safened by a screwed connecting)
150V and 500V$_{AC}$ voltage

♦ **Galvanic partition :**
Inputs/Supply /outputs : 2 kV

♦ Broad supply range.

♦ Variable response time according to the period of the deformed signal. Watching of the current and voltage max. on all the network periods.

♦ Programmable measure cycle according to the modulation period (20ms to 80s : mode manual) or adjusted automatically (mode automatic).
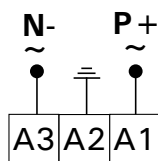
Output options
♦ **3 combinable outputs :**
• *Bidirectional analog output :*
  0/5mA, 0/10mA, 0/20mA, 4/20mA
  -5/5mA, -10/10mA, -20/20mA
• *Relay output : setpoint or pulses*
• *Digital output Modbus/Jbus*
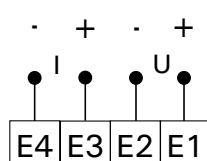 *Data link RS422/485 2 or 4 wire*
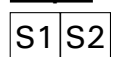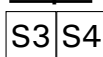
Wiring

Upper connector

Supply

N-   P+

A3	A2	A1

Inputs

· + · +
I   U

E4	E3	E2	E1

Lower connector

Analog output

S1	S2

+   ·
Lr < 600Ω
(20 mA)

Relay output

S3	S4

Digital output

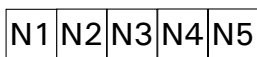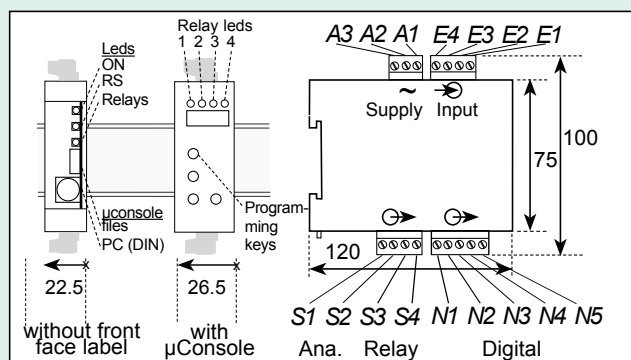| N1	N2	N3	N4	N5

Gnd   Rx-   Rx+   Tx-   Tx+

Presentation

♦ **Dimensions** : Housing : 96 x 49 x 112 mm
(H x L x D)   µConsole : 80 x 26.5 x 120 mm

♦ **Protection** : Housing / terminals : IP 30

♦ **Case** : Self-extinguishing housing of black UL94VO ABS Latching on symmetrical DIN rail (Vertical mounting of the cases, with 5mm space between each). Plug-off connectors for screwed connectings (2.5mm², flexible or rigid).

♦ **Weight** : 230g (with packaging)

♦ **Operating T°** : 0°C to +55°C.

♦ **Storage T°** : -25°C to +70°C.

♦ C€ marking

Technical features

TRM 1 TA

Inputs

Voltage	2 programmable calibers Un = 150 and 500 Vac	Power draw	Voltage input : resistance 1 MΩ Current input : < 0.2 VA
Current	2 programmable calibers 1 and 5 A In = 1.2 and 6 Aac	Test voltage	2KV/50Hz/1min.
		Frequency	50Hz (option : 60 Hz)
Oversteppings	measurable : 1.2 Un and 1.2 In	Type of network	Single or 3 phase balanced with or without neutral 4 or 6 wire
Overloads	Permanent : 750 V, 10 A During 10s : 1000 V, 50 A	Thermic drift	< 200ppm

3 combinable outputs : analog, relay, digital
Analog output (option A) (bidirectionnal)

Relay output (option R)
(setpoint or pulses)

Galvanic partition	2KV	Galvanic partition	2KV
Output signal	Programmable (in mA) : -20/20 -10/10 -5/5 0/5 0/10 0/20 4/20 mA	Type of contact	On potential free contact
Scale setting	0 to 100% of measure range by progr.	Rated load	5A - 250 Vac
Admissible load	Up to 600 Ω (20 mA)	Response time	100ms for Umax and Imax 2x(measure cycle) for the other values
Resolution	24000 points		
Accuracy	< 0.1% of full scale on -20 / 20 mA (in relation to the display) < 0.2 % on -5/5 mA	**Pulse output** Count rate Width of the pulses Weight of the pulses	1 to 4 pulses per second. 100 to 400ms by programming programmable
Residual ripple	±2.5 mV (peak to peak) on 50 Ω load		
Response time	<120ms for Umax and Imax 2x (measure cycle) for the other values	**Setpoint output** Hysteresis Time delay	Adjusting of the setpoints programmable. Programmable, 0 to 15% of the setpoint. Programmable, 0 to 15 sec.
Thermic drifts	<100ppm (±20mA) <200ppm (0/20mA)		

More than 12 measurable parameters

Digital output RS 422/485 (option N)

Measured parameters	Single and mesh voltage, line current, active and apparent powers, cosine, active energies in and out, RMS values...	Galvanic partition	2KV
		Type	2 or 4 wire
		Speeds	4800 / 9600 / 19200 bauds
Accuracy rating **Phase angle** :	Voltage, Current : 0.5 Power : 1 (IEC 60688) Energies : 2 (5A) and 3 (1A)	Protocole	Modbus/Jbus RTU 8 bits, programmable parity. 1 or 2 stop bits.
Wave train :	Voltage, Current : 0.2 Power : 0.5 Energies : 1 (5A) and 2 (1A) (IEC61036) (Saved every 5 min.).	Format of the data	programmable, integer 16 bits.

Power supply

2 Versions : High or	low voltage (to be specified on order)
High voltage (2)	90...270 Vac or 88...350 Vdc
Low voltage (3)	20...40 Vac or 20...60 Vdc
Power draw	5 VA

Measuring method	Real time simultaneous sampling of the voltage and current. Digital calculation on 32 bits. Measurement of the deformed signals.
Digital filtering	Programmable on several levels
Measure cycle	Variable according to the period of the deformed signal (between 20ms and 80s).

Coding

Type : *TRM 1 TA*

Options : *A R N I*

A : option analog bidirectionnal output
R : option relay output : setpoint or pulses
N : option digital output RS422/485
I : option network frequency at 60Hz

Power supply : *High or low voltage (specify)*
(2) HT : high voltage : 90...270 Vac or 88...350 Vdc
(3) BT : low voltage : 20...40 Vac or 20...60 Vdc

Order example :

- For a TRM1 TA with 1 analog output, 1 relay output in high voltage power supply, request reference :
TRM1 TA AR 2

This instrument is dedicated to industrial applications. It has to be installed in an electrical switchbox, or equivalent.

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