

# DIGITAL MEASURE TRANSMITTER

Single or 3-phase balanced/unbalanced 3 or 4 wire networks


# Series TRM4

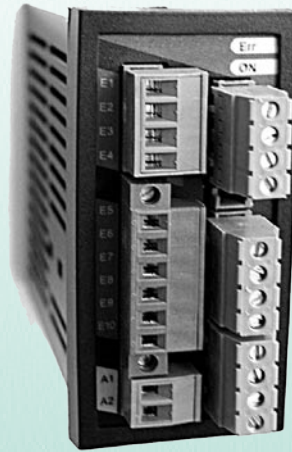
## Type

The **transmitters TRM4** are especially designed for the **measurement**, the **control** and the **transmission** of all the parameters of AC electrical networks: voltage, current, power, energy, frequency, etc...

Easy programming, accessible by PC via the software *Supervision*.

## Environment

- Operating temperature: 0°C to +55°C.
- Storage temperature: -25°C to +70°C.
-  marking



## Functions

- Universal, **32 measurable parameters**, for all network types.

They accept as input by programming:  
Current: 1A and 5A AC  
Voltage: 100V L-N / 175V L-L and 330V L-N / 600V L-L

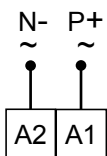
- Quick cycle time: 40ms
- Universal (switching) power supply

## Options

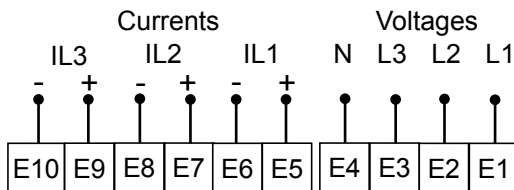
- ◆ Analog outputs (up to 5 outputs)
- ◆ Relay outputs
- ◆ Digital data link RS485
- ◆ Profibus output
- ◆ Ethernet output (Modbus TCP)
- ◆ Harmonics analysis

## Wiring

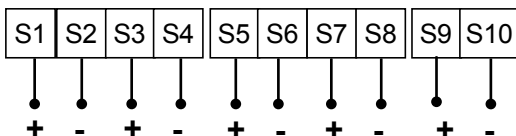
### Power supply



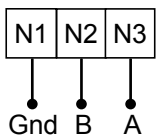
### Inputs



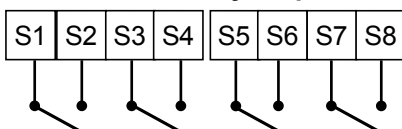
### Analog outputs



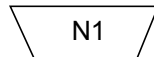
### RS485 output



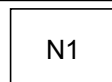
### Relay outputs



### Profibus output



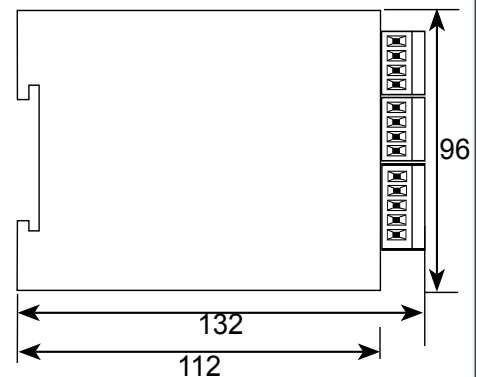
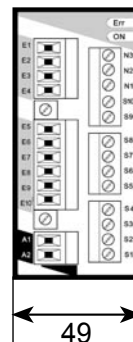
### Ethernet output



## Dimensions

Dimensions : (H x L x D) 96 x 49 x 112 mm  
(P=132, with terminals)

### Front face view



**Protection** : Case / terminals: IP 20

**Housing** : Self-extinguishing case of black UL94VO ABS  
For latching on symmetrical DIN rail  
Plug-off connectors for screwed connections (2.5mm<sup>2</sup>, flexible or rigid)

**Weight** : 200g to 500g

# Technical features

## Inputs

- **Voltage** 2 programmable ranges:  
Un=100V L-N / 175V L-L and 330V L-N / 600V L-L
- **Current** 2 programmable ranges: 1 & 5A (In=1.2A & In=6A)  
*Measurable oversteppings* 1.2 In; 1.2 Un  
*Overloads* permanent: 750 V, 2 In  
during 10 s: 1000 V, 10 In  
*Power draw* voltage input: resistances 1 M $\Omega$   
current input: < 0.2 VA  
*Test voltage* 2 kV / 50 Hz / 1 min.  
*Frequency* 10...50...65 Hz (other frequencies: consult)  
*Network type* single or 3-phase balanced/unbalanced  
with or without neutral

## Outputs

- **RS485 output (option  N )**  
*Type* 3 wire (galvanic partition / inputs 2 KV)  
*Speed* 4800 / 9600 / 19200 bauds  
*Protocole* Modbus / Jbus RTU 8 bits programmable parity  
*Format of the data* Integer 16 bits (table of the units) or 32 bits  
decimal points and units fixed.
- **Relay outputs (option  R )**  
*Type of contact* on potential free contact (galvanic partition: 2KV)  
output 1NO  
*Rated load* 5A - 250 VAC  
- either **SETPOINT OUTPUT**  
Setting of the setpoints : 0 to 100% of the measure range (program.)  
Switching hysteresis : 0 to 15% of the setpoint (programmable)  
Time delay : 0 to 15s (programmable)  
- or **PULSE OUTPUT**  
Count rate : 4 / 2 / 1 pulses per second according to the  
programmed width  
Width of the pulses : 100 / 200 / 400ms (programmable)
- **Analog outputs (option  A )**  
*Galvanic partition* 1kV (between outputs)  
2kV (inputs). 3 bidirectionnal outputs, possibility  
of insulation at 4kV (optional).  
*Output signal* programmable:  
**Bidirectionnal outputs** (up to 3 outputs):  
-20/20mA -10/10mA  
-5/5mA 0/5mA 0/10mA 0/20mA 4/20mA  
**Unidirectionnal outputs** (up to 2 outputs):  
0/5mA 0/10mA 0/20mA 4/20mA  
*Scale setting* 0 to 100% of the measure range (programmable)  
*Admissible load* up to 600 $\Omega$  (20mA)  
*Accuracy of the card* < 0.1% of the full scale on -20/20mA  
< 0.2% on -5/5mA  
*Max. residual ripple* >25mV (peak to peak) on 500 $\Omega$  load  
*Response time* typical 60ms maximum < 100ms (input/output)  
*Thermic drifts* < 120 ppm caliber -20/+20mA  
< 200 ppm caliber 0/20 mA
- **Ethernet output (option  F )**  
*Protocole* TCP/IP (Modbus)  
*Speed* 10 / 100M  
*Connection* RJ45  
Embarked web server for the configuration, the reading of the measures  
and the management of the measures storage memory.

## • Profibus output (option P )

<i>Type</i>	PROFIBUS DP slave
<i>Speed</i>	Up to 12Mbauds
<i>Address</i>	Configurable with the software Supervision
<i>Connection</i>	DB9 Female

## • Harmonics analysis (option H )

Measurement of the voltage and current harmonics of the 3 phases up to rank 50. Retransmission possible in Modbus.

## Supply

Universal power supply
20...270 VAC / 20...300 VDC
Power draw 6 VA max. in AC, 3.5W max. in DC

## Measure

### • 32 measurable parameters

<i>Accuracy rating</i>	Voltages, currents: 0.2 (CEI688-1) Powers: 0,5 (CEI688-1) Energies: 1 (CEI61036)
<i>Thermic drifts</i>	< 200ppm
<i>Measuring method</i>	Fast simultaneous sampling of the 3 voltages and the 3 currents. Digital calculation on 32 bits. Measuring of deformed signals, pass band 6.4KHz
<i>Digital filtering</i>	Programmable on several levels
<i>Energies</i>	Saved
<i>Cycle time</i>	40ms (for all network types)

## Wiring

With detailed manual, supplied with the instrument.

# Coding

## Types:

**TRM4** 3U, 3V, 3 I, cos  $\varphi$ , cos  $\varphi$ /phase, F, P 10/15min., Q 10/15min., S, P/phase, Q/phase, leak current, E active, E reactive, inductive and capacitive

**Options available for all types:**  H Harmonics analysis

**With/without RS485 outputs**  N (possibility to have up to 5 outputs),

- Options:**  2R 2 relay outputs  
 4R 4 relay outputs  
 2A 2 analog unidirectionnal outputs  
 3A 3 analog bidirectionnal outputs  
 4A 2 unidirectionnal outputs, 2 bidirectionnal outputs  
 5A 2 unidirectionnal outputs, 3 bidirectionnal outputs

**Profibus output**  P,

**Options:**  R 2 relay outputs

**Ethernet output**  F,

**Options:**  A 1 bidirectionnal analog output  
 R 2 relay outputs

## Order example:

- For a TRM4 with 2 relay outputs (setpoint or pulses), 3 bidirectionnal analog outputs and RS485 digital data link, request the reference: **TRM4 3A 2R N**
- For a TRM4 with 5 analog outputs and RS485 digital data link, request the reference: **TRM4 5A N**

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



e-mail : info@ardetem.com  
http : //www.ardetem.com

Route de Brindas  
Parc d'activit  d'Arbora N 2  
69510 SOUCIEU EN JARREST  
FRANCE

T l. : 33 (0)4 72 31 31 30  
Fax : 33 (0)4 72 31 31 31

Your representative