DIGITAL MEASURE TRANSMITTER

single/3-phase balanced/unbalanced 3/4 wire networks

Series TRMv5

true RMS measurement

suitable for disturbed electrical networks

TRMv5

Type

The ***transmitters TRMv5*** are especially designed for the ***measurement***, the ***control*** and the ***transmission*** of all the parameters from AC electrical networks: voltage, current, power, energy, frequency, etc...

Programming by the PC software SlimSET via a standard USB / µUSB cable or by tactile LCD micro console.

Environment

- Operating temperature:
  -10°C to +55°C.
- Storage temperature:
  -25°C to +70°C.
- Marking CE

Functions

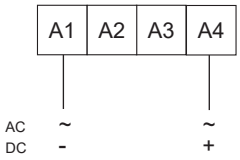
- Universal, for all types of electrical networks. The following input calibers can be programmed:
  Current: 1 and 5 A AC
  Voltage:
  - 60V L-N / 100V L-L
  - 110V L-N / 190V L-L
  - 250V L-N / 440V L-L
  - 350V L-N / 600V L-L
- High-performance measure: continuous measurement without interruption, suitable for disturbed networks.
- Cycle time: 40ms
- Universal power supply

Available options

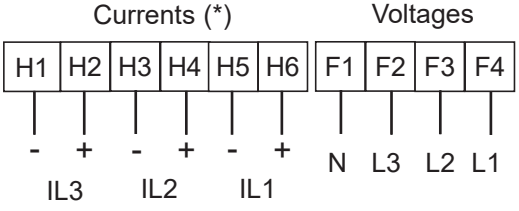
- **5 analog outputs**
- **3 relay outputs**
- **RS485 digital communications**
- **Ethernet output (TCP Modbus)**
- **Harmonics analysis**
- **Logic input**

Connectings

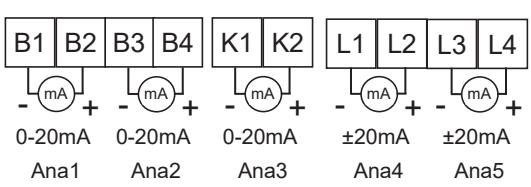
Supply



Inputs

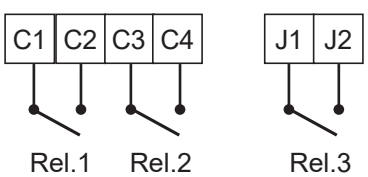


Analog outputs

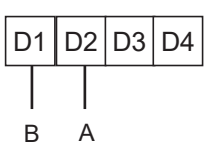


Ethernet output

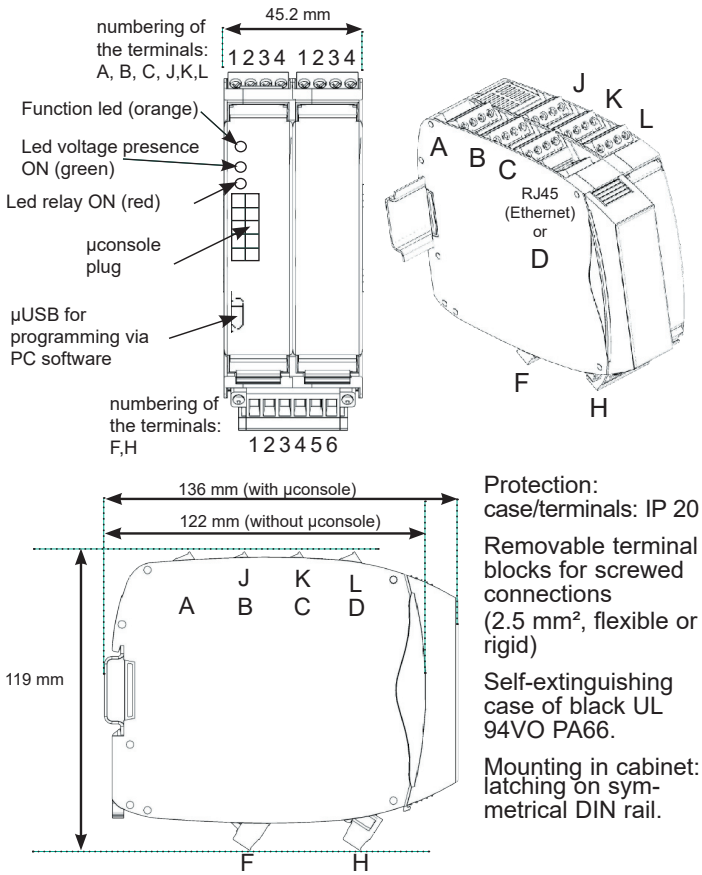
Relay outputs



RS485 output



Dimensions



Protection: case/terminals: IP 20

Removable terminal blocks for screwed connections (2.5 mm², flexible or rigid)

Self-extinguishing case of black UL 94VO PA66.

Mounting in cabinet: latching on sym-metrical DIN rail.

ARDETEM 69510 SOUCIEU EN JARREST -France - Tél. 33 (0)4 72 31 31 30 - Fax. 33 (0)4 72 31 31 31 - CA CO/151

Technical features

Inputs

• **Voltage** — 4 programmable ranges:
- 60V L-N / 100V L-L
- 110V L-N / 190V L-L
- 250V L-N / 440V L-L
- 350V L-N / 600V L-L

• **Current** — 2 programmable ranges: 1 and 5 A AC with automatic switching of the internal calibers

Measurable overranges	1.2 In; 1.2 Un
Overloads	permanent: 750 V, 2 In During 10 s: 1000 V, 10 In During 0.5 s: 100A
Power consumptions	voltage input: 1.5 MΩ resistances current input: < 0.2 VA
Test voltage	3 kV / 50 Hz / 1 min. between each current input
Frequency	10...50...65 Hz (other frequencies: consult with us)
Network type	single or 3-phase balanced/unbalanced with or without neutral

Outputs

• **RS485 output (option N)**

Type	2-wire with galvanic isolation
Baud rate	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 2R or 3R)**

Type of contact	on potential free contact (galvanic isolation: 3KV) output 1NO
Rated load	5A - 250 VAC

- either **SETPOINTS OUTPUT**
  - Setting of the setpoints : 0 to 100% of the meas. range (programmable)
  - Switching hysteresis : 0 to 15% of the setpoint (programmable)
  - Time delay : 0 to 15s (programmable)
- or **PULSES 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 2A or 4A or 5A)**

Output signal: programmable with galvanic isolation (1KV betw. outputs):

Bidirectional outputs:
-20/20mA -10/10mA
-5/5mA 0/5mA 0/10mA 0/20mA 4/20mA

Unidirectional outputs:
0/5mA 0/10mA 0/20mA 4/20mA

Scale setting	0 to 100% of the measure range (programmable)
Admissible load	up to 500Ω (20mA)
Accuracy of the card	< 0.1% of the up scale
Resolution	16 bits
Max. residual ripple.	<25mV (peak to peak) on 500Ω load
Response time	typical 60/80ms (input/output)
Thermal drifts	< 150 ppm/°C

• **Ethernet output (option F)**

Protocole	TCP/IP (Modbus) with galvanic isolation
Speed	10 / 100M
Connecting	RJ45

Embarked web server for the configuration, the reading of the measures and the management of the measure storage memory.

• **Logic input (option T)**

Nominal voltage	24VDC ±30% with galvanic isolation 3KV

• **Harmonics analysis (option H)**

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

• **Profibus or Profinet output (option PB or PN)**

Power supply

Universal power supply
20...250 VAC / 21.5...250 VDC
Power draw: 11 VA max. in ac, 6W max. in DC

Measure

Accuracy rating	Voltages, currents: ..... 0.2 Powers: class.....0.5 Active energy: class.....1% Reactive energy: class.....1%
Measuring method	fast simultaneous sampling of the 3 voltages and the 3 currents. Digital calculation on 32 bits. TRMS measurement of deformed signals up to the harmonic 51
Digital filtering	programmable on several levels
Energies	Saved
Cycle time	40ms (for all network types)

Wiring

With detailed manual, delivered with the instrument.

Compliance with standards

Electrical safety	*EN 61010-1*
Protection class	*II* *double isolation, voltage inputs by protection impedance.* *The current inputs are electrically isolated from one another.*
Environment and accuracy	*IEC 61557-12*
Directive EMC 2014/30/UE	*EN 61326-1*
Energy counting	*IEC 62053-22*
Pollution degree	*2*
Measure category	*CAT III 300VAC L-N* *CAT II 600VAC L-N*
IN/OUT test voltage	*3 KVAC 50Hz 1min.*

Coding

TRMv5 3U, 3V, 3 I, cos φ, cos φ/phase, F, P 10/15min., Q 10/15min., S, P/phase, Q/phase, leak current, E active, E reactive, inductive and capacitive

H	harmonics analysis	T	24Vdc isolated logic input
N	RS485 output	F	Ethernet output + embarked web server
2R	2 relay outputs	PB	Profibus output
3R	3 relay outputs	PN	Profinet output
2A	2 unidirectional analog outputs		
4A	2 unidirectional analog outputs 2 bidirectional analog outputs		
5A	3 unidirectional analog outputs 2 bidirectional analog outputs		

Order example:

• For a TRMv5 with 2 relay outputs (setpoint or pulses), 2 unidirectional analog outputs and RS485 output request the reference:
TRMv5 2A 2R N

• For a TRMv5 with 5 analog outputs and RS485 output request the reference: **TRMv5 5A N**

This appliance is designed for industrial applications. It has to be installed in an electrical cabinet, or equivalent.

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