



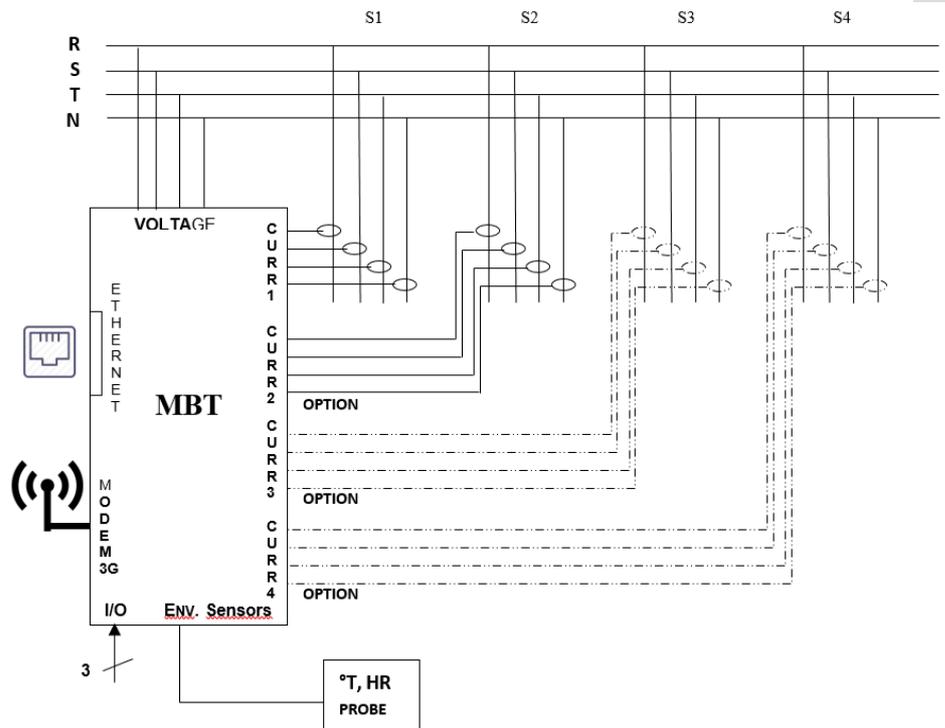
## Multistage powermeter for electrical measurements at nodes of BT networks

**MBT** is a compact multistage three-phase powermeter to measure the electrical quantities (voltage, current, powers) up to 4 three-phase lines (S1÷4) connected to the same electrical node (ie that share the same voltage).

The voltage measurement is direct ( $V-N_{Nom}$  equal to 230 Vac), while the current measurement is performed by means of flexible Rogowski or TA split-core micro-sensors.

**MBT** is available with a number of current stages of 2 or 4.

In addition to the electrical measurements, **MBT** also performs a measurement of temperature and relative humidity, through an external sensor module, connected by a cable.



All the measurements made by **MBT** are processed to obtain minimum, average and maximum values within programmable integration periods and recorded in the internal data memory. The recording autonomy before the saturation / rewriting of the data memory equal to 31 days . In addition to the periodic values, **MBT** also records events (instant, duration, peak) when the measures exceed minimum and maximum programmable thresholds.

**MBT** also detects 4 digital inputs to be associated with alarm events from the field.

**MBT** is equipped with the following communication interfaces for connectin to host systems for configuration and archives downloading:

- 10/100 baseT Ethernet port
- 3G modem with external antenna, for spontaneous sending of alarm notifications and periodic measurement files

**MBT** supports various communication protocols: http (integrated web server), ftp server and client, modbus TCP.

# Technical Specifications

## Measuring circuits

- Nominal voltage Vn:
  - 3 x 230 Vac L-N
  - Umin: 46 Vac L-N
  - Umax: 400 Vac F-N
  - Inst. overload (0.1 sec): 575 Vac F-N
  - Insulation Cat. IV 300 V class 2 (reinforced insulation)
- Current Rogowski transducers:
  - Transducers output: 85 mV / kA @ 50 Hz
  - Max current I<sub>max</sub>: 400 Aac
- Temperature: -30 + 70 °C
- Relative humidity: 0-100%
- Digital inputs: 4 channels, passive optoisolation 24 Vdc ±10%, insulation ≥600 Vpk

## Measurements over 50/60 Hz grid

- Phase-neutral voltage, inst/min/avg/max over programmable interval.
- Phase current, inst/min/avg/max over programmable interval
- Active, reactive, apparent power, inst/min/avg/max over programmable interval
- Frequency inst/mim/avg/max over programmable interval
- Temperature, inst/avg over programmable interval
- Relative humidity, inst/avg over programmable interval

## Accuracy

- Voltage: Class 0.5 CEI EN 61557-12
- Current: Class 0.5 CEI EN 61557-12
- Flexible clamp: ±0.5% da 10% a 150% I<sub>din</sub>
- Power: Class 1 CEI EN 61557-12
- Temperature: ±1 °C
- Relative humidity: ± 1%

## Power supply

From measuring circuits 3x230 Vac -25% + 75%

Consumption: 15 VA max

Power Backup: 15 sec. from power outage

## Environmental conditions

Operating temperature: -15 +55 °C

Humidity: 95% uncondensed

Altitude: 0-2000 m asl

## Weight

- 600 g

## Safety

- EN61010-1
- Cat. IV 300 V
- Class 2 (reinforced insulation)
- Pollution degree: 2

## EMC

- Emissions: EN61000-6-4
- Immunity: EN61000-6-2
- EN61326-1

## Communication ports

- Ethernet 10/100 baseT – RJ45 with led
- Modem 3G with SIM holder and removable external antenna

## Communication protocols

- Http server (responsive web application, for configuration, real time display and archives downloading)
- Ftp server and client (modem)
- Modbus TCP slave

## Data files

- Daily periodic measurements
- Daily events
- File format: text CSV

## Panel leds

- Power on
- Vcc Ok
- Modem status
- Device status

## Data memory

- Capacity: 31 days
- Type: microSD

## Clock calendar

- Format: ISO8601

### TW-TeamWare Srl

Via Pindaro, 19

20128 Milano - Italy

Tel. +39 02 27003261

Fax +39 02 27007753

email [tw@teamware.it](mailto:tw@teamware.it)

web [www.teamware.it](http://www.teamware.it)