

# ReCon T Energy Logger THD GPRS and USB version

Compact, robust and versatile electrical energy monitoring with 3G communication capabilities.

Today's increasing energy costs and environmental concerns demand more sophisticated energy recording tools. Knowing precisely where and when energy is used is the first steps in any energy management program. CESINEL ReCon series of high-performance electrical energy loggers set a new standard in functionality, versatility, compactness, and simplicity of use. Preinstalled with built-in flexible coils, installing the logger is a matter of minutes. After installation the logger will automatically record all your energy parameters for later retrieval via the local USB port. Other communication options are also available. The ReCon T three-phase Energy Logger is the perfect solution for occasional, large-scale, distributed energy monitoring solutions.



# Summary of main capabilities Recorded phenomena

Voltage and current RMS max, average and minimum values
Voltage interruptions, dips and swells: time and duration of event
Voltage and current harmonic distortion (UTHD and ITHD)
Low order voltage and current harmonics (up to 7th order)
Network frequency max, average and minimum values
Active, reactive and apparent power (kW, kvar and kVA)
Active, reactive and apparent energy (kWh, kvarh and kVAh)
Total Power factor. In wye mode also per-phase is available
Voltage and current unbalance
Main features Built-in backlit display
Powers directly from the measurement signals.
Single and polyphase connection topologies
Can also be powered directly from USB for easier use on a desk
Different sizes of flexible current sensors available
Magnetic back plate for instantaneous attachment to an electric panel
Very large memory available for mode than 3 months of non-stop recording
Storage interval from 1s to 60 minutes

100 V CAT IV / 600 V CAT III overvoltage rating, double insulation for maximum safety.

# Complete included software

The included MEDCALScope software allows a complete and exhaustive analysis of recorded data. It is possible to save the recorded data for later use and export the data to other computer applications such as spreadsheets and word processors, as well as check compliance with EN50160, NV, PRODIST and other power quality standards and produce automated reports. MEDCALScope is freely available for download or update at the internet address: http://www.cesinel.com/

#### Voltage and current view



#### Harmonics view



#### Table view

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Statistics and compliance checking

#### ITIC / CBEMA events curves

#### Instrument setup



# **Detailed Technical specifications**

## User interface characteristics

Display type	Graphical LCD Display with backlight. Auto-power off function for longer life
User interface	Flat buttons for display and local configuration of the instrument. It is possible to
	operate the instrument with electric safety gloves
Enclosure IP rating	IP54 according to IEC 60529. IP65 available with larger enclosure.

## Voltage measurement

Input Voltage (Phase-Neutral) (Un)	Max. 1000 V <sub>RMS</sub>
Input Voltage (Phase-Phase) (Un)	Max. 1750 V <sub>RMS</sub>
User-selectable nominal voltages	50/100 V, 64/110 V, 65/115 V, 69/120 V, 72/125 V, 73/127 V, 100/173 V, 110/190 V, 120/208 V, 125/217 V, 127/220 V, 133/230 V, 139/240 V, 220/380 V, 230/400 V, 250/415 V, 277/480 V, 347/600 V, 400/690 V, 480/831 V, 690/1200 V, 831/1440 V
User-selectable electric topology	Wye three-phase 4 wires: L1-N, L2-N, L3-N voltages and L1, L2, L3, N currents Delta three-phase 3 wires: L1-L2, L2-L3 and L3-L1 voltages and L1, L2, L3 currents Split-Phase: L1-N and L2-N Single-Phase: L1-N
User-selectable voltage transformer primary	1 kV, 2.4 kV, 3.3 kV, 6.9 kV, 10.0 kV, 11.0 kV, 13.8 kV, 15.0 kV, 23.0 kV, 25.0 kV, 30.0 kV, 33.0 kV, 34.5 kV, 45.0 kV, 69.0 kV, 88.0 kV, 138.0 kV, 230.0 kV, 345.0 kV, 440.0 kV, 500.0 kV, 750.0 kV
User-selectable voltage transformer secondary	100 V, 110 V, 115 V, 220 V, 230 V, 400 V, 1000V
Input Impedance	800 kΩ per channel, 1.6 MΩ Phase-Neutral
Maximum error for RMS voltage	0.1% of range

Maximum error for RMS voltage

#### Voltage quality parameters Maximum, Average and Minimum for every interval

RMS voltage Dips and Swells

RMS voltage profiles

Voltage and current harmonics UTHD Frequency Unbalance

## Current measurement common specifications

recorded events.

Up to order 7th order

seconds

Input connector RMS current Intrinsic error for RMS current Current harmonics (S version only) ITHD

IP-68 waterproof Maximum, Average and Minimum for every interval 0.1% of range + sensor error Up to order 7th Calculated as UTHD for consistency

Measured according to EN61000-4-7 and EN 50160:2001 Measured according to EN61000-4-30 Ed 2 and EN 50160:2001

Measured according to EN61000-4-30 Ed 2 and EN 50160:2001

Duration and depth recording. Possibility of recording the RMS voltage profile of the

Triggered by Dips and Swells. Cycle-by-cycle recording, maximum duration: 4

# Flexible current sensors. 3 sensors: L1, L2, L3, N

Nominal current (In) Current measuring range 50 A / 180 A / 600 A / 2.000 A / 5.000 A 2 x In: 100 A / 360 A / 1.200 A / 4.000A / 10.000 A

## Power and Energy.

Active, Apparent and Reactive/Non-Active Power. Maximum, Average and Minimum for every interval. Intrinsic error for Active and Apparent power and energy: 0,5 % Intrinsic error for reactive power and energy: 1% Power Factor, In delta mode only the total power factor is available. Active, Apparent and Reactive/Non-Active Energy with daily load curve.

## Sampling, recording, memory and storage

Sampling frequency 6.400 / 7.680 Hz Sampling resolution 16 bits with adjustable amplification stage Automatic storage of recordings after 10 seconds of losing supply power. Automatic power-on and resuming of recording after return of supply voltage. Optional external battery provides power for 60 mimnutes. Averaging intervals 1 s, 2 s, 5 s, 10 s, 30 s, 1 m, 2 m, 5 m, 10 m, 15 m, 30 m, 60 m Number of records and events Over 12.000.000 records. Duration depends on selected topology and number of disturbances Under normal circumstances the instrument can store over 150 days of measurements with 10 minutes averaging interval

Type of memory

Internal Flash-type memory, 16 GB

RTC precision

#### Communications

USB 2.0 as standard USB effective data transmission speed

## Dimensions and weight

External dimensions Weight Voltage cables length

# Mains Power supply

Power supply level

Power supply frequency Power consumption

# USB Power supply

Power supply level Power consumption USB cable length Isolation

## Safety

Installation category Pollution degree Isolation level Safety standard

## Compliance

EMC Safety Manufacturing process 5 ppm (error below 0.5 seconds per day)

Certified drivers for Windows XP, 7, 8, 8.1 and 10. Both 32-bit and 64-bit versions 1 Mbps

145 mm x 90 mm x 45 mm 900 g 200 cm, other lengths upon request

85 to 600 V<sub>BMS</sub> nominal (600V<sub>BMS</sub> max. / 1000V<sub>BMS</sub> over-voltage protected) 100 to 600 Vdc nominal (850Vdc max. / 1500Vdc over-voltage protected) DC or AC 50-60 Hz 3.1 W max.

5 Vdc (USB standard voltage) 2.8 W max. 1.5 meters max. 5000  $V_{\text{RMS}}$  / 8 mm creepage distance

1000V CAT III / 600V CAT IV 2 Double isolation IEC/EN 61010-1

Compliant with EU EMC directive 2014/30/EU Compliant with EU LVD directive 2014/35/EU Compliant with ISO 9001-2015