

MIRRIN Multi-Channel Battery Operated Load Logger

The **MIRRIN Multi-Channel Battery Operated Load Logger** (MLL) measures AC RMS current (load) up to four channels and is ideal for monitoring loads on circuits and switchboards to record load profiles and used to identify slow changing events such as long duration interruptions, outages and derive estimates of usage patterns.



Figure 1: MIRRIN with holster (left), MIRRIN with back plate and magnetic feet mounting (right)

The MLL is also useful as a diagnostic tool to assess load sharing on single phase circuits and load balancing on three phase systems. The MLL incorporates a Liquid Crystal Display (LCD) which shows the maximum current measurement in each channel together with the date-time stamp of its occurrence and therefore ideally suited as a Maximum Demand Indicator (MDI).

Key hardware features

- Log channels: Four current (standard) and two temperatures (optional).
- Logged data: RMS current for phases A, B, C and Neutral; current THD for phases A, B, C and Neutral; and two temperature channels.
- Current sensors comply with CAT IV 600V.
- Programmable logging interval, from one second.
- Programmable alarms: current and temperature channels. Alarm events listed in a table.
- Over ten years memory at ten minute logging interval (SD card included).
- Displays load current, maximum demand, temperature and maximum temperature with a date-time stamp for each channel.
- Battery (rechargeable) operated with power saving mode to extend battery life.
- External DC e.g. (a) battery, (b) dc power adaptor, (c) solar panel, and (d) USB port.

- Waterproof, rated at IP65. Suitable for indoor and outdoor applications.
- Communications with devices that incorporate Bluetooth or WiFi.
- Detachable accessories: Various flexible and clamp-on current probes; Ambient and surface temperature probes.

Analysis and reporting

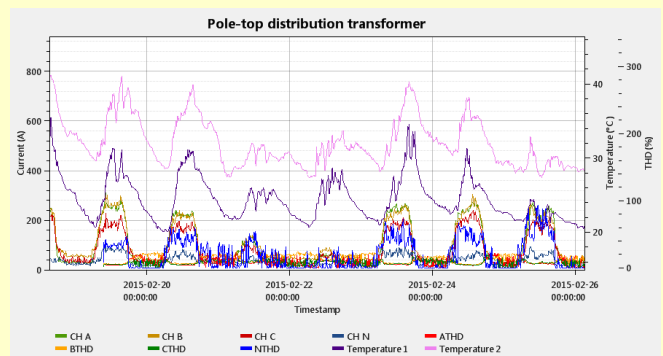


Figure 2: Profiling a distribution transformer - (a) phase and neutral currents; (b) current THD for phase and neutral; and (c) ambient and top oil temperatures

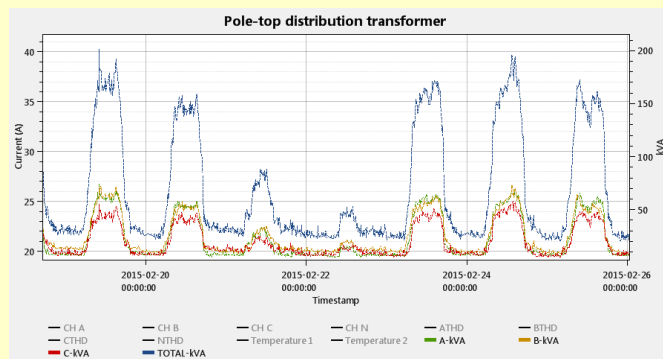


Figure 3: Profiling a distribution transformer - Estimating kVA for phases A, B, C and total

Key software (CITRUS) features

- The CITRUS software is easy to use and intuitive, and provides tools for analysing data and reporting.
- Diagnostics – shows battery voltage level.
- Power estimation (by entering a nominal supply voltage).
- Graphical features
 - Add title.
 - Individual selection of current and temperature channels.

Get more Work from your Power

- Quickly change time and magnitude axes.
- Print function.
- Export PDF.
- Overlay multiple data files.
- Show data table and alarms.
- Export data file as a CSV.

Apps (CITRUS LITE)

- Android and iOS versions available.
- Provides measurements, graphical displays and options for downloading and emailing data files using Bluetooth or WiFi.



Figure 4: CITRUS LITE: (a) Installed on iOS, (b) Launched

Specifications

Input Channels

Current Inputs (AC RMS)

Temperature Inputs

Communications
Serial Data (standard)

Wireless (optional)

Sampling

A to D Conversion
Sampling Rate

Instantaneous measurement

Maximum measurement

4 channels - Phases A, B, C and Neutral
2 x PT100 RTD (optional)

TTL serial; Baud Rate: 230400
Bluetooth or WiFi enabled

12 bits
1600Hz (1600 samples per second)
RMS aggregation of four cycles 250ms apart and updated every second
Based on the instantaneous measurements using a 60-second exponential time constant.

Logging

Logged Data Memory

Logging Interval

Measurements

Accuracy

System Accuracy

Outputs

Visual Tools

Data File

Visual Indicator

General
Display

Current Sensors

Battery Supply
External Supply
Battery Life

Environment

Use
Altitude
Operating Temperature
Relative Humidity

Degree of Protection
Safety Category

Electromagnetic Compatibility

Emissions

Immunity

Physical

Dimensions (H x W x L)
Weight
Case Material and colour
Holster

SD card, Over 10 years of data at 10 minute logging
Programmable from 1 second
Current (RMS), current THD, temperature, estimate of kVA
±0.5% (excludes current sensor)
±1% (clamp-on current sensor)

Graphical Interface
Mirrin format binary with CSV export
2 x Status LED

LCD: Time-stamped current, current (max.), temperature and temperature (max.)
Flexible current probes or clamp-on current probes - Automatic detection
Rechargeable Lithium 5V dc adaptor.
Four months typical.
Extended to twelve months in Power Saving Mode

Indoor and outdoor
Up to 2000m.
-20°C to 70°C
80% for temperatures up to 70°C
IP65
IEC 61010-1, CAT IV 600V defined by CT

AS/NZS CISPR 22: 2002 Class A
EN61000-4-3:1995, including Amdt 1:1998

55 x 90 x 145 mm
400g (battery included)
Polycarbonate, moulded in light grey
Matte black