

## MIRRIN Multi-Channel Battery Operated Load Logger

### Application: Pole-Top Transformer Monitoring

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: MLL (middle) with current sensor options - flexible current probe (left) and clamp-on current probe (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.

#### Pole-top transformer monitoring



**Figure 2: Installation on a pole-top transformer**

#### Apps (CITRUS LITE)

- Android and IOS versions available.
- Provides measurements, graphical displays and options for downloading and emailing data files.

#### 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

## Get more Work from your Power

- temperature channels.
- 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.

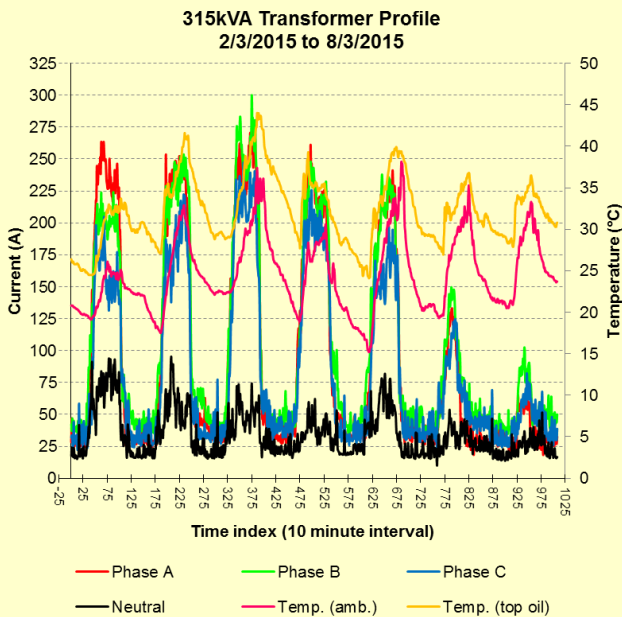


Figure 3: Reporting - pole top transformer weekly profile

### Specifications

#### Input Channels

Current Inputs (AC RMS)

4 channels - Phases A, B, C and Neutral

Temperature Inputs

2 x PT100 RTD (optional)

#### Communications

Serial Data (standard)

TTL serial; Baud Rate: 230400

Wireless (optional)

Bluetooth or WiFi enabled

#### Sampling

A to D Conversion

12 bits

Sampling Rate

1600Hz (1600 samples per second)

Instantaneous measurement

RMS aggregation of four cycles 250ms apart and updated every second

Maximum measurement

Based on the instantaneous measurements using a 60-second exponential time constant.

#### Logging

Logged Data Memory

SD card, Over 10 years of

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

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