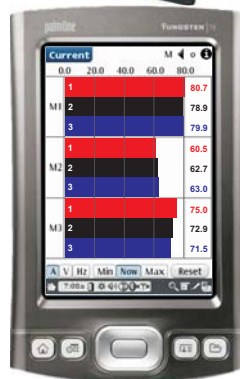
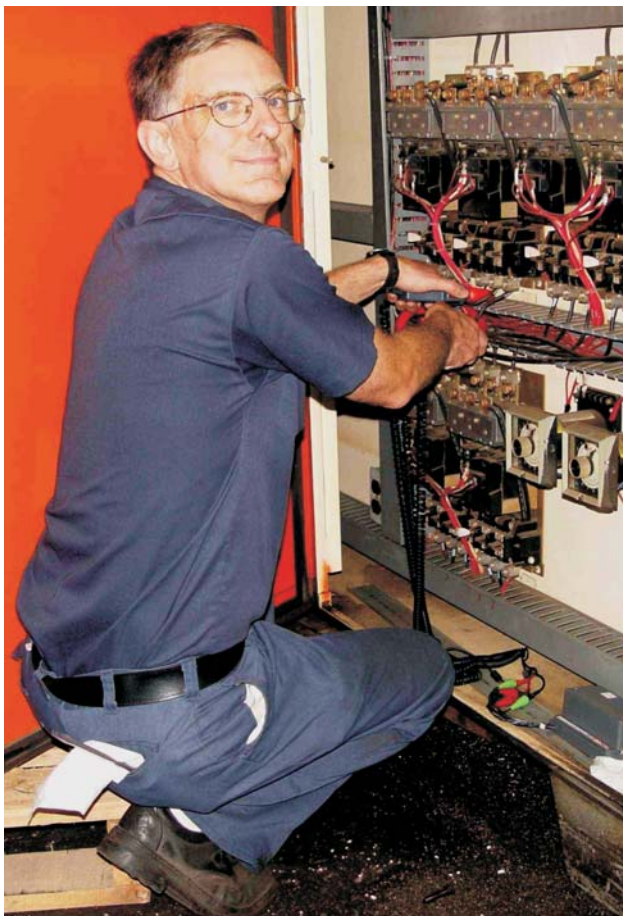
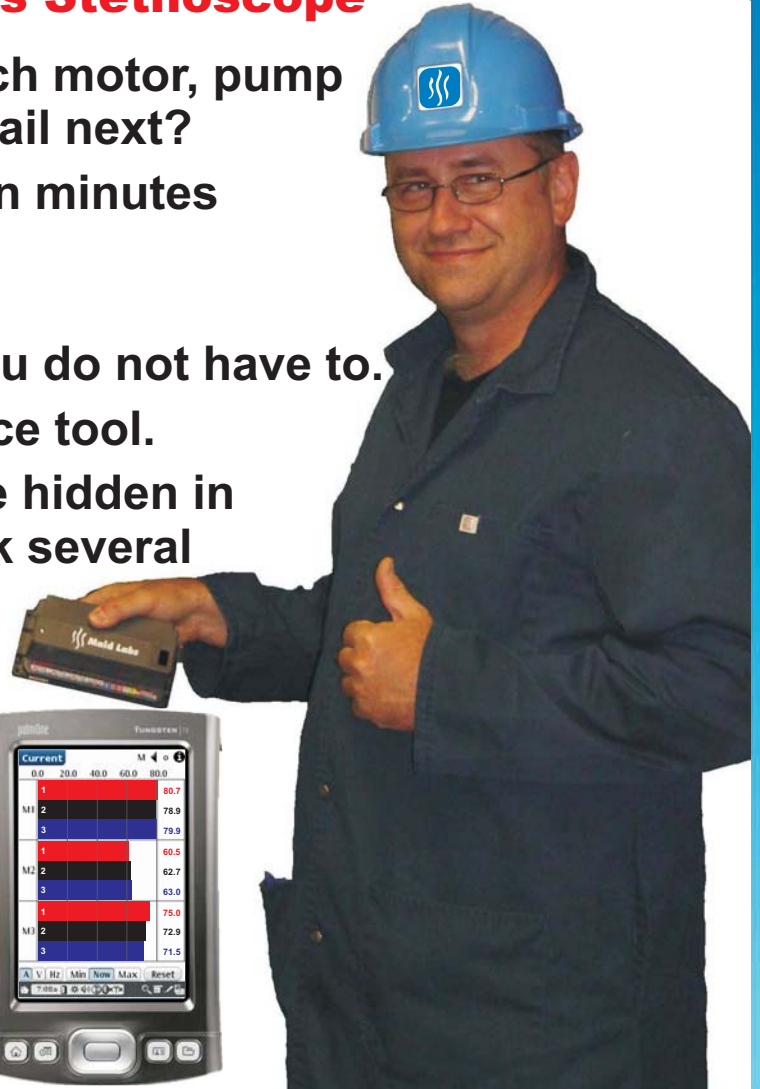


Datalogger for Motors and Electrical Equipment

The Electrician's Stethoscope

- ❑ Would you like to know which motor, pump or equipment will probably fail next?
- ❑ Find intermittent problems in minutes instead of hours or days, without replacing parts!
- ❑ Do not stop production if you do not have to.
- ❑ A true predictive maintenance tool.
- ❑ Small, the datalogger can be hidden in the electrical panel and work several months on 2 C batteries!



MULTI-USE CONCEPT

MerMaid



The MerMaid electrical verification system allows to:

- simultaneously examine several electrical equipments and monitor all of their phases at the same time;
- record electrical equipment behaviour in order to create a computing base allowing to set up or upgrade the predictive maintenance system;
- be used as an alarm when current, tension or other measurements are excessive or debalanced;
- solve more rapidly intermittent electrical problems without having to replace unnecessary pieces. Also allows to reduce or even eliminate production interruptions.

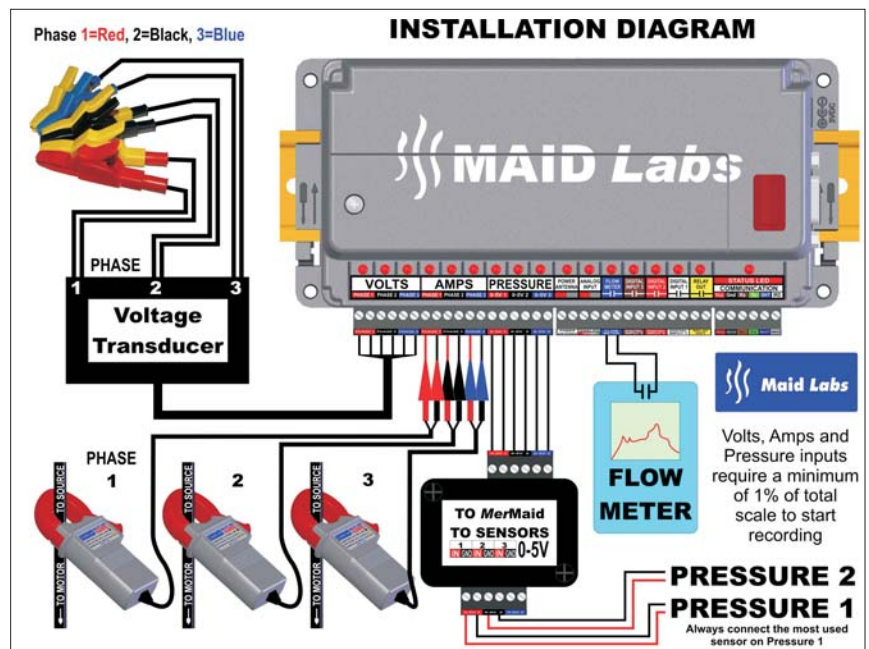
Definitely, our system can help reduce production interruptions, better target the electrical components to keep in the inventory, reduce stress generated by these situations on your employees and company.

MerMaid is a multi-phase, multi-motor current, tension, frequency, digital and analog recorder system. *MerMaid* can be customized for specific applications, as seen in the installation diagram below, which provides all the data required to evaluate the electrical efficiency of a pump.

The Palm computer graphic analysis with automatic anomaly search algorithms makes it easy to find impending problems while onsite. A Windows application offers even deeper data analysis such as a graphic comparison of the current consumption for the three phases of a motor.

Data recording is possible because *MerMaid* is a small, but very powerful instrument - up to 6 months of operation on two "C" type batteries - or can be AC operated.

- Connects up to three motors at the same time.
- Records vital signs of your electrical equipment with up to 9 current or voltage transducers.
- Monitors frequency.
- Records power factor (current and voltage sensors must be connected simultaneously on the same equipment).
- Compares electrical data to the environment of the analysed equipment with analog and digital entries.

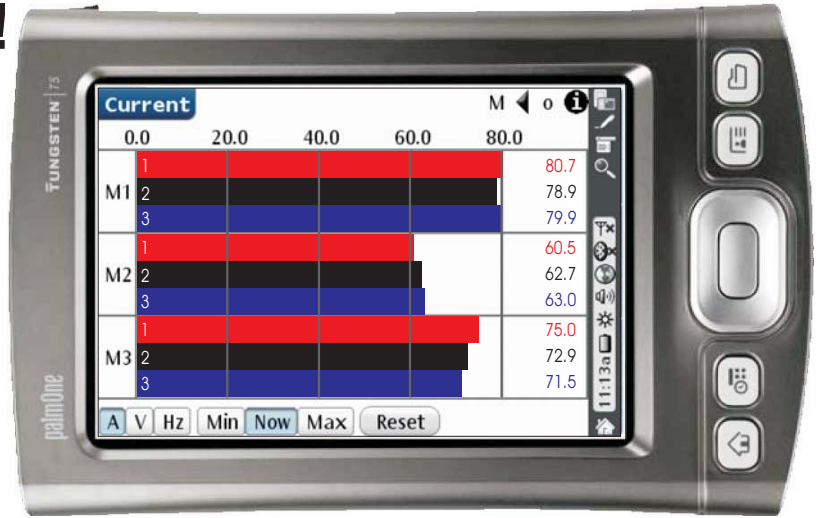


MerMaid

For Palm®



A Palm!
Pure
common
sense



MerMaid

Using a handheld in an industrial environment is pure common sense. Compared to laptop computers, they are affordable, easy to carry, small, and have less chances of getting broken or stolen. They have high resolution colour touch screen to display high quality graphs.

Sensors

Input: 1 2 3

Sensors Type: X [Icons] 5A I V

Model: MLCT-300 300A

Connection: 3 Phase, Delta

Use: Independent

OK Cancel

8:23a

Data Loggers

Name	S/N	Size
Dumoulin 2-18...	237,749	135 KB
EKA - 1 moteur	237,743	15 KB
EKA - 3 moteurs	237,738	318 KB
EKA - Reel	237,736	180 KB
Impérial broyeur...	40,089	176 KB
Impérial planeur	40,045	387 KB
Kruger 21R5	40,055	85 KB

Kruger 21R5

Analysis

- Analog Input (0-5V)
- Analog Input (4-20mA)
- Digital 1
- Digital 2
- Digital 3
- Motor 1
- Motor 2
- Motor 3
- Motors Frequency
- Motors Start/Stop
- Number of Running Motors
- Pump Efficiency
- Rain Clicks
- Rain Rate
- Relay
- Working Hours

Select

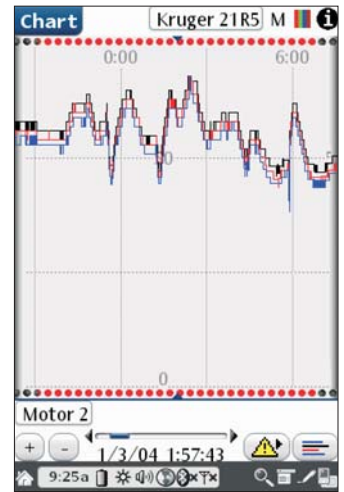
9:29a

The accuracy of the information depends on the sensors selected for the work to do. This is one of the important reasons why *MerMaid* allows to select the sensors that will provide the most accurate readings for the job to do. Choices are no sensor, current (3 types), analog inputs and tension. The configuration can be done before the installation or at the pick-up.

Whether it is portrait or landscape, the user can rapidly select a different datalogger or a more appropriate graph in order to perform the desired analysis.

The zoom function gradually changes the displayed period from a few seconds to several months. The user decides of the level of details required in order to view the displayed information.

The best way to verify the behaviour of one or several electrical equipments is to view all of the vital functions at once in an easy to interpret window. Study the current drawn by each phase of several motors. Compare their operating time.



MerMaid was developed for the people who must react rapidly when a problem occurs.



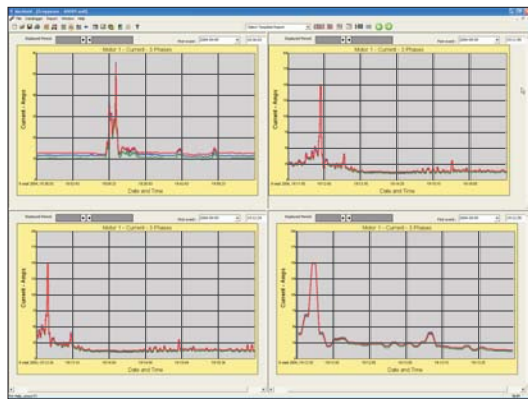
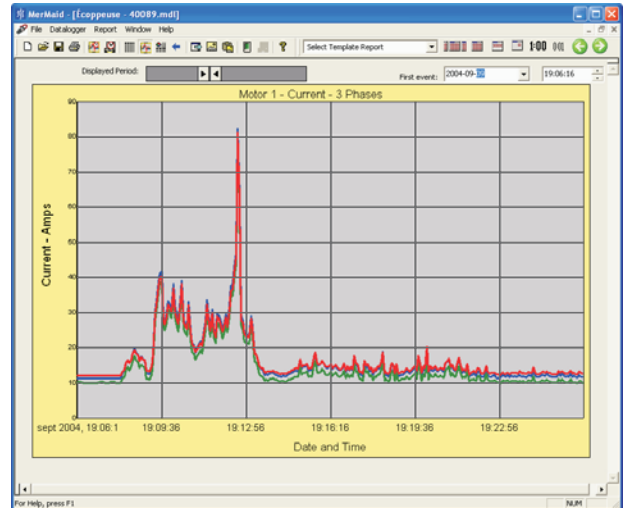
MerMaid For Windows®

Why use a powerful analysis system if the user does not understand the data or if the user guide must be read every time the software is used?

MAID Labs has studied this important issue for high tech users and proposes a simple solution: *MerMaid* allows the user to create and modify graph templates.

Up to 38 data fields can be selected to generate any custom designed graph from user created templates.

The basic templates include: average current for the 3 electrical equipments, current for each phase, average current vs minimum and maximum current for each phase, current for each phase vs their voltage, battery status and temperature of the datalogger. Create the templates that better highlight the type of problems that you are looking for.



Up to four different periods of time can be displayed at once in order to facilitate graph comparison of a unique datalogger.

In the table mode, *MerMaid* automatically looks for abnormal starts and stops and highlights them before being exported to Excel if desired.

MerMaid - [Écoppouse - 40089.md]

File Datalogger Report Window Help

Select Template Report

Quantity of Events = 30157

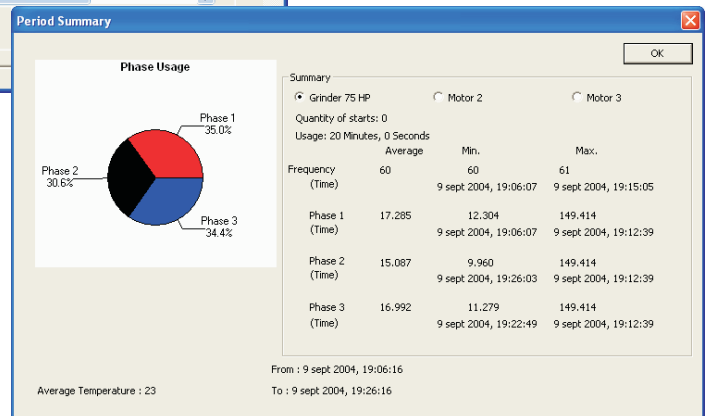
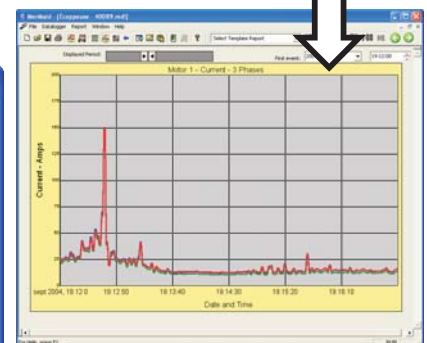
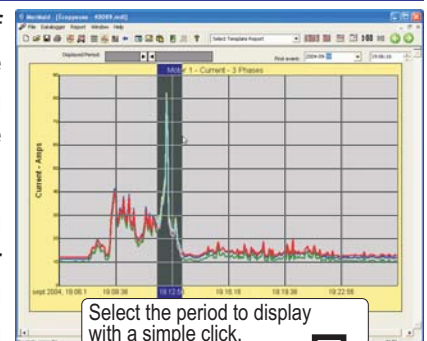
Date and Time	Types	Values	Values	Values	Motors
8 September 2004, 7:32:33	Motor 1 Start				Grinder 75 HP
8 September 2004, 13:36:01	Motor 1 Stop				Grinder 75 HP
8 September 2004, 14:41:18	Motor 1 Start				Grinder 75 HP
8 September 2004, 14:41:43	Motor 1 Stop				Grinder 75 HP
8 September 2004, 14:49:22	Motor 1 Start				Grinder 75 HP
8 September 2004, 14:49:28	Motor 1 Stop				Grinder 75 HP
8 September 2004, 14:49:34	Motor 1 Start				Grinder 75 HP
8 September 2004, 14:49:35	Motor 1 Stop				Grinder 75 HP

For Help, press F1

The summary screen shows how balanced are the phases.

MerMaid allows to store in the clipboard the desired graphs in order to paste them in a word processing document or send them by email.

***MerMaid's* power is directly linked to the user's imagination!**



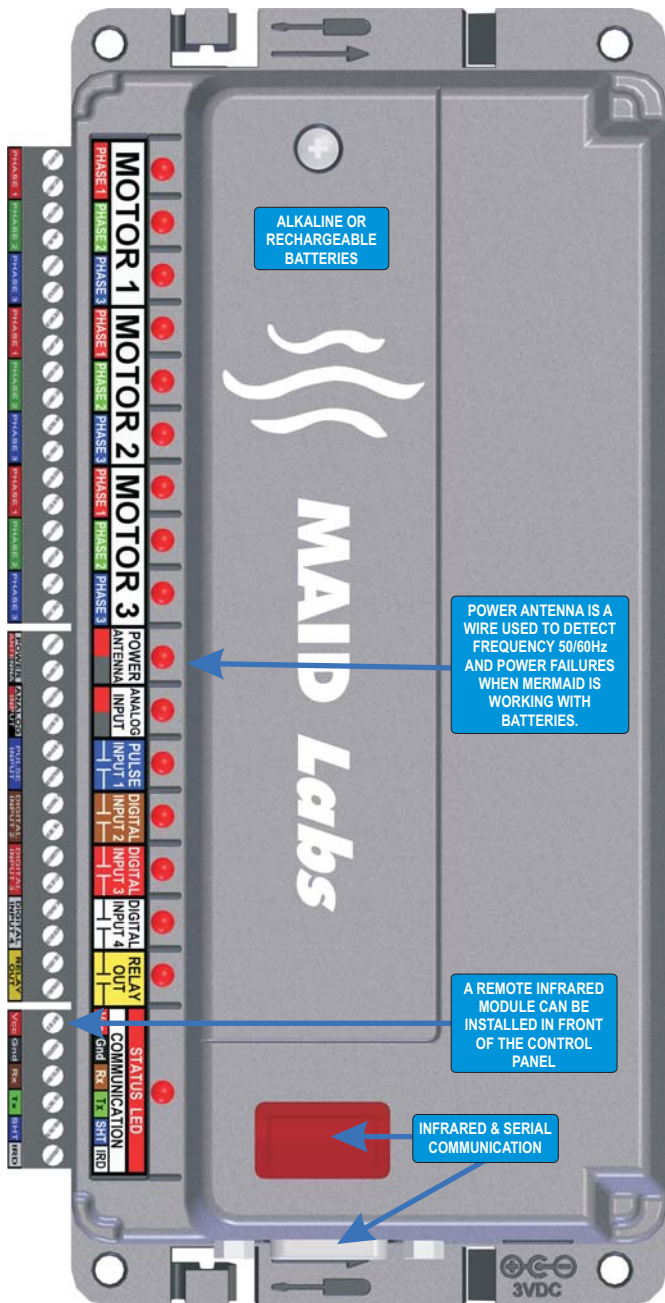
MerMaid

Motor Event and Current Recorder

Municipal And Industrial Data Labs Inc.

Tel. : 877.297.1115 450-375-2144 Fax : 450-375-9463

www.maidlabs.com



MerMaid Datalogger

Size	8H x 6.5W x 17.2D cm (3H x 2.5W x 6.75D inches)
Weight	0.45 kg (1 lb) including two C alkaline batteries
Material	Polyphenylene oxide
Power	2 type C alkaline or rechargeable batteries (switch selectable). 3VDC 2 Amps power supply. Internal power source to monitor while changing batteries.
Battery Life in Operation	Up to 6 months of operation assuming normal use.
Storage Temperature	-40 to 140°F (-40 to 60°C)
Operating Temperature	0 to 140°F (-18 to 60°C)

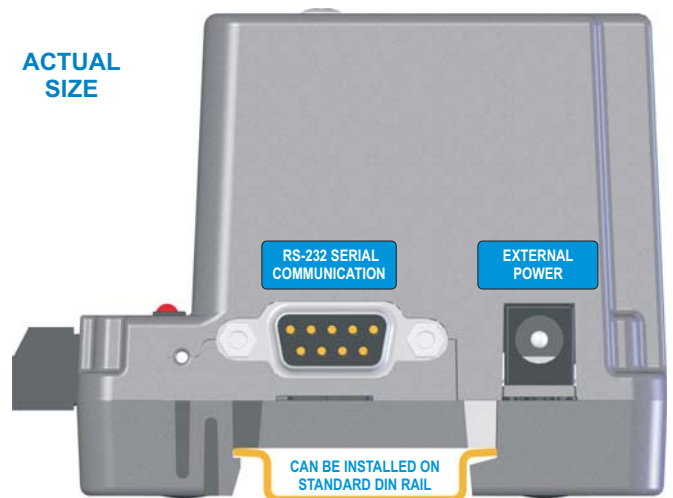
Data Storage and Communication







Capacity	Between 400 000 and 500 000 records according to the type of data.
Storage Mode	Rollover and fill once.
Record Algorithms	All motor starts and stops, as well as state changes of digital inputs are recorded. Current, analog input and frequency are recorded when their values change - every two seconds. Maximum of 10 events per second per input.
Program Memory	Flash memory. A boot loader is used to update the logger's firmware through the MerMaid for Windows software.
Data Retrieval	Infrared communication with Palm computer. Direct RS-232 connection on Db9.
Data Analysis	Palm computer with MerMaid for Palm software, Windows' based computer with MerMaid for Windows. VOLUCALC for pump stations: accuracy of ±1% of totalized flow and ±5% cycle to cycle)

Input and Output

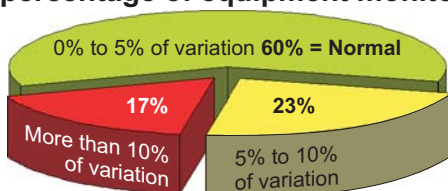
Current	9 current clamps can be connected at once to the 9 electric inputs.
Voltage	9 voltage clamps plugged to as many transformers can be connected at the same time to the 9 electric inputs.
Frequency	Clamp reading of current and voltage.
Power Failure	Power supply source detection or power antenna.
Analog	1 single-ended differential 4 to 20 mA or 0-5V.
Pulse	1 C contact event. 1 reading every 2 seconds.
Digital	3 C contacts

ACTUAL SIZE

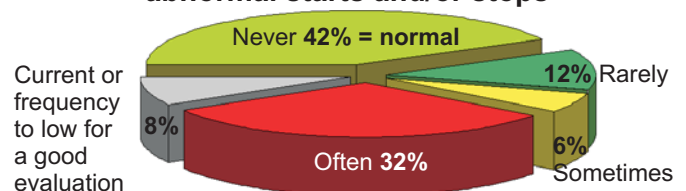


 Part no : MLKB	Basic MerMaid KIT: MerMaid logger, 6 current clamps 150A, connectors, software for Palm and Windows, briefcase.	 Part no : MLKBWT	Basic waterproof MerMaid KIT: MerMaid logger, 6 current clamps 150A, waterproof connectors, softwares, briefcase.	 Part no : MLCT150	Current Clamps 150 Amps 600V = 10mV/A, Accuracy of $\pm 2\%$ from 1.5A to 150A Opening of 3 cm. 16 cm x 8 cm x 3 cm
 Part no : MLKF	MerMaid full KIT: MerMaid logger, voltage transformer, 6 current clamps, live interface, connectors, power supply, softwares, Palm handheld, briefcase.	 Part no : MLKFWT	Waterproof MerMaid full KIT: MerMaid logger, voltage transformer, power supply, 6 current clamps, live interface, softwares, waterproof connectors, Palm,	 Part no : MLCT300	Current Clamps 300 Amps 600V = 5mV/A Accuracy of $\pm 2\%$ from 3A to 300A Opening of 3 cm. 16 cm x 8 cm x 3 cm
 Part no : MLMMD	MerMaid datalogger. Low consumption on 2 type C batteries. DIN rail. Infrared and serial communication. 8H x 6.5W x 17.2D cm.	 Part no : MLMMDWT	Waterproof enclosure for MerMaid 7.5H x 13.5P x 22.5L cm.	 Part no : MLCT05	Mini current sensor of 5 Amps 600V = 300mV/A Accuracy of $\pm 2\%$ from 50mA to 5A Opening 1 cm. 40 mm x 26 mm x 24 mm
 Part no : MLICWT	Waterproof digital input adaptor To use the digital inputs with the waterproof enclosure	 Part no : MLPTCWT	Waterproof connector for Voltage Transformer	 Part no : MLCT15	Mini current sensor of 15 Amps 600V = 100mV/A, Accuracy of $\pm 2\%$ from 150mA to 15A Opening 1 cm. 40 mm x 26 mm x 24 mm
 Part no : MLPS1	Power supply. 90VAC to 264VAC. Output 3.3 V 2 A UL approbation	 Part no : MLCTWT	Waterproof connectors with 6 banana jack of 4mm for 3 phases current sensors	 Part no : MLCT75	Mini current sensor of 75 Amps 600V = 20mV/A, Accuracy of $\pm 2\%$ from 750mA to 75A Opening 1 cm. 40 mm x 26 mm x 24 mm
 Part no : MLIR1	Infrared communication module. Start-up distance: 6 cm. Operation distance: 1 meter. Maximum length of the cable: 8 meters.	 Part no : MLCTA6	Connectors with 6 banana jack of 4mm for 3 phases current sensors	 Part no : MLCTP1500	Precision current sensors 1500Amps Accuracy of $\pm 1\%$ 1500A opening of 50 cm
 Part no : MLAI420A	4-20mA analog input converter Transform 3 standard analog inputs into MerMaid's electrical inputs. Input 1 must have a reading for input 2 and 3 to be ON.	 Part no : MLCTA6	Other precision current sensors Call Accuracy of $\pm 1\%$	 Part no : MLCT300-5A	Current Clamps 50A with 4-20mA output 600V = 10mV/A Accuracy of $\pm 2\%$ from 0.5A to 50A Opening of 3 cm. 16 cm x 8 cm x 3 cm
 Part no : MLPT600	3 phases 600 Volts voltage transformer with wires and clamps. Protection of 1000V 34A Clamp opening of 30 mm	 Part no : MLUSB232	USB to RS-232 serial adaptor To connect the MerMaid datalogger to a computer having a USB port.	 Part no : MLCT300-5V	Current Clamps 50A with 0-5V output 600V = 10mV/A Accuracy of $\pm 2\%$ from 0.5A to 50A Opening of 3 cm. 16 cm x 8 cm x 3 cm
 Part no : MLLI120	Live Interface Transforms live voltage isolator from 12V to 120V AC or DC in C contact for the digital entries of the MerMaid datalogger.	 Part no : MLCB232MF6	RS-232 extension cable 6' To connect the MerMaid datalogger to a computer having a RS-232 serial port	 Part no : MLCT300-30A	Current Clamps 300A with 4-20mA output 600V = 10mV/A Accuracy of $\pm 2\%$ from 3A to 300A Opening of 3 cm. 16 cm x 8 cm x 3 cm
 Part no : MLCASE1	Aluminum briefcase with moulded separators as presented in the KIT. 46 x 35.5 x 15 cm	 Part no : MLPALMT5	T5 Palm handheld or more recent: 400 Mhz processor, 64 Mo RAM, SD expansion port, built-in Bluetooth™ technology, 320 x 480 resolution.	 Part no : MLCT300-30V	Current Clamps 300A with 0-5V output 600V = 10mV/A Accuracy of $\pm 2\%$ from 3A to 300A Opening of 3 cm. 16 cm x 8 cm x 3 cm

Percentage of current variation between phases and percentage of equipment monitored



Percentage of equipment monitored having abnormal starts and/or stops



Source: Over 200 electric equipment tested in a 6 months period using 90 dataloggers, 14.5 million records, 25 million current records, the equivalent to 6 years/machine of testing.

Patent pending on cyclic operation analysis. Specifications can be changed without notice - PRINTED IN CANADA