



Current Monitoring Kit

Quick Start Guide

DO090-5

Issues:

- 1) 2.10.02 WP A4 format
- 2) 2.10.02 Added safety warning
- 3) 17.3.06 Word A5 format. S1: Removed relay modules. S2: Added MI010.
S4.1: added EL041, RS-232.
- 4) 25.1.07 New logo & title font.
- 5) 1.9.08 New address.

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1 General safety warnings



We strongly recommend that you read the general safety information below before using your product for the first time. If the equipment is not used as specified, then the protection provided may be impaired. This could result in damage to your computer and injury to yourself or others.

The product manual is installed on your computer when you install the supplied software.

Maximum input range

The maximum input range and, where applicable, overload protection for the EL040 is ± 30 V. Always operate the product within this specified input range. Operation outside the range of the overload protection is likely to cause permanent damage to the unit.

Current clamps

Current clamps are intended to simply clip round an insulated conductor. You must not make an electrical connection to the conductor, as doing so may be dangerous and could cause damage to the equipment and your computer and may cause injuries to yourself and others.

If you wish to work on uninsulated high-voltage cables, you should check the suitability of the current clamp for this usage.

Hazardous voltages

Pico products are **not** designed for direct connection to hazardous voltages, such as mains.

Safety grounding

The ground of every product is connected directly to the ground of your computer by the interconnecting cable provided in order to minimise interference. Always use the cable provided to attach the product to your computer.

You should assume that the product does not have a protective safety earth. Incorrect configuration or use on voltages outside the maximum input range can be hazardous.

Condition of equipment

Before using any of the probes, sensors or test equipment, make sure they are in a satisfactory condition and not damaged in any way.

Repairs

The unit contains no user serviceable parts. Repair or calibration of the unit requires specialised test equipment and must be performed by Pico Technology or its authorised distributors.

2 Introduction

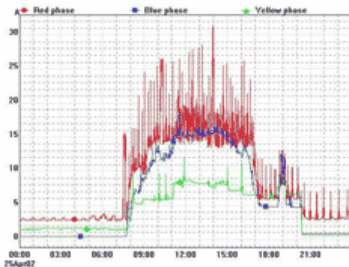
The current monitoring kit from Pico Technology contains everything needed to start logging current consumption data from up to three separate circuits. It is ideal for measuring and balancing three-phase supplies as well as machine monitoring and energy efficiency studies.



Current monitoring enables the amount of current consumed to be analysed, highlighting areas of excessive consumption. Once any problems have been identified, plans can be made to reduce the excess. This will reduce bills, increase profits and in turn help the environment. Benefits will be seen from this analysis in industrial applications as well as in the home.

As machinery gets older its current consumption often increases as parts become worn and the machine's efficiency drops. Data collected from separate machines over long periods of time can highlight problems before they become critical. Servicing or replacement can then be scheduled before the machine fails, saving on lost production time.

Alarms can be set to warn of higher or lower than normal current consumption of machinery. This can be used to highlight problems, which if sustained may incur expensive servicing costs.



The current monitoring kit has the facility to store up to 250,000 readings from the current clamps and requires no electrical contact with the cable being measured. The data can be easily downloaded on to a laptop or desktop PC using the supplied EnviroMon software. Additionally the EnviroMon software enables data to be viewed either in a table or graph format for analysis, and saved to other text or image formats for inclusion into reports, distribution by e-mail or live display on the web. An example can be seen at:

<http://www.picotech.com/dynamic>

If you wish to monitor data from a remote site, it is possible to access the logger via a modem. The computer will then retrieve data from the logger each time the EnviroMon software is started.

The EnviroMon system can be easily expanded with additional sensors to enable collection of data from current, voltage, temperature and humidity sensors. Each EL005 data logger can support up to 10 converters which can be placed anywhere along a 400 m stretch of network cable.

For further information on the additional sensors and accessories please visit our web site:

<http://www.picotech.com/enviromon.html>

3 Kit contents

- EL040 current monitor
- EL005 stand-alone data logger
- Three 300 A AC current clamps (TA011)
- Power supply
- EL003 network cable (5 m)
- 1.8 m serial cable (MIO10)
- PC software, cables and manuals

4 Installation

In order to set up the system, the EL005 data logger must be connected to a computer by a serial cable. This is required even if you intend to use the EL005 as a stand-alone logger.

4.1 Connecting the system together

- 1) Attach the current clamp around only the LIVE wire of the device whose current consumption you wish to log. The system can use 1, 2 or 3 current clamps.
- 2) Connect the current clamps to the EL040 current monitor using the 4 mm banana plugs.
- 3) Connect the EL040 current monitor to the EL005 data logger using the EL003 network cable provided. See sections 3.2.2 and 3.2.3 of the EnviroMon User Manual if the EL005 is more than 5 metres from the EL040. The maximum length of conventional cable between the two units is 400 m.
- 4) Connect the mains adaptor to the EL005 data logger and turn on the power. The red light will flash once, remain on for 4 seconds and then flash at 2 Hz.
- 5) Connect the EL005 data logger to the computer using the serial cable supplied.

Now that the hardware has been assembled, you are ready to install the software on the computer.

4.2 Installing the software and instruction manual

Installing under Windows XP (SP2) and Vista

- 1) Insert the Pico CD into your CD-ROM drive.
If autorun is enabled the CD will start up automatically.
If so, go to Step 5
- 2) Press the **Start** button and select **Run**
- 3) Type **d:\pico** (where 'd:' is your CD-ROM drive)
- 4) Press the **Enter** key
- 5) When the Pico CD main menu appears, click the **Install Software** button
- 6) The program will guide you through the installation

To run the software:

- Press the **Start** button
- Select **Programs**
- Select **Pico Technology**
- Select **EnviroMon for Windows**

After this you will have the option to take a guided tour for further software assistance.

For further information on setting up the EnviroMon please consult the Getting Started section of the EnviroMon Help file (which is installed with the software).

5 Technical specifications

5.1 EL005 – stand-alone data logger

Sampling rate	1 to 240 minutes per sample
Max readings	250,000
Max. no. of sensors	30 (40 with EL037 and EL041)
PC connection	RS-232 serial port
Power	12 V DC (mains adaptor supplied)
Backup battery	Internal rechargeable cells

5.2 EL040 – current monitor converter

Number of channels	3
Sensor type	Current clamp or current transformer
Max. input voltage	1 V RMS AC
Input impedance	> 1 M Ω
Frequency range	20 Hz to 1 kHz
Accuracy	$\pm 1\%$ (0 to 200 mV) $\pm 2.5\%$ (200 mV to 1 V)
Operating temperature	-20 °C to +70 °C
Input connector	4 mm banana plug

5.3 TA011 – 300 A current clamp

Current range	0.1 A to 300 A AC RMS
Accuracy	<50 A: $\pm 3.0\%$ ≥ 50 A: $\pm 2.0\%$
Output voltage	1 mV AC per 1 A AC
Operating temperature	0°C to 50°C
Maximum conductor size	29 mm
Frequency response	50 Hz to 60 Hz



Safety note

The current clamp is designed to be used on insulated wires. Using the clamp on uninsulated wires may damage the equipment and cause injury to yourself or others.

6 Technical support

Answers to the most common questions and problems can be found in the technical support section of the product manual, which is installed with the software and accessible from the help menu.

The Pico Technology web site also contains regularly updated technical support information at:

<http://www.picotech.com>

Contact information for our technical support team can be found on our website and at the back of this manual.



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