

PCS Logger Operation Manual

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1. Introduction

The PCS Logger is an 8 channel software data logger that operates directly from a PC or laptop without the need for an external data logger. The software communicates with a variety of ICT International sensors and features automated startup logging for a preset sensor configuration. Sensor data can be viewed in real-time in the form of a graphical display or the user can choose between a range of digital and sensor specific analogue style meters.

2. Getting Started

Install the PCS Logger software on your PC or laptop. The files on the CD supplied can simply be copied to a directory of the user's choice (e.g. C:\Program Files\PCS Logger\). Ensure that the Sensors.info and PCSlogger.exe file are located in the same directory. Create a shortcut on the desktop to the file **PCSLogger.exe**.

Connect the SI8 interface to a spare serial port on the PC. Connect the sensors to the DataBus connector block. If a sensor bus power supply has been provided, connect this to the DataBus connector block as well.

Double click on the PCS Logger icon created on the desktop to start the program. When the PCS Logger software is first started, an information window will advise that the program is an evaluation version that is limited to a 30-day trial. Click **OK** on this window and then go to the Setup Panel by clicking on the **Setup** tab (Figure 1).

3. Registration

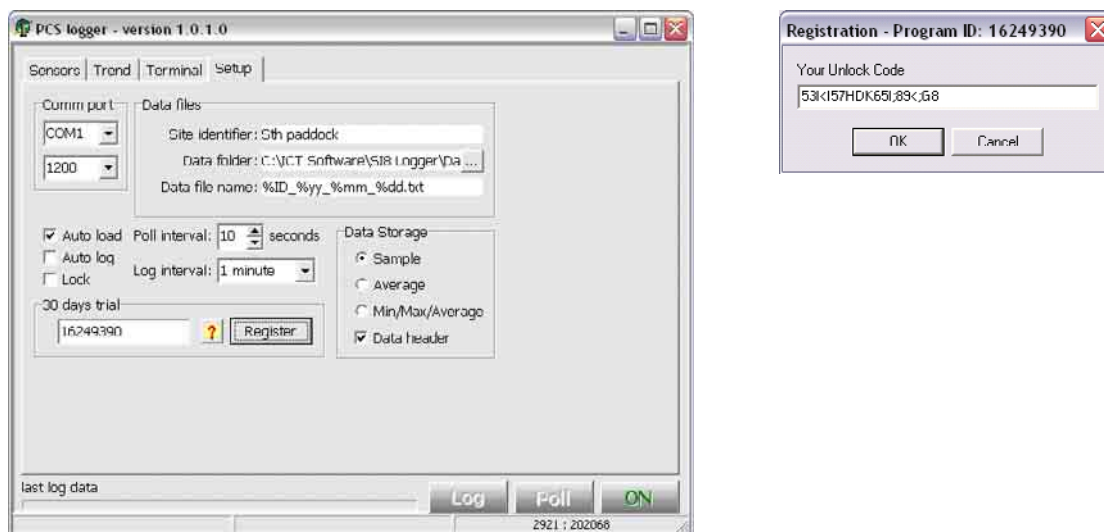


Figure 1. Setup Panel and Registration.

The Setup Panel will display a program ID number in a window at the center left of the screen (Figure 1). This number must be emailed to sales@ictinternational.com.au and an unlock code will be emailed back to you. Click on **Register** to enter the unlock code after you have received it. The unlock code can simply be copied from the email and pasted into the Registration window. After the program has been successfully unlocked, the program ID and Register button will be faded. Subsequent starting of the PCS Logger program will no longer display the 30-day trial notice.

The unlock code is unique to the computer that the PCS Logger program is installed to and cannot be used to unlock copies of the program installed on other computers.

4. Setup Panel

When the PCS Logger software first starts, the communications port and baud rate may have to be set for the software to communicate with the sensors. The drop down menus to alter these settings are in the top left corner of the Setup Panel. The program updates the Comport list automatically at startup after searching the Windows registry for serial communication ports. The general setting for most PCs will be Com Port 1 at 1200 baud rate.

In most cases, a sensors.info file will be provided. This file contains all the relevant information about the sensors purchased with the SI8 PCS Logger and can be set to load automatically on starting the PCS Logger software by clicking on the **Auto load** checkbox on the left hand side of the Setup Panel (see “4.3 Auto Features”, p. 6).

4.1 Polling and Logging Intervals

The polling and logging intervals can be set with the two drop down menus in the center of the Setup Panel. The **Poll interval** control will set the frequency that information is read from all the sensors connected to the DataBus and displayed as real-time values in the Sensors and Trend panels. The **Log interval** will set the frequency that the current sensor value is written to a data file. Note that the Poll interval can only be set as a portion of the Log interval. The maximum value for a Poll interval can be determined by holding the cursor over the Poll interval field after the Log interval has been selected.

4.2 File Name and Location

The name and location for a data file can be entered into the **Data file name** and **Data folder** location fields respectively. The Data folder location can also be selected using the Browse button on the right hand side of the Data folder field.

Files can be stored as plain text files by using a .txt file type extension in the file name. Using a .csv file type extension will allow files to be opened directly by Excel (See Figure 2). The Count column in the Log files displays the number of Polls counted between successive data logs.

	A	B	C	D	E
1	Date Time	count	Temperature	Humidity	
2					
3	5/04/2005 10:25	8	30.5	58.8	
4	5/04/2005 10:26	10	30.8	52.7	
5	5/04/2005 10:27	8	28.7	49.1	
6	5/04/2005 10:28	8	27.3	48.4	
7	5/04/2005 10:29	9	26.9	48.1	
8	5/04/2005 10:30	9	29.3	59.9	
9	5/04/2005 10:31	8	27.8	50	
10	5/04/2005 10:32	8	27	48.6	
11	5/04/2005 10:33	10	26.5	48.1	
12	5/04/2005 10:34	8	25.8	48	
13					
14					
15					
16					
17					

Site A_2005_04_05

Figure 2. Opening Files Directly by Excel.

File names showing the date and Site Identifier can also be generated automatically with the use of some simple macros as follows:

- **%ID** — will include the Site identifier in the data file name.
- **%yy_%mm_%dd** — will include the current date in the data file name in the date form year, month, day. (The advantage of year, month, day order is that the files will appear in chronological order when listed on your computer.)

For example, if the Site Identifier name is Sth Paddock, the current date is 2/3/05 and the macro is entered as **%ID_%dd_%mm_%yy.csv**, then the automatically generated file name will be:

Sth Paddock_02_03_05.csv.

Depending on the types of sensors connected to the system, the data storage format can be selected in the **Data Storage** section on the right hand side of the Setup Panel.

Sample	sensor data value at the time of logging
Average	sensor data values averaged over the logging period
Min/Max/Average	sensor data minimum, maximum and average value for the logging period

If a data header is not required in the saved data file, this can be deselected by clicking off the **Data header** check box. The **Data header** can be deselected when new data is to be appended to an existing file.

If the **Data header** is not deselected when appending to existing files, a new data header will be created before the new data is added to the file. This will make the generation of graphs from a program such as Excel difficult without editing the file manually.

4.3 Auto Features

Autoload: When the PCS Logger software starts, the sensors.info file will be loaded and the program will be automatically configured for the sensors that have been provided and will also set up the Meters panel for those sensors. Note that the **Auto load** feature only works with the sensor file named **sensors.info**. See the Sensor Panel section for creating alternative sensor files.

Auto log: As well as being able to load sensor information, the PCS Logger software can also be set to start polling the sensors and logging the results automatically on startup by clicking on the **Auto log** checkbox. Note that if this feature is used, the data will be logged to the file already designated in the Data file name field.

Lock: When polling is started, the PCS Logger software automatically locks the data files, comm port, logging and polling fields of the Setup Panel so that they cannot be modified accidentally while the system is operating. It also locks the edit feature of the Meters Panel.

4.4 Control Buttons

ON: To start communications between the PCS Logger software and the sensors, click the **ON** button in the lower right corner of the Setup Panel.

Poll: To begin polling the sensors, click the **Poll** button. Flashes when active.

Log: To begin saving data to a file, click the **Log** button. Flashes when active.

Note that these three controls are successively dependent such that polling cannot begin until communications are started and similarly, logging cannot begin until polling has started. However, once polling has started, data from the sensors can be viewed in real-time regardless of whether logging has been initiated.

5. Sensors Panel

Once the PCS Logger software has been set to start polling the sensors in the Setup Panel, the sensors can be monitored in real-time in either the Sensors or Trend panel. By default, the Sensors Panel will display digital style meters that are determined on startup by the sensors info file provided. (See Figure 3).

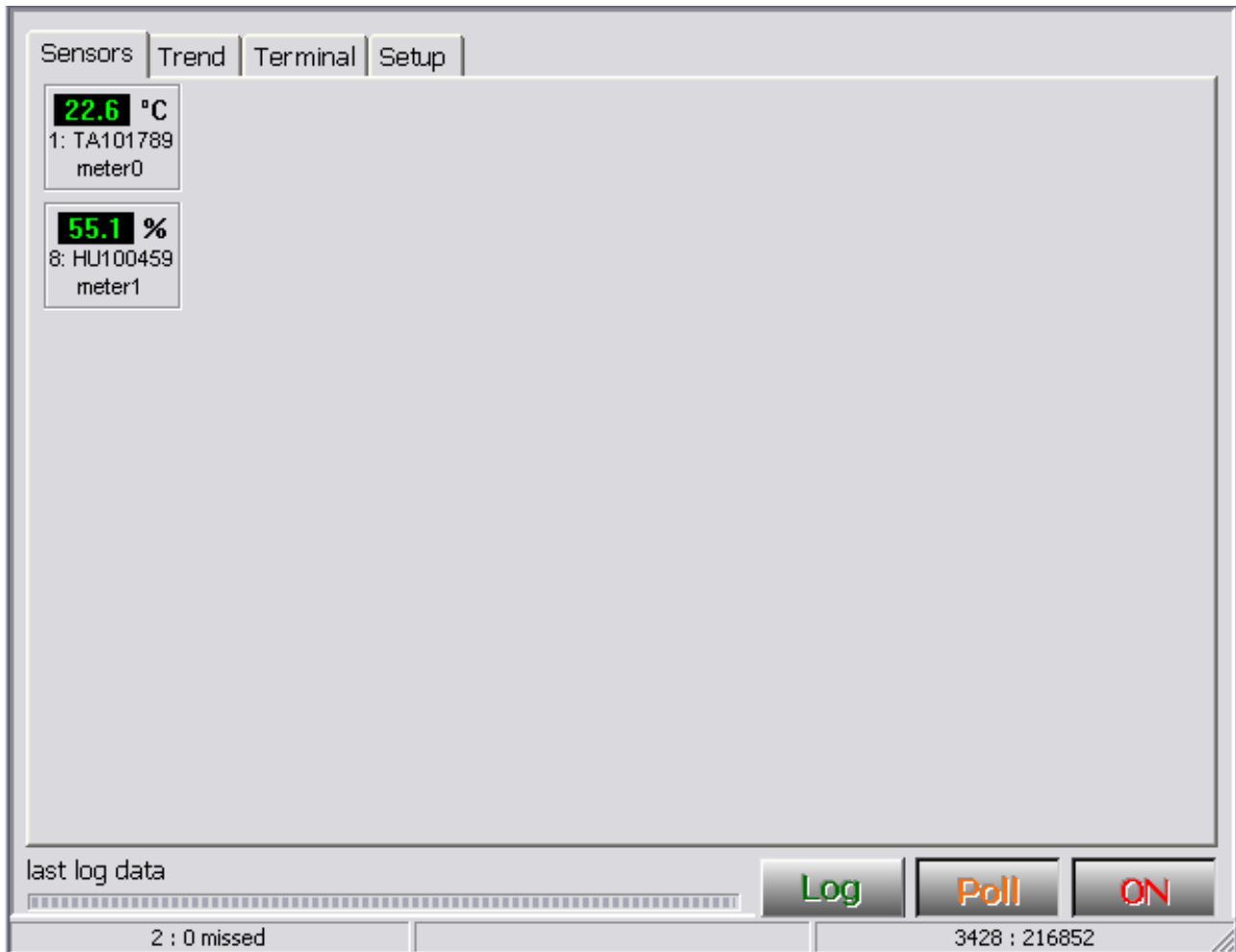


Figure 3. Sensors Panel.

The user can modify the style of these meters as follows.

1. If the PCS Logger software is in poll mode, stop the polling by clicking the **Poll** button. In the Setup Panel, deselect the **Lock** option. Return to the Sensors Panel.
2. Select the meter from the Sensor Panel to be modified by clicking on it once. A selected meter will be highlighted in black outline with resizing and positioning handles. Right click over the selected meter and then left click **Edit** on the Sensor Panel local menu. This will activate the **Meter Editor Panel**. The drop down menu at the top of the Meter Editor allows the user to select from the following meter types:
 - Value
 - Thermometer
 - Vertical Bar
 - Horizontal Bar
 - Vertical Meter
 - Horizontal Meter
 - 120° Meter
 - 180° Meter
 - 270° Meter
 - Tank
 - Compass
 - Trend
 - Rain Gauge Trend

The Meter Editor provides a variety of meter styles and the user is encouraged to explore these options to create combinations of meters to suit their individual preference. Refer to Figure 4 for further details on configuring meters with the Meter Editor. Figure 5 shows some examples of configured meters. Note that each meter must be configured individually.

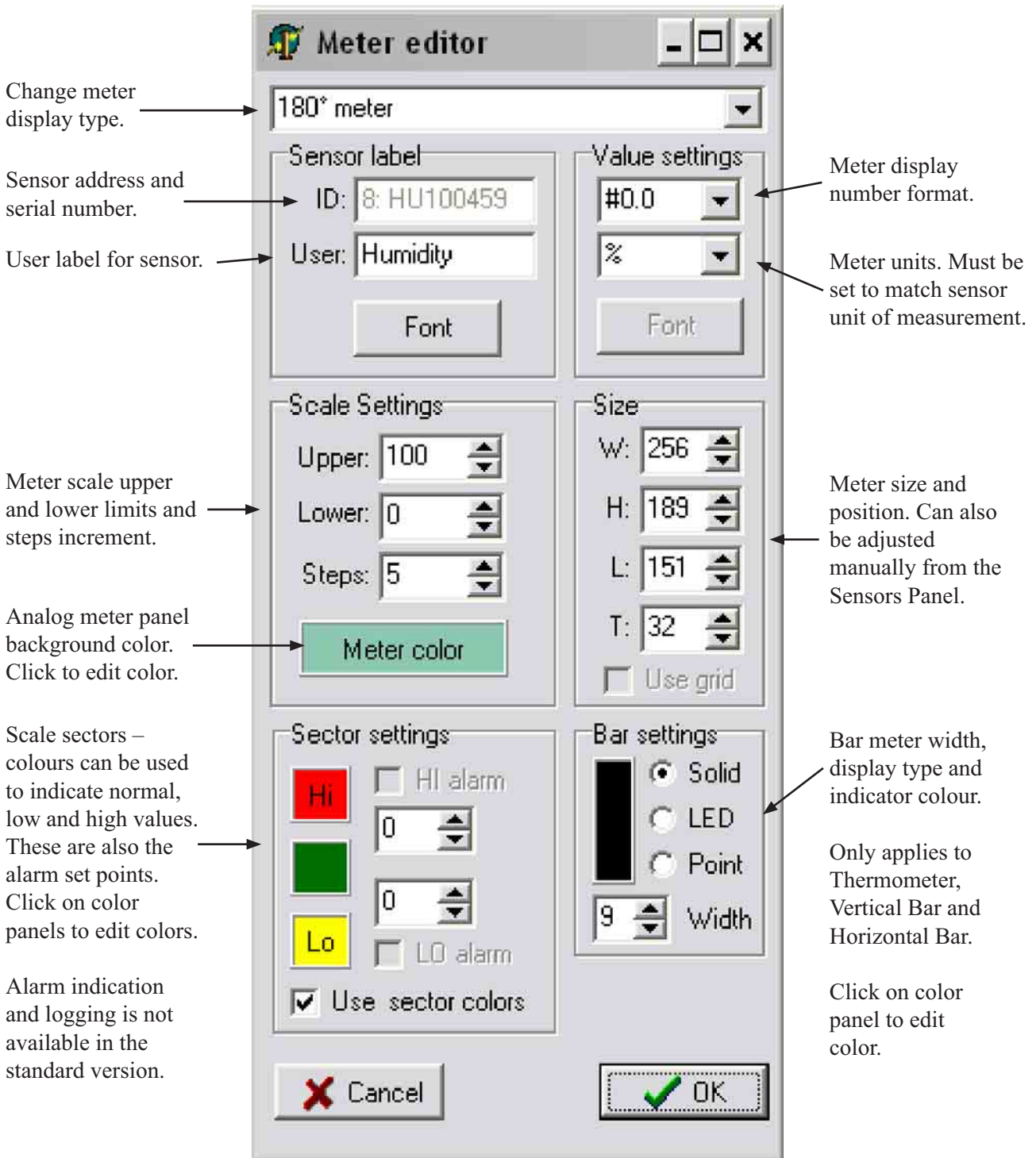


Figure 4. Meter Editor.

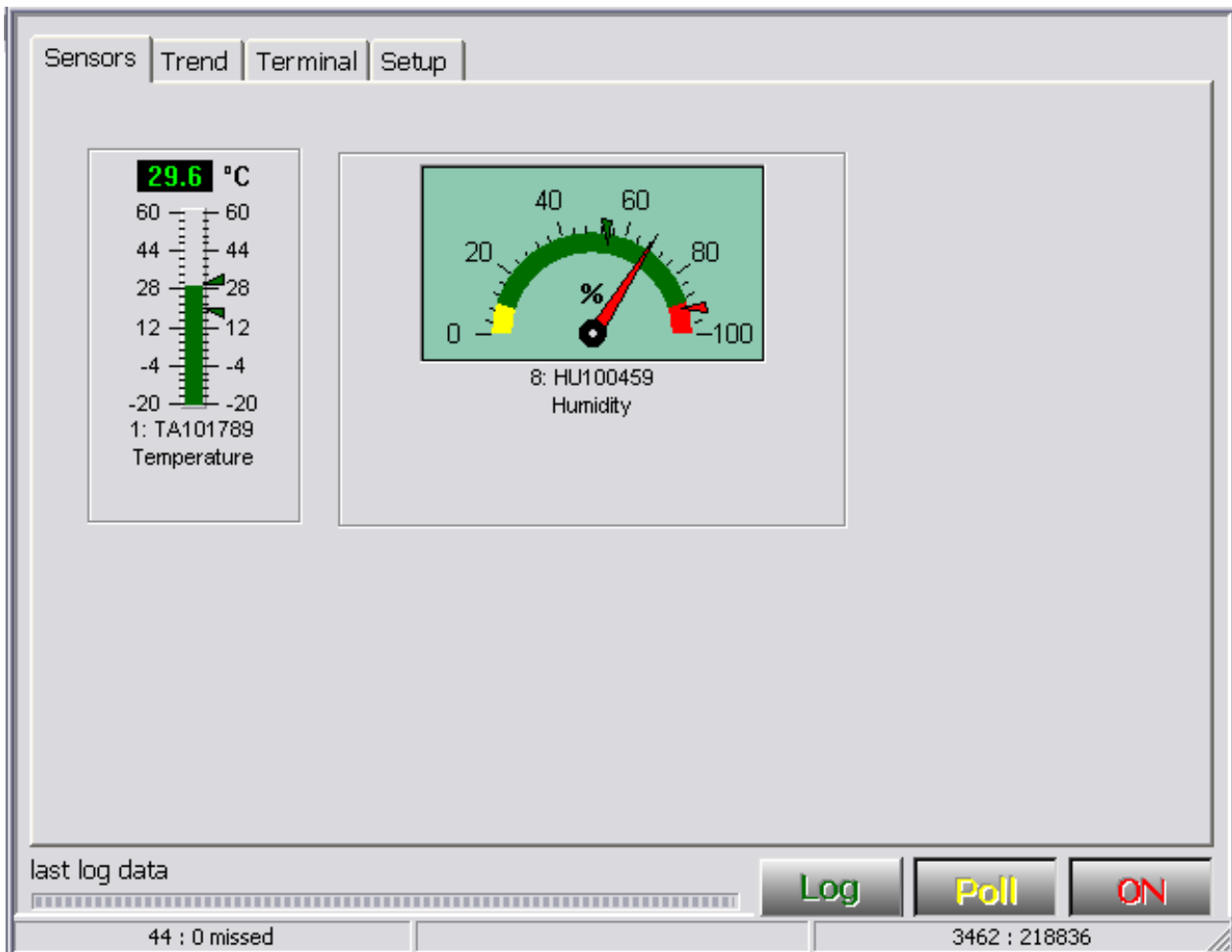


Figure 5. Examples of Configured Meters.

- When the meter configuration is complete, it needs to be saved in the **sensors.info** file if it is to be used in subsequent PCS Logger sessions. After clicking **OK** to close the Meter Editor, right click anywhere in the Sensors Panel to access the Sensor Panel local menu and move the cursor down to **Save Sensor info**.

Note that while other sensor file names can be created and recalled manually in each PCS Logger session, only the **sensors.info** file name is used by the **Auto load** feature in the Setup Panel to load a sensor information file at startup. Other meter configurations can be saved using a file name other than **sensors.info** but they must be loaded manually from the Sensor Panel local menu using **Load Sensor info**. See the section on **Changing Sensor Configurations** if the actual sensor configuration (rather than just the meters) is being changed.

Other features of the Sensor Panel local menu include:

- Reset Min/Max – sets the minimum/maximum pointers to the current value.
- Automatic arrangement and alignment of meters.
- Manually add and remove meters.

6. Trend Panel

The Trend Panel will display real-time polled data of all connected sensors in a graphic display. When the PCS Logger software is in Poll mode, select the desired time division from the adjustable Sec/Div field in the lower left corner of the Trend Panel. Click the **Active** checkbox to view the real-time data. Note that the real-time graphical display will continue to update on the Trend screen even if the sensor polling is stopped. In this case the Trend screen will simply continue to display the last polled value of the sensors.

The sensors connected will be displayed in the Trend Panel as different coloured graphs. Scroll through the connected sensors by clicking on the Up/Down arrows on the lower right corner of the Trend Panel. The colour of the selected channel number can then be correlated to the sensor name to the left of the scroll arrows. (See Figure 6, Temperature sensor is connected to Ch1 which is green.) The sensor name displayed will be the same as the user label entered into the Meter Editor for each sensor. The Y axis scale will correspond to the measurement units selected in the Meter Editor.

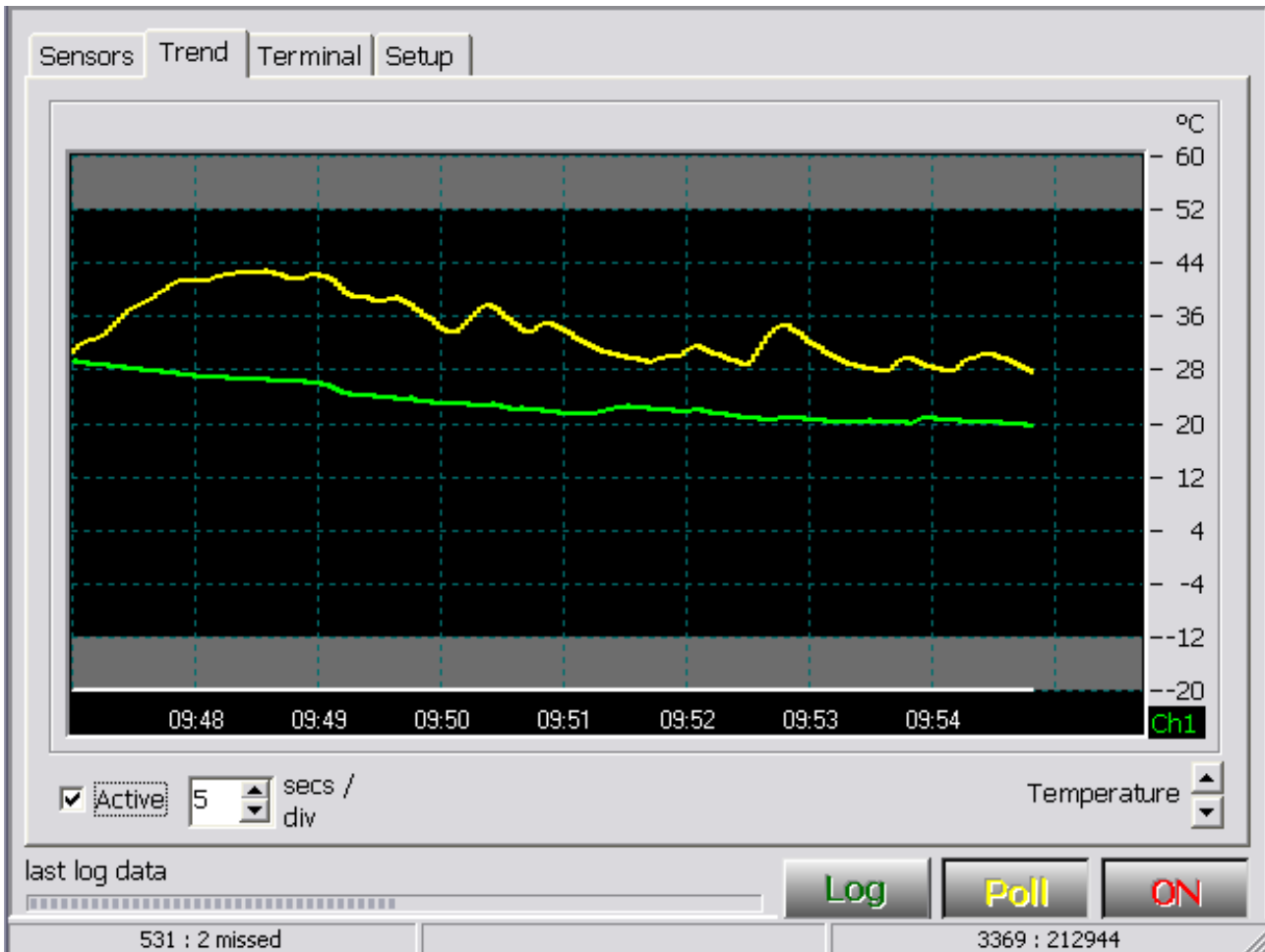


Figure 6. Trend Panel.

While the Trend screen is active, the recent values of each sensor can be determined by holding the cursor over the real-time graphical display. A vertical white line will appear for alignment with the X axis (Time) and the corresponding sensor value for that date and time will appear to the left of the sensor scroll buttons (see Figure 7). The date, time and value displayed will replace the name of the sensor in that section of the screen.

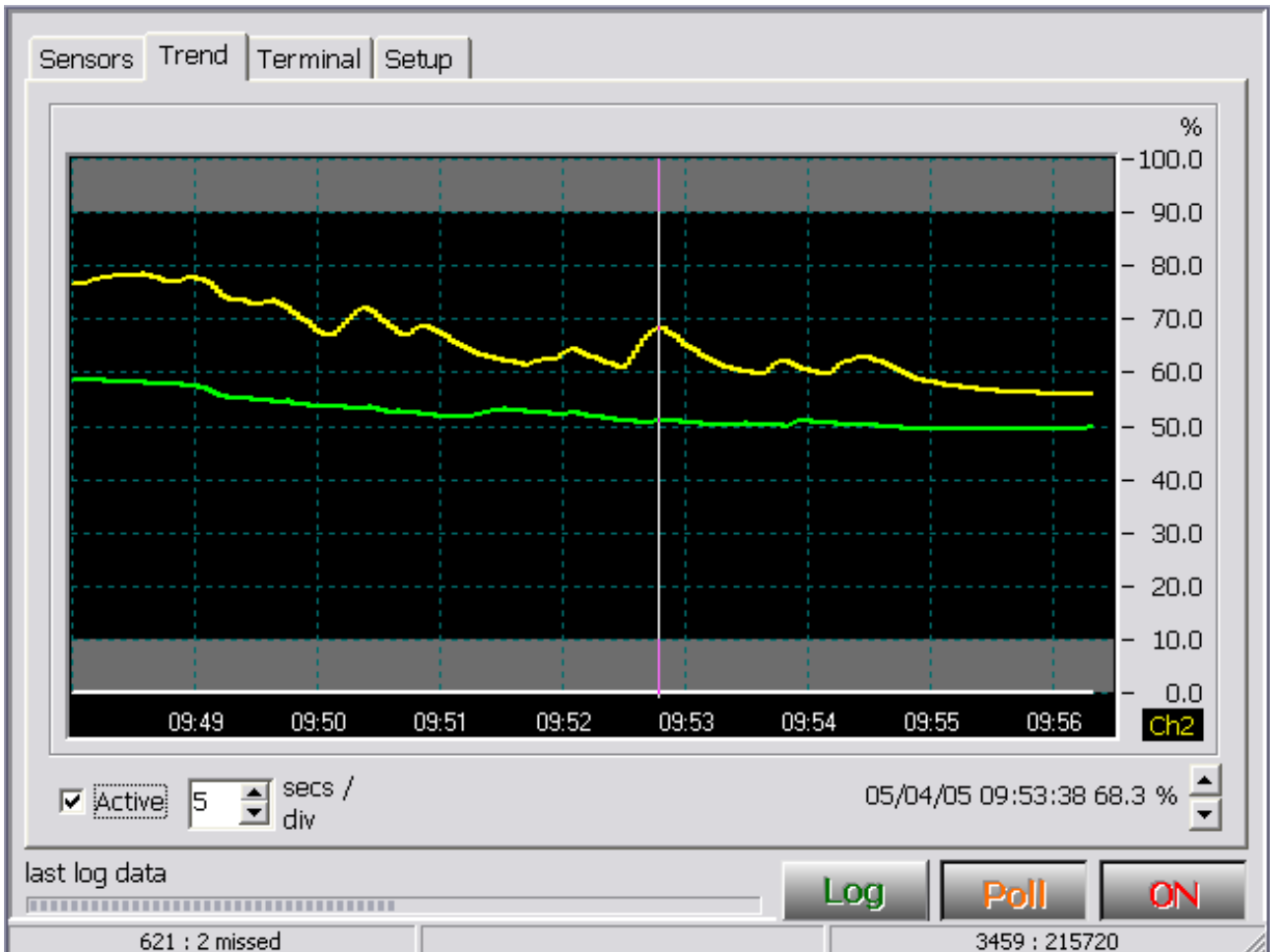


Figure 7. Trend Panel: recent values of each sensor.

7. Terminal Panel and Changing Sensor Configuration

The user can modify the sensor configuration supplied with the PCS Logger. To do this the PCS Logger software uses the Terminal Panel to detect the new sensor configuration.

All the sensors connected to the DataBus must have different sensor addresses. If two or more sensors have the same address the PCS Logger will not be able to find or identify them.

1. Click the **ON** button to open the communication port. If the sensor addresses are known, skip to step 4.
2. Connect one sensor at a time to identify each sensor and the sensor address. Enter ? in the command edit box and click the **send** button. The connected sensor should respond with identification text within 2 seconds (see Terminal Panel of Figure 8). Take note of the detected address (e.g. Address 8).

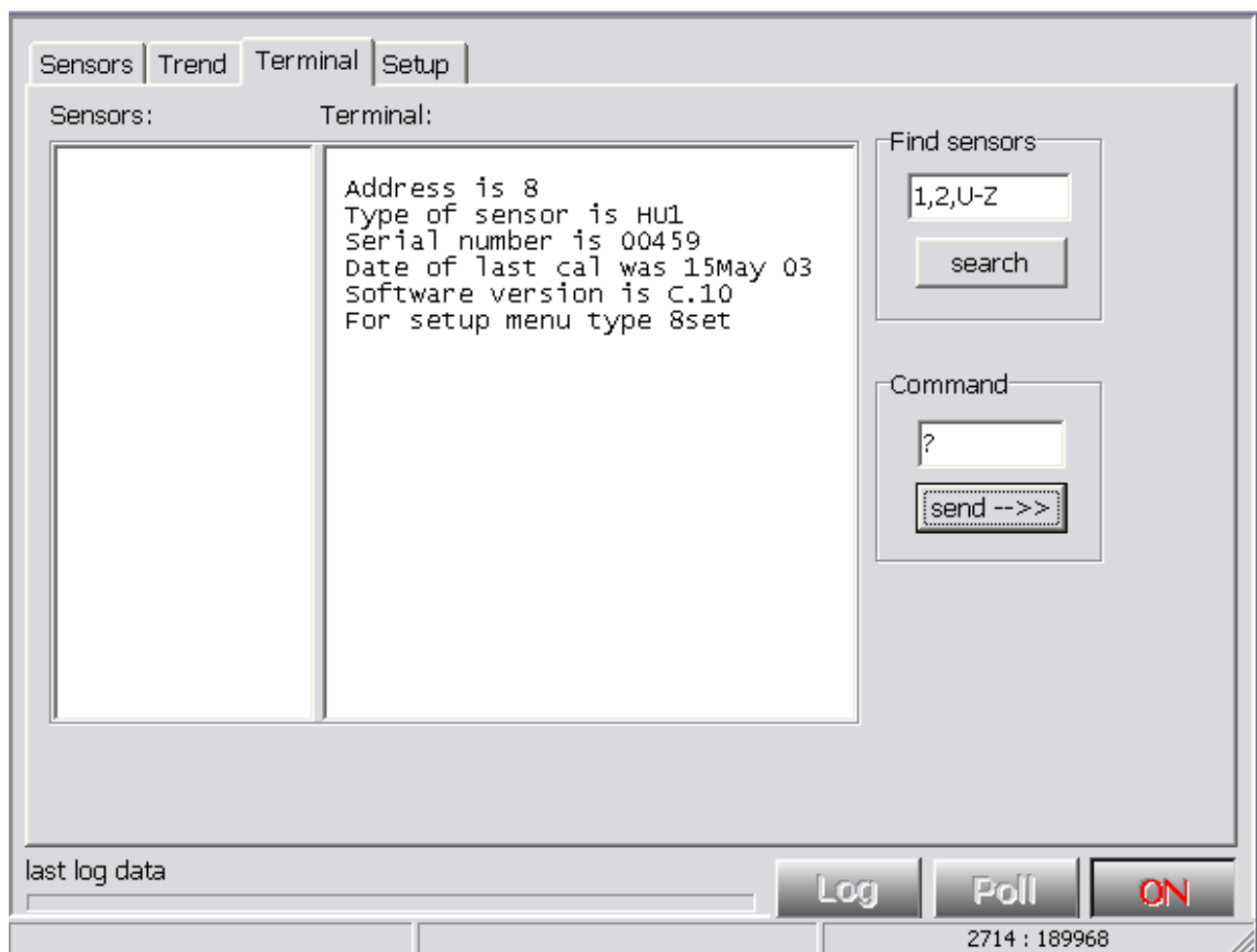


Figure 8. Terminal Panel.

3. Disconnect the detected sensor and add the next sensor. Repeat **send** command as in step 2.
4. After all sensors are identified, connect all sensors to the DataBus.

5. Enter the detected sensor addresses or search range into the **Find sensors** edit box and click the **search** button (see Figure 9). The sensor addresses can be entered individually, separated by a comma or as a range separated by a hyphen, e.g. 1,2,U-Z.

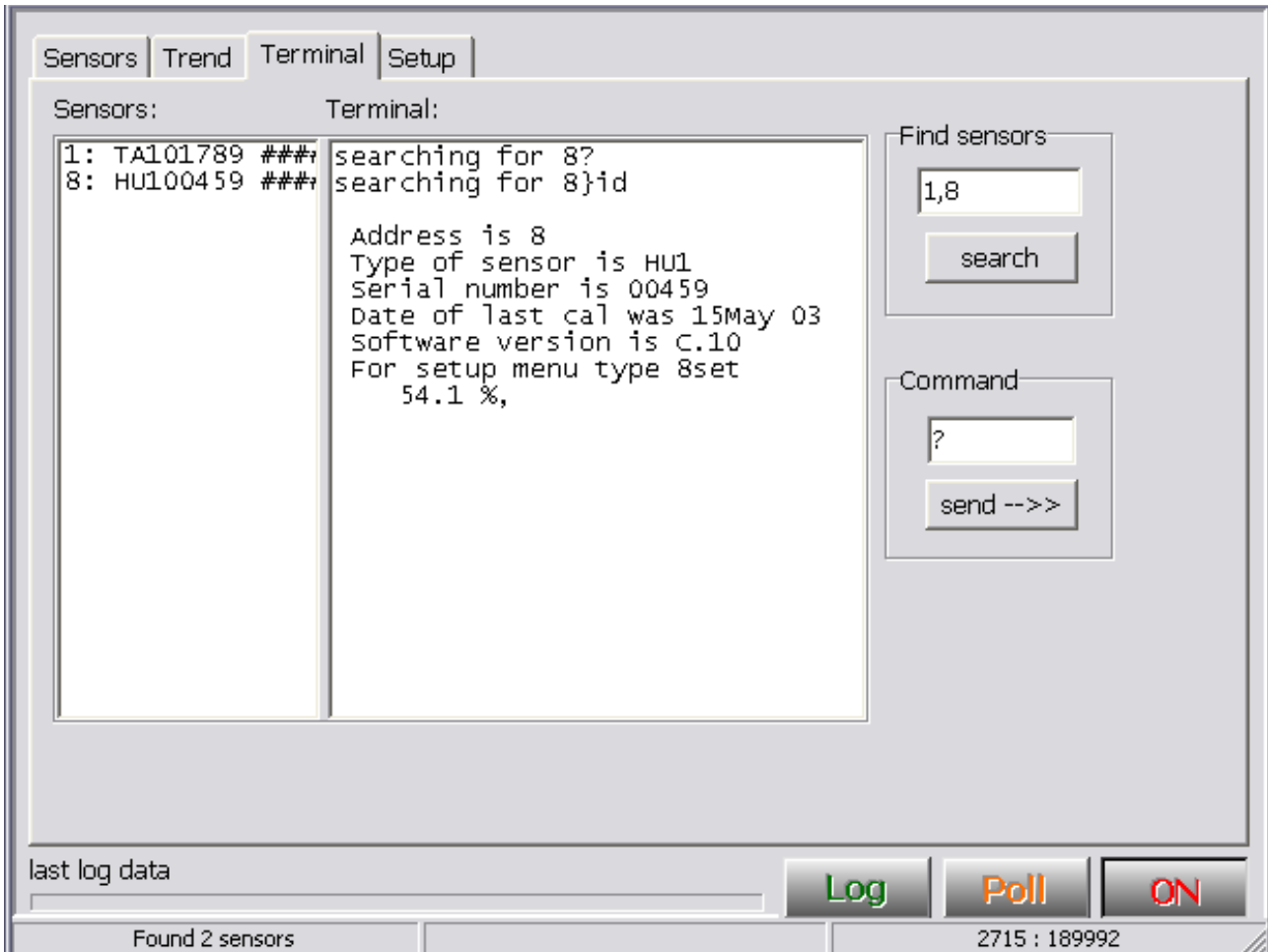


Figure 9. Terminal Panel: find sensors edit box.

6. As each sensor is identified it will be added to the **Sensors** list pane on the left and the program will show the sensor serial number and the sensor default number format and engineering units.
7. Meters can now be set up for the new sensor configuration as described in section 5, “Sensors Panel”, p. 7. If **Auto load** has already set up a meter display, this can be removed with the **Remove meters** function in the Sensors panel local menu. After removing meters, click on **Add Meters** to start a new meter setup. Meters can now be configured to the user’s preference as discussed in the Sensors Panel section.
8. After the meters have been set up, click on **Save Sensor Info** in the Sensors Panel local menu. If the new sensor and meter configuration is to replace the supplied sensor configuration, the file can be saved as **sensors.info**. Reusing this file name will allow the **Auto load** feature to function. Note that while other sensor file names can be created and recalled manually in each PCS Logger session, only the sensors.info file name is used by the *Auto load* feature in the Setup Panel to load a sensor info file at startup. Ensure that the **sensors.info** file is saved to the same directory as the **PCSLogger.exe** file.