Pro*React* EN Analogue
Linear Heat Detection

PC Software Installation and Operation Instructions

Thermocable
Pro*Academy*
Linear Detection Technology Made Simple

Contents:

Important – read before commencing installation

▶ Please read the ProReact EN Analogue Installation Manual thoroughly before using the PC Programmer software and ensure all recommendations and advice are followed.

▶ Install the ProReact EN Analogue Linear Heat Detection System accordingly to meet local and country installation requirements.

▶ For UL Listed installations, ProReact EN Analogue linear heat detection cable must be installed in accordance with NFPA 70 & 72, NEC 760 (National Electric Code).

▶ For EN5422 approved installations, ProReact EN Analogue linear heat detection cable must be installed in accordance with DIN VDE 08332 or country equivalent (such as BS 58391).

▶ Installation of the ProReact EN Analogue Linear Heat Detection System should only be undertaken by trained, qualified personnel.

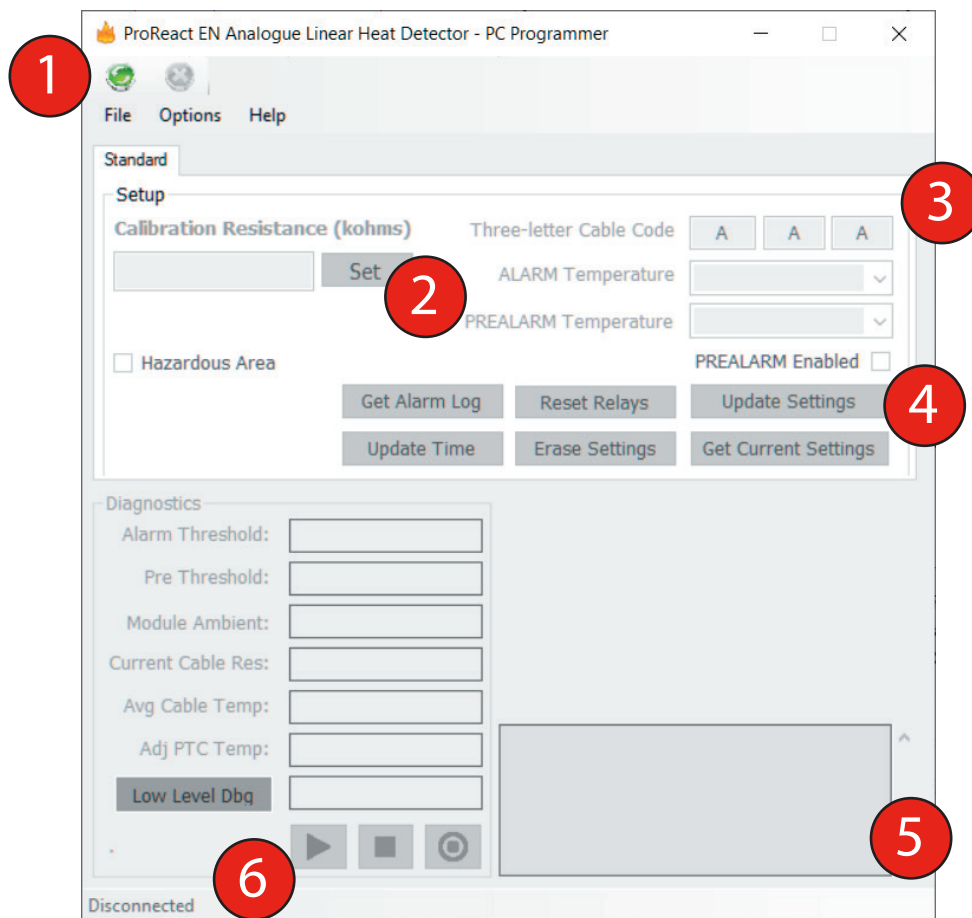# Connecting to the ProReact EN Analogue Composite Control Unit

Figure 1. Screenshot of PC Programmer Software

1. Install and run the **ProReact EN Analogue Linear Heat Detector - PC Programmer** software before connecting the ProReact EN Analogue Composite Control Unit to the laptop or PC.

2. If this is the first time a PACC unit will be connected to the computer it is advisable to first install the driver. To do this, go to **File > Install Driver File...**

3. The program may prompt to grant extra permissions, in which case select Yes.

4. After a short time a window should appear (see below) with a file path displayed and if successful, the text "Driver Installed ok" will be visible. Click on the window and press the return or enter key to dismiss the window. The driver is now installed. **It is recommended to restart your computer after this step.**
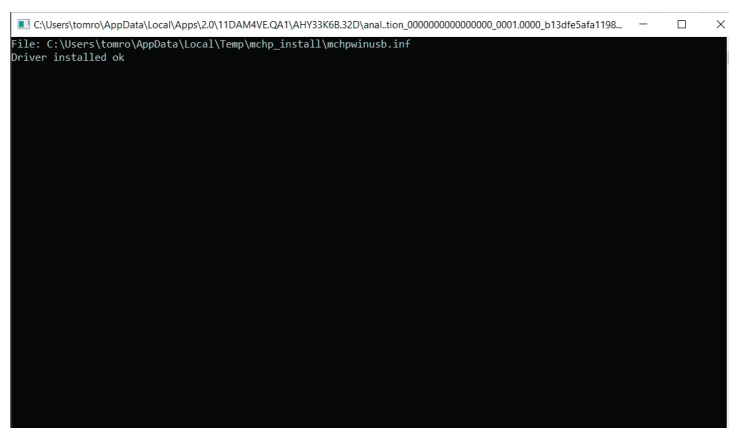

Figure 2. Screenshot of Driver Installation box after successful installation

5. Power up the ProReact EN Analogue Composite Control Unit and connect it to the PC or laptop using a USB Type A to **MiniB USB** cable. The MiniB connector end of the USB cable should be plugged into the vertical USB socket located in the top right hand corner of the control unit PCB.

6. **Note: it is not possible to connect to a PACC unit which is displaying "Self Program?" on the LCD. To connect, proceed past this stage by selecting "No". If "Yes" is selected, complete the commissioning process until you are presented with the normal operation screen ("Curr: " on the top line of the LCD display) before attempting to connect to the PACC unit with the PC programmer software.**

7. If this is the first time connecting the PACC unit to the computer, Windows will install the device and display a notification when the installation is complete. This may take several minutes.

8. After the installation is complete or a PACC unit has previously been connected to this computer, click the green connect icon on the toolbar, shown at 1 in the screenshot in Figure 1.

9. The programming software automatically locates and connects to the PACC unit. If a successful connection can be made, the programming software controls will be enabled (see Figure 3).
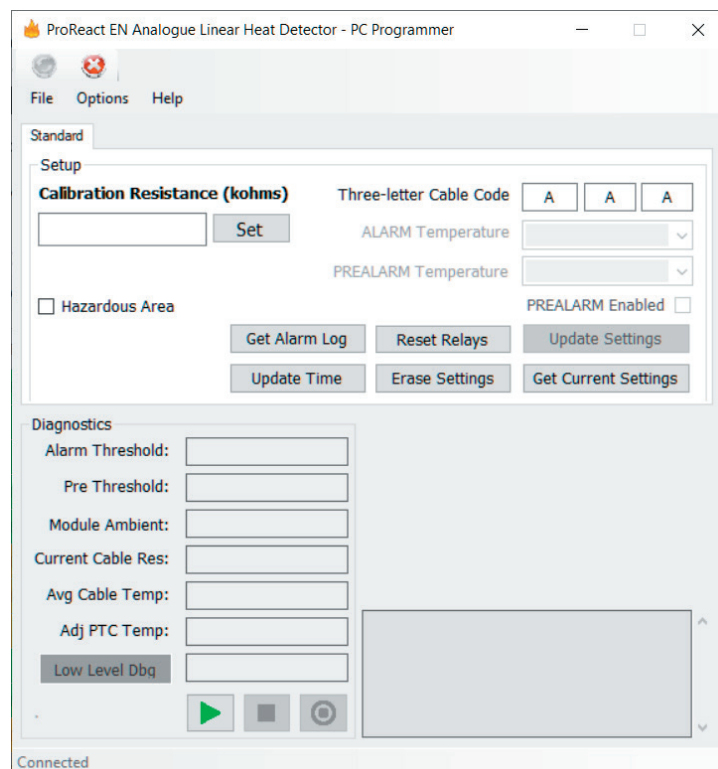

Figure 3. Screenshot of PC Programmer software once the control unit is connected

Commissioning

Before beginning to commission the system ensure that the installation of the control unit, sensor cable, end-of-line module and any junction boxes have been carried out in accordance with the information provided herein. Incorrect installation may result in unwanted alarms, faults or malfunction of the system even after successfully commissioning the control unit.

1. Establish a connection to the ProReact EN Analogue Composite Control unit (see section Connecting to the control unit)

2. To retrieve the settings from the PACC unit. Press the "Get Current Settings" button shown at 4 in Figure 1. This will download the parameters from the PACC unit and populate the programmer software input controls accordingly.

3. If this is an uncommissioned PACC unit, "FAULT: NO SETUP" will be shown on the LCD display. New parameters will need to be entered into the programming software and downloaded to the PACC unit.

4. The first parameter to be entered should be the calibration resistance. This may only be done when the button next to the calibration resistance input box shows "Set" (shown at 2 on Figure 1). If the button shows "Unset", the calibration resistance input box will be greyed out. In this case, click "Unset" first to enter a new calibration resistance.

5. Once the calibration value has been entered and the "Set" button clicked, the calculated zone length will be shown in the text box in the bottom right of the PC Programmer screen. Check this value corresponds to the actual amount of sensor cable connected to the PACC unit.

6. If the PACC unit is installed in an application where the sensor cable is located in a hazardous area, click the "Hazardous Area" checkbox underneath the calibration resistance input control. See the Hazardous Area application guide for more information on commissioning the system in a hazardous area application.

7. Next enter the three letter code of the ProReact EN Analogue sensor cable attached to the PACC unit in the corresponding input boxes next to the **"Threeletter Cable Code"** label shown at 3 in Figure 1.

8. Finally, choose the appropriate Alarm setting (and Prealarm setting, if desired). Please refer to the ProReact EN Analogue Installation Instructions manual for guidance on choosing the correct alarm temperature.

9. Once all the paramters have been set, press the **"Update Settings"** button, shown at 4 in Figure 1, to download the settings to the PACC unit.

Diagnostics

1. To check the diagnostic information from the ProReact EN Analogue Composite Control unit, click the green play button shown at 6 in Figure 1.

2. While diagnostics is running the play button is greyed out and the red Stop button is active. The red Record button is also active. The diagnostic information is as follows:

Label	Description
Alarm Threshold	Threshold resistance, below which if the current cable resistance drops an alarm is triggered.
Pre Threshold	Threshold resistance, below which if the current cable resistance drops a prealarm is triggered.
Module Ambient	Current ambient temperature of the PACC unit
Current Cable Res	Current resistance of the sensor cable
Avg Cable Temp	Average ambient temperature of the whole sensor cable
Adj PTC Temp	Adjusted ambient temperature of the sensor cable (used by the PACC unit)
Low Level Dbg	Low level debugging information

Figure 4. Screenshot of PC Programmer software diagnostics frame

3. The Record function logs the diagnostic data (every 5 seconds) to a CSV file which can be later viewed to monitor the resistance and temperature readings over a longer period of time. Before clicking the Record button, first go to **File > Log Directory...** to specify a directory on the computer where the log information should be stored.

4. Press the Record button to start recording. While recording is taking place the text "Recording" should be visible in the bottom left hand corner of the Diagnostics frame.

5. In the log directory a file called "analogue_log.csv" should be created. If the file already exists the diagnostic data is appended to the end of the file.

6. The file format is in commaseparated values. An example of the logged data and corresponding values is given below:

Field	1	2	3	4	5	6	7	8	9	10	11
Data	20200605 15:58:40	1932225	256	244	703568	258	871	1640	2	4	0

Field 1: Timestamp of data point

Field 2: Measured sensor cable resistance in kohms * 10 (e.g. 1932225 = 193,222.5 kohms)

Field 3: Adjusted sensor cable ambient temperature * 10 (e.g. 256 = 25.6 degrees Celsius)

Field 4: Real sensor cable ambient temperature * 10 (e.g. 244 = 24.4 degrees Celsius)

Field 5: Alarm threshold resistance in kohms * 10 (e.g. 703568 = 70,356.8 kohms)

Field 6: Control unit ambient temperature * 10 (e.g. 258 = 25.8 degrees Celsius)

Field 7: Low level debugging information

Field 8: Low level debugging information

Field 9: Low level debugging information

Field 10: Low level debugging information

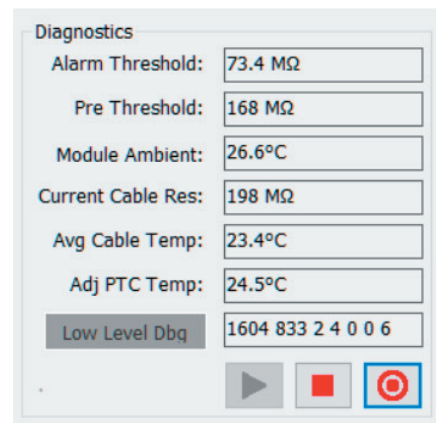Field 11: Prealarm threshold resistance in kohms * 10 (0 = prealarm disabled)

Updating the Date and Time

1. To set the data and time on the ProReact EN Analogue Composite Control unit, first connect the PACC unit to the PC programmer.

2. Click the "Update Time" button on the PC programmer software.

3. The current date and time on the computer will be copied to the PACC unit.

4. You may view the time by pressing the SELECT button on the PACC unit 3 times during normal operation. The "Update Time" button can be pressed while the time is being viewed on the PACC unit to verify the date and time have been set corrrectly.

Retrieving the Alarm Log

1. An alarm event log is built into the ProReact EN Analogue Composite Control unit which stores the conditions of the sensor cable at the time of alarm for the 3 most recent alarms.

2. To download the alarm log, click the **"Get Alarm Log"** button.

3. If successful, the event log for the last 3 alarms is shown in the bottom right hand text box. (note: the log does not include fault or prealarm events).

4. An example alarm log event is shown in Figure 5.

5. It is possible to determine the cause of alarm based up on the information shown. See Table 1 for examples and the corresponding most likely cause for the alarm.

Figure 5. Screenshot of PC Programmer software showing the alarm log

Threshold	Lowest	Ambient	Rate alarm	Most likely cause of alarm
10.0MΩ	8.0MΩ	24ºC	None	A section of sensor cable reached the temperature requried to trigger an alarm for the chosen alarm setting
25.0MΩ	40.0MΩ	25ºC	Fast	A section of the sensor cable was heated rapidly meeting the rate-of- rise alarm trigger condition in the control unit
1800.2kΩ	2534.6kΩ	47ºC	High	The sensor cable was at a high ambient temperature relative to the chosen alarm temperature and the rate of change of temperature of the sensor cable met the high ambient rate-of-rise alarm trigger condition
198.6kΩ	350.4kΩ	72ºC	None	The average ambient temperature of the whole sensor cable exceeded the alarm temperature for the chosen alarm setting

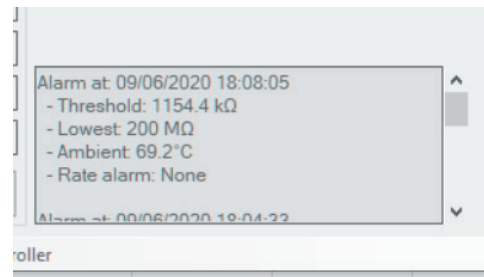Table 1. Example alarm log events and corresponding most likely causes of alarm

Modbus RS-485

The ProReact EN Analogue Composite Control unit has a built-in RS485 Modbus output which can be used to remotely access realtime information from the ProReact EN Analogue LHD system.

1. By default, the PACC unit has the following Modbus settings:

    Protocol: Modbus RTU
    Baud Rate: 19200
    Parity: Even
    Address: 1

2. It is only possible to change the Modbus settings using the PC software. To do this, connect the software to the PACC unit and go to **Options > Enable Modbus**.

3. The Modbus parameters frame will now be visible on the PC Programmer screen (see highlighted area in Figure 6).

4. Select the desired protocol, baud rate, parity and address then click the "Set Modbus Params" button to update the settings on the PACC unit.

5. Check the settings have been set by clicking the "Get Modbus Params" button. If the parameters have been set successfully the values should not change, otherwise the parameters will revert to their previous values.
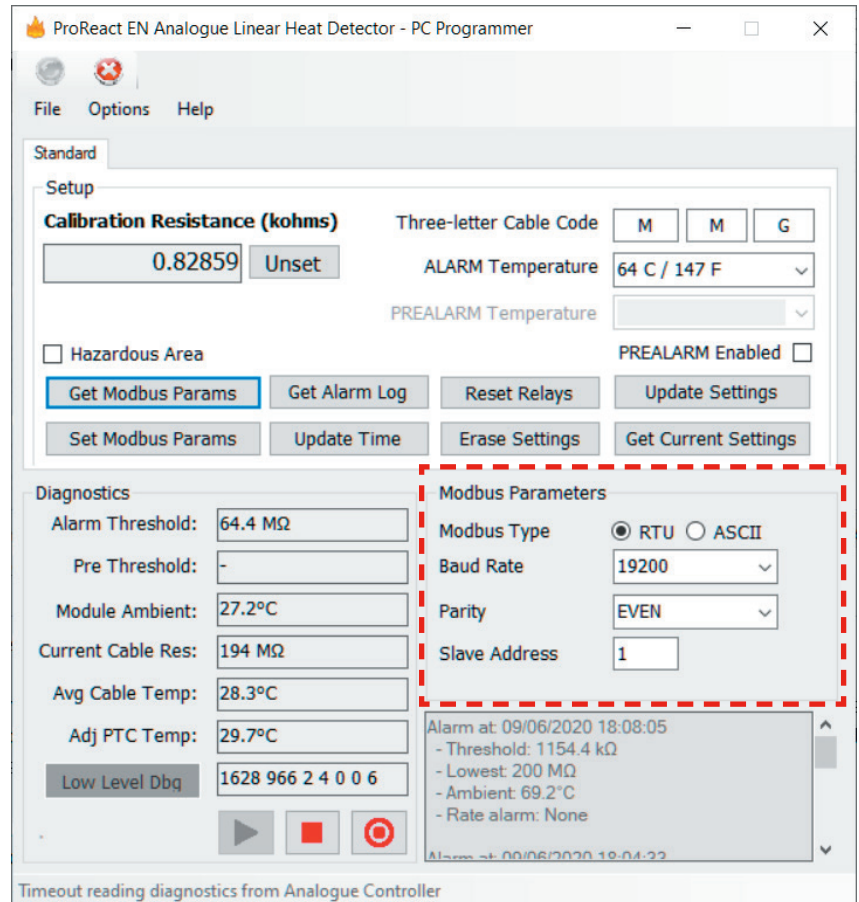

Figure 6. Screenshot of PC Programmer software showing the Modbus settings

Resetting a Latched Alarm or Pre-alarm Condition

1. If the PACC unit has alarmed the relay outputs will latch (remain set) until the PACC unit receives a reset command. One method to reset the relay outputs is using the PC Programmer software.

2. Establish a connection to the PACC unit (see section Connecting to the control unit).

3. Click the "Reset Relays" button on the PC programmer software.

4. You will need to click the button for each output that is set. For example, if the alarm and prealarm relays are both set you will need to click the "Reset Relays" button twice.