PROHEAT®

# X45 DATA LINK 1.1 KIT

## Data Link Kit Part# PK0053-3
## Windows 2000, XP, Vista, 7
## G-III Proheat Control Module (PCM) ONLY

The X45 Data Link software allows technicians to download the X45 operation history from the Proheat Control Module (PCM). It records operational events and errors in sequence allowing technicians to assist with product troubleshooting.

### Option 1

Computer has a Serial (RS232) port. Install software as per ***Software Installation*** and then go to ***How to Run the Program***.

### Option 2

Computer does not have a Serial (RS232) port. In this case, a USB-Serial converter will be required. This is included in the PK0053-3 Data Link Kit. Alternatively, a commercial USB-Serial converter may be purchased from an electronics store. Go to ***USB-Serial Converter Set-Up*** first then install software as per ***Software Installation*** followed by ***How to Run the Program***.

### Software Installation

**NOTICE**

*Periodically check www.proheat.com for the latest PK0053-3 software.*

**If software is downloaded from www.proheat.com, proceed to Step 3**

1. Insert the X45 Data Link CD ROM into your CD drive.
2. Open ***Windows Explorer***. In the folders pane under ***My Computer***, **double-click** on the ***d: drive*** icon (or the drive letter for your CD drive).
3. **Double-click *X45 G-III Data Link Install 1.1*** file from the folder.
4. The self-extracting archive will prompt you as shown in Figure A. Click ***Unzip***. The X45 G-III Data Link V1.1 will start automatically.
5. Click ***Close*** to complete installation.

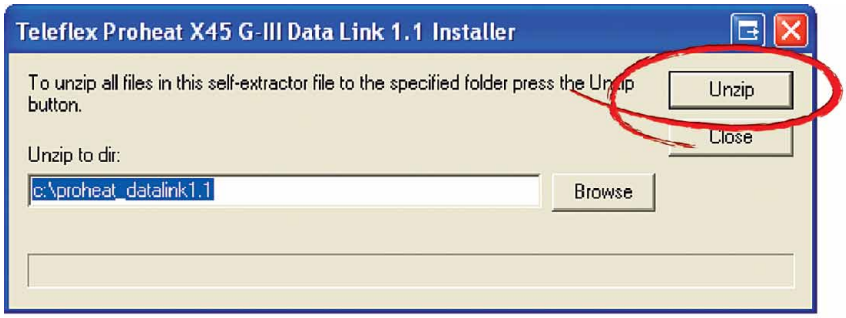
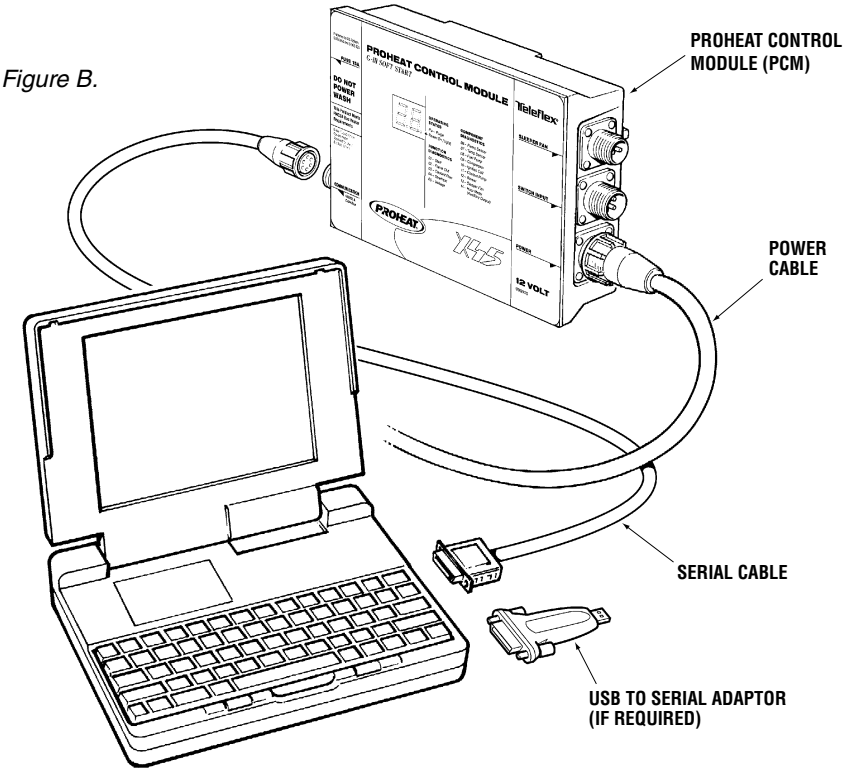



*Figure A.*

## How to Run the Program

**1** Connect the power cable and Data Link cable to the PCM as shown in Figure B. If required, connect the USB-Serial adaptor (see **Option 2** on page 1).

*Figure B.*




**2** Open ***Windows Explorer*** and navigate to ***c:\proheat_datalink1.1*** folder.

**3** **Double-click** on ***200976K PCM Data Link 1.1***. Figure C will be displayed. Ensure that the PCM Connected is displayed in the upper right corner of the screen as shown.

**NOTICE**

*If **Not Connected** is displayed, the software is not connecting to the PCM. Troubleshoot to ensure that the PCM has power and is properly connected to the computer.*

*Not Connected*

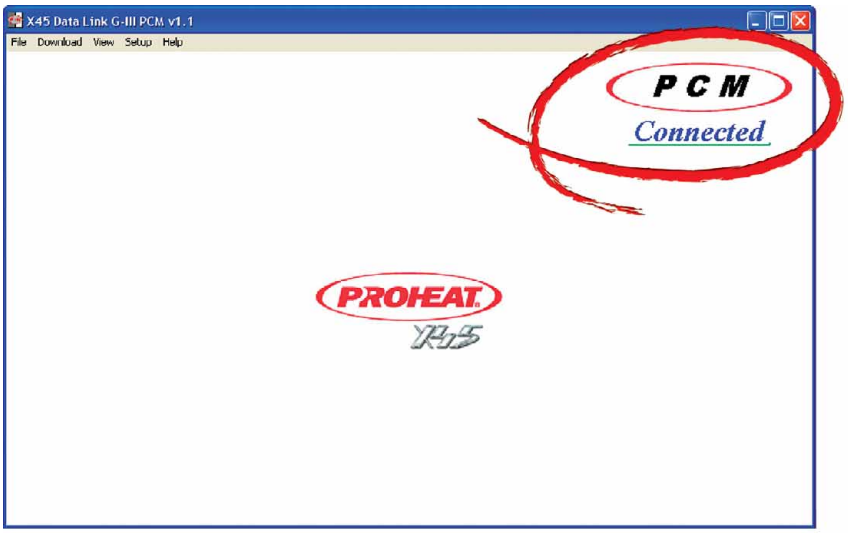



*Figure C.*

**4** **Click** on the **Download** menu to download the data from the PCM. A "Download PCM" pop-up window will be displayed as shown in Figure D. Enter the appropriate information in the **User Reference, Heater S/N**, and **Controller S/N** locations provided and click "OK" to proceed with the download. **Note:** It is not required to enter the information to proceed with download.

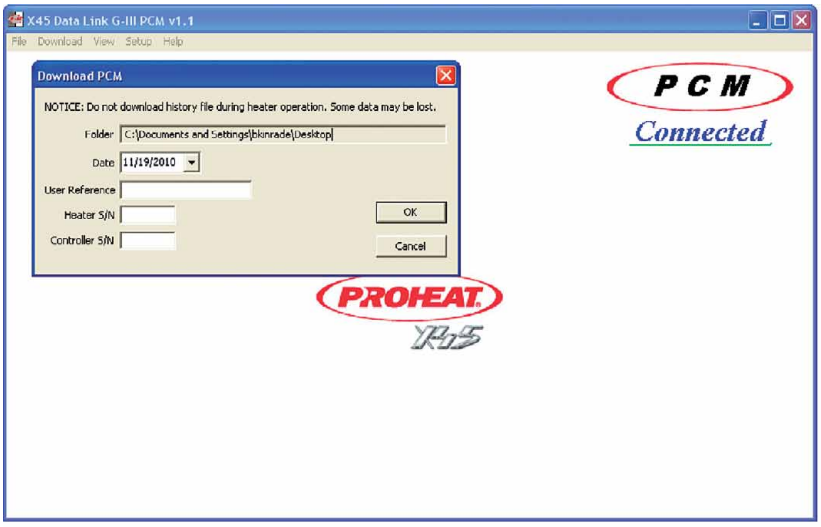
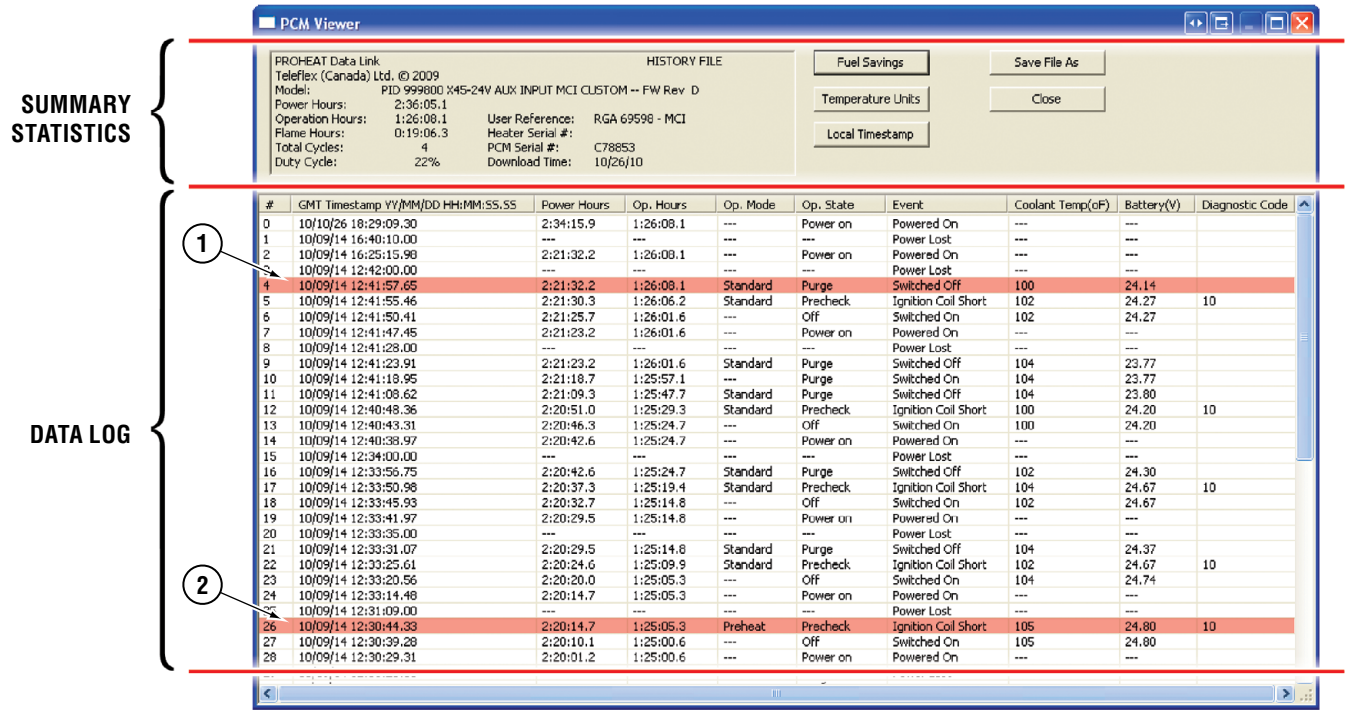



*Figure D.*

## NOTICE

- *The Download date defaults to the date set on your computer.*
- *Download time is approximately 3 minutes.*
- *Downloads will be automatically saved to* ***c:\proheat_datalink1.1*** *folder.*

**5** Figure E is an example of the data displayed. For more information about Op. Mode, Op. State and Event columns, refer to the X45 manual on www.proheat.com or contact Product Support at www.proheat.com.




| # | GMT Timestamp YY/MM/DD HH:MM:SS.SS | Power Hours | Op. Hours | Op. Mode | Op. State | Event | Coolant Temp(oF) | Battery(V) | Diagnostic Code |
|---|---|---|---|---|---|---|---|---|---|
| 0 | 10/10/26 18:29:09.30 | 2:34:15.9 | 1:26:08.1 | --- | Power on | Powered On | --- | --- | |
| 1 | 10/09/14 16:40:10.00 | --- | --- | --- | --- | Power Lost | --- | --- | |
| 2 | 10/09/14 16:25:15.98 | 2:21:32.2 | 1:26:08.1 | --- | Power on | Powered On | --- | --- | |
| 3 | 10/09/14 12:42:00.00 | --- | --- | --- | --- | Power Lost | --- | --- | |
| 4 | 10/09/14 12:41:57.65 | 2:21:32.2 | 1:26:08.1 | Standard | Purge | Switched Off | 100 | 24.14 | |
| 5 | 10/09/14 12:41:55.46 | 2:21:30.3 | 1:26:06.2 | Standard | Precheck | Ignition Coil Short | 102 | 24.27 | 10 |
| 6 | 10/09/14 12:41:50.41 | 2:21:25.7 | 1:26:01.6 | --- | Off | Switched On | 102 | 24.27 | |
| 7 | 10/09/14 12:41:47.45 | 2:21:23.2 | 1:26:01.6 | --- | Power on | Powered On | --- | --- | |
| 8 | 10/09/14 12:41:28.00 | --- | --- | --- | --- | Power Lost | --- | --- | |
| 9 | 10/09/14 12:41:23.91 | 2:21:23.2 | 1:26:01.6 | Standard | Purge | Switched Off | 104 | 23.77 | |
| 10 | 10/09/14 12:41:18.95 | 2:21:18.7 | 1:25:57.1 | --- | Purge | Switched On | 104 | 23.77 | |
| 11 | 10/09/14 12:41:08.62 | 2:21:09.3 | 1:25:47.7 | Standard | Purge | Switched Off | 104 | 23.80 | |
| 12 | 10/09/14 12:40:48.36 | 2:20:51.0 | 1:25:29.3 | Standard | Precheck | Ignition Coil Short | 100 | 24.20 | 10 |
| 13 | 10/09/14 12:40:43.31 | 2:20:46.3 | 1:25:24.7 | --- | Off | Switched On | 100 | 24.20 | |
| 14 | 10/09/14 12:40:38.97 | 2:20:42.6 | 1:25:24.7 | --- | Power on | Powered On | --- | --- | |
| 15 | 10/09/14 12:34:00.00 | --- | --- | --- | --- | Power Lost | --- | --- | |
| 16 | 10/09/14 12:33:56.75 | 2:20:42.6 | 1:25:24.7 | Standard | Purge | Switched Off | 102 | 24.30 | |
| 17 | 10/09/14 12:33:50.98 | 2:20:37.3 | 1:25:19.4 | Standard | Precheck | Ignition Coil Short | 104 | 24.67 | 10 |
| 18 | 10/09/14 12:33:45.93 | 2:20:32.7 | 1:25:14.8 | --- | Off | Switched On | 102 | 24.67 | |
| 19 | 10/09/14 12:33:41.97 | 2:20:29.5 | 1:25:14.8 | --- | Power on | Powered On | --- | --- | |
| 20 | 10/09/14 12:33:35.00 | --- | --- | --- | --- | Power Lost | --- | --- | |
| 21 | 10/09/14 12:33:31.07 | 2:20:29.5 | 1:25:14.8 | Standard | Purge | Switched Off | 104 | 24.37 | |
| 22 | 10/09/14 12:33:25.61 | 2:20:24.6 | 1:25:09.9 | Standard | Precheck | Ignition Coil Short | 102 | 24.67 | 10 |
| 23 | 10/09/14 12:33:20.56 | 2:20:20.0 | 1:25:05.3 | --- | Off | Switched On | 104 | 24.74 | |
| 24 | 10/09/14 12:33:14.48 | 2:20:14.7 | 1:25:05.3 | --- | Power on | Powered On | --- | --- | |
| 25 | 10/09/14 12:31:09.00 | --- | --- | --- | --- | Power Lost | --- | --- | |
| 26 | 10/09/14 12:30:44.33 | 2:20:14.7 | 1:25:05.3 | Preheat | Precheck | Ignition Coil Short | 105 | 24.80 | 10 |
| 27 | 10/09/14 12:30:39.28 | 2:20:10.1 | 1:25:00.6 | --- | Off | Switched On | 105 | 24.80 | |
| 28 | 10/09/14 12:30:29.31 | 2:20:01.2 | 1:25:00.6 | --- | Power on | Powered On | --- | --- | |

*Figure E.* *1 – Example 1, See page 8.*

*2 – Example 2, See page 8.*

## Temperature Units

**Click** on the **Temperature Units** button to switch the displayed temperature units to Fahrenheit or Celsius (see Figure F). All displayed values will be re-displayed.

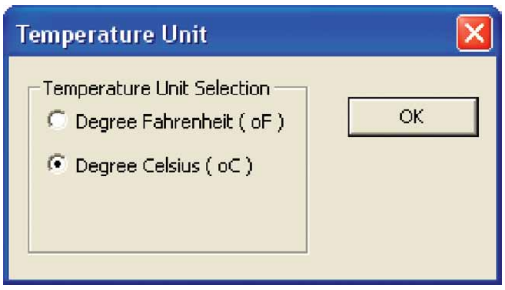



*Figure F.*

## Local Timestamp

**Click** on the **Local Timestamp** button to change the time from GMT to your computer set time zone (see Figure G). **Note:** The PCM is factory set at GMT time zone. The Data Link program reads the Microsoft Windows computer clock and re-displays the Data Link display time to the computer time zone.

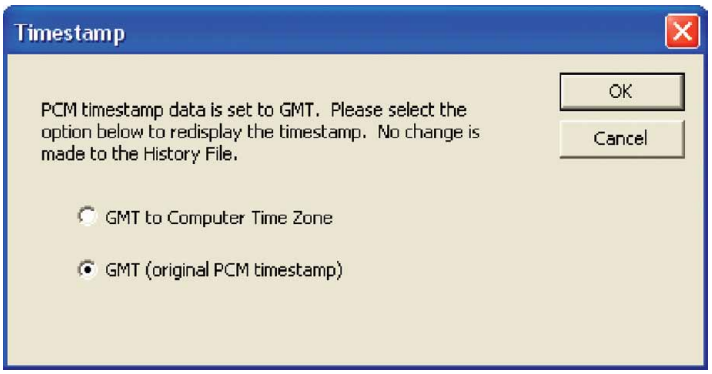



*Figure G.*

## Fuel Savings

**Click** on the **Fuel Savings** button to determine your fuel and maintenance cost savings by using your PROHEAT heater (see Figure H).

The **Cost Structure** of the calculation can be set to US (gallons–$USD) or **Canada** (Litres–$CAD) depending on where you are operating your PROHEAT. Enter the cost of the fuel you are using into the **Cost of Fuel** area, the fuel consumption of your vehicle at idle into the **Engine Fuel Consumption per hour of idling** area and enter the additional engine maintenance costs due to the engine idling into the **Additional Engine Maintenance Cost per hour of idling** area.

Select the appropriate heater model in the **Enter Heater Model** area and **Click Re-calculate**. The total cost savings by using the heater instead of idling is calculated and displayed at the bottom of the window.

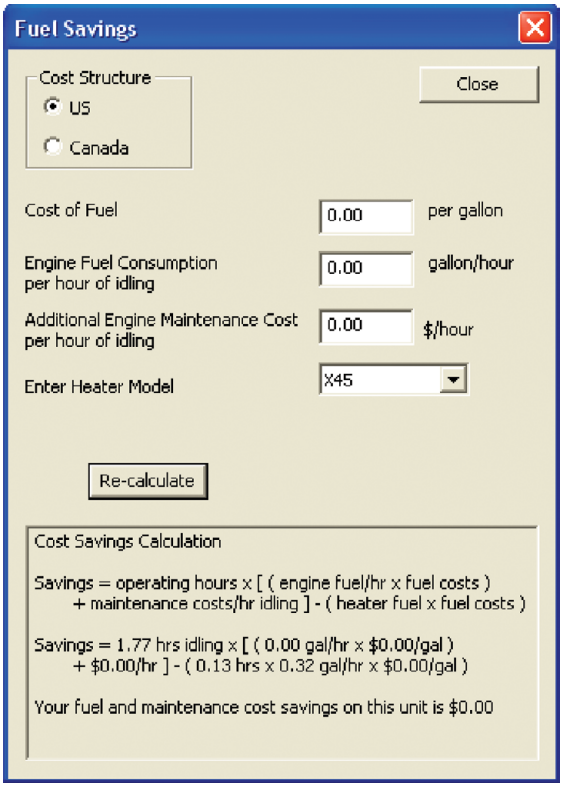



*Figure H.*

## PCM Version

**Click** on the **View** menu then **Version**… as shown in Figure I.

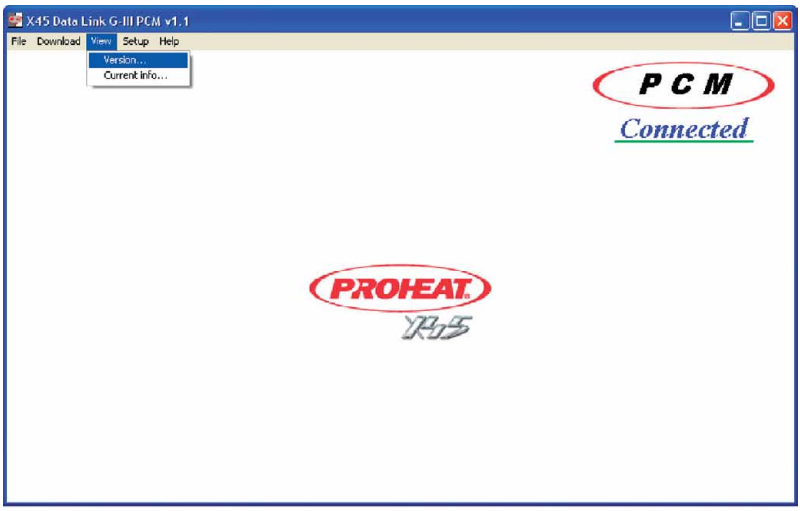



*Figure I.*

A pop-up window will be displayed like the one in Figure J. The PCM software version information will be shown for your heater. Click the Read button to update the information shown.

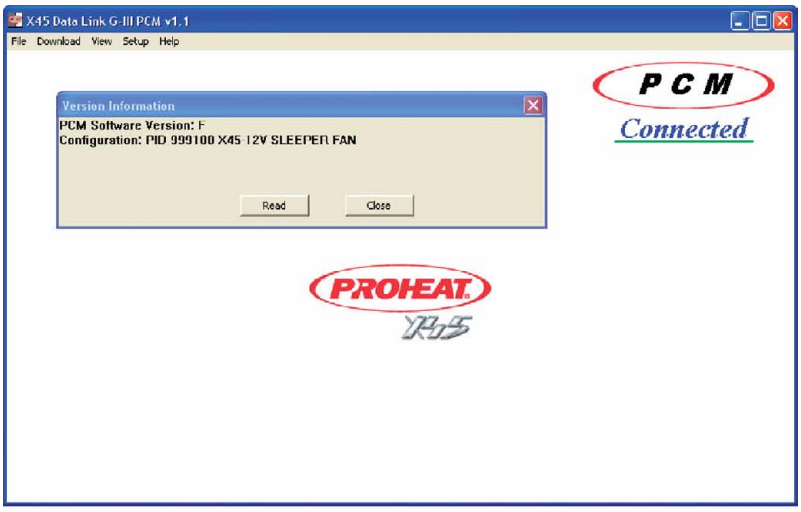



*Figure J.*

## View Current Info

**Click** on the **View** menu then **Current Info**… as shown in Figure K.

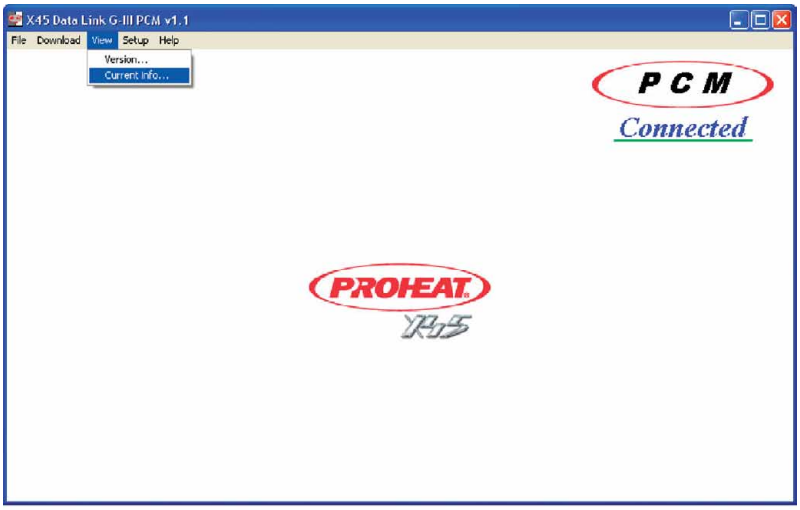



*Figure K.*

A pop-up window should be displayed like the one in Figure L showing the current battery voltage and coolant temperature. **Click** the **Read** button to update the information shown.

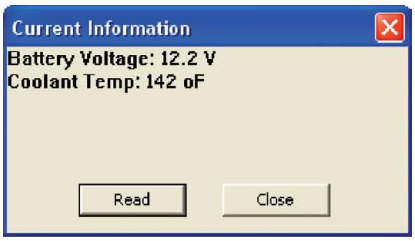



*Figure L.*

## Data Interpretation

The software displays information in Summary Statistics and Data Log form (see figure E). The following definitions provide guidance on the data displayed. For more information about the data displayed, refer to the X45 manual on www.proheat.com or contact Product Support at www.proheat.com

**NOTICE**

*The PCM data cannot be erased or reset. The data in permanently recorded in the PCM.*

### Summary Statistics Definitions

**Model** Proheat control module model and software version. For example, "PID 999800 X45-24V AUX INPUT MCI CUSTOM – FW Rev. D" has version D software and is a PID 999800 model.

**Power Hours** Power clock in the PCM. When power is applied, clock advances. When power removed, clock stops.

**Operation Hours** Number of hours the heater is operationally ON in any of the Standard, Preheat or Supplemental modes.

**Flame Hours** Number of hours that the heater is burning fuel.

**Total Cycles** Sequence of automatic operations by the PCM beginning with detecting temperature below the cycle on threshold and starting combustion, and ending with detecting temperature above the cycle off threshold and extinguishing combustion.

**Duty Cycle** Flame Hours/Operation Hours. Percentage of time that the heater is burning fuel when it is operationally ON.

**User Reference** User Reference data input.

**Heater Serial #** User input of heater serial number.

**PCM Serial #** User input of PCM serial number.

**Download Time** Date stamp provided by computer at download time.

## Data Log

**NOTICE**

*A reading of 338°C (640°F) indicates that the temperature sensor was NOT connected at time of data log.*

| | |
|---|---|
| **#** | Data row number. |
| **Timestamp YY/MM/DD HH:MM:SS.SS** | Time of data log. Note that the timestamp can be set to GMT (factory default) or can be changed to computer Local Time (see page 4). |
| **Power Hours** | Power Hour time stamp for the event. |
| **Op. Hours** | Operation Hour for the event. |
| **Op. Mode** | Software Operation Mode: Standard, Preheat or Supplemental. See the manual at www.proheat.com for more information on the Standard, Preheat and Supplemental Operation Modes. |
| **Op. State** | Software Operation State in which the Event occurs. |
| **Event** | Name of the software Event that occurs in the Operation State. |
| **Coolant Temp** | Coolant temperature sensor measurement. Note that the temperature units can be changed (see page 4). |
| **Battery** | Input voltage recording. |
| **Diagnostic Code** | Diagnostic code number and description. |

## Examples

Refer to Figure E, page 3 for the row that is interpreted in the following examples.

**1** Row **4**, GMT Timestamp **10/09/14 12:41:57.65** – At this timestamp the Power Hours are **2:21:32.2** (PCM has been powered for this length of time) and Op. Hours are **1:26:08.1** (PCM has had a signal to run for this length of time). In the **Standard** Op. Mode in the **Purge** Op. State, the PCM recorded a **Switched Off** Event. At the time of this event, the Coolant Temp was 100°F and the Battery voltage was 24.14 V.

**2** Row **26**, GMT Timestamp **10/09/14 12:30:44.33** – At this timestamp the Power Hours are **2:20:14.7** (PCM has been powered for this length of time) and Op. Hours are **1:25:05.3** (PCM has had a signal to run for this length of time). In the **Preheat** Op. Mode in the **Precheck** Op. State, the PCM recorded an **Ignition Coil Short** Event. At the time of this event, the Coolant Temp was 105°F and the Battery voltage was 24.80 V. The corresponding Diagnostic Code 10 was displayed to go along with the **Ignition Coil Short**. For more information about Code 10 diagnostics, refer to the X45 manual at www.proheat.com or contact Product Support at www.proheat.com

## USB-Serial Converter Set-up

1. The USB-Serial (RS232) converter must be configured to communicate through COM1, COM2 or COM3. The following instructions are for the Windows XP operating system. The instructions are similar for other Windows operating systems. If you need further assistance, please contact Product Support at www.proheat.com
2. Install the USB-Serial adaptor as per the manufacturer's instructions. The USB-Serial adaptor driver must be installed from the CD or the manufacturer's web-site.
3. Insert the USB-Serial adaptor into a USB port on the computer.
4. **Right-Click** on ***My Computer*** icon on the Desktop. Click on the ***Hardware*** tab and then the ***Device Manager*** button as shown in Figure M.

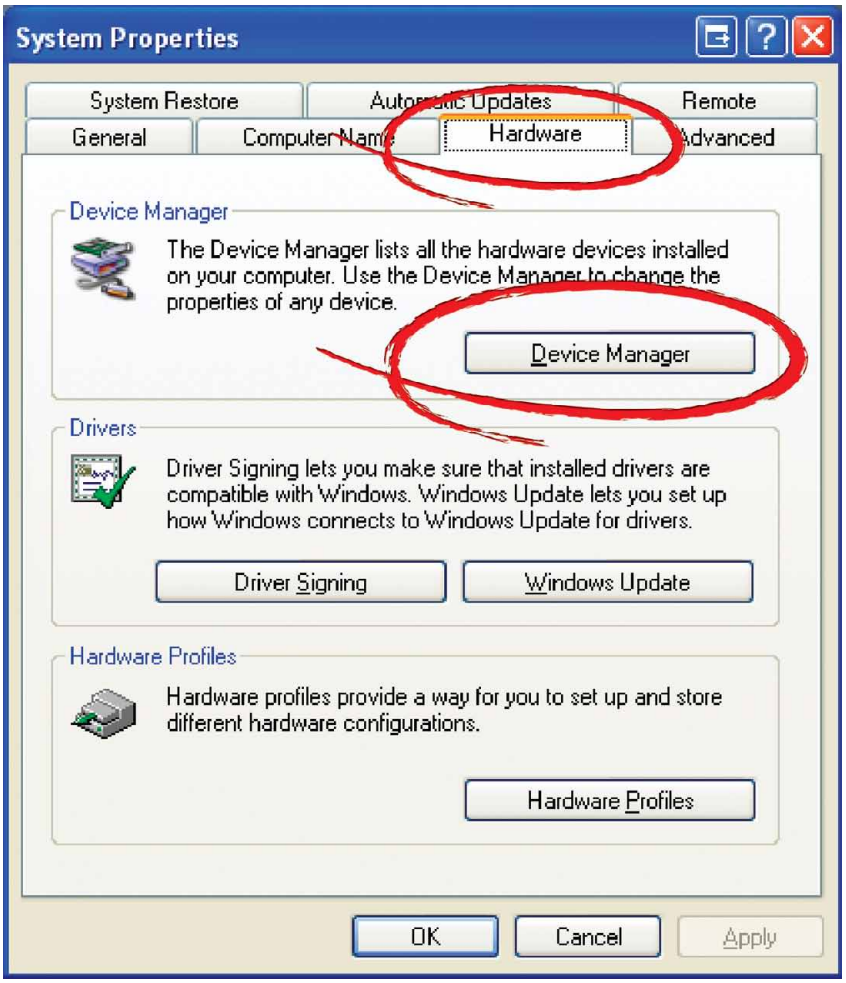



*Figure M.*

**NOTICE**

*The USB-Serial adaptor may not be defaulted to COM4. This is for example only.*

5. Expand the Device Manager window to see the ***Ports (COM & LPT)*** as shown in Figure N. Locate the USB-Serial Comm Port. In this example, it is defaulted to COM4.
6. **Right-click** on the adaptor and left-click on ***Properties***.

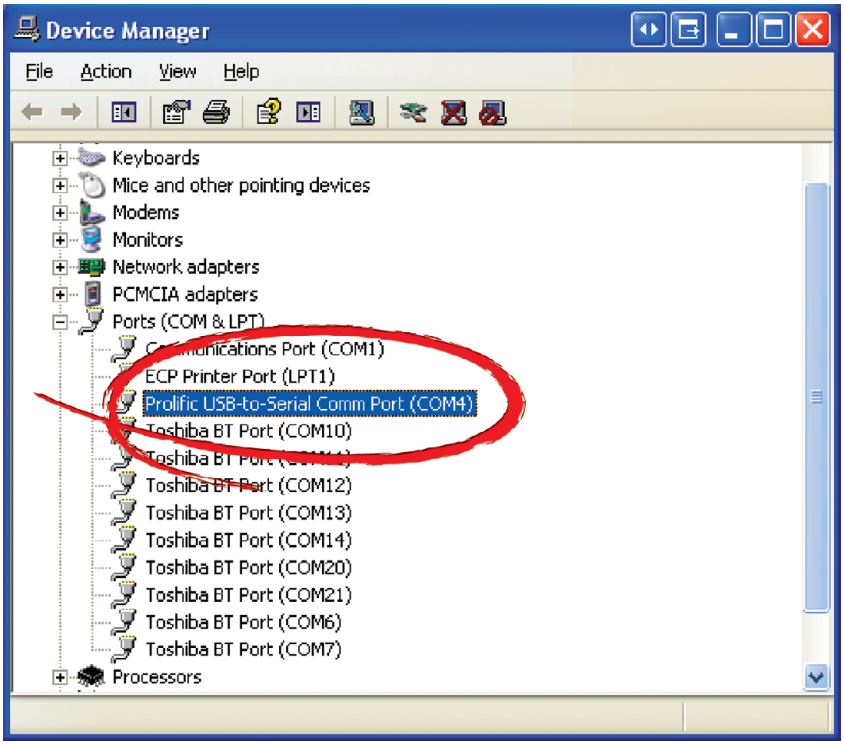



*Figure N.*

**7** Click on ***Port Settings*** and then the ***Advanced*** button as shown in Figure O.

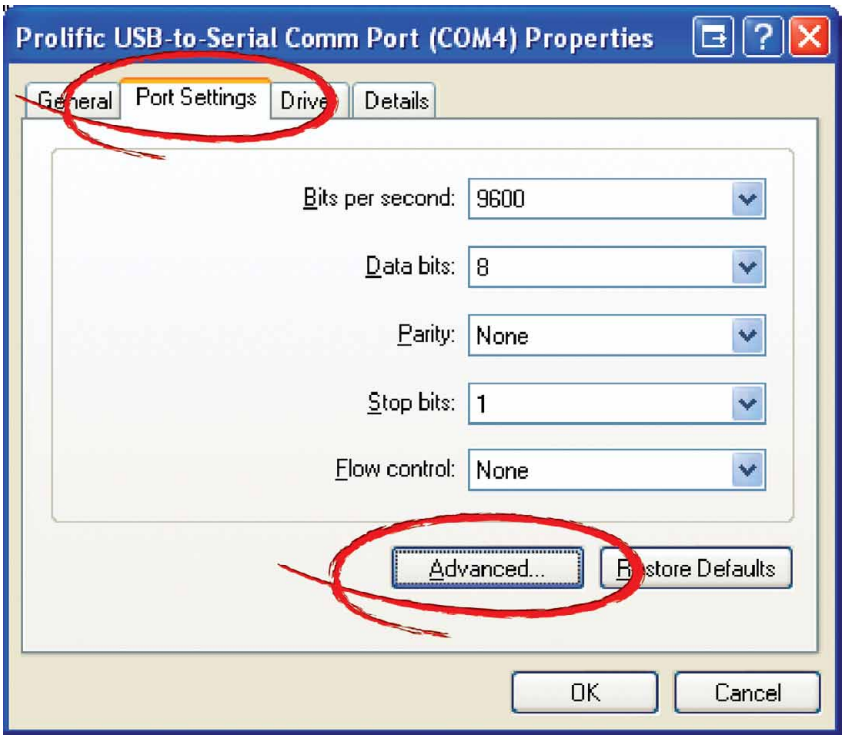



*Figure O.*

**NOTICE**

*The USB-Serial adaptor may not be defaulted to COM4. This is for example only.*

**8** Change the USB-Serial ***COM Port Number*** from the default to COM1, COM2 or COM3 as shown in Figure P. Click 'OK' to close the Advanced Settings for COM window followed by 'OK' to close the Communications Port Properties windows.

If COM1, COM2 or COM3 are all in use, repeat Steps 6–8 to reassign one of the ports to free up COM1, COM2 or COM3 and then repeat Steps 6–8 to assign the USB-Serial to COM1, COM2 or COM3. For example, reassign COM1 to COM30 and then assign the USB-Serial to COM1.

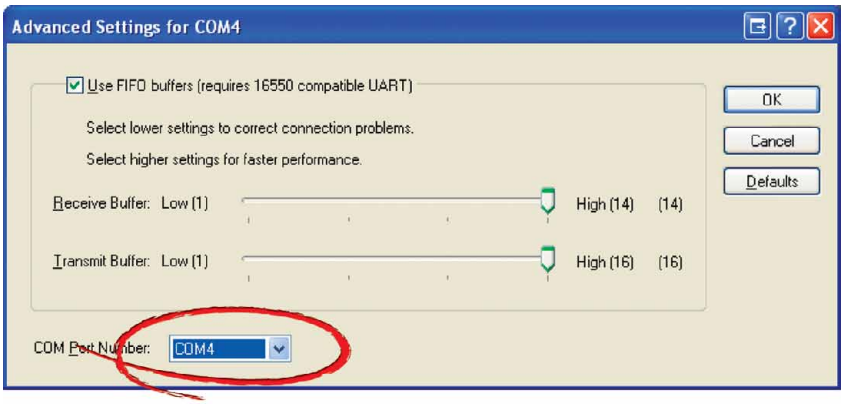



*Figure P.*

**9** The USB-Serial converter is now set-up to communicate with the software. Go to ***Software Installation*** followed by ***How to Run the Program.***