Twin Tec
User Instructions for TC88A Log Software

CAUTION: CAREFULLY READ INSTRUCTIONS BEFORE PROCEEDING. NOT LEGAL FOR SALE OR USE IN CALIFORNIA OR ON ANY POLLUTION CONTROLLED VEHICLES.

OVERVIEW

TC88A Log software runs under Microsoft Windows XP/Vista/7. This software allows users of the TC88A ignition to view real time engine data during dyno tuning and to download and to display data logged by the unit including operating statistics and historical diagnostic codes.

Using the software requires the Twin Tec USB Interface P/N 18014 for PC connectivity. The USB interface is compatible with Windows XP/Vista/7. The PC must have a free USB port. If you have an older PC without USB capability, you cannot use the software. For USB driver installation, COM port configuration, and module connections, please refer to the USB interface instructions.

After TC88A Log is launched, the main screen appears blank. You have multiple display options. You can display real time engine data on an instrument panel type screen by using the View Real Time Data command on the View menu. You can display data logged by the TC88A unit on a chart recorder type screen. You can also view engine operating statistics logged by the TC88A unit. Data logged by the TC88A unit must be downloaded before it can be displayed, by using the Download Data From TC88A command on the Communications menu. Once data has been downloaded, it is automatically displayed on a chart recorder type screen. You can view the engine operating statistics by using the View Statistics command from the View menu. You can save this data by using the Save File command from the File menu. You can display a previously saved data file by first using the Open File command on the File menu and then using the View Chart or View Statistics commands on the View menu.

A sample data file (Sample.log) is included in the program folder.

PC REQUIREMENTS

We recommend a laptop with Pentium processor and super VGA display (SVGA with 1024 x 768 pixel resolution) running Windows XP/Vista/7. Data display is graphics intensive and a high speed Pentium processor is recommended. Processors slower than 300 MHz will exhibit sluggish program loading and response. The PC must have a available USB port.

TC88A Log includes print commands to print downloaded data. The program has been tested with Hewlett-Packard laser and inkjet printers and Epson inkjet printers. We recommend using a color inkjet printer.

SOFTWARE INSTALLATION

The software is supplied in the form of a compressed file downloaded from our website. The installation process uses InstallShield. This industry standard installer is based the new Microsoft Windows Installer service that greatly reduces potential problems such as version conflicts and allows for application self-repair.

Before proceeding with installation, shutdown any other applications that may be running. For Windows Vista, you must disable the User Account Control (UAC) during installation. If you are not familiar with the UAC, please refer to the Vista UAC Tech Note on our website's Tech FAQ for details.

Use the Windows Explorer to run the setup.exe file downloaded from our website. InstallShield will install the software in an appropriate folder under Program Files.

Once InstallShield has completed the installation, TC88A Log will appear on the Windows Start Menu. You can then launch it just as you would any other Windows program.

TC88A Log requires the Monospace 821 BT fixed pitch printer font in order to properly align columns when printing. The Monospace 821 BT font is included in the distribution media and automatically copied to your Windows Fonts folder during installation. A backup copy is also placed in the program folder. If you accidentally delete this font, use the Install New Font command from the Fonts folder File menu. The filename associated with Monospace 821 BT is monos.ttf.

TC88A CONNECTION

Connect the USB interface. Turn the ignition key and engine run/stop switches on to provide power to the ignition. Do not start the engine.

If the ignition module has been removed from the motorcycle, you can do bench top programming by using an adapter harness that includes a small 12 volt DC power supply.

After the program is launched, the main screen appears. The program uses COM1 as the default port. In most cases, you will have configured the USB interface to use a different COM port, such as COM5. Use the Port Setup command on the Communications menu to select the correct COM port. The program will remember the new port setup.

REAL TIME ENGINE DATA DISPLAY

When the engine is running, you can display real time engine data on an instrument panel type screen by using the View Real Time Data command on the View menu. Please note that real time engine data cannot be directly saved by means of the TC88A Log program. However, this data is constantly being logged by the TC88A unit and can be downloaded (for example at the end of series of dyno runs).

Real time engine data is displayed on an instrument panel type layout with round tach and speedometer gauges and bar graph type gauges for all other parameters. Diagnostic codes and system status messages are displayed in additional windows. If the engine is not running, most values will appear as zero or off.

Displayed parameters include:

RPM – engine crankshaft RPM (numeric value displayed beneath gauge)

VSS – vehicle speed in MPH or KPH (numeric value displayed beneath gauge)

MAP – manifold pressure in In-Hg or kilopascals (29.92 In-Hg or 101.3 kPa corresponds to sea level atmospheric pressure)

BAT – battery voltage

FRONT ADV, REAR ADV – ignition advance in degrees BTDC

You can also select the vehicle speed, temperature, and pressure units used for real time engine data display and data logging chart display. Use the Units Selection command on the Edit menu. A dialog box will appear as shown in Figure 2. You can select miles per hour (MPH) or kilometers per hour (KPH) vehicle speed units, Farenheit (F) or Celsius (C) temperature units, and inches of mercury (In-Hg) or kilopascals (kPa) manifold pressure units. The program remembers the selections you have made.

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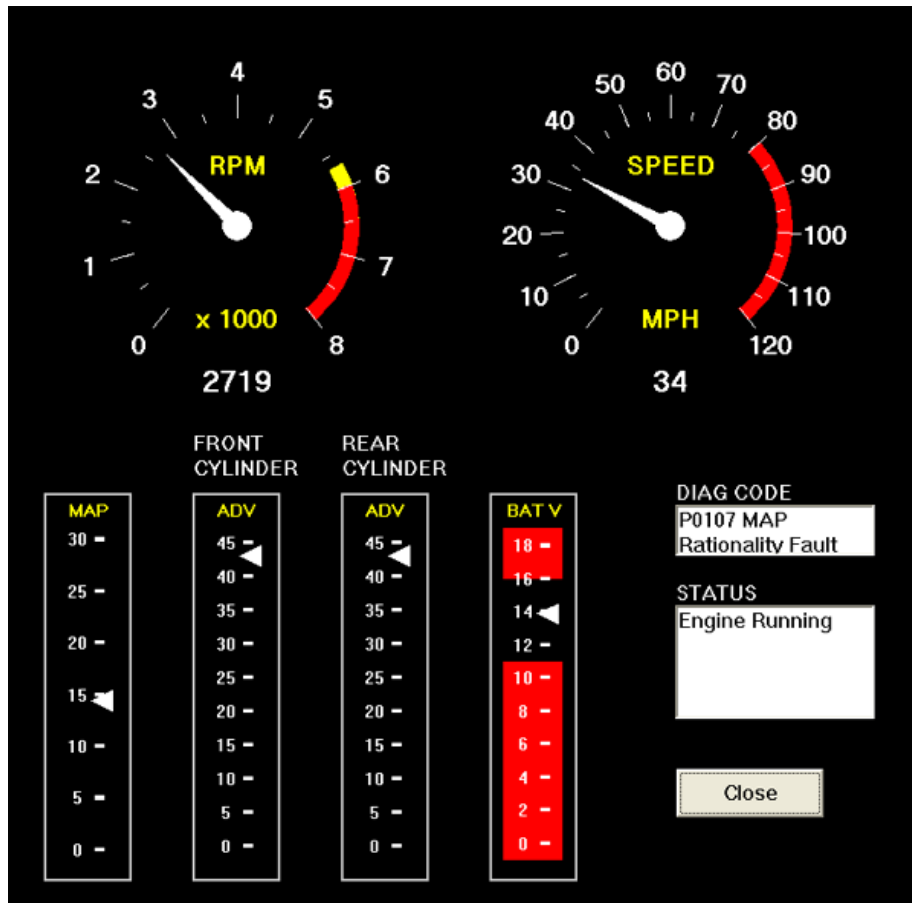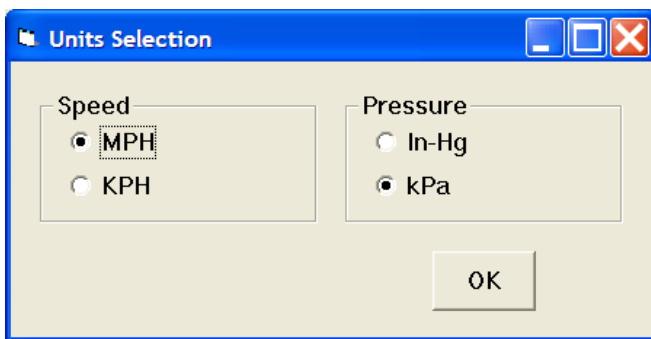
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Figure 1 – Real Time Engine Data Display

Figure 2 – Units Selection

The last data logged will appear at the right end of the chart. You can save the data by using the Save File command from the File menu after closing the chart display (data is not lost by closing the chart display). You can display a previously saved data file by first using the Open File command on the File menu and then using the View Chart command on the View menu.

Please note that real time engine data cannot be directly saved by means of the TC88A Log program. However, this data is constantly being logged by theTC88A unit and can be downloaded (for example at the end of series of dyno runs).

Note that TC88A data files use a .log extension. You should create a separate folder to store these files.

You have a range of capabilities for analyzing downloaded data displayed in the chart recorder format. You can select two parameters for display.

DATA LOGGING CHART DISPLAY

You can also display data logged by the TC88A unit on a chart recorder type screen. Data logged by the TC88A unit must be downloaded before it can be displayed, by using the Download Data From TC88A command on the Communications menu. Once data has been downloaded, it is automatically displayed.

Trace 1 is displayed in red with its Y axis legends on the left side of the chart. Trace 2 is displayed in green with its Y axis legends on the right side of the chart.

The X axis is always elapsed time. You can select from one of three time scales. You can use the scroll bar to move the chart display window in terms of elapsed time. If you hold the left mouse button down within the chart area, a cursor line appears. The exact values of the parameters displayed on trace 1 and trace 2 and the elapsed time appear in windows above the chart. If you want to analyze the elapsed time between two events (for example the time required to accelerate from 0 to 60 MPH), you can move the cursor to the first event and then click on the Reset Time Display button. You can print the displayed chart to any Windows printer by clicking on the Print button (a color inkjet printer is recommended for best results).

Figure 3 – Data Logging Chart Display
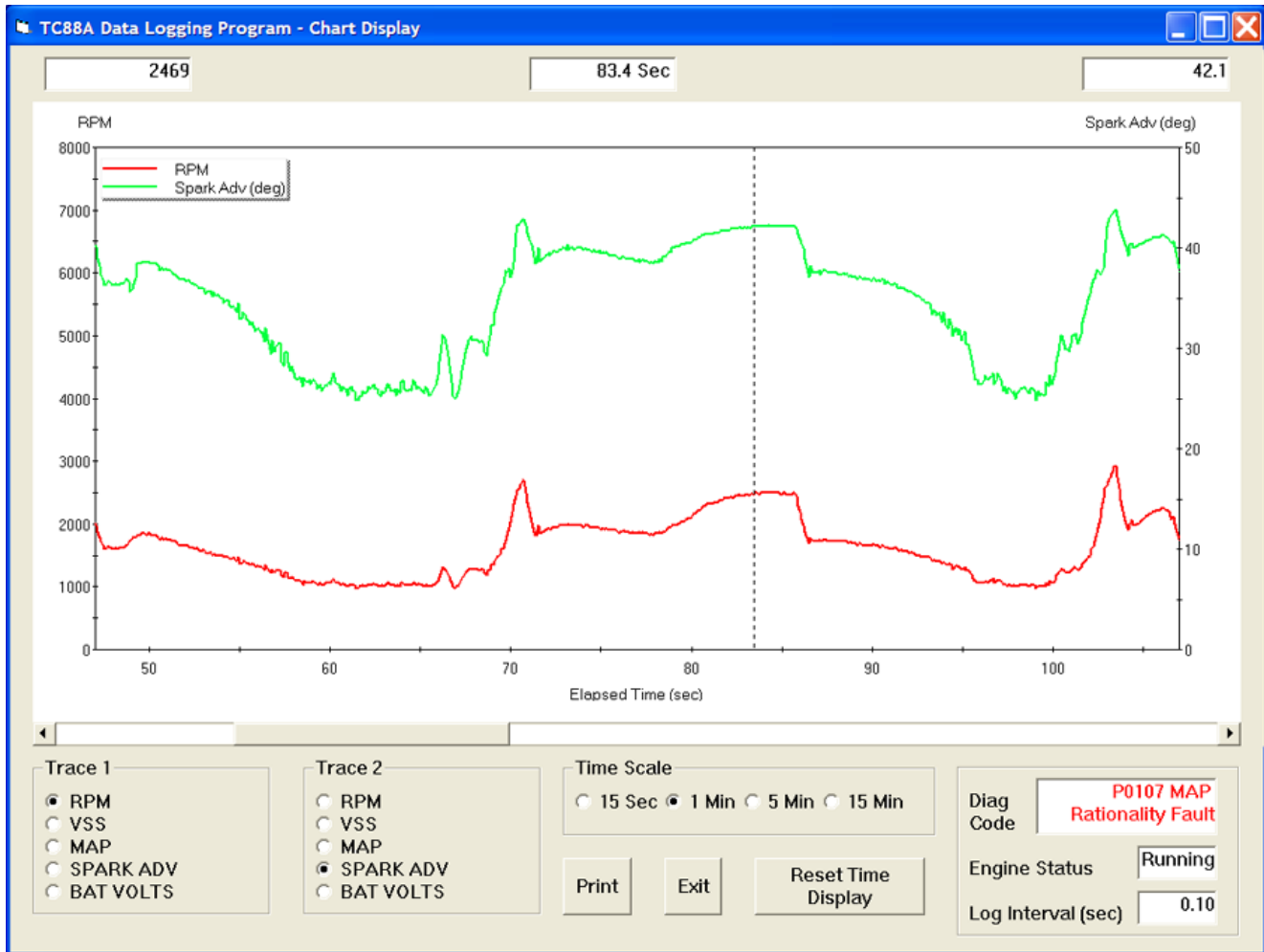
Data parameters include:

RPM – engine crankshaft RPM

VSS – vehicle speed in MPH or KPH

MAP – manifold pressure in In-Hg or kilopascals (29.92 In-Hg or 101.3 kPa corresponds to sea level atmospheric pressure)

SPARK ADV – front cylinder ignition advance in degrees BTDC

BAT – battery voltage

Additional data is displayed at the lower right side of the screen. This data includes:

Diagnostic Code – normally blank unless a diagnostic code is set. Refer to the TC88A installation instructions for details.

Engine Status – Off or Running.

Log Interval – the actual data logging interval in seconds

The TC88A data buffer stores the **last** 4000 data points. With a nominal data logging interval of 0.50 seconds, this corresponds to 33 minutes of data. You can set higher or lower data logging intervals by means of the Edit TC88A Parameters command on the Edit menu. Data logging intervals of 0.5-1.0 seconds are suitable for on-road tests; a shorter interval of 0.10 seconds is recommended for dyno tuning. After you enter a new data logging interval, click on Upload to TC88A.

You can clear the data within the TC88A by using the Clear TC88A Data Buffer command from the Communications menu. If you change the data logging interval, you should also clear the TC88A data buffer.

OPERATING STATISTICS

You can also display engine operating statistics, including historical diagnostic codes, logged by the TC88A unit. Data logged by the TC88A unit must be downloaded before it can be displayed, by using the Download Data From TC88A command on the Communications menu. Once data has been downloaded, you can use the View Statistics command from the View menu. You can save the operating statistics data by using the Save File command from the File menu. Please note that data for historical diagnostic codes is not saved. You can display a previously saved data file by first using the Open File command on the File menu and then using the View Statistics command on the View menu.

Note that TC88A data files use a .log extension. You should create a separate folder to store these files.

The data is fairly self-explanatory. Total hours represents the total time that the engine was running. ID represents the firmware identification. This field typically includes the manufacturer (Twin Tec), model number, program revision and author's initials, and date. Note that the date is not a manufacturing date code, just the date for the particular firmware release.

Elapsed time is displayed for 13 RPM bands from idle to 6999 RPM. Note that elapsed time data is rounded off during each engine run, so the sum of the elapsed time figures may not precisely match the total hours. The program also displays the maximum engine RPM, time at the RPM limit (in seconds for better resolution) and the number of engine starts.

Clicking on the Print Statistics button prints a report. When you click on this button, a small data entry screen pops up and allows you to add a serial number or comment that will appear on the printout. You can also use the Print command from the File menu.

Figure 4 - Operating Statistics Display

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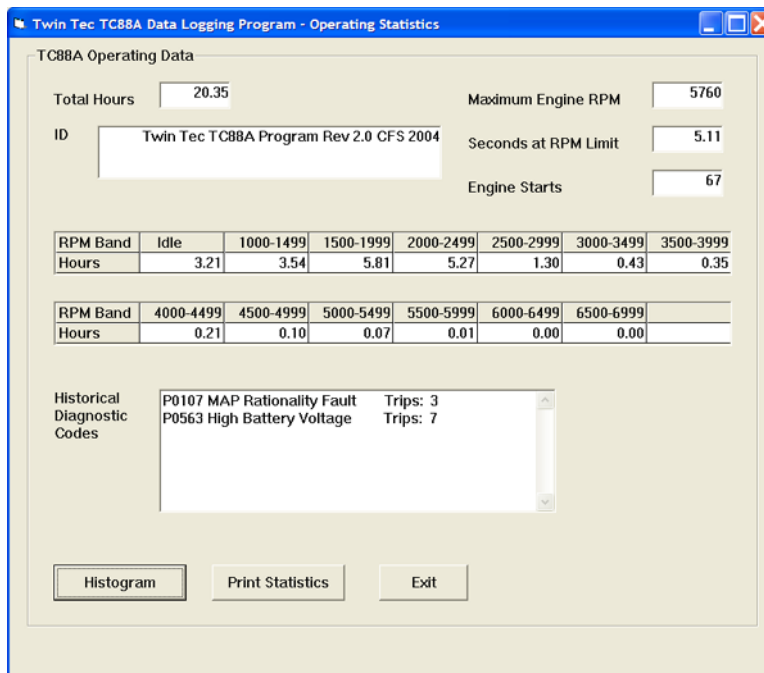
Figure 5 - Operating Statistics Histogram Chart
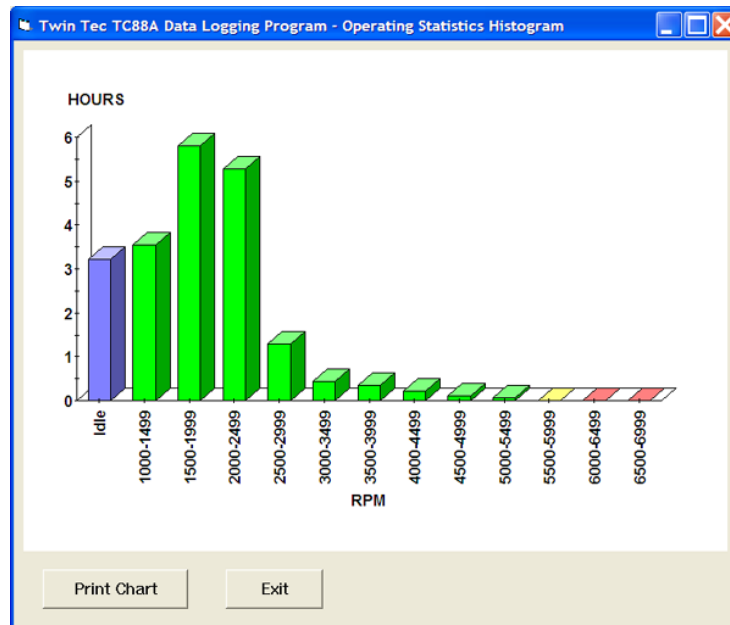
Any historical diagnostic codes logged by the TC88A are listed along with the number of trips (engine start cycles) since the individual code was last logged. Codes are automatically cleared after 50 trips.

Customers are often confused about the meaning of the term "trips." This is an industry standard terminology. If a code shows 40 trips, it means that the code was set 40 engine start cycles ago, not that the code has been set 40 times.

Refer to the TC88A instructions for further information about diagnostic codes. You can clear historical diagnostic codes by using the Clear Historical Diagnostic Codes command from the Communications menu.

The elapsed time data in the various RPM bands can be displayed in the form of a histogram chart by clicking on the Histogram button.

Color coding of the bars helps to interpret the data. The idle RPM band is blue, normal operating RPM bands are green and high RPM bands are yellow and red. The chart is automatically scaled for best display. You can print the chart along with a complete statistics report by clicking on the Print Chart button.

IMPORTING DATA INTO EXCEL

Data files saved from TC88A Log are in comma delimited ASCII format. You can easily import a data file into other programs such as Microsoft Excel for further analysis. You can also view data files with a text editor such as Windows WordPad. To import a data file into Excel:

1. Start Excel. In the File Open dialog box, select Files of type: All Files (*.*). Then browse for the data file.

2. The Text Import Wizard appears. For step 1, select delimited file type. For step 2, select comma delimiter. For step 3, select general column data format. Then click on Finish.

3. You can then format the data and save the spreadsheet as an Excel file.

TROUBLESHOOTING FLOWCHART

Follow the troubleshooting flowchart shown on the next page. Experience has shown that most communication problems are user error or PC compatibility issues.

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Troubleshooting Flowchart

```
                         ┌─────────────┐
                         │  STARTING   │
                         │   POINT     │
                         └──────┬──────┘
                                │
                    ┌───────────────────────────┐
                    │ IS RS-232 TIMEOUT ERROR    │
                    │ MESSAGE DISPLAYED WHEN      │
                    │ ATTEMPTING DOWNLOAD OR      │
                    │ UPLOAD?                     │
                    └──────┬──────────────┬───────┘
                       YES │           NO │
                           │              │        ┌──────────────────────┐
                           │              └────────│ FOR MISC PROBLEMS,    │
                           │                       │ CALL TECH SUPPORT.    │
                           │                       └──────────────────────┘
                    ┌──────────────────┐
                    │ PRODUCT VERSION? │
                    └──┬────────────┬──┘
            TWIN CAM   │            │  EVO SERIES
       ┌───────────────┘            └───────────────────┐
┌──────────────────────────┐      ┌──────────────────────────┐
│ CYCLE ENGINE RUN/STOP     │      │ CYCLE ENGINE RUN/STOP     │
│ SWITCH. VERIFY CHECK      │      │ SWITCH. VERIFY STATUS     │
│ ENGINE LIGHT ILLUMINATED. │      │ LED ILLUMINATED.          │
│ IS PROBLEM FIXED?         │      │ IS PROBLEM FIXED?         │
└────┬──────────────┬───────┘      └────┬──────────────┬───────┘
 YES │           NO │                YES│            NO│
┌─────────┐         │              ┌─────────┐   ┌──────────────────────────┐
│  DONE   │         │              │  DONE   │   │ CONNECT BLACK ALLIGATOR   │
└─────────┘         │              └─────────┘   │ CLIP ON USB INTERFACE TO  │
                    │                            │ BATTERY GROUND (-)        │
                    │                            │ TERMINAL. IS PROBLEM      │
                    │                            │ FIXED?                    │
                    │                            └────┬──────────────┬───────┘
                    │                              NO │          YES │
                    │                                 │              │  ┌─────────┐
                    │                                 │              └──│  DONE   │
                    │                                 │                 └─────────┘
         ┌───────────────────────────┐
         │ USE WINDOWS DEVICE MANAGER │
         │ TO VERIFY THAT CORRECT COM │
         │ PORT IS SELECTED. IS       │
         │ PROBLEM FIXED?             │
         └────┬──────────────┬────────┘
          YES │           NO │
       ┌─────────┐       ┌──────────────────────┐
       │  DONE   │       │ CALL TECH SUPPORT     │
       └─────────┘       └──────────────────────┘
```