Twin Tec
User Instructions for PC Link TC88 Software

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

OVERVIEW

PC Link TC88 software runs under Microsoft Windows XP/Vista/7/8/10. The TC88 version of PC Link software allows the user to program our ignitions for Twin Cam 88® series engines with custom advance tables and other engine parameters.

Using the software requires the Twin Tec USB Interface P/N 18014 for PC connectivity. The USB interface is compatible with Windows XP/Vista/7/8/10. 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.

Please note that the PC link software cannot access restricted private label products other than those authorized.

PC REQUIREMENTS

We recommend a laptop with Pentium processor and super VGA display (SVGA with 1024 x 768 pixel resolution) running Windows XP/Vista/7/8/10. 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 an available USB port.

PC Link TC88 includes a print command that prints advance table graphics and other engine parameters. 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, shut down 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.

The PC_Link_TC88.cfg file contains access codes for restricted private label products. You will only be able to access those products for which this file contains valid access codes.

Once InstallShield has completed the installation, PC Link TC88 will appear on the Windows Start Menu. You can then launch it just as you would any other Windows program.

PC Link TC88 requires the Monospace 821 BT fixed pitch printer font in order to properly align columns when printing advance tables. 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.

SOFTWARE OPERATION

After PC Link TC88 is launched, the main screen appears blank. You have three options for obtaining advance table data for editing. You can open a previously saved advance table file by using the Open Table command on the File menu, create a new table by using the New Table command on the File menu (refer to Figure 1), or download data from an attached module by using the Download From EEPROM command on the Communications menu.

Note that advance table data files use a .tbl extension. Create a separate folder to store these files.

Daytona Twin Tec, 240 Springview Commerce Dr. Bldg 1-J, Debary FL 32713   PC Link TC88
(386) 304-0700   www.daytona-twintec.com   8/2021
Page 1

Once you have advance table data, you can edit the data by clicking on and dragging individual points on the 3D chart display (refer to Figure 3) or you can directly edit numeric data on the spreadsheet grid. You can also rotate the 3D chart display for a better view of a particular region.

After you have completed editing the advance table data, you can display and edit the associated engine parameters by using the Edit Module Parameters command on the Edit menu (refer to Figure 4).

Once the appropriate parameters have been entered, you can print the data using the Print Table command on the Print Menu. You can save the edited advance table by using the Save Table command on the File menu.

You can upload the advance table data and engine parameters to an attached module by using the Upload to EEPROM command on the Communications menu.
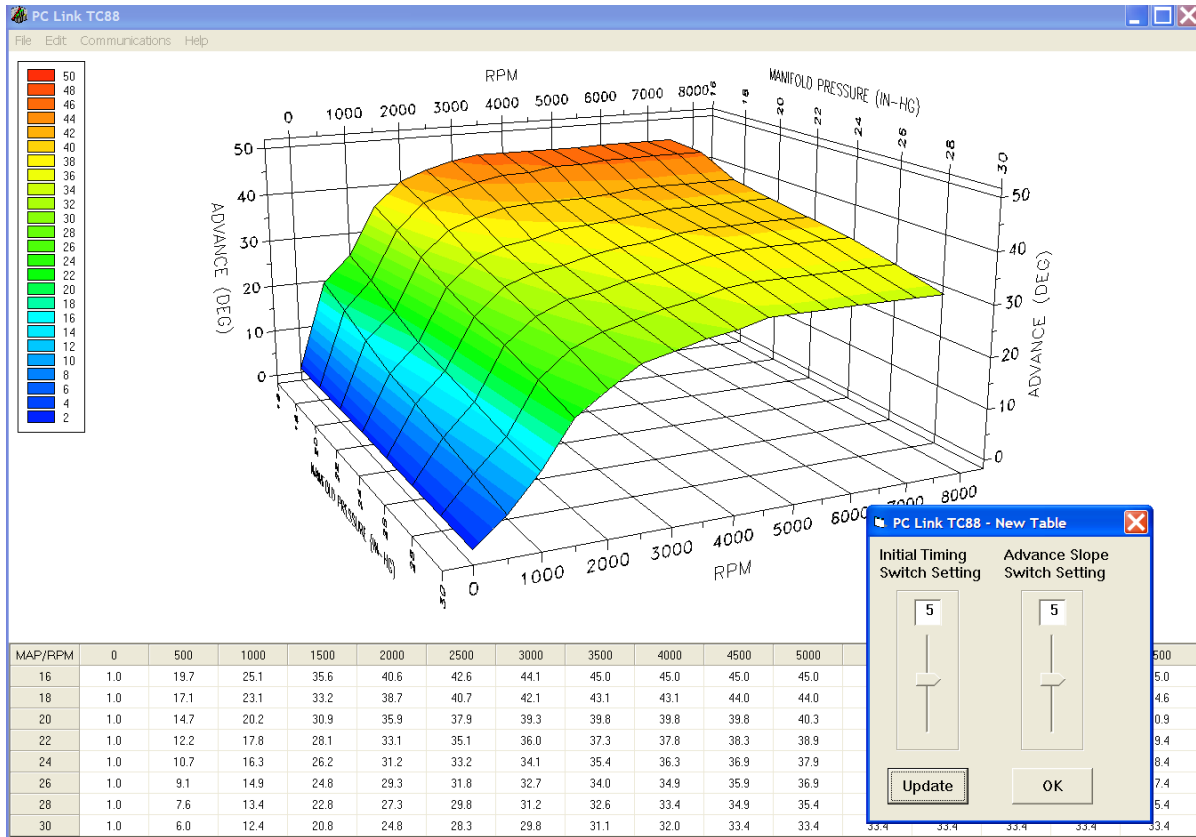
CREATING A NEW ADVANCE TABLE

Use the New Table command on the File menu. The dialog box shown in Figure 1 appears. You can enter initial timing and advance slope switch settings. Each time you click on Update, the corresponding advance table is displayed. The advance values are exactly what the module would interpolate from the factory programmed minimum and maximum advance tables in FLASH memory with the same switch settings.

You will find the New Table command useful for generating an advance table that will serve as a starting point for further edits. When you are ready to proceed with editing, click on OK.

The New Table command is also useful for checking out exactly what advance would be generated for any given switch settings.

Module parameters are not changed when you create a new advance table. **Always check the module parameters after you create a new advance table.**

Daytona Twin Tec, 240 Springview Commerce Dr. Bldg 1-J, Debary FL 32713   PC Link TC88
(386) 304-0700   www.daytona-twintec.com   8/2021

Page 2

Figure 1 - Creating a New Advance Table

MAP/RPM	0	500	1000	1500	2000	2500	3000	3500	4000	4500	5000				500
16	1.0	19.7	25.1	33.2	40.6	42.6	44.1	45.0	45.0	45.0	45.0				5.0
18	1.0	17.1	23.1	33.2	38.7	40.7	42.1	43.1	43.1	44.0	44.0				4.6
20	1.0	14.7	20.2	30.9	35.9	37.9	39.3	39.8	39.8	39.8	40.3				0.9
22	1.0	12.2	17.8	28.1	33.1	35.1	36.0	37.3	37.8	38.3	38.9				9.4
24	1.0	10.7	16.3	26.2	31.2	33.2	34.1	35.4	36.3	36.9	37.9				8.4
26	1.0	9.1	14.9	24.8	29.3	31.8	32.7	34.0	34.9	35.9	36.9				7.4
28	1.0	7.6	13.4	22.8	27.3	29.8	31.2	32.6	33.4	34.9	35.4				5.4
30	1.0	6.0	12.4	20.8	24.8	28.3	29.8	31.1	32.0	33.4	33.4	33.4	33.4	33.4	33.4

Editing Table Data

You can edit table data using standard Windows copy and paste operations by selecting cells and then clicking the right mouse button to pop-up the edit menu. You can select cells by dragging the mouse with left button down. You can also use the Modify command on the pop-up menu. When you enter a value, the presence of optional sign (+ or -) or percent (%) characters affects the outcome of the Modify command.
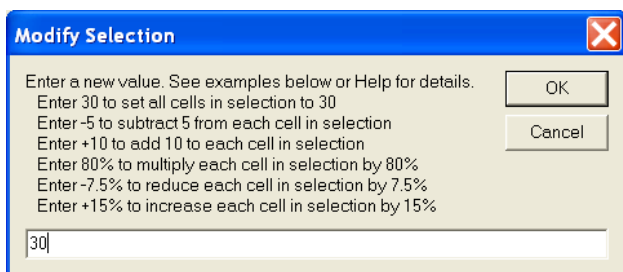
Figure 2 – Modify Command

Chart Operations

You can rotate the 3D chart display for a better view of a particular region by dragging the mouse while holding both mouse buttons down.

PC Link TC88 is intended to be an open system and uses the Component One Chart 7.0 3D charting control. The adventurous user can experiment with the chart property pages by right clicking on the chart. Almost any chart property can be changed. Click on the Help button for more information. If you corrupt the chart, exit and restart PC Link TC88.

Data Export and Import by Means of Drag and Drop

You might want to export or import 3D table data to or from another application such as Microsoft Excel. Arrange the program windows so that both the source and destination are visible (one on the left side of the screen and the other on the right side seems to work best). You must be able to see the information you want to drag as well as the location where you want to drop it. To export from PC Link TC88 to Excel,

Daytona Twin Tec, 240 Springview Commerce Dr. Bldg 1-J, Debary FL 32713   PC Link TC88
(386) 304-0700   www.daytona-twintec.com   8/2021
Page 3

use the left mouse button to select a range of data on the spreadsheet grid. Then move the mouse cursor to an edge around the selection. Hold the left mouse button down and drag the selection into Excel. Release the left mouse button on the top left cell in Excel. When importing into PC Link TC88 from Excel, use the same procedure, except that Excel requires dragging and dropping with the right mouse button.

DOWNLOADING DATA FROM EEPROM

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.

Download data by using the Download From EEPROM command on the Communications menu. If you attempt to access a restricted private label module, the program will display a warning message and abort the download process. Otherwise, the program will display the module's firmware ID.

If the download process is successful, the advance table data will be displayed for editing. Module parameters (explained further on) are also downloaded and can be displayed using the Edit Module Parameters command on the Edit menu.

Twin Tec ignitions are shipped from the factory with a default advance table loaded into EEPROM memory. This is the same as the maximum advance table stored in permanent FLASH memory. If you have never uploaded any custom advance table to EEPROM memory, this default table is what you will see.

Please note that no relationship exists between the advance data downloaded from EEPROM and any switch settings on the module. Also note that the minimum and maximum advance tables stored in

FLASH memory are permanent and cannot be changed or directly accessed.

EDITING ADVANCE TABLE DATA

Once you have advance table data, you can edit the data by clicking on and dragging individual points on the 3D chart display (refer to Figure 3) or you can directly edit numeric data on the spreadsheet grid.

The table consists of 16 columns corresponding to 500 RPM increments from zero to 7,500 RPM and 8 manifold pressure (MAP) rows from 16 to 30 In-Hg. The 7,500 RPM advance value is used at all higher RPM levels and the 16 In-Hg MAP advance value is used at all lower MAP levels.

Note that 16 In-Hg corresponds to a high vacuum deceleration or idle condition and that 30 In-Hg corresponds to wide open throttle (WOT). Advance values must be between zero and 45 degrees.

You can shift the entire advance table up or down by holding the Shift key down while dragging any point. The chart label box shows the shift in degrees. When you release the mouse button, the chart and spreadsheet grid values will be updated. Response of the chart label box may be sluggish on slower systems due to the amount of data being updated.

Editing Table Data

You can edit table data using standard Windows copy and paste operations by selecting cells and then clicking the right mouse button to pop-up the edit menu. You can select cells by dragging the mouse with left button down. You can also use the Modify command on the pop-up menu. When you enter a value, the presence of optional sign (+ or -) or percent (%) characters affects the outcome of the Modify command as shown in Figure 2.

Figure 3 - Editing Advance Data

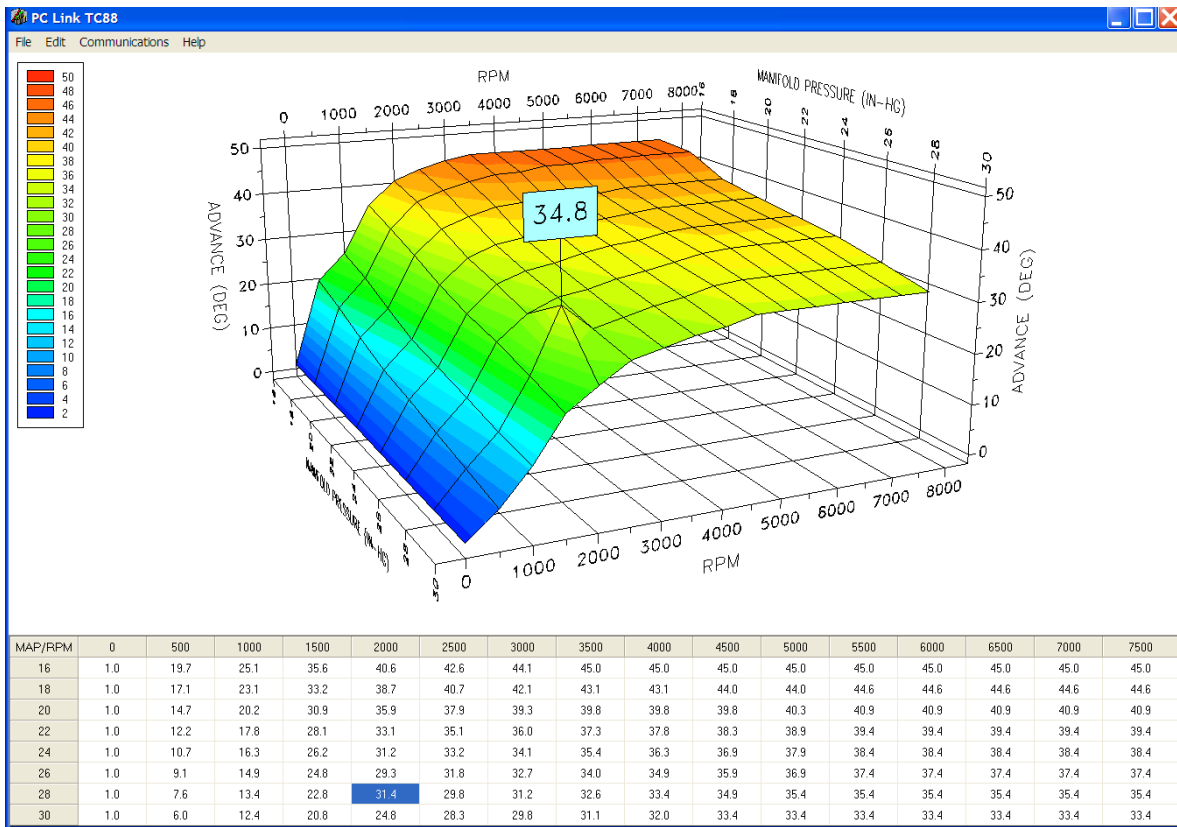| MAP/RPM	0	500	1000	1500	2000	2500	3000	3500	4000	4500	5000	5500	6000	6500	7000	7500
16	1.0	19.7	25.1	35.6	40.6	42.6	44.1	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0	45.0
18	1.0	17.1	23.1	33.2	38.7	40.7	42.1	43.1	43.1	44.0	44.0	44.6	44.6	44.6	44.6	44.6
20	1.0	14.7	20.2	30.9	35.9	37.9	39.3	39.8	39.8	39.8	40.3	40.9	40.9	40.9	40.9	40.9
22	1.0	12.2	17.8	28.1	33.1	35.1	36.0	37.3	37.8	38.3	38.9	39.4	39.4	39.4	39.4	39.4
24	1.0	10.7	16.3	26.2	31.2	33.2	34.1	35.4	36.3	36.9	37.9	38.4	38.4	38.4	38.4	38.4
26	1.0	9.1	14.9	24.8	29.3	31.8	32.7	34.0	34.9	35.9	36.9	37.4	37.4	37.4	37.4	37.4
28	1.0	7.6	13.4	22.8	31.4	29.8	31.2	32.6	33.4	34.9	35.4	35.4	35.4	35.4	35.4	35.4
30	1.0	6.0	12.4	20.8	24.8	28.3	29.8	31.1	32.0	33.4	33.4	33.4	33.4	33.4	33.4	33.4

Chart Operations

You can rotate the 3D chart display for a better view of a particular region by dragging the mouse while holding both mouse buttons down.

PC Link TC88 is intended to be an open system and uses the Component One Chart 7.0 3D charting control. The adventurous user can experiment with the chart property pages by right clicking on the chart. Almost any chart property can be changed. Click on the Help button for more information. If you corrupt the chart, exit and restart PC Link TC88.

Data Export and Import by Means of Drag and Drop

You might want to export or import 3D table data to or from another application such as Microsoft Excel. Arrange the program windows so that both the source and destination are visible (one on the left side of the screen and the other on the right side seems to work best). You must be able to see the information you want to drag as well as the location where you want to drop it. To export from PC Link TC88 to Excel, use the left mouse button to select a range of data on the spreadsheet grid. Then move the mouse cursor to an edge around the selection. Hold the left mouse button down and drag the selection into Excel. Release the left mouse button on the top left cell in Excel. When importing into PC Link TC88 from Excel, use the same procedure, except that Excel requires dragging and dropping with the right mouse button.

MODULE PARAMETERS

Module parameters are displayed in a dialog box, as shown in Figure 4, by using the Edit Module Parameters command on the Edit menu. Module parameters control the overall operation of the ignition module.

When PC Link TC88 is first started, default module parameters are loaded. Module parameters are updated whenever you download data from an ignition module or open an advance table file. Module parameters are saved along with the advance table data when you save an advance table. **Always check the module parameters before uploading data to an ignition module.**

Under Options, you can select either EEPROM Advance Table or FLASH Advance Tables.

You must select the EEPROM Advance Table option in order to force the module to use a custom advance table. If you make this selection, the module will use the advance values stored in the EEPROM based table, subject to any initial timing or rear cylinder offset. The advance slope switch will become inactive.

If you select the FLASH Advance Tables option, the module will use the factory programmed minimum and maximum advances tables in permanent FLASH memory and interpolate between these two tables based on the advance slope switch setting.

Figure 4 - Editing Module Parameters
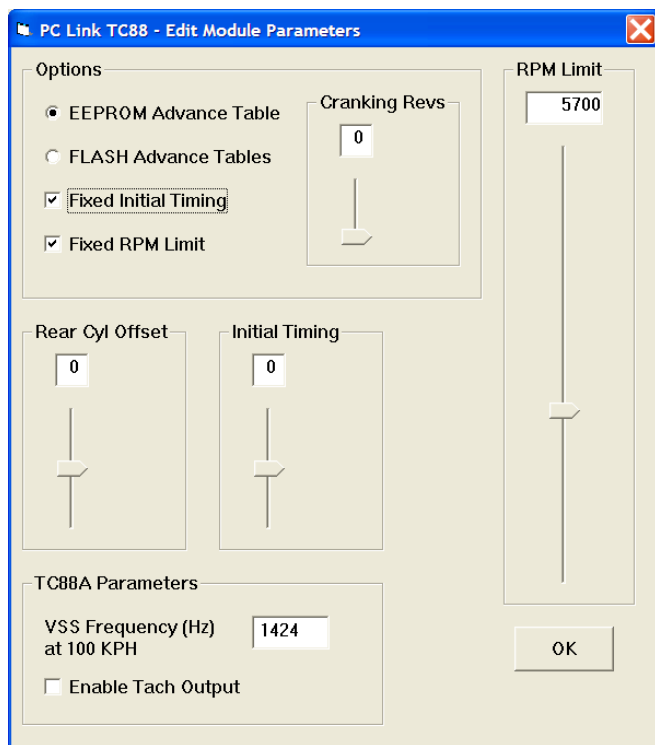
Regardless of the advance table selection, you can also select the Fixed Initial Timing and/or Fixed RPM Limit options. If you select one of these options, the corresponding slider control appears and allows you to enter a value. Fixed initial timing and RPM limit override any module switch settings. These options are primarily intended for engine builders and tuners.

If you select the Fixed Initial Timing option, we suggest that you always set the slider to zero (nominal setting) to avoid confusion and unexpected results. If you use a different setting, all the advance values will be shifted up or down. Please note that a slider setting of zero corresponds to a switch setting of 5.

Cranking Revs sets the number of engine revolutions before the ignitions fires the first spark. Most Twin Cam 88® engines will start best with a zero setting. Please note that a hot engine may exhibit preignition and appear to start on the first revolution even if the Cranking Revs parameter is set to a non-zero value.

You can also adjust the rear cylinder timing offset over a -5 to +5 degree range. Leave the slider midrange at zero if you do not require a rear cylinder timing offset.

Please note that the fixed initial timing and rear cylinder offset values are read out directly in degrees.

TC88A Parameters

The VSS (vehicle speed sensor) frequency parameter sets the correct speedometer and odometer scaling. Please refer to the following section for more details.

The Enable Tach Output option is applicable to TC88A units with firmware revision 2.0 and higher only. If you select this option, a 12 volt square wave tach signal (one pulse per revolution) will be present on pin 2 when the engine is running. This tach signal is compatible with most tachometers intended for 1999-2003 Twin Cam 88® applications and allows you to retrofit a wide range of tachometers to newer 2004-2006 models. Selecting this option disables real time data display with TC88A Log software.

SPEEDOMETER CALIBRATION (TC88A ONLY)

The VSS frequency parameter sets the correct speedometer and odometer scaling. You can find the exact value in the speedometer section of the factory service manual for your model. Use the frequency value at 100 KPH. Values for most 2004-2006 models are given in Table 1.

Daytona Twin Tec, 240 Springview Commerce Dr. Bldg 1-J, Debary FL 32713   PC Link TC88
(386) 304-0700   www.daytona-twintec.com   8/2021
Page 6

Table 1 – VSS Frequency at 100 KPH

Model	All exc. Japan	Japan Only
2004-2005 Sportster 883	1431 Hz	1635 Hz
2004-2005 Sportster 1200	1386 Hz	1526 Hz
2006 Sportster 883	1682 Hz	1682 Hz
2006 Sportster 1200	1624 Hz	1624 Hz
Dyna (exc. FXDP)	1424 Hz	1583 Hz
Dyna FXDP	1435 Hz	N/A
Softail (exc. FXSTD)	1403 Hz	1501 Hz
Softail FXSTD	1382 Hz	1506 Hz
Touring Models (exc. Police)	1375 Hz	1493 Hz
Touring Models (Police)	1435 Hz	1435 Hz

Speedometer Recalibration. You can easily recalibrate the speedometer (and odometer) to accommodate tire and gear changes. Run the motorcycle on a chassis dyno at a constant speed. Note the speedometer reading and the correct speed indicated on the dyno. Use the following formula to calculate the new VSS frequency parameter:

$$\text{New VSS Freq} = \frac{\text{Original VSS Freq} \times \text{Speedo Reading}}{\text{Indicated Dyno Speed}}$$

For example, if the original VSS frequency parameter was 1403 Hz, the speedometer reading is 60 MPH and the indicated dyno speed is 57 MPH, then the new VSS frequency parameter should be:

$$1476 \text{ Hz} = \frac{1403 \text{ Hz} \times 60 \text{ MPH}}{57 \text{ MPH}}$$

The speed units cancel out, so you can use either MPH or KPH units in the calculation as long as you use the same units for both the speedometer reading and dyno speed. For best accuracy, use a test speed near highway cruising speed.

VIN DATA

TC88A Rev 4.1 and later modules can report VIN data on the J1850 data bus. Correct VIN data may be required by some accessories.

Use the Edit TC88A VIN command to program the VIN.

If the TC88A firmware is updated using Mega Boot Programmer software, the VIN must be reentered. Note that the VIN is not stored as part of a TC88A advance table file and is not changed if a different advance table is uploaded.

UPLOADING DATA TO EEPROM

Refer to the Downloading Data from EEPROM section on page 4 for additional details.

Before uploading, make sure the module parameters are correct. If you want the module to use a custom advance table, you must select the EEPROM advance table option as explained on page 6.

Upload data by using the Upload To EEPROM command on the Communications menu. If you attempt to access a restricted private label module, the program will display a warning message and abort the upload process. A status message is displayed when the upload process has been successfully completed.

MODULE SWITCH SETTINGS

When you upload data, you do not have to change any module switch settings except initial timing.

Mode. Original TC88 only. The mode switch continues to function normally and allows you to enable or disable multi-spark.

Initial Timing. The initial timing switch continues to function normally unless you select the Fixed Initial Timing option in the Module Parameters dialog box prior to uploading, **To avoid confusion and unexpected results, we suggest that you always set the initial timing switch to 5 (nominal setting) after uploading a custom advance table.** If you use a different setting, all the advance values will be shifted up or down.

Advance Slope. If you select the EEPROM Advance Table option in the Module Parameters dialog box prior to uploading, the advance slope switch is disabled.

Daytona Twin Tec, 240 Springview Commerce Dr. Bldg 1-J, Debary FL 32713　　　　　　　PC Link TC88
(386) 304-0700　www.daytona-twintec.com　　　　　　　　　　　　　　　　　　　　　　8/2021

Page 7

RPM Limit. If you select the Fixed RPM Limit option in the Module Parameters dialog box prior to uploading, the RPM limit switches are disabled. **However, on TC88A modules, setting the RPM limit switches to zero will disable the module.**

TROUBLESHOOTING FLOWCHART

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

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 SWITCH. VERIFY CHECK ENGINE LIGHT ILLUMINATED. IS PROBLEM FIXED?

YES   NO

DONE

CYCLE ENGINE RUN/STOP SWITCH. VERIFY STATUS LED ILLUMINATED. IS PROBLEM FIXED?

YES   NO

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