Twin Tec — User Instructions for PC Link Evo Software

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

OVERVIEW

PC Link Evo software runs under Microsoft Windows XP/Vista/7. The Evo version of PC link software allows the user to program our ignitions for Evolution® series engines with custom advance tables and other engine parameters. These ignitions use the brown tachometer wire for the link to a laptop computer. An optional USB Interface is required.

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.

Please note that PC Link Evo 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. 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 CDROM drive for program loading and an available USB port.

PC Link Evo 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 on CDROM media or 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 or the Run command from the Windows Start Menu to launch setup.exe in the PC_Link_Evo folder on the CDROM or the setup.exe file downloaded from our website. InstallShield will install the software in an appropriate folder under Program Files.

The PC_Link_Evo.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 Evo will appear on the Windows Start Menu. You can then launch it just as you would any other Windows program.

PC Link Evo 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 Evo 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 Twin Tec module by using the Download From EEPROM command on the Communications menu.

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

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

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).

Figure 1 - Creating a New Advance Table

MAP/RPM	0	500	1000	1500	2000	2500	3000	3500	4000	4500	5000					7500
Low	5.0	10.0	18.3	24.3	30.2	31.5	32.8	32.8	32.8	32.8	32.8					32.8
WOT	5.0	5.0	10.9	17.3	23.0	27.6	28.6	29.7	30.7	31.8	32.8	32.8	32.8	32.8	32.8	32.8
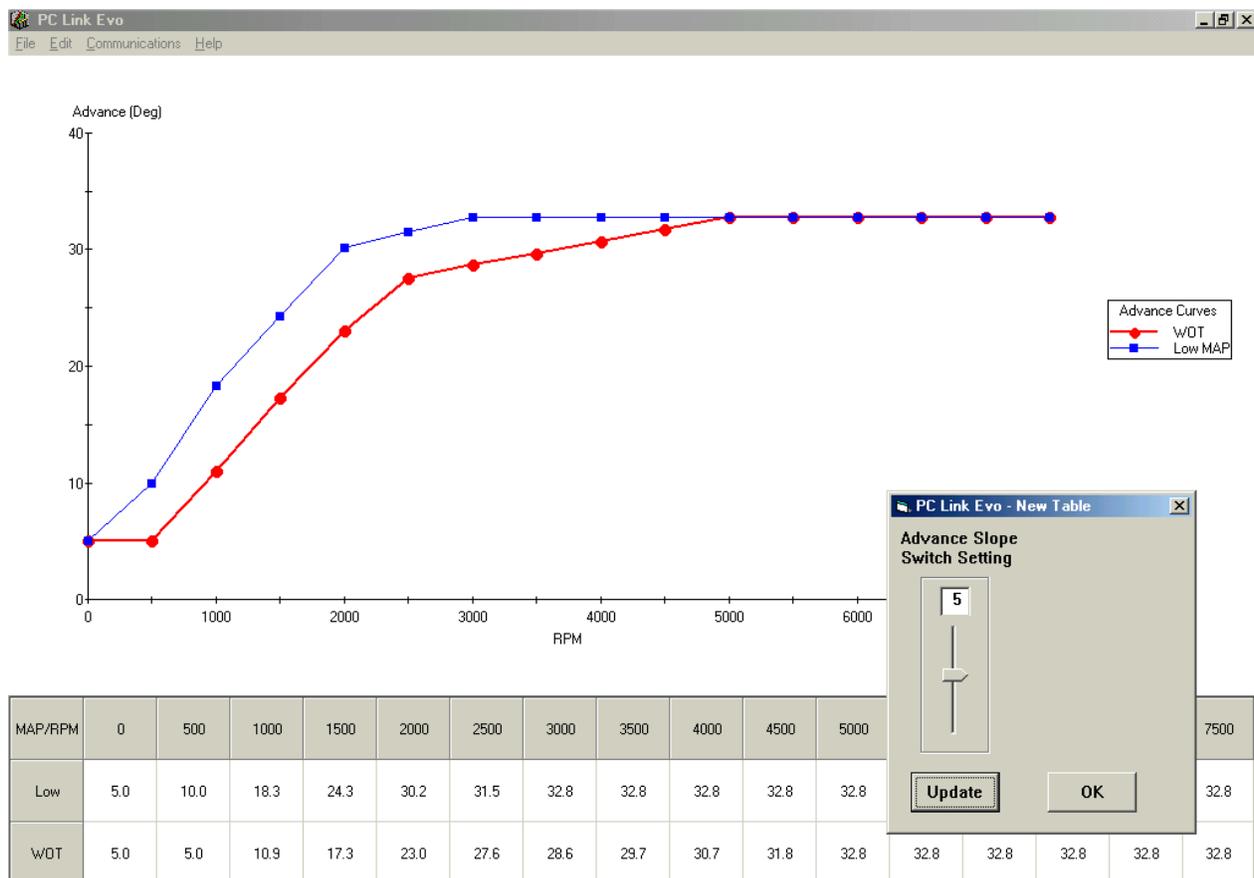
Once the appropriate parameters have been entered, you can print the data using the Print Table command on the Print Menu. You can save the edited advance table by using the Save Table command on the File menu.

You can upload the advance table data and engine parameters to an attached Twin Tec 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 will be prompted to select the table type: Race for the standard version or EX for the limited advance range version. You can enter an advance slope switch setting. Each time you click on Update, the corresponding advance table is displayed. The advance values are exactly what the Twin Tec module would interpolate from the factory programmed minimum and maximum race advance tables in FLASH memory with the same switch setting.

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 setting.

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

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.

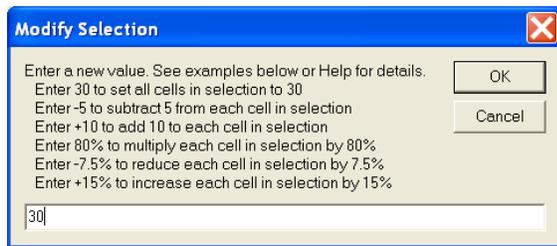#### Figure 2 – Modify Command

Chart Operations

PC Link Evo is intended to be an open system and uses the Component One Chart 7.0 2D 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 Evo.

Data Export and Import by Means of Drag and Drop

You might want to export or import 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 Evo 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 Evo 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 engine or ignition has been removed from the motorcycle, you can do bench top testing by using an adapter harness (P/N EVO-ADAPT) 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 units are shipped from the factory with a default advance table loaded into EEPROM memory. This is the same as the race 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 chart display (refer to Figure 3) or you can directly edit numeric data on the spreadsheet grid.

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Figure 3 - Editing Advance Data
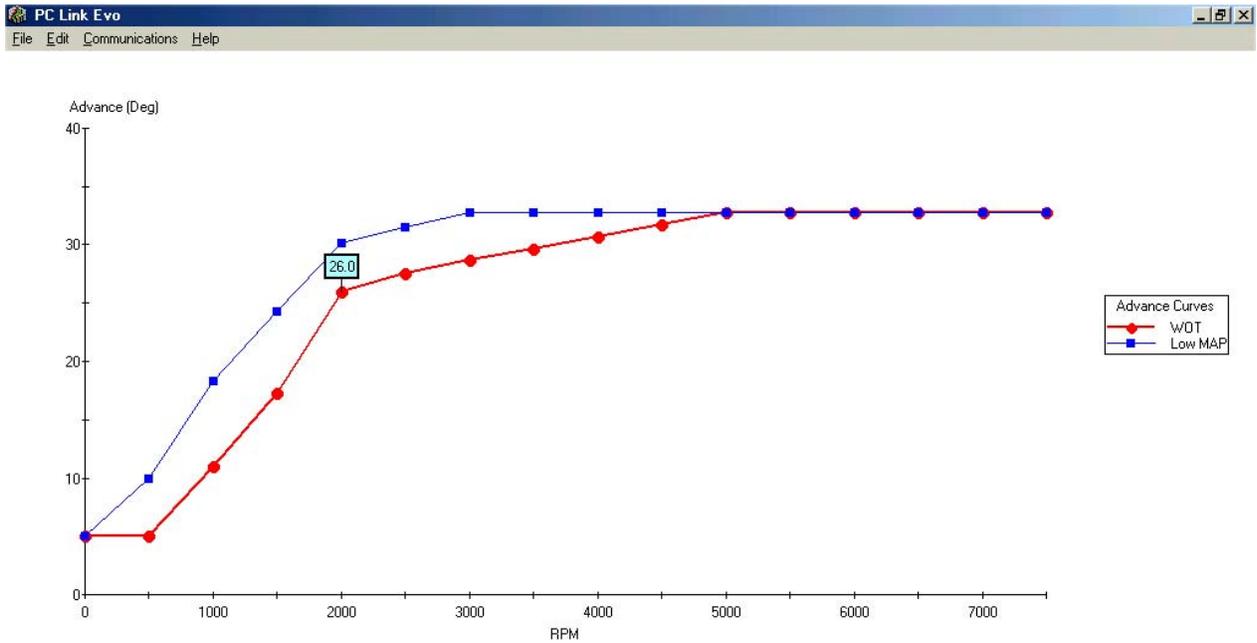
MAP/RPM	0	500	1000	1500	2000	2500	3000	3500	4000	4500	5000	5500	6000	6500	7000	7500
Low	5.0	10.0	18.3	24.3	30.2	31.5	32.8	32.8	32.8	32.8	32.8	32.8	32.8	32.8	32.8	32.8
WOT	5.0	5.0	10.9	17.3	26.0	27.6	28.6	29.7	30.7	31.8	32.8	32.8	32.8	32.8	32.8	32.8

The table consists of 16 columns corresponding to 500 RPM increments from zero to 7,500 RPM and 2 manifold pressure (MAP) rows corresponding to low manifold pressure (high vacuum - VOES switch closed) and wide open throttle (VOES switch open). The 7,500 RPM advance value is used at all higher RPM levels. In most cases you will only edit the wide open throttle (WOT) curve. Advance values must be between zero and 40 degrees.

At higher RPM values, the WOT and low MAP curves may overlap. If you click on a chart point where the curves overlap, the WOT curve has priority and will be selected. If you need to edit the low MAP curve, enter the data in the spreadsheet grid.

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.

Chart Operations

PC Link Evo is intended to be an open system and uses the Component One Chart 7.0 2D 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 Evo.

Data Export and Import by Means of Drag and Drop

You might want to export or import 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

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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 Evo 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 Evo 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 Twin Tec module.

When PC Link Evo 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 Twin Tec module to use a custom advance table. If you make this selection, the unit 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 unit 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.

Regardless of the advance table selection, you can also select the Fixed RPM Limit and/or Alternate Use of VOES Input for Retard options. If you select one of these options, the corresponding slider control appears and allows you to enter a value. These options are primarily intended for engine builders and tuners. A fixed RPM limit overrides any RPM limit switch setting.

The Alternate Use of VOES Input for Retard option is intended for specialized turbocharger and nitrous oxide injection applications. When this option is selected, the unit will retard timing up to 10 degrees if the purple /white VOES wire is grounded.

Figure 4 - Editing Module Parameters
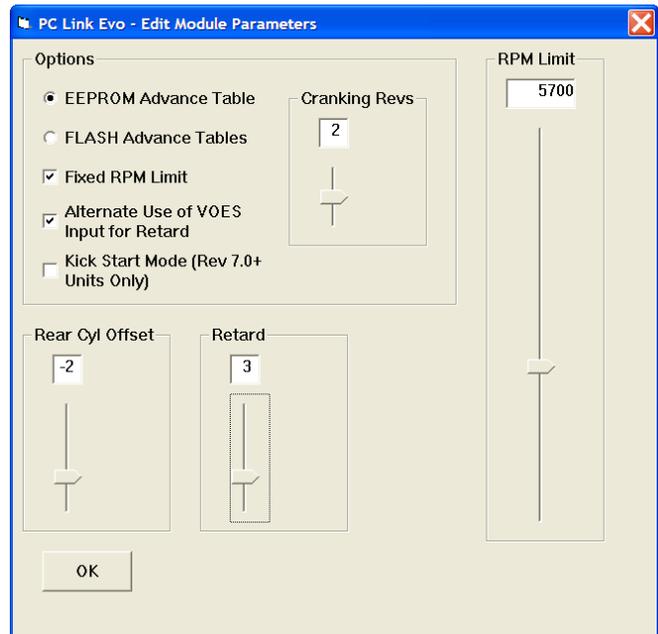
The Kick Start Mode option is only applicable to Revision 7.0 and higher Model 1005 ignitions. When this option is selected, the ignition will immediately fire a spark when the engine is kicked over.

Cranking Revs sets the number of engine revolutions before the ignitions fires the first spark. Most Evolution® engines will start best with a setting of 2. 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 retard and rear cylinder offset values are read out directly in degrees.

UPLOADING DATA TO EEPROM

Refer to the Downloading Data from EEPROM section on page 3 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 above.

Upload data by using the Upload To EEPROM command on the Communications menu. If you attempt to upload a race version file to a Model 1005

EX unit or attempt to access a restricted private label module, an error message will appear and the upload will be aborted. 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.

Mode. If you select the EEPROM Advance Table option in the Module Parameters dialog box prior to uploading, the mode switch no longer controls advance selection (i.e. street or race). The mode switch still selects dual/single fire and multi-spark. If you change coil type or multi-spark, you can use the following mode switch settings:

0 Dual fire, multi-spark disabled

1 Dual fire, multi-spark enabled

2 Single fire, multi-spark disabled

3 Single fire, multi-spark enabled

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.

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.

TROUBLESHOOTING FLOWCHART

Follow the troubleshooting flowchart on the next page. 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        │  │ CYCLE ENGINE        │
│ RUN/STOP SWITCH.    │  │ RUN/STOP SWITCH.    │
│ VERIFY CHECK ENGINE │  │ VERIFY STATUS LED   │
│ LIGHT ILLUMINATED.  │  │ 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  │
    └────────┘   └────────────────────┘
```

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