



Twin Tec *User Instructions for VRFI View Software for Palm OS*

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

INTRODUCTION

VRFI View software allows using a Palm OS based handheld organizer (PDA) to view engine parameters on motorcycles equipped with the Twin Tec VRFI fuel injection controller, including the new VRFI D version. This facilitates tuning and diagnostics, especially on motorcycles without a tachometer. You can view any three of the engine parameters that are logged by the VRFI system.

WARNING: To avoid a distraction that could lead to serious injury or death, do not use a PDA to monitor engine parameters while operating a motorcycle.

Choice of an appropriate Palm OS PDA depends on the intended application. Newer units such as the Palm M130 feature a color display with backlight that offers great indoors visibility (for example in a dyno test room). Older units with monochrome displays such as the Palm V offer the best visibility in direct sunlight. While the Palm V has been out of production for some time, used units are readily available on eBay for under \$60.00.

REQUIREMENTS

VRFI View runs on PDA units using Palm OS 3.5 or later (an upgrade to OS 4.1 is recommended). You will require a serial (RS-232) HotSync cable with a female 9-pin (DB-9) connector for your PDA. Most of the serial HotSync cables for the Palm series will work OK. Handspring Visor units have a non-standard serial port and require signal conditioning electronics in the serial HotSync cable. Thus potential compatibility problems may occur. For the Handspring Visor series, we have tested and approved the Belkin F8R0101 Y-combo Sync Cable. This cable is available direct from Belkin at www.bewlkin.com. The Auterra website at www.auterraweb.com or www.auterraweb.com/supportedpalms.html lists an extensive cross reference of serial HotSync cables for

PALM compatible PDAs including units from Garmin, Handspring, Kyocera, PALM, Samsung, and Sony.

You will also require a Palm link cable (P/N PALM-TCFI-C same as used with our TCFI fuel injection controller) from Daytona Twin Tec. The Palm link cable has a male 9-pin connector that mates with the Palm HotSync cable and a four terminal Deutsch connector that mates with the data link connector on the H-D® wiring harness. Data transfer occurs at 56 kBaud. The high baud rate limits the maximum cable length and the use of an extension cable is not recommended.

CAUTION: the standard PC link cable (P/N TCFI-C) cannot be used because different handshake signal requirements exist for the Palm application.

The VRFI View software is installed using HotSync from the Palm Desktop running on a PC. You must have access to an IBM-compatible PC with Windows and the Palm Desktop for this purpose. HotSync can be done by means of serial (RS-232) or USB cable or cradle.

DEMO VERSIONS

The VRFI View software is similar to TCFI II View except for scaling of some parameters for the VRSC engine application. Two demo versions of TCFI II View are available from our website at www.daytona-twin-tec.com. The TCFI II Demo program allows you to try the software out on a PDA without a Palm link cable. The standard program exits if it cannot communicate with a VRFI unit.

The second version actually emulates a Palm PDA running on your Windows PC. You can download the program file TCFI2_Demo_Emulator.exe from our website. Double click on the file to start the emulator. Use your mouse and left click on the PDA buttons. To stop the emulator, right click with your mouse and then click Exit on the pop-up menu.

SOFTWARE INSTALLATION

The software is supplied on CDROM media (in the Palm_View folder) or in the form of a ZIP archive downloaded from our website. If you downloaded the ZIP archive, you will require PKZIP to unzip the individual files. If you do not have PKZIP installed on your computer, you can download it from www.pkware.com. The ZIP archive includes the following files:

VRFI View.prc
NSBRuntime.prc
BitsNBytesLib.prc
NSBSystemLib.prc

Copy these four files into the Add-on folder in the Palm Desktop directory on your computer. Start the Palm Desktop and then use the Install tool to browse and select the four files. Perform a HotSync operation to install the files onto your PDA.

MOUNTING THE PDA

You can mount your PDA on a flat surface using Velcro tape or on the handlebars using an appropriate mount. We recommend the Arkon CM627 Universal PDA Mount. This handlebar mount is available direct from Arkon at www.arkon.com. The Arkon CM627 has a snap-in pedestal and two sliding supports at the bottom that should be permanently secured with epoxy glue. We also recommend that you use some Velcro tape between the back of the PDA and the Arkon mount for maximum security. Secure the cable with tie wraps.

Figure 1 – Typical Handlebar Mounting



Additional mounting systems are available from Ram Mounts at www.ram-mount.com.

RUNNING THE PROGRAM

Start the engine before running the program. You can exit from the program at any time, but do not connect or disconnect the Palm link cable while the run/stop switch is on.

Use the Application Launcher and tap on the VRFI View icon to start the program. A program message with the revision and copyright information will appear. Tap on OK to continue. A program message with the VRFI module firmware ID will appear. Tap on OK to continue. From this point on and until you exit from the program, additional stylus taps are ignored and user interaction is by means of the hard buttons on the PDA case. The only exceptions are program messages. Tap on OK, as you normally would, to close a program message.

The reason for ignoring stylus taps while the program is running is that the digitizer screen on some PDA units was found to be sensitive to wind buffeting and bug hits. Automatic shutoff is also disabled and the program will continue running until you exit.

To exit the program, press the power button. This action will return you to the Application Launcher and restore normal stylus operation and automatic shutoff.

When VRFI View is running, the program interrogates the attached VRFI unit for the selected engine parameters. If you turn off the run/stop switch while VRFI View is still running, the program message "Lost link to VRFI module" appears. You can restart the engine and tap on OK to continue running VRFI View.

As shown in Figure 2, VRFI View displays three selected engine parameters, VRFI user output status, and engine status.

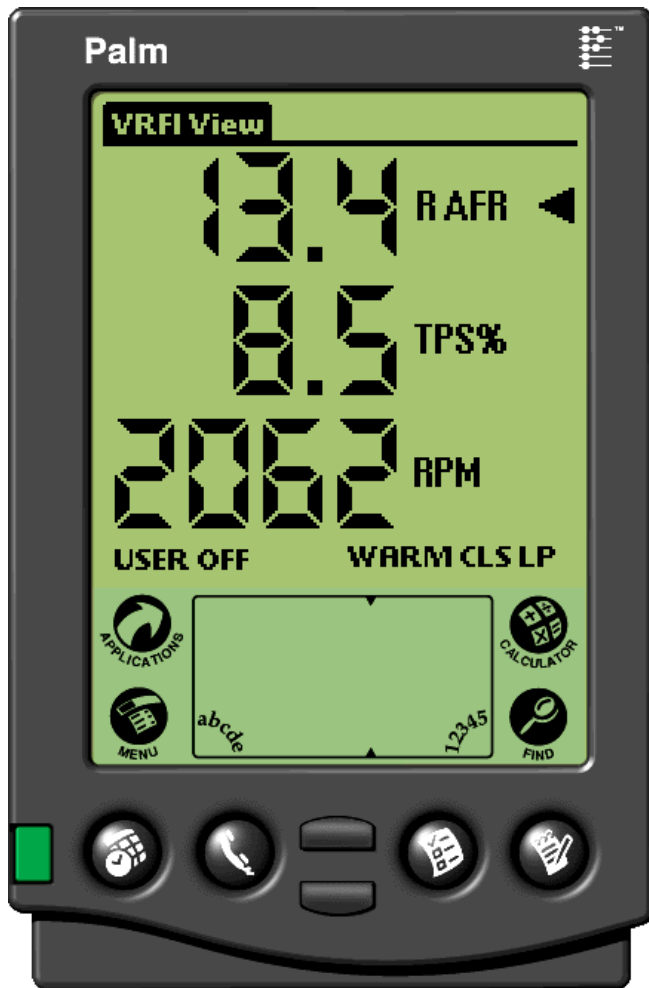
For each of the three engine parameters, you can select the displayed parameter from the list given on page 3. An arrow appears to the right of the active parameter. The right button (Memo Pad) moves the arrow between the top, middle, and bottom parameter. The scroll buttons in the center change the selected parameter.

The left button (Date Book) allow you to override the VRFI user output. This feature can be used as a diagnostic aid to test accessory systems connected to the user output. Repeatedly pressing the left button cycles between manual on mode (USER MAN ON), manual off mode (USER MAN OFF), and automatic mode (USER AUTO). When you cycle to automatic

mode, the display changes back to indicate the actual status of the user output (USER ON or USER OFF) after about 2 seconds as the VRFI regains control.

Please note that for safety reasons, manual control of the user output is disabled if the VRFI is configured for an electric shifter.

Figure 2 – VRFI View Screen Display



Engine parameters include (in order):

RPM – engine crankshaft RPM

VSS – vehicle speed in MPH

F AFR – front exhaust gas oxygen sensor based air/fuel ratio (10:1 to 20:1). Only displayed for VRFI D version.

R AFR – rear exhaust gas oxygen sensor based air/fuel ratio (10:1 to 20:1). Only displayed for VRFI D version.

AFR – exhaust gas oxygen sensor based air/fuel ratio (10:1 to 20:1). Displayed for original VRFI with single channel WEGO.

AF CMD – air/fuel ratio command from current VRFI AFR table cell.

F BLM – front block learn multiplier (main fuel table correction factor based on exhaust gas oxygen sensor feedback, shown as percent value from 75-125%). Only displayed for VRFI D version.

R BLM – rear block learn multiplier (main fuel table correction factor based on exhaust gas oxygen sensor feedback, shown as percent value from 75-125%). Only displayed for VRFI D version.

BLM – block learn multiplier (main fuel table correction factor based on exhaust gas oxygen sensor feedback, shown as percent value from 75-125%). Displayed for original VRFI with single channel WEGO.

TPS % – throttle position (0 to 100%)

TPS V – throttle position sensor output from zero to +5 volts. Used for idle TPS adjustment. (refer to VRFI Tuning Manual). Not available when engine is running.

IAC – idle air control stepper motor position (higher number means more idle air)

MAP – manifold pressure in In-Hg (29.92 In-Hg corresponds to atmospheric pressure)

BARO – barometric pressure in In-Hg

IAT – intake air temperature (deg C)

ET – engine coolant head temperature (deg C)

BAT – battery voltage

F INJ – front injector pulse width in milliseconds

R INJ – rear injector pulse width in milliseconds

F ADV – front cylinder ignition advance in degree BTDC

R ADV – rear cylinder ignition advance in degree BTDC

Additional engine status data is displayed at the lower right side of the screen:

DIAG P0xxx – a diagnostic code, such as P0505 has been set by the VRFI. Press the To

Do List button (right under DIAG) to display a description of the diagnostic code. Refer to the VRFI installation instructions for details.

For VRFI D version units, engine status data includes:

ENGINE OFF – engine not running while run/stop switch is in on position.

COLD OPN LP – engine cold, open loop AFR control

COLD CLS LP – engine cold, closed loop AFR control

WARM OPN LP – engine warm, open loop AFR control

WARM CLS LP – engine warm, closed loop AFR control

HOT OPN LP – engine hot (radiator cooling fan on), open loop AFR control

HOT CLS LP – engine hot (radiator cooling fan on), closed loop AFR control

WEGO ERROR – WEGO unit reports sensor not operating (cold or failed).

For original VRFI units with single channel WEGO, engine status data includes:

ENGINE OFF – engine not running while run/stop switch is in on position.

ENGINE COLD – engine below operating temperature for closed loop AFR control.

ENGINE WARM – engine has reached operating temperature for closed loop AFR control.

ENGINE HOT – the radiator cooling fan is on.

WEGO ERROR – WEGO unit reports sensor not operating (cold or failed).

TROUBLESHOOTING

Experience has shown that most communication problems are user error or cable compatibility issues. For issues related to the Palm Desktop, PC operation, or HotSync please refer to the documentation supplied with your PDA or call the manufacturer's tech support.

HANDSPRING VISOR SERIAL PORT HANGUP ISSUE

While Handspring Visor units feature excellent display visibility in bright sunlight and long battery life, they have a non-standard serial port that can hang up both the VRFI module and PDA. **If you are using a Handspring Visor, start the VRFI View program before turning the run/stop switch on.** When the initial program message appears, do not touch OK until after you turn the run/stop switch on.

If communications is lost while VRFI View is running, the Handspring Visor serial port can hang up. **If you are using a Handspring Visor, you must always exit from the program before shutting off the engine.** If you fail to do so, the next time you start VRFI View, you may get the program message "Serial port was left open. Reset device." The only way to recover from this situation is to do a soft reset and then perform a HotSync operation.