



Twin Tec *User Instructions for VRFI Gen 3 View Software for Palm OS*

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

INTRODUCTION

VRFI Gen 3 View software allows using a Palm OS based handheld organizer (PDA) to view engine parameters on motorcycles equipped with the Twin Tec VRFI Gen 3 fuel injection controllers. 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. Units such as the Palm M130 or M515 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 these units have been out of production for some time, used units are readily available on eBay for under \$60.00.

Please note that VRFI Gen 3 View is not compatible with the original VRFI system.

REQUIREMENTS

VRFI Gen 3 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. To avoid potential compatibility problems, we suggest that you visit the Auterra website at www.auterraweb.com or www.auterraweb.com/supportedpalms.html. Auterra 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) 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.

The VRFI Gen 3 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

Two demo versions are available. The VRFI Gen 3 Demo program loaded as part of the software installation described below allows you to try the software out on a PDA without a Palm link cable. The standard VRFI Gen 3 View 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 VRFI3_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 Gen 3 View.prc
VRFI Gen 3 Demo.prc (demo version)
NSBRuntime.prc
BitsNBytesLib.prc
NSBSystemLib.prc

Copy these five 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 CM927 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 Gen 3 View (or VRFI Gen 3 Demo for demo version) 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 Gen 3 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 Gen 3 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 Gen 3 View.

As shown in Figure 2, VRFI Gen 3 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.

Figure 2 – VRFI Gen 3 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).

R AFR – rear exhaust gas oxygen sensor based air/fuel ratio (10:1 to 20:1).

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%).

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%).

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 Gen 3 Installation & 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 cylinder 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 Gen 3 Installation & Tuning Manual for details.

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

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

When the initial program message appears, do not touch OK until after you turn the run/stop switch on.

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.

If communications is lost while VRFI Gen 3 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 Gen 3 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.

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 Gen 3 View program before turning the run/stop switch on.**