

# *Racedata*

***EXTREME PERFORMANCE RACE DATA SYSTEMS***

## **I** *50plus*

INTEGRATED STAND-ALONE DIGITAL DISPLAY AND REPLAY DASH SYSTEM

INSTALLATION  
PROGRAMMING  
OPERATION

# **I50plus DIGITAL DISPLAY AND REPLAY DASH SYSTEM**

Installation, Programming and Operating Instructions

Revision 1.02 12/07 Technical Support 503 638 8480

Before you install the **I50plus** digital dash system **pay close attention to wire routing and system grounding**. Avoid EMI and RF signal interference; be sure to avoid running wires parallel with any ignition wires. Where wires must cross, cross at 90 degrees. It is very important to keep all sensor wires as far away from ignition boxes, coils and ignition wires as possible.

## **BEFORE YOU START, HERE ARE SOME IMPORTANT RECOMMENDATIONS AND THINGS TO KEEP IN MIND.**

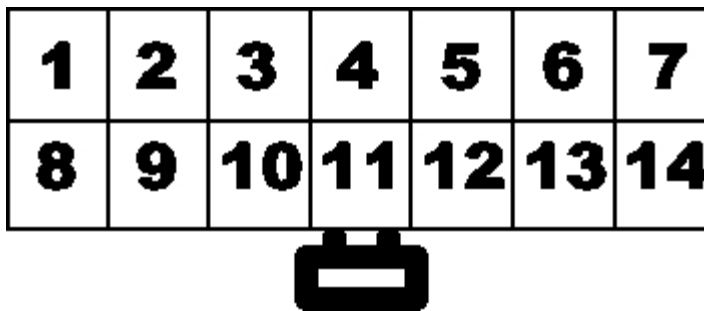
1. **Suppression core spark plug wires must be used with all electronic devices like the I50plus.**
2. **installing an I50plus on a car equipped with a magneto will require a inductive pickup. If using an inductive pickup for RPM tach signal, be sure to chassis ground the battery you use to power the I50plus.**
3. **Please use thread sealer on all fluid fittings to prevent leaks.**
4. **The I50plus requires a battery source with a minimum 12 volt 1 amp and a maximum 18 volt 18 amp.**
5. **Select a location to mount the I50plus where the display screen is not exposed to direct sunlight or the temperature does not exceed 165 degrees F.**
6. **Never let the I50plus sit out in the rain and never submerge them in water.**
7. **Operating or powering up the I50plus with a sensor connected to a wrong terminal can cause sensor damage, causing the sensor to operate incorrectly.**
8. **We recommend that you install a Noise filter/capacitor such as MSD part # 8830 to filter out voltage spikes or a momentary open circuit.**
9. **We recommend that you solder all wire connections and use shrink tube to insulate solder connections. Do not solder sensor wires with the sensors connected or with power connected to the I50.**
10. **We recommend that you do not attach pressure sensors directly to your engine, our pressure sensors are high grade precision measuring devices. Direct engine vibration and the hot and cold cycles will shorten sensor life.**

## **Installing the I50plus digital dash display**

There are many ways to install the **I50plus**. There are four 10-32 threaded mounting points on the back of the **I50plus** digital dash. Once you have selected a location to install the **I50plus**. Look to see how you will route the sensor, power, record switch and ground wires. It is important to route all wires so they do not impair or interfere with the operation of your racecar. Also please take great care to route all wires so they are not exposed to excessive temperatures or pinched by any part of your racecar. **A good chassis ground very important for proper I50plus operation.** Once you have mounted the **I50plus** dash plug in the 14-pin connector wire harness. Shown below is a color code wire diagram and pin location legend for the 14 pin connector. **Please use caution when connecting the sensor wires. Operating or powering up the I50plus with a sensor connected to a wrong terminal can cause sensor damage, causing the sensor to operate incorrectly.** Looking at the 14-pin connector housing, it has the position numbers 1, 7, 8 and 14 marked on each of the 4 corners. With the connector tab down and the wires held in your hand towards you position 1 is on the left hand side of the connector. **Do not solder sensor wires with the sensors connected or with power connected to the I50plus.**

### **14 position pin connector COLOR LEGEND**

Position 1	BLACK	Oil pressure sensor
Position 2	BLACK	Fuel pressure sensor
Position 3	YELLOW	Water temperature sensor
Position 4	YELLOW	Transmission temperature sensor
Position 5	YELLOW	Engine oil temperature sensor
Position 6	WHITE	Playback button
Position 7	RED	Fuel pressure sensor
Position 8	BLACK	Battery supply ground ( <i>chassis ground battery</i> )
Position 9	RED	Battery supply positive
Position 10	WHITE	Fuel pressure sensor
Position 11	WHITE	Oil pressure sensor
Position 12	PURPLE	Record via transbrake or momentary switch
Position 13	ORANGE	RPM pickup
Position 14	RED	Oil pressure sensor



### Battery Power and Ground Connections

Connect the power and ground wire directly to the positive and negative side of the battery. Be sure you have good chassis ground. The power source should be switched. Connect a red wire from position 9 to the positive side of the battery. Connect the black wire from position 8 to the negative side of the battery. For proper operation, it is very important to keep the *I50plus* and all sensor wires as far away from ignition boxes and ignition wires as possible. Suppression core spark plug wires must be used. Be sure to avoid running *I50plus* wires parallel with any ignition wires. Where wires must cross, cross wires at 90 degrees.

### Water Temperature Sensor

The water temperature sensor screws into a 1/8 NPT threaded bung. Be sure to install all fittings securely with Teflon tape. Connect the yellow wire from position 3 to the water temperature sensor.

### Transmission Temperature Sensor *Screen will not display temperature unless this sensor is connected*

The transmission temperature sensor screws into a 1/8 NPT threaded bung. Be sure to install all fittings securely with Teflon tape. Connect the yellow wire from position 4 to the transmission temperature sensor.

### Engine Oil Temperature Sensor *Screen will not display temperature unless this sensor is connected*

The engine oil temperature sensor screws into a 1/8 NPT threaded bung. Be sure to install all fittings securely with Teflon tape. Connect the yellow wire from position 5 to the engine oil temperature sensor.

### Record Data Switch Via Transbrake Switch Connection (if used to start data recording)

Connect the purple wire from position 12 to the transbrake solenoid / power side terminal. This connection is used in place of a separate record data switch.

### Separate Momentary Record Data Switch

Use this connection in place of the transbrake switch connection. Connect the purple wire from position 12 to one side of a momentary push button switch. Connect the other side of the switch to position 9 the positive power position. Each time that you momentarily depress the push button a new recording session will begin.

### Engine RPM Connection

Most electronic ignition systems have a tachometer output connection. Connect the orange wire from position 13 directly to the tachometer output on your ignition system. If your ignition system is not equipped with a tachometer output check with the manufacture of your system for recommended tachometer connection. **Magneto installations require an inductive pickup.** If using an inductive pickup see the inductive pick up section in the instructions.

### Oil Pressure Sensor 0 – 100PSI *Connecting sensor wires to wrong terminals can cause sensor damage*

Install the oil pressure sensor in the selected location. **Please be sure to use thread sealer when installing pressure sensor.** The oil pressure sensor has standard 1/8" NPT threads. Connect the red wire to position 14, the black wire to position 1 and the white wire to position 11.

### Fuel Pressure Sensor 0 – 100 PSI *Connecting sensor wires to wrong terminals can cause sensor damage*

Install the fuel pressure sensor in the selected location. **Please be sure to use thread sealer when installing pressure sensor.** The fuel pressure sensor has standard 1/8" NPT threads. Connect the red wire to position 7, the black wire to position 2 and the white wire to position 10.

### Playback Feature Push Button

Install the included push button in an easy to reach location. Connect the white wire from position 6 to one side of the push button switch and connect the other side of the switch to a good chassis ground.

### I50plus factory default settings

Number of cylinders	8
Engine oil pressure warning indicator	20 PSI and below
Water temperature warning indicator	210 degrees F and above
Engine oil pressure range	0 – 100 PSIG
Fuel pressure range	0 – 100 PSIG
Water temperature range	0 – 320 degrees F
Transmission temperature range	0 – 320 degrees F
Engine oil temperature range	0 – 320 degrees F

## I50plus User changeable settings

**Data recording event** Momentary button depress is the (**default**). The option is **momentary button depress and engine RPM above 3000 RPM** \*\* see instructions for data recording momentary switch and RPM \*\*

**Data Recording Momentary button and Engine RPM** When the **I50plus** record switch is depressed and engine RPM reaches 3000 RPM the **I50plus** will record 31 seconds of data, stopping automatically at the end of the record session. Each time engine RPM reaches 3000 and record button is depressed the existing recorded data is erased and new data is collected and recorded for playback. To change the **I50plus** to record when the momentary record button is depressed and engine RPM exceeds 3000 RPM, depress the Playback button and keep the playback button depressed for 20 seconds. At the bottom of the display screen two options will be displayed, MODE 1 and MODE 2. **Mode1 is button only and Mode 2 is button and RPM**. To select push the playback button to toggle between Mode 1 and 2. When you have made your selection power the **I50plus** off and then on again.

### Engine RPM detection

Direct connect (**default**) The option is **inductive** \*\*see instructions for inductive connection\*\*

### Inductive RPM connection

To change the **I50plus** to inductive RPM pickup do the following. With the **I50plus** in the power off position depress and keep the playback button depressed while powering the **I50plus** on. You will see **RPM DETECT TYPE** the default is direct connect. To change it to inductive depress and release the playback button. When you have made your selection power the **I50plus** off and then on again.

### Playback recorded data

To playback recorded data, depress and release the record button. **Playback is displayed in the following order, engine RPM, Oil PSI, Fuel PSI, Water Temp, Voltage, Trans Temp and Engine Oil Temp**. RPM is displayed first (see example shown below). Each of RPM playback screen pages shows 1/3 of recorded data and is displayed in 250 millisecond increments. The screen is read from the left to the right with each horizontal displaying six recorded 250 millisecond values starting at the 0 second record point.

The **I50plus** when in the playback mode will automatically scroll through the pages at a 4 second per page rate. You can depress and release the playback button to freeze any playback page at any time and then restart the auto scroll by depressing and releasing the playback button again. The **I50plus** will stop at the end of playback and display the high and low values for the recorded session. To exit the high and low values page depress and release the playback button. The display screen is now in the normal display mode.

### Sample playback page

RPM							
0-00000	00000	00000	00000	00000	00000	00000	Time points 0 thru 1.25 seconds
1.5-00000	00000	00000	00000	00000	00000	00000	Time points 1.50 thru 2.75 seconds
3-00000	00000	00000	00000	00000	00000	00000	Time points 3.00 thru 4.25 seconds
4.5-00000	00000	00000	00000	00000	00000	00000	Time points 4.50 thru 5.75 seconds
6-00000	00000	00000	00000	00000	00000	00000	Time points 6.00 thru 7.25 seconds
7.5-00000	00000	00000	00000	00000	00000	00000	Time points 7.50 thru 8.75 seconds
9-00000	00000	00000	00000	00000	00000	00000	Time points 9.00 thru 10.25 seconds

### Recorded high and low values

	LOW	HIGH
ENGINE RPM	0000	0000
OIL PSI	000	000
FUEL PSI	00.0	00.0
WATER TEMP	000	000
VOLTAGE	00.0	00.0
TRANS TEMP	000	000
ENG OIL TEMP	000	000

To exit the high and low values page depress and release the playback button. The display screen is now in the normal display mode.

### WARRANTY INFORMATION

The Racedata **I50plus** is warranted for a period of 90 days against defects in workmanship and materials under normal use and correct installation. Warranty starts from the day of purchase and is non transferable. If the returned product is found to be defective as described above, the product will be repaired or replaced at the sole discretion of

Racedata. The warranty is voided if the *I50* or any of its sensors have been opened, tampered with, installed incorrectly or modified in any way. Racedata is not liable for any injury or damages resulting from the use or misuse or improper installation of the *I50*. If repair or upgrade is needed please contact Racedata and request a return authorization service form. Fill it out and please include it with your returned unit.

#### **TECHNICAL SUPPORT**

Call 503 638 8480. Technical support hours are from 9:00 AM to 12:00 PM and 1:00 PM to 4:00 PM Monday through Thursday and Fridays 9:00 AM to 12:00 PM Pacific time. Racedata Inc. 484 SW Borland Rd. West Linn, Oregon 97068.