



## INSTRUCTIONS

### **FAST™ EZ-LS™**

Thank you for choosing FAST™ products; we are proud to be your manufacturer of choice. Please read this instruction sheet carefully before beginning installation, and also take a moment to review the included limited warranty information.

#### **EZ-LS™ Applications**

EZ-LS™ is compatible with 24x and 58x style crank wheels found on the LS engine family. To maintain EZ-LS™ compatibility a 24x crank wheel must be used with a single pulse cam signal, and the 58x crank wheel must be used with a 4-pulse cam signal both of which are OEM configurations. The EZ-LS wiring harness has default connectors that are compatible with a 24x crank wheel and single pulse cam sensor, however crank and cam adapters (PN 30207 and PN 30200, respectively) are provided for 58x crank wheel and 4 pulse cam sensor applications. The EZ-LS™ must be configured for either 24x or 58x engines by using either the EZ-EFI 2.0 handheld or C-Com software if using XFI.

#### **EZ-LS™ Installation**

The EZ-LS™ is water resistant when connected to the wiring harness. It can be mounted in the engine compartment or in the vehicle's interior. It is good practice to mount the EZ-LS™ with the connector facing down. This way, there is less chance of moisture getting into the EZ-LS™ if it needs to be disconnected in wet conditions.

Avoid mounting locations that expose the EZ-LS™ to extreme heat or that confine it to a closed area with no air circulation.

There are LEDs on the front face of the EZ-LS™, which can be used to monitor its operation. To take advantage of this feature, the EZ-LS™ would need to be mounted so that the front face of the EZ-LS™ is visible.

A CAN connector from the EZ-LS™ harness needs to be connected to a CAN connector from a FAST™ ECU. Keep this in mind when choosing mounting locations for the two boxes.

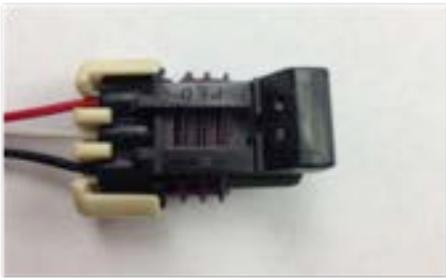
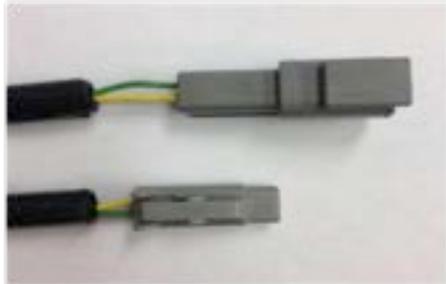
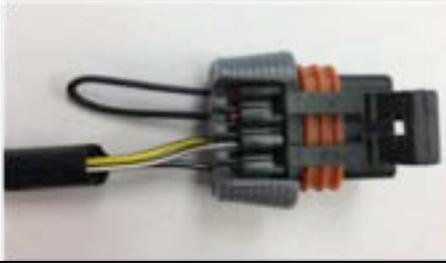
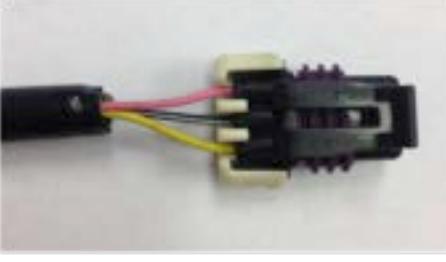
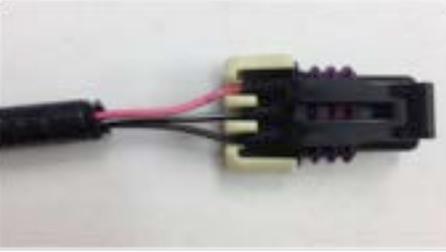


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**Part #: FAST4-205**  
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## Wiring

### Connection Overview

MULTI-WIRE CONNECTIONS		
NAME	DESCRIPTION	CONNECTOR
CALPORT	Calport is only used during the updating process while in "Flash Mode".	
CAN	The communications link between EZ-LS, EZ-EFI 2.0 or XFI, and EZ-TCU. Must be used with EZ-EFI 2.0 or XFI for proper functionality. Must cap unused CAN connectors with terminating ends.	
CRANK/CAM OUT	Transmits crank and cam signals via connecting to the "Distributor" connector found on EZ-EFI 2.0 and Sportsman XFI's wiring harness or "CAM/HALL EFFECT" on XFI 2.0.	
CRANK	Connects to 24x crank pickup found near the starter. Must use provided adapter for 58x applications. It is used to determine engine crank speed.	
CAM	Connects to the single pulse cam sensor. Must use provided adapter for 4 pulse applications. It is used to determine engine cam position.	

COILS	Consists of 2 connectors (driver and passenger side) are similar in appearance. Connects to factory coil wiring to drive GM "Smart" coils.	
BLOCK GND	An important connection that must be installed on the engine block to a clean bare metal location. This connection is used to provide a strong ground path for ignition spark.	

SINGLE-WIRE CONNECTIONS		
NAME	DESCRIPTION	WIRE COLOR
FLASH	Initializes a special update mode, called "flash mode". Should be mounted away from any ground to avoid accidentally entering flash mode.	BLUE
TACH OUTPUT	Provides 4 pulses per revolution of the engine and can be used to control a tachometer.	GREEN/BLACK
DIGITAL GND	Connections that must be installed <b>directly</b> to the battery's negative post.	BLACK/WHITE
POWER GND		BLACK
ANALOG GND		BLACK/PINK
BATTERY POS	Connections that must be installed <b>directly</b> to the battery's positive post.	RED
12V SWITCHED	Used to control power to the EZ-LS. This must be connected to "switched" power, which includes power at cranking.	PINK

**CAN LINK:**

This connects to the CAN LINK connection on your EZ-LS™ compatible ECU main harness. Both the EZ-LS™ and the ECU harness will have a pair of CAN connectors. The plug from one harness will connect to the receptacle from the other harness. It does not matter which pair of connectors is used as long as one pair is mated. This connection can be made through an Interconnect Cable(s) for additional reach. There will be one loose plug and one loose receptacle at either end of the CAN wiring. These loose ends need to be capped off with a Terminating Plug at one end and a Terminating Receptacle at the other. This is absolutely necessary for proper network performance. The ECU uses the CAN Link to tell the EZ-LS™ what timing values are called for in the tuning file.

**Warning:** Before starting your engine make sure that with the ignition switch on, the “Status” light on the XIM™ is illuminated. This indicates that the EZ-LS™ and ECU are communicating properly via the CAN network.

**Running the engine without proper CAN communication can result in permanent damage to the engine and ignition coils.** If the “Status” light is not illuminated, check the following items:

- Verify that the CAN wiring is connected per the provided instructions. One male or female connector from the ECU should be connected to a mating connector on the EZ-LS™. The unused male and female connector must have the terminating resistors plugged into them.
- XFI™ only, Verify that under “System Configuration”, CAN Stream is enabled.
- Verify that the EZ-LS™ wire labeled 12V Switched is connected to a 12V source that has power when the ignition switch is in the run position and during cranking.
- If after checking all of these items, you still cannot get a status light on the EZ-LS™, call the FAST™ EFI HELP™ line at 1-877-334-8355 for assistance before starting your engine.

**Configuring EZ-LS™ with EZ-EFI 2.0**

Configuring the EZ-LS is required once hardware installation is complete. Using the handheld provided with EZ-EFI 2.0 enter “Setup Wizard”. Not all screens encountered during the Setup Wizard are shown, only EZ-LS specific screens are discussed in these instructions.



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The first EZ-LS™ specific setting found in the EZ-EFI 2.0™ wizard is the “Crank Input” screen, shown below. Select “EZ-LS / XIM”.



Next configure the EZ-LS™ for either 24x or 58x engine type on the “EZ-LS/XIM Setup” screen.



After selecting between 24x and 58x modes, the timing curve must be setup. Setup consists of three options with the first being idle timing, the second being All-In timing, and finally All-In RPM.



Finally, during the “Timing Verification” screen the default LS engine setting of +50 will be automatically set. Follow the instructions on the screen. Upon completion of this screen the EZ-LS™ will be fully configured.



### External LEDs



The EZ-LS™ features four LEDs built into its case. They are valuable tools for confirming basic functions.

**POWER** – This LED lights up when the EZ-LS™ is switched on.

**STATUS** – In normal operation, this LED lights up when the EZ-LS™ has established CAN communications with an ECU. If it is not lit, see the trouble shooting steps outlined in the CAN LINK discussion.

A slowly flashing (approximately 1 flash per second) status LED indicates the EZ-LS is in “flash mode”. If flash mode was entered accidentally, make sure the FLASH wire is not touching ground and power cycle the EZ-LS™. For more information see “Flashing the EZ-LS™”.

**CAM** – This LED flashes each time the EZ-LS™ receives an input from the cam sensor. It will flash relatively slowly during cranking. The flashing will become more rapid with increasing engine speed. If it is not flashing while the engine is turning over, you will need to find out why before the engine will run. Check that the cam sensor is properly installed and plugged in. Also check for any wiring damage between the cam sensor and the EZ-LS™.

**CRANK** – This LED lights up while the EZ-LS™ is receiving input from the crank sensor. If it is not lit while the engine is turning over, you will need to find out why before the engine will run. Check that the crank sensor is properly installed and plugged in. Also check for any wiring damage between the crank sensor and the EZ-LS™.

### **Flashing the EZ-LS™**

If it becomes necessary to update the software within the EZ-LS™, the unit will need to be put into flash mode. This is done by grounding the FLASH wire while turning on the EZ-LS™. A flashing Status LED will indicate that the EZ-LS™ is in flash mode. An update utility will be provided that will send the new software to the EZ-LS™ through the communications cable that links the EZ-LS™ (through the CALPORT connector) to the laptop. Once the update has been sent, remove the FLASH wire from ground and power cycle the EZ-LS™ to complete the flashing process.



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## FAST™ LIMITED LIFETIME WARRANTY AND LIMITED WARRANTY

FAST™ warrants that its EZ-EFI™ products are free from defects in material and workmanship for the lifetime of the product. This **Limited Lifetime Warranty** shall cover **only** the original purchaser. All other FAST™ products are covered by a **Limited Warranty** which covers defects in material and workmanship for a period of **one year** from the date of purchase.

**FAST's obligation under this warranty is limited to the repair or replacement of its product.** To make a warranty claim, the part must be returned directly to FAST™ at the address listed below with a valid Return Merchant Authorization Number (RMA), freight prepaid. Items covered under warranty will be returned to you freight collect. To obtain an RMA, call 877-334-8355 to report the issue you are experiencing. At that time, FAST™ will attempt to trouble shoot your issue.

**It is the responsibility of the installer to ensure that all of the components are correct before installation. We assume no liability for any errors made in tolerances, component selection or installation.**

**There is absolutely no warranty on the following:**

- A. Any parts used in racing applications or subject to excessive wear;**
- B. Any product used in marine applications, unless that product is listed by FAST™ as a specific marine product;**
- C. Any product that has been physically altered improperly installed or maintained;**
- D. Any product used in improper applications, abused, or not used in conjunction with the proper parts.**

**There are no implied warranties of merchantability or fitness for a particular purpose.** There are no warranties which extend beyond the description of the face hereof. **FAST™ will not be responsible for incidental and consequential damages, property damage or personal injury damages.** Where required by law, implied warranties or merchantability and fitness are limited to terms outline above.

This warranty gives you specific legal rights and you may also have other legal rights which vary from state to state.



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