

DFS-1000 Wiring Diagrams and PC Software Installation.



For Technical Support Please contact your dealer or email seellc@mchsi.com

Important Information - When using a conventional style ignition coil (Not Coil on Plug) you must use Static Suppression Ignition Wires with this Controller. The DFS-1000 Ignition Controller contains High Frequency Digital Electronics and will NOT function correctly without Suppression Wires!

Caution - Do NOT submerge Controller in liquid or directly wash unit with liquid of any type! (Do NOT spray when washing vehicle!)

It is the responsibility of the purchaser to follow all guidelines and safety procedures supplied with this product and any other manufactures product used with this product. It is also the responsibility of the purchaser to determine compatibility of this device with the vehicle and other components.

Shutt Electronics & Engineering LLC assumes no responsibility for damages resulting from accident, improper installation, misuse, abuse, improper operation, lack of reasonable care, or all previously stated reasons due to incompatibility with other manufacturer's products.

Shutt Electronics & Engineering LLC assumes no responsibility or liability for damages incurred from the use of products manufactured or sold by Shutt Electronics & Engineering LLC on vehicles used for competition racing. Shutt Electronics & Engineering LLC neither recommends nor approves the use of products manufactured or sold by Shutt Electronics & Engineering LLC on vehicles which may be driven on public highways or roads, and assumes no responsibility for damages incurred from such use.

It is the purchaser's responsibility to check the state and local laws pertaining to the use of Nitrous Oxide for racing applications. Shutt Electronics & Engineering LLC does not recommend nor condone the use of its products for illegal street racing.

Important

The DFS-1000 can be used with either Hall Effect or VR (magnetic style sensors). This allows the use of Factory style sensors. To use factory Crank and Cam sensors the correct FLASH Image must be loaded for the Make, Model, and Year. The FLASH Image files are located on the USB Stick Drive that came with the DFS-1000 controller.

The DFS-1000 can also be used with a special High Resolution 4-magnet rotor and a Dynatek Pro-Series ® crank trigger assembly. The high resolution rotor is available for common KZ and GS engines. The rotor is designed for the static timing to be set at TDC of both the 1,4 and 2,3 trigger pickups. Please refer to the High Resolution rotor Setup page for more information.

The DFS-1000 will NOT function with a Dual Magnet rotor!

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Installing DFS-1000 Dataview Software

To install and use the Dataview software you will need to be running Windows XP with Service Pack 3 installed or later operating system (Vista or Windows 7).

The DFS-1000 Dataview software is located on the USB Stick drive included with the controller. The software does NOT auto install. You will need to place the USB Drive in an open USB port and wait for the system to recognize the device and inform you that the drive is ready to use.

On most systems a window will open showing the contents of the drive, if a List appears please select the option that allows you to view drive contents. An alternate way to access the drive is to right click on Start and select Explore. Scroll down the list and select Digital Firestorm Drive.

Once you have the USB Drive opened you may copy the “DFS-1000 Dataview 1.0.msi” file to another location on your file system if you desire. When you double click on the file the Windows Installer will begin installing the software. Install the software to the default directory. A sub folder will be created in the installed Programs list, this folder will contain links to run or remove the software. A link is also provided to access a pdf help file. You must have Adobe Acrobat Reader installed to read the pdf file. A shortcut icon will also be placed on the desktop to start the application.

The DFS-1000 controller relies upon a Windows common USB driver so you may connect the USB cable at any time, even before installing the Dataview software. Please connect the USB cable and power up the DFS-1000 controller and let the system find and initialize the new device for before starting the application.

The Dataview application will allow you to access all of the User settings that are available on the controller using a PC or Laptop. Please refer to the Dataview application Help files for more information.

IMPORTANT—the USB interface is disabled when the controller has been Activated. If the internal Data log memory was erased before Activation the controller will log input/output information for 30 seconds. Data logging begins when the Activation signal is first applied, even if the 2-Step/Launch Input is ON. This way as you stage with the 2-Step on and go Wide Open Throttle the controller will data log the Launch and Pre-Launch events.

Installing DFS FLASH Utility Software

To install and use the DFS FLASH Utility software you will need to be running Windows XP with Service Pack 3 installed or later operating system (Vista or Windows 7).

The DFS FLASH Utility software is located on the USB Stick drive included with the controller. The software does NOT auto install. You will need to place the USB Drive in an open USB port and wait for the system to recognize the device and inform you that the drive is ready to use.

On most systems a window will open showing the contents of the drive, if a List appears please select the option that allows you to view drive contents. An alternate way to access the drive is to right click on Start and select Explore. Scroll down the list and select Digital Firestorm Drive.

Once you have the USB Drive opened you may copy the “DFS FLASH Utility 1.0.msi” file to another location on your file system if you desire. When you double click on the file the Windows Installer will begin installing the software. Install the software to the default directory. A sub folder will be created in the installed Programs list, this folder will contain links to run or remove the software. A link is also provided to access a pdf help file. You must have Adobe Acrobat Reader installed to read the pdf file. A shortcut icon will also be placed on the desktop to start the application.

The DFS-1000 controller relies upon a Windows common USB driver so you may connect the USB cable at any time, even before installing the DFS FLASH Utility software. Please connect the USB cable and power up the DFS-1000 controller and let the system find and initialize the new device for before starting the application.

The DFS FLASH Utility application is used to Load alternate FLASH Images (software) into the controller. The current FLASH Image file name will be displayed in the Dataview and/or DFS FLASH Utility window when the applications are ran and the DFS-1000 controller is connected with the USB cable and powered up.

NOTE—the controller requires a separate power source other then the USB interface.

Please refer to the application Help files for information related to loading a new FLASH Image.

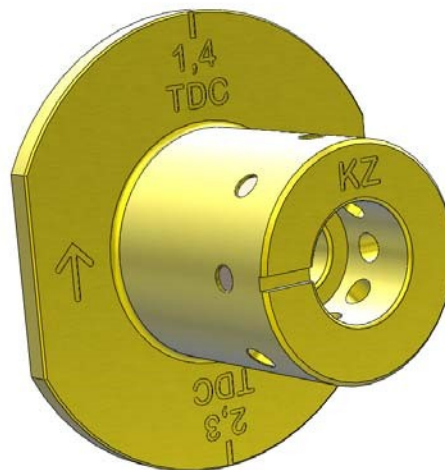
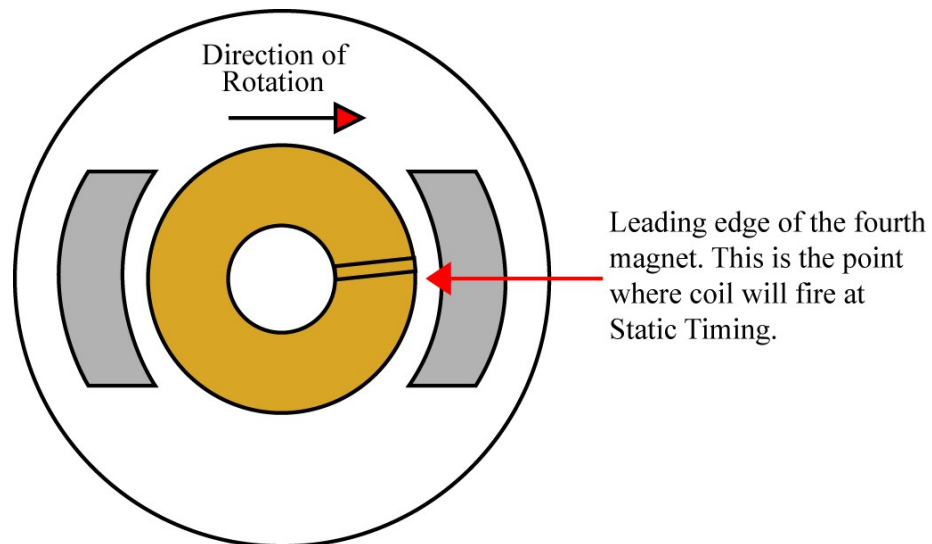
High Resolution Rotor, Static Timing

To use the High Resolution rotor the “DFS_8X_HALL_EFFECT x-x-x.DFI” image file must be loaded into the controller. Install the DFS FLASH Utility software and follow the instructions in the Help file to load the FLASH Image.

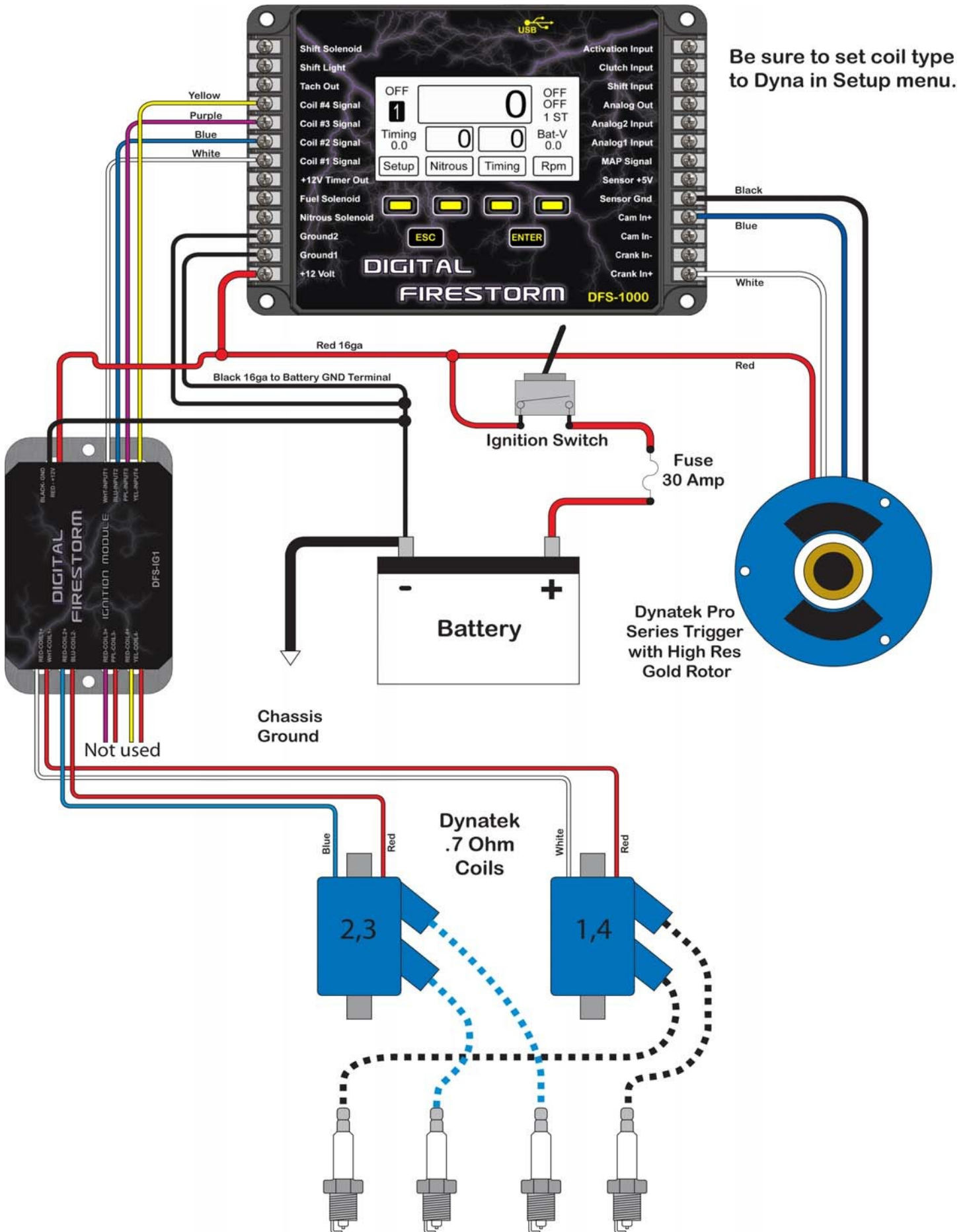
The timing is adjustable using the DFS-1000 user interface or the PC software from 0 to 40 degrees of advance. The rotor is designed to be set at TDC for both the 1,4 and 2,3 triggers. It is OK to retard the center cylinders (2,3) a few degrees if needed using the trigger.

If a CAM sensor is adapted (development has been started) to a KZ or GS engine and a Rotor with eight magnets is used, then individual cylinder timing can be provided. This option is still in the early development stage. When it is available the controller can be updated with the new FLASH Image.

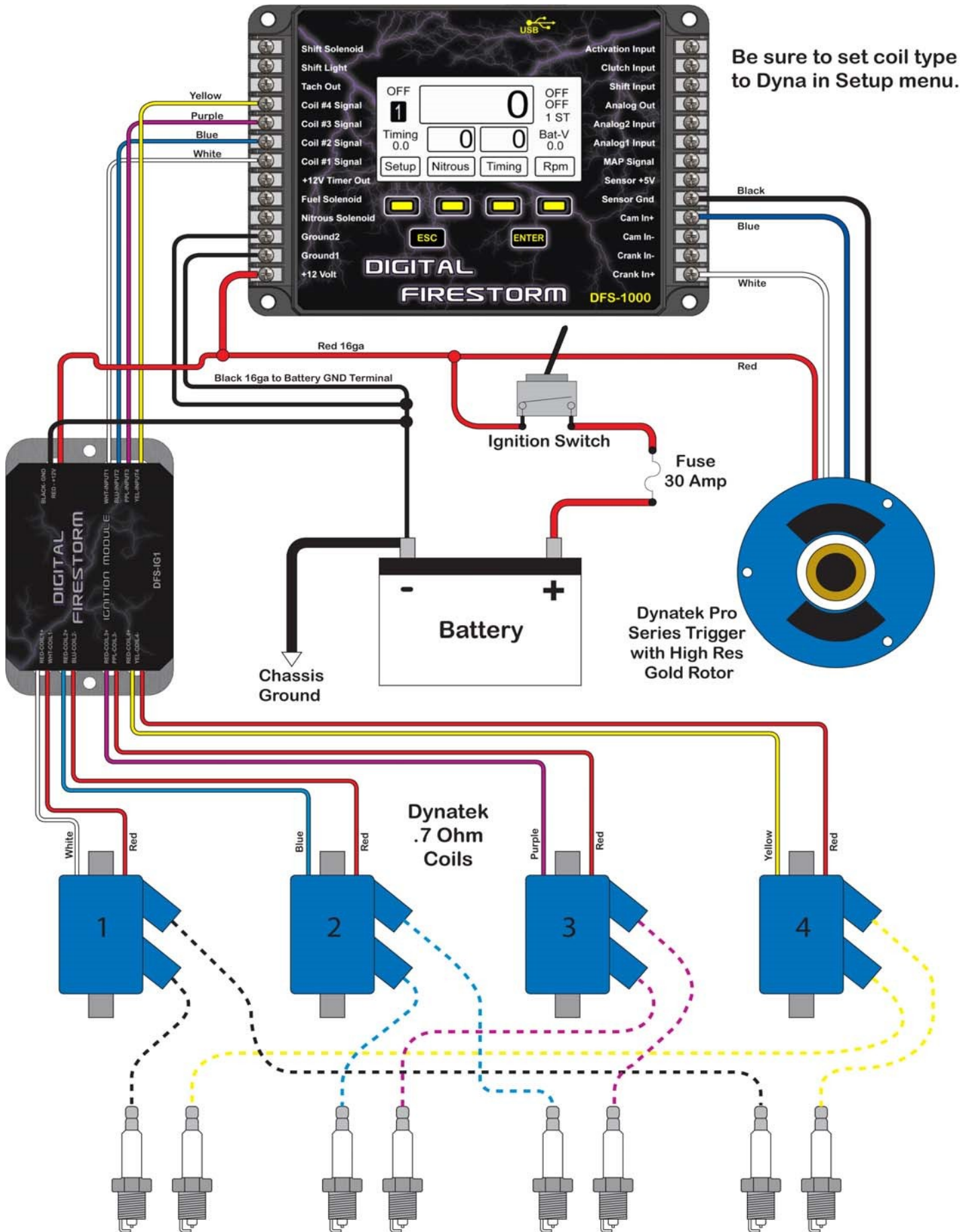
The High Resolution rotor is Gold anodized for easy identification and corrosion resistance. Use the magnet with a line (notch) pointing to it to set the static timing. Use the Static Timing function from the “Setup” menu on the controller to aid in setting the static timing. When the controller is in Static Timing mode the display will show the trigger state and the Shift Light if connected will also function as a timing light.



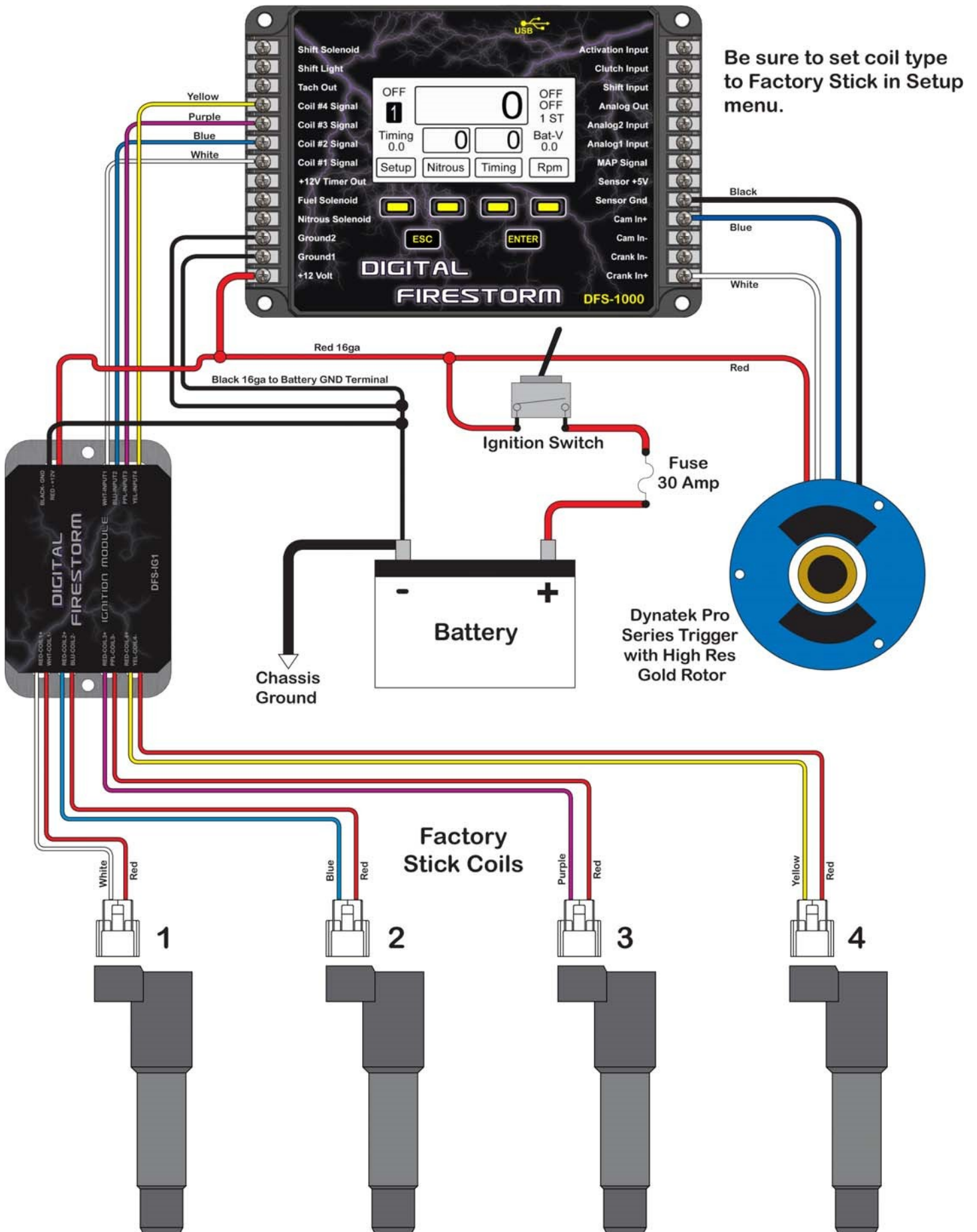
Single Plug Cylinder Head



Dual Plug Cylinder Head



Single Plug, Stick Coil



Selecting and Loading the Correct FLASH Image

The DFS-1000 can be configured for many different applications based on the FLASH Image (software) that is loaded. As new applications become available they will be included on the USB drive.

The controller will NOT function if the wrong FLASH Image is loaded into the controller. Please see the list below for current supported applications. Install and use the DFS FLASH Utility software on a PC/Laptop to load the correct image file into the controller.

It may be possible to create a NEW image file for applications not listed. Contact your dealer or email seellc@mchsi.com to enquire. A minimum of 8 crank trigger pulses per revolution are required and a cam trigger signal. Also cam trigger phasing (degrees past TDC) information will be needed. Depending on the application and the complexity a fee may be charged, this will be determined at the time of the request.

Supported applications and correct image file

GSXR-1300, 1999-2001 (8 pulse crank trigger) - "DFS-GSXR_1300 1999-2001 x-x-x.DFI"

GSXR-1300, 2002-2007 (24-1 pulse crank trigger) - "DFS-GSXR_1300 2002-2007 x-x-x.DFI"

GSXR-1300, 2008-20xx (24-2 pulse crank trigger) - "In development phase, contact for Beta image"

GSXR-1000, 2002-2007 (8 pulse crank trigger) - "DFS-GSXR_1000 2002-2007 x-x-x.DFI"

Contact your dealer or email seellc@mchsi.com to enquire.

Using with Factory ECM (Fuel Injection)

When using the DFS-1000 with a factory ECU the coil load must be simulated or the ECU will turn the injector OFF for any cylinder that does not have a proper electrical load. This simulated or dummy load is provided with a coil dummy pack. See below for ordering information.

When using the DFS-1000 to control the ignition and a Factory ECU to control the fuel the crank and cam trigger wires may be spliced into the ECU crank/cam trigger wires. At this time no issues (setting ECU trigger codes) have been experienced.



Dummy coil pack available from Schnitz Racing

1109015-SUZ for late model Suzuki Sport Bikes.

1109015-KAW for late model Kawasaki Sport Bikes.



Stick coil connector kit available from Schnitz Racing, these are the connectors required to plug into the factory stick coils.

CPACK-F, Coil Connector Kit, Stick Coils—Female

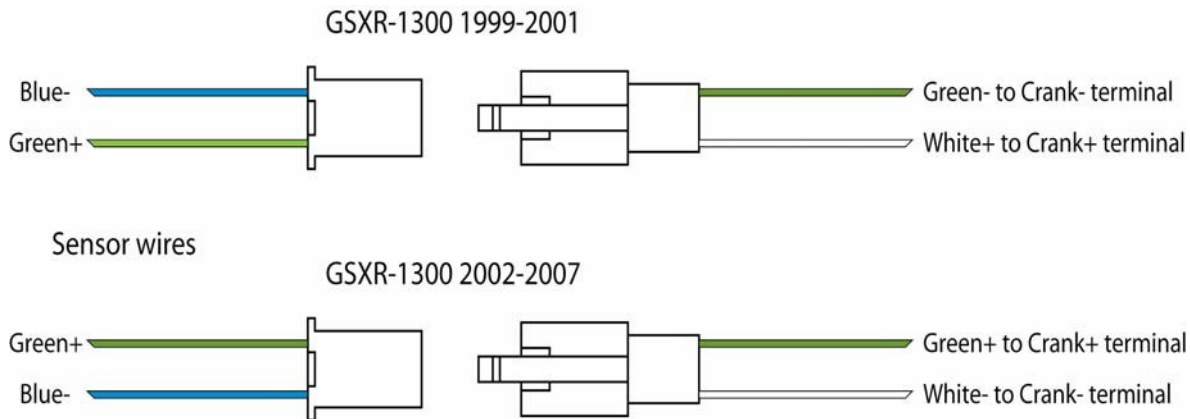
Connecting the Crank Sensor

The crank sensor is typically a VR or Magnetic 2-wire style, the Positive wire should be connected to the Crank+ terminal on the controller and the Negative wire should be connected to the Crank- terminal.

When using the DFS-1000 to control the ignition and a Factory ECU to control the fuel the crank trigger wires may be spliced into the ECU crank trigger wires. At this time no issues (setting ECU trigger codes) have been experienced.

If the controller is used with carburetors then the crank trigger wires can be connected directly to the Crank+ and Crank- terminals.

There is an example below of connecting the crank sensor, in most applications you will need to determine which wires are from the crank sensor and determine the polarity. If the wires are connected backwards the controller may not allow the engine to start or the ignition timing will be incorrect. In almost all cases the sensor polarity (wire color) can be found in the factory service manual.



Connecting the Cam Sensor

The cam sensor is typically a VR or Magnetic 2-wire style, the Positive wire should be connected to the Cam+ terminal on the controller and the Negative wire should be connected to the Cam- terminal.

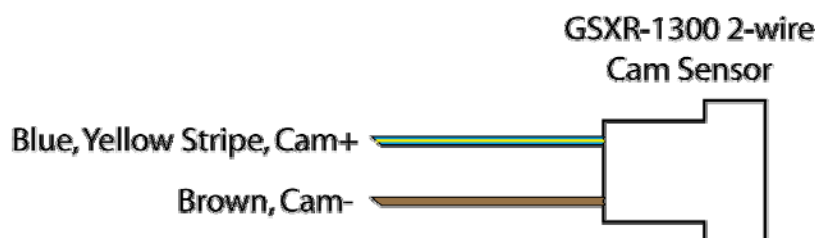
When using the DFS-1000 to control the ignition and a Factory ECU to control the fuel the crank and cam trigger wires may be spliced into the ECU crank/cam trigger wires. At this time no issues (setting ECU trigger codes) have been experienced.

If the controller is used with carburetors then the cam trigger wires can be connected directly to the Crank+ and Crank- terminals.

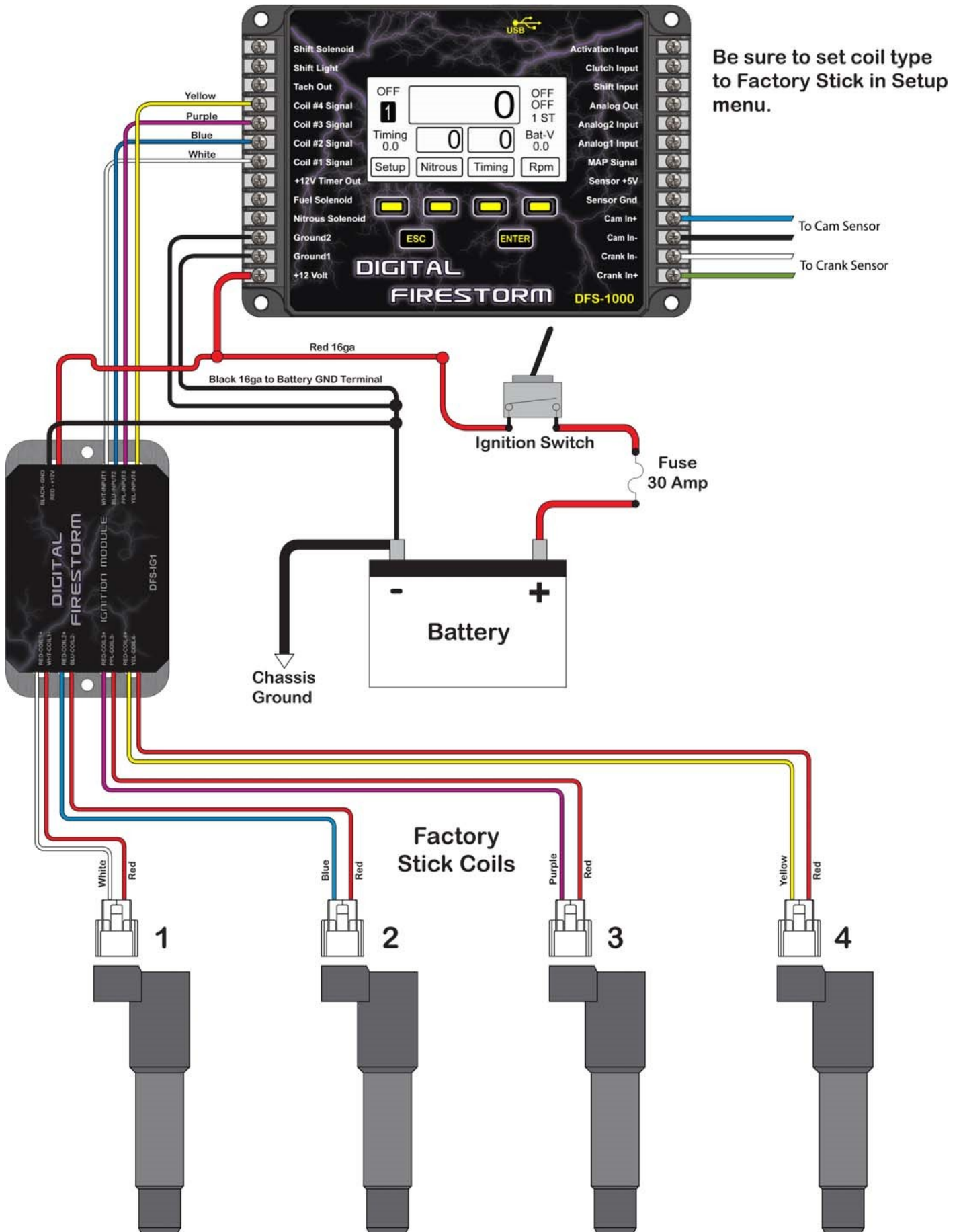
If the cam sensor has three wires it is a Hall Effect style and only the cam sensor signal wire should be connected to the Cam+ terminal. The Cam- terminal is left un-connected.

There is an example below of connecting the crank sensor, in most applications you will need to determine which wires are from the cam sensor and determine the polarity. If the wires are connected backwards the controller will not allow the engine to start.

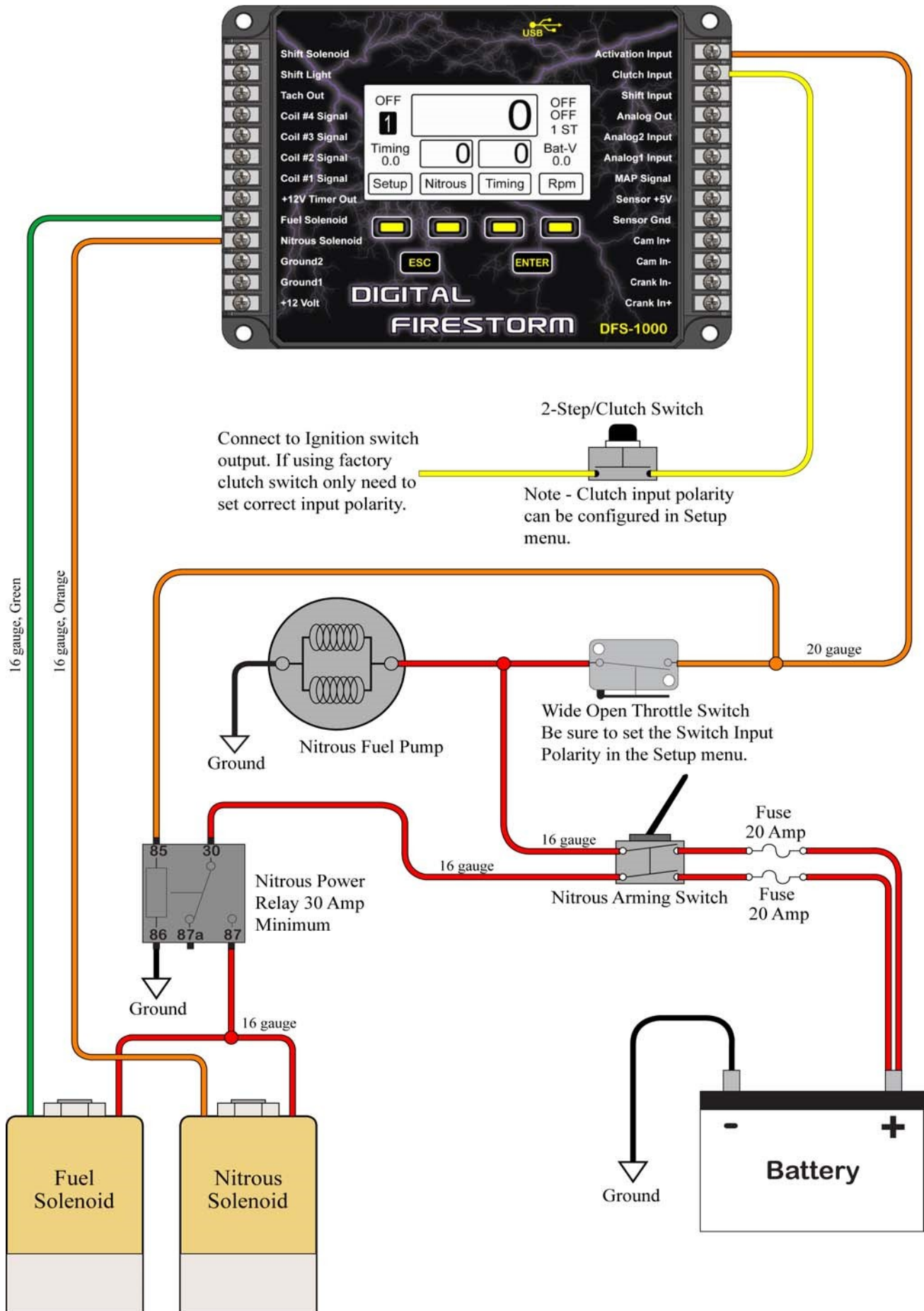
In almost all cases the sensor polarity (wire color) can be found in the factory service manual.



Ignition System Installation



Nitrous System Installation



TPS (Throttle Position Sensor) Connection

A TPS (Throttle Position Sensor) signal may be connected to the Analog2 Input. To enable the TPS Input function the controller must be configured.

- 1—Power up the controller.
- 2—Press the “ENTER” button.
- 3—Press the button under the “OPT” icon.
- 4—Scroll down and select the “Analog2 Setup Menu” and press the “ENTER” button.
- 5—Scroll down to “TPS Option is OFF” and press the “ENTER” button.
- 6—If Help is on choose to view or skip and then Select “YES” to turn TPS option ON.
- 7—Configure the TPS Input min and max (Idle and WOT) voltages.

If you want to use the TPS Input along with the “Activation” input to control the Nitrous you will need to enable the function. If the TPS Activation is not enabled the TPS input readings will only be data logged.

IMPORTANT—on some models the TPS input reading may be erratic when the engine is running. This is due to factory ECU/Sensor ground wiring. This problem may be encountered with some O2 Wideband controllers or when reading the Gear Sensor position voltage. A solution is available to eliminate ground offset errors, part number ARC-001 (Analog Reference Correction) can be purchased and installed. Contact your dealer or email seellc@mchsi.com for more information on the ARC-001.

Basic Wideband (O2) Controller Connection

The analog output (0 to 5 volts) from a O2/Wideband controller can be connected to the Analog1 input. To enable the Wideband function the controller must be configured. Once the controller is configured to read the Air/Fuel ratio it may also be used to disable the Nitrous in the event the system goes lean.

- 1—Power up the controller.
- 2—Press the “ENTER” button.
- 3—Press the button under the “OPT” icon.
- 4—Scroll down and select the “Analog1 Setup Menu” and press the “ENTER” button.
- 5—Scroll down to “AFR Option Off” and press the “ENTER” button.
- 6—If Help is on choose to view or skip and then Select “YES” to turn AFR option ON.
- 7—Configure the AFR input parameters.

In order for the controller to convert the analog (0 to 5V) input to an Air/Fuel/Ratio the proper values must be entered that correspond to the Wideband controller output.

AFR Min Voltage—this is the minimum voltage the Wideband controller outputs.

AFR Min Value—this is the Air/Fuel/Ratio at the AFR Min Voltage.

AFR Max Voltage—this is the maximum voltage the Wideband controller outputs.

AFR Max Value—this is the Air/Fuel/Ratio at the AFR Max Voltage.

Example settings for a “Wideband Commander”

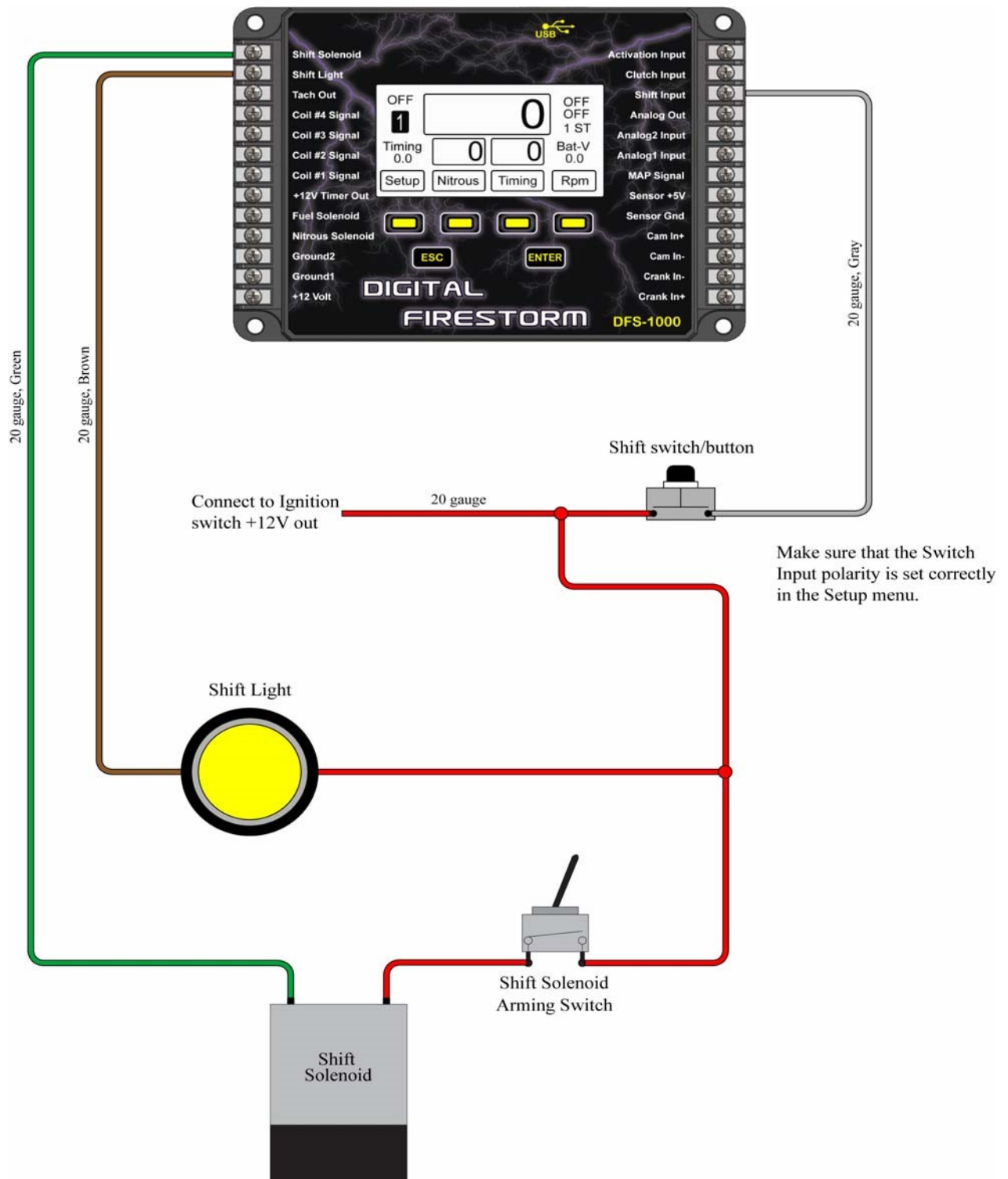
AFR Min Voltage = 0.00

AFR Min Value = 10

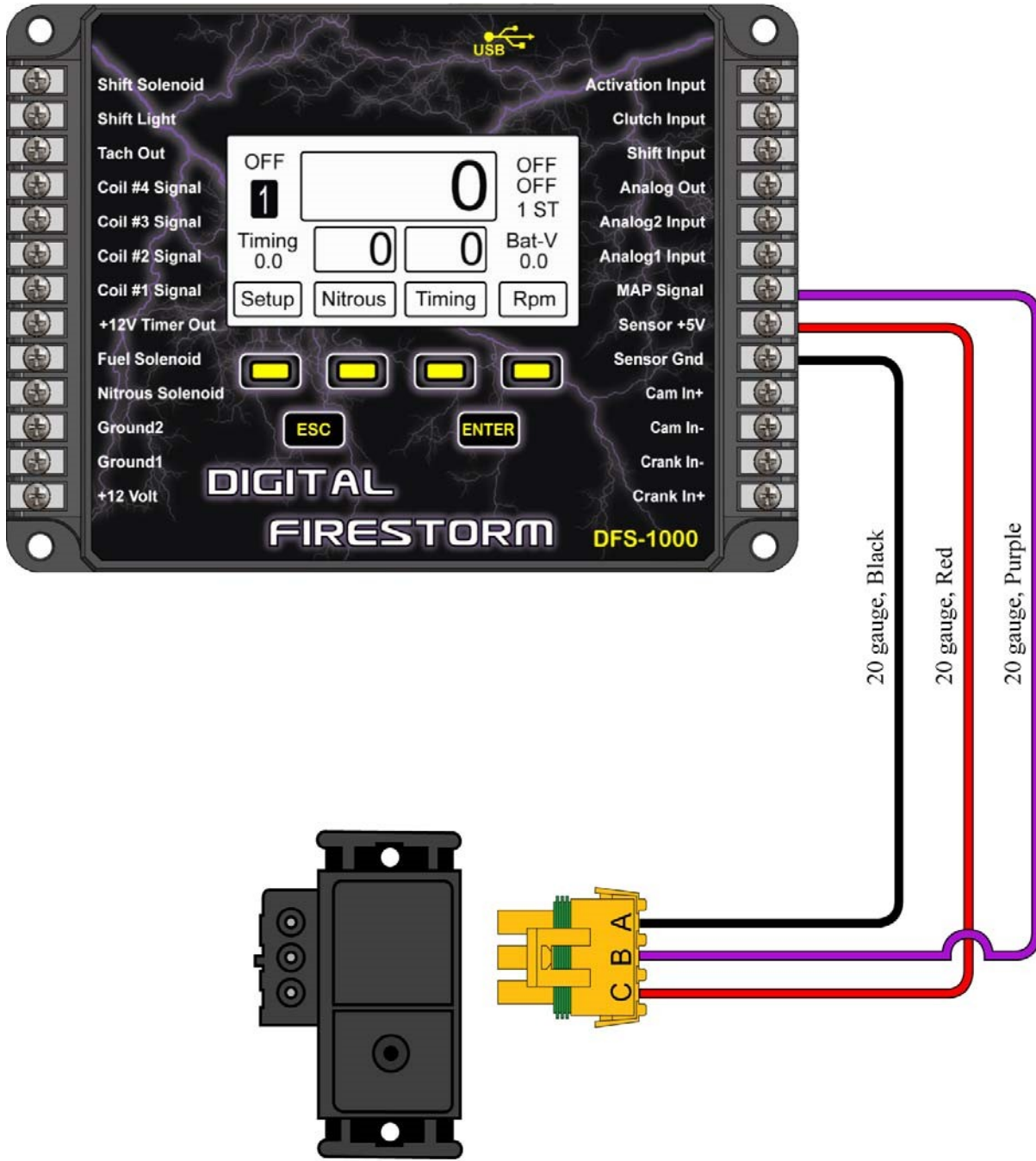
AFR Max Voltage = 5.00

AFR Max Value = 18

Shift Light and Solenoid Installation



GM 3-Bar MAP Sensor Installation



GM Map Sensor
12223861 3bar MAP