

OWNERS MANUAL

InPower Model SS-GM-02

Electronic Start/Stop/Elevated Idle Control Module for GM 2019+ C4500-6500 and Navistar CV

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1. Introduction

InPower's SS-GM-02 Start/Stop/Elevated Idle Module interfaces with the GM PTO Upfitter Connector to provide you with the signals you need for Elevated Idle selection and Start/Stop Functions. This product is compatible with (Diesel Only) 2019+ GM 4500-6500 and Navistar CV vehicles.

Please refer to the **GM Upfitter Integration Bulletin 120F** (or most current revision of 120) for up to date information for the integration of this system.

This programmable PTO controller interface provides Start, Stop, and two preset RPM modes. It provides a +12VDC and Ground True input control for Start/Stop and Elevated RPM functions - All of these Inputs are activated as a momentary switch connection. The SS-GM-02 also supplies a Start/Run Status Output and an optionally configured Output. The programmable nature of this unit allows the customization of these inputs to meet customer requirements and service a wide variety of application interfaces. For custom requirements, please contact InPowerLLC for your needs.

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The SS-GM-02 is directly interfaced to the GM PTO Controller which constantly monitors chassis conditions and co-ordinates requests from the SS-GM-02. It connects to the PTO Upfitter Connector and thereby the GM PTO Controller.

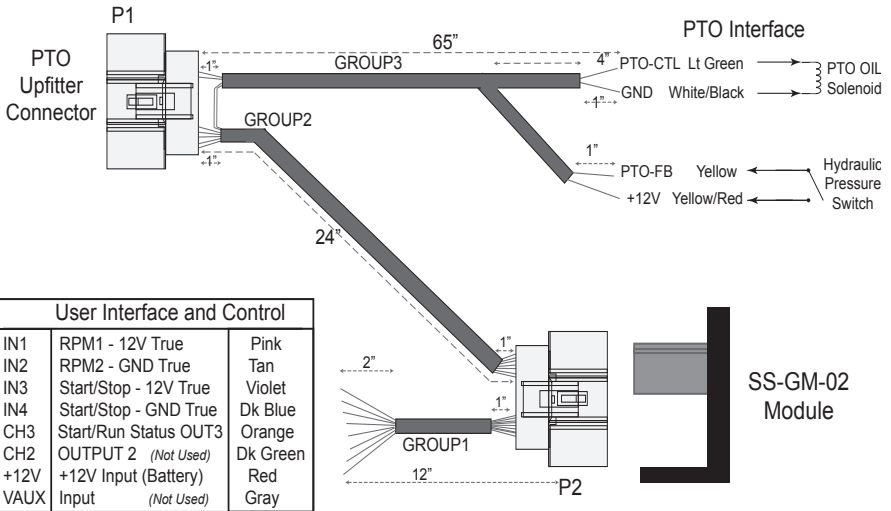
The SS-GM-02 kit includes a harness for connection to the PTO Upfitter Connector and the PTO itself. This harness consists of a connector (P1) to connect to the GM PTO Upfitter Connector, and the other connector (P2) for the connection to the SS-GM-02. The SS-GM-02 is then connected to the PTO via 4 Blunt-Cut wires: PTO-CTL, GND, PTO-FB, and +12V. These wires to the PTO will be terminated with user supplied, PTO appropriate connectors dictated by the type of PTO that is installed. There are also 8 Blunt Cut wires provided for the User Interface and Control of the SS-GM-02 Module. These provide Start/Stop and RPM selection, Status output, and a +12V Power Input.

Note 1: GM vehicle wire colors and locations may vary substantially between different models and even different model years. **Please obtain and consult the PTO Control information for your specific vehicle prior to installing the module.** Documentation may be obtained from GM's Website.

Note 2: Please refer to your PTO manufacturer for the appropriate PTO connectors for PTO-FeedBack and PTO-Control.



SS-GM-02 Harness Start/Stop/High Idle with PTO and PTO Upfitter Connector



1.1 Control Interface

The standard configuration for the SS-GM-02 is as follows:

User Interface and Control			
IN1	RPM1	- 12V True	Pink
IN2	RPM2	- GND True	Tan
IN3	Start/Stop	- 12V True	Violet
IN4	Start/Stop	- GND True	Dk Blue
CH3	Start/Run Status	-(OUT3 12v)	Orange
CH2	OUTPUT 2	-(Not Used)	Dk Green
+12V	+12V Input		Red
VAUX	Input		Gray

IN1 RPM1 - (12V True) A momentary connection to +12V selects RPM1 (programmed into the PTO Controller by the GM tech tool) if the engine is running. Momentary input - push to turn on RPM1, then push to turn off RPM1.

IN2 RPM2 - (Gnd True) A momentary connection to Gnd on this wire selects RPM2 (programmed into the PTO Controller by the tech tool) if the engine is running. Momentary input - push to turn on RPM2, then push again to turn off RPM2.

IN3 Start/Stop - (12V True) A momentary connection to +12Vdc starts the engine. The next momentary connection to +12V Stops the engine. Momentary input - push to Start, push again to Stop.

IN4 Start/Stop - (Gnd True) A momentary connection to Gnd starts the vehicle. The next momentary connection to Gnd Stops the engine. Momentary input - push to turn Start, push again to Stop.

CH3 Start/Run Status - Goes to 12V when the SS-GM-02 has initiated a Start/Run sequence of the Engine. Goes to open circuit (disconnected from 12V) if the engine doesn't start.

+12V Input - Power for the SS-GM-02 (Battery) 2ma Quiescent Current (nothing driven)

VAux - Auxiliary Input for voltage monitoring

Depending on the optional configuration ordered, the interface can be (for other configurations, please contact InPowerLLC).

Model	Description	I/O Details	Comments
SS-GM-02	Default Configuration	Inputs (see above)	
SS-GM-02-C	Contact InPower for Custom Configurations		

2. Installation Procedures



2.1 Safety Precautions

This electronic Start/Stop/Elevated Idle product has been designed and manufactured to meet the intended application requirements and specifications. Any modifications to the product or to the installation procedure can be dangerous and will void InPower's warranty.

- Read and understand the instructions in this manual and other manuals before starting the installation.
- **Make sure that the vehicle battery power is disconnected during the installation of the Start/Stop module.**
- **Reconnect the battery when the system installation is complete.**
- Wear appropriate safety equipment, such as protective eyeglasses, faceshield and clothing when installing equipment and handling the battery.
- Be careful when working near a battery. Make sure that the area is well ventilated and that there are no flames near the battery. Never lay objects on the battery that can short the terminals together. If battery acid gets in your eyes, immediately seek first aid. If acid gets on your skin, immediately wash it off with soap and water.

2.2 Getting Started

IMPORTANT NOTE: Once again! Please obtain the specific PTO installation instructions for your vehicle make and model from GM. Wire colors and locations may vary from model to model and even between different years for the same model. The guide may be obtained from **GM's Upfitter Integration Bulletin 120F** (or latest revision thereof).

The SS-GM-02 is designed for Frame Rail Mounting. It is designed to IP66 (No ingress of Dust and able to withstand water spray).

You will need tools to splice wires together. For each the Start/Stop/Preset Idle settings you will need different switches. They also can be configured to be steady signals. This is all in the desired configuration of the control lines. Carefully disconnect the battery before making any electrical connections.

2.3 Required Installation Hardware

#10 Mounting hardware (bolts and nuts)

Connector to match your chassis specific PTO Solenoid

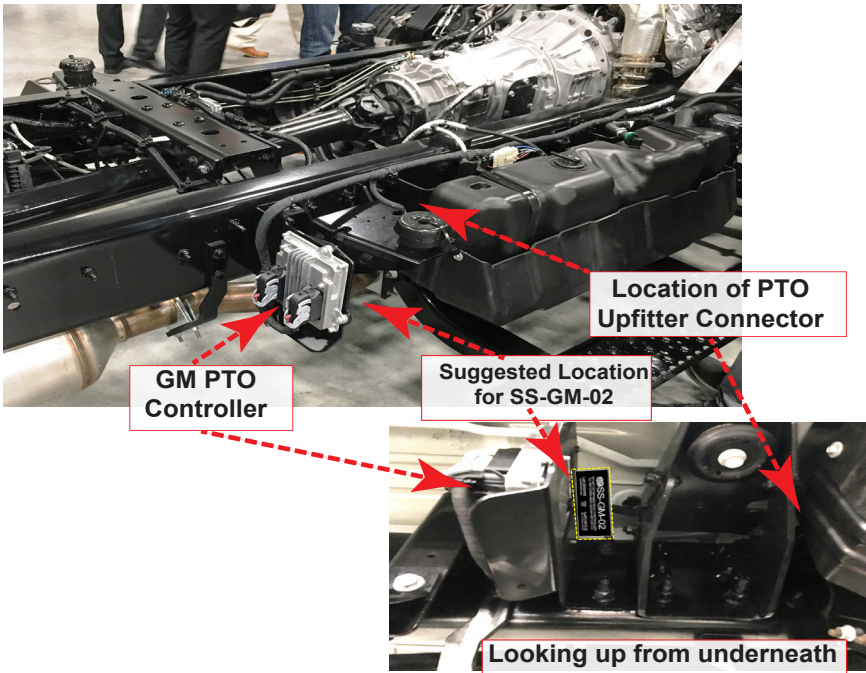
Connector to match your chassis specific PTO Pressure Switch

2.4 Mounting the SS-GM-02

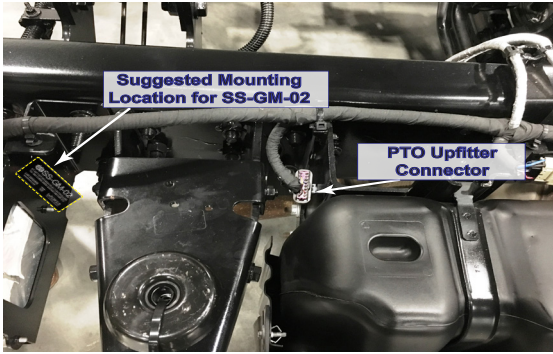
It is suggested the mounting of the SS-GM-02 module be on the frame rail on the backside of the GM PTO Controller Bracket. There are holes in this bracket that will facilitate mounting. These will accommodate #10 mounting hardware. This location will insure that there is enough wire to plug into the GM PTO Upfitter Connector and into the SS-GM-02.

There are blunt cut wires provided for the interface to the PTO itself. The Control of the PTO is performed by the Group 3 wire bundle shown in the **SS-GM-02 Harness** START/STOP/High Idle. The PTO-CTL Light Green Wire and White/Black GND wire together control the engagement of the PTO and the PTO-FB provides Feedback that the PTO is on and running. This PTO-FB Signal (Group 3 Yellow PTO-FB and +12V Yellow/Red) is based on PTO Pressure indicating that the PTO is on and functioning properly. Both of these need to have the PTO specific connectors connected to the provided blunt cut wires.

Overview of Framerrail PTO Controller and PTO Upfitter Connector



PTO Upfitter Connector Location

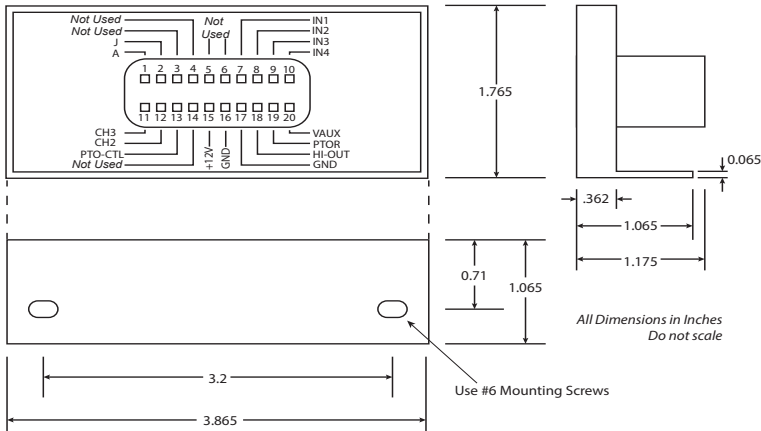


2.5 Making the Control Connections

First, unplug the plug from the PTO Upfitter Connector, and plug the SS-GM-02 Harness P1 Connector into the PTO Upfitter Connector. Next, Plug P2 of the harness into the SS-GM-02 Start/Stop Controller.

Next, with the appropriate connectors for your PTO type, route the Group 3 wires from the P1 Connector to the PTO and connect the PTO-CTL and GND (PTO Control and Ground connections) to the PTO. Then, with the appropriate connector for your PTO, connect the PTO-FB and +12V (Feedback signal (Pressure) and Power) to the PTO. This will insure that there is proper Control and Feedback from the PTO to the SS-GM-02 Start/Stop Controller and PTO Controller.

Following the connections to the PTO Upfitter Connector (P1) and SS-GM-02 (P2), the Group 1 signals must be appropriately Terminated for Start/Stop and RPM



Selection selection. Connect the Group 1 Wires in appropriate manner for your application.

4.0 Troubleshooting

Troubleshooting of the SS-GM-02 is accomplished in the following manner:

1. Make certain that all the connections are tight to the PTO Upfitter Connector and to the PTO itself, and that +12V power is being supplied to the SS-GM-02.
2. Make certain all the Chassis Ready Conditions (listed in the GM PTO Bulletin) are satisfied for engagement of the PTO.
3. Apply a momentary +12Vdc to Input 3 (or alternately momentary GND to Input 4) to start the SS-GM-Start Sequence.
4. Monitor the Start/Run Output (Out3). when the command is acknowledged by the SS-GM-02 this line will go to +12Vdc. If the vehicle engine starts, this signal will remain high. If it doesn't start, it will drop to Gnd after 30 seconds.
5. Finally, apply a momentary +12Vdc to Input 3 (or alternately momentary GND to Input 4) to Stop the Engine.

Troubleshooting RPM selection

If the Engine is Running and all Chassis Ready Conditions are satisfied, upon the selection of either RPM1 or RPM2, the Engine should go to the Selected RPM programmed by the GM Tech Tool.

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