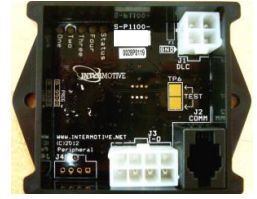# Protected Idle Output
G-PIO601-A 2021-2025 Chevy Tahoe

Introduction

The Protected Idle Output module is used for Chevy Tahoes with the Protected Idle feature. The Protected Idle feature allows the officer to lock the vehicle in park with the engine running and take the key out of the vehicle. PIO601 offers an output intended to disable the gun lock release button or any other equipment. The outputs activate 10 seconds after the feature is enabled to provide the officer time to operate the gunlock.

Installation Instructions

Disconnect vehicle battery before proceeding with installation

CAUTION

All electronic products are susceptible to damage from Electrostatic Discharge or ESD. Ground yourself before handling or working with the module and harnessing by first touching chassis ground, such as the barrel of the cigarette lighter.

IMPORTANT—READ BEFORE INSTALLATION

It is the installer's responsibility to route and secure all wiring harnesses where they cannot be damaged by sharp objects, mechanical moving parts and high heat sources. Failure to do so could result in damage to the system or vehicle and create possible safety concerns for the operator and passengers.

Avoid placing the module where it could encounter strong magnetic fields from high current cabling connected to motors, solenoids, etc. Avoid radio frequency energy from antennas or inverters next to the module. Avoid high voltage spikes in vehicle wiring by always using diode clamped relays when installing upfitter circuits.

PIO601 Module

Remove the lower dash panel below the steering column area and find a suitable location to mount the PIO601 module. Locate the module in an area away from any high heat sources (engine heat, heater ducts, etc.). Do not mount the module until all wire harnesses are routed and secure. The last step of the installation is to mount the module.

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Gateway Plug and Play Harness

1. Locate the Gateway module that is located under the dash and above the accelerator pedal.

2. Locate the 30-pin connector, X1 labeled "BLK" on the module.

3. Unplug the Black 30-pin connector from the Gateway module and plug it into the mating connector on the PIO601 harness. Plug the male connector from the PIO601 harness into the OEM Gateway module (X1).

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8-Pin PIO601 Connector Pin-Out Definition

This connector contains the PIO601 output pins. Each output rated at 1/2A and is intended to drive relay coils or other low current loads. **Note: when driving relays, a diode-protected type must be used. InterMotive recommends DigiKey #PB682-ND Relay.**

The pins are defined as follows:

- Pin #1 (Orange wire) Protected Idle Output, +12V with 10 sec delay

- Pin #2 (Purple wire) Protected Idle Output, +12V with 10 sec delay

- Pin #3 (Yellow wire) Protected Idle Output, Ground with 10 sec delay

- Pin #5 (Red wire) fixed jumper to pin 6

- Pin #6 (Red wire) fixed jumper to pin 5

- Pin #7 (Green wire) Protected Idle Output, Ground with 10 sec delay

Connect the desired outputs to vehicle equipment as needed. Tape up unused leads. When connecting to relays, use relays with appropriate kick-back suppression, such as Digikey #PB682-ND. Unsuppressed relays will induce very high voltage spikes throughout modern vehicles sensitive computer electronics and should not be used, per Ford, GM, SAE, etc.

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Reconnect the vehicle battery

Initial Installation Power-Up

When the PIO601 module is first plugged in, it attempts to acquire the vehicles VIN to interpret vehicle data on the OBD network for five minutes. If Vin is not received then the module will go to sleep. The key must be in the Run position for network traffic to be present (engine off is OK).

1. Turn the ignition switch to the Run position.
2. Plug the 4 pin data link connector into the module

- If the module LEDs "scroll", then it has NOT acquired a recognized VIN. The chassis may be a new Model Year which the module does not recognize, or the chassis has an unrecognized engine. Ensure your chassis is listed at the top of page one of these instructions. Contact InterMotive Tech Support for assistance.
- If no LEDs come on when the module is plugged in and powered up, it is working properly. Proceed to post installation testing.

PIO601 Module Mounting

Ensure all the harnesses are properly connected and routed, and are not hanging below the dash area. Mount the PIO601 module using screws or double sided tape. Reinstall the lower dash panel.

PIO601 Post Installation Testing

1. Turn the ignition ON to wake up and initialize the PIO601 module. The Module will turn on four outputs when Protected Idle is enabled, two +12 volts and two ground outputs.

2. Pin1 (Orange Wire) is a +12 volt output. Turn on Protected Idle and verify the output is 12 volts 10 seconds after enabling.

3. Pin2 (Purple Wire) is a +12 volt output. Turn on Protected Idle and verify the output is 12 volts 10 seconds after enabling.

4. Pin3 (Yellow Wire) is a Ground output. Turn on Protected Idle and verify the output is Ground 10 seconds after enabling.

5. Pin4 (Green Wire) is a Ground output. Turn on Protected Idle and verify the output is Ground 10 seconds after enabling.

The PIO601 is properly installed only if it passes the above tests. If any irregular operational issues persist, recheck the condition set configuration. Contact InterMotive at 530-823-1048 for technical assistance.

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Diagnostics

To enter diagnostic mode, momentarily short the two test pads together on the module (look for "Test" on the printed circuit board) with the ignition on. There are eight 'pages' of diagnostic data. Each time the test pad is momentarily grounded the module will advance to the next 'page'. The Status LED will flash the page number (e.g. the Status LED will flash 5 times when in 'page' 5).

Page 1

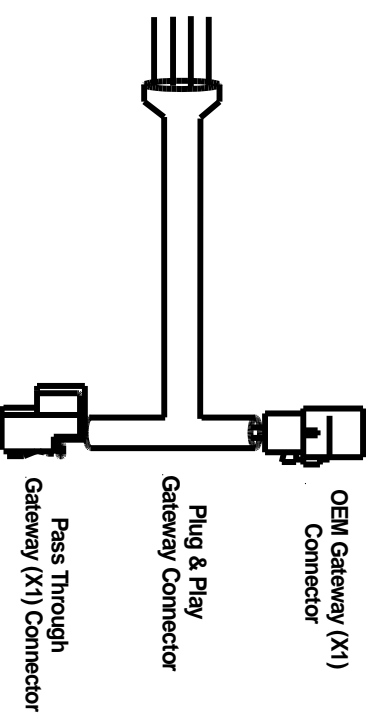The on-board LED's will light when a corresponding load is active:

LED1 = Protected Idle Output Active
LED2 = Not Used
LED3 = Not Used
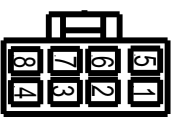LED4 = Protected Idle Active
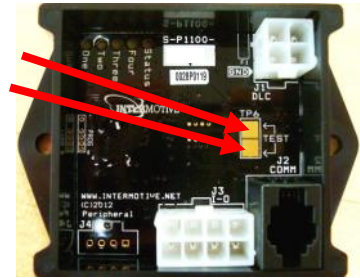
PIO601 Operation

Turning the vehicle ignition ON will wake up and initialize the PIO601 module. Outputs are controlled based on the module's configuration.
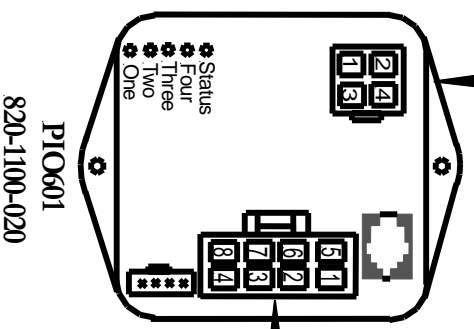
When the key is turned OFF, the PIO601 module will go into a low power sleep mode and it's outputs will shut off. This may take up to five minutes, and the Diagnostic LED's (if active) on the module will go out once in sleep mode.

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PIO601
820-1100-020

Status
Four
Three
Two
One

Back of Connector

Back of Connector

1	RED	(12V Battery Voltage)
2	BLUE/WHITE	(HS CAN High)
3	GRAY	(Ground)
4	YELLOW	(HS CAN Low)

1	ORANGE	Protected Idle Output (+12V with 10 sec. delay)
2	PURPLE	Protected Idle Output (+12V with 10 sec. delay)
3	YELLOW	Protected Idle Output (Ground with 10 sec. delay)
4	BLUE/WHITE	N/A
5	RED	
6	RED	
7	GREEN	Protected Idle Output (Ground with 10 sec. delay)
8	BROWN/WHITE	N/A

OEM Gateway (X1) Connector

Plug & Play Gateway Connector

Pass Through Gateway (X1) Connector

Submit product registration at www.intermotive.net

If the PIO fails any step in the Post Installation Test, review the installation instructions and the loaded configuration by running the Graphical User Interface application. If necessary, call InterMotive Technical Support at (530) 823-1048.