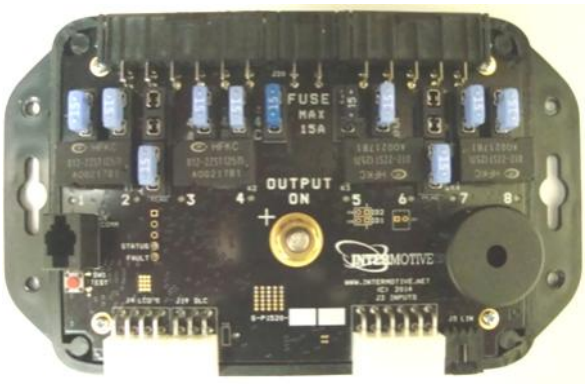
PRC9xx-A
Programmable Relay Power Center

See FlexTech Programming Utility software for latest list of supported vehicles
See below for a current list of supported Ford vehicles
Contact InterMotive for additional applications



Introduction

The **Programmable Relay Power Center (PRPC)** is the core module in the **FlexTech System** and provides access to a broad range of vehicle data such as MPH, RPM, Park Brake, Service Brake, temperatures, transmission range, accelerator pedal, doors, lights, door locks, ABS, MIL, etc. Specific data is vehicle dependent. The PRPC provides 8 configurable relay outputs, eight configurable low current outputs (1/2A Max), and six configurable beepers. There are also ten general purpose inputs, one analog input, and one dedicated ignition input that can be used as part of the programmable logic. The Programmer allows logical combinations (AND, OR, =, >, <) of various vehicle data to control an output. For example, one output can be programmed to go active when ECT>230 OR TFT>250 AND RPM>300 (any numeric values can be used). This could drive a high temperature dash indicator. Another output could be programmed to drive a warning buzzer/lamp when the vehicle speed exceeds some limit, such as 70mph. Electric doors can be disabled unless certain safety conditions are met and so on. Depending on the version of PRC9xx-A that you have there could also be motor reversing hardware included, see the table below.

PRC Versions and the vehicles they currently support

Make sure that the version of PRPC you are installing is the correct one for your Ford vehicle. There may be new vehicles or model years added. If you don't see your vehicle or model year below, please check with InterMotive.

PRC900-A	Without Motor Reversing	(2022 Sprinter)
PRC950-A	With Motor Reversing	(2022 Sprinter)

PRPC's with firmware 4.65 or higher can be connected to the Intermotive CIM, FlexSpeak and FlexFlash system using a LIN harness. For more information, see the appropriate instructions (CIM, FlexSpeak, or FlexFlash).

WARNING: Dual loading fuses on relay(s) 3 and/or 6 will cause a short circuit between Vbat and Ground. This can damage the module and may result in loss of warranty.

PRC9xx Enclosures

The PRC9xx-A comes in a full enclosure that has openings on the side for access to the connectors. This gives full protection for the board. The PRC9xx-AX comes in a low profile enclosure that gives backing support and insulation to the board while allowing air flow over the board.

Motor Reversing vs Non Motor Reversing Operation

In general, all of the relay outputs on the PRPC are of the single-pole-single-throw, normally open (Form A) type. They are open circuits when not activated. When activated, they provide 12V to the output (or optionally ground for Relay 3 and Relay 6). In order to provide motor reversing operation, the PRC950 versions have different relays for Relay 1, Relay 2, Relay 7, and Relay 8. These are single-pole-double-throw, with both normally open and normally closed inputs (Form C). Relay 1 with Relay 2 forms a motor reversing pair (also Relay 7 with Relay 8). To use these outputs in this way requires selecting "Motor Reversing" in the configuration. If selected for Relay 1 it is also selected for Relay 2 (selecting for Relay 7 also selects for Relay 8). If motor reversing is selected, then the software in the PRPC will not allow Relay 1 and Relay 2 (Relay 7 and Relay 8) to be activated at the same time. If motor reversing is not selected in the configuration, these outputs are independent outputs that provide 12V when activated and ground when de-activated.

Optional Add-On modules

There are a number of additional modules that can be connected to the PRPC using a LIN cable. The PRPC then interfaces with these devices to extend the functionality of the FlexTech system. Please refer to the instructions for each module for its installation and operation.

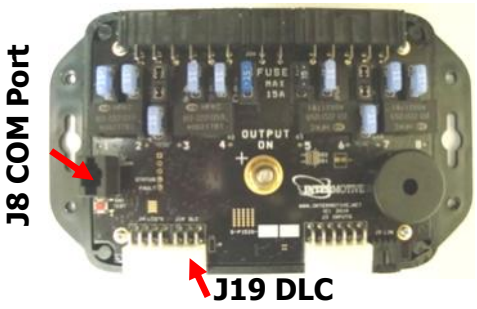
- Switch Backer Board, SBB4 or SBB8. These boards monitor four or eight switches and provide a programmable indicator light for each. They also provide a backlight and have two 1 A and four 0.5 A Low Current Outputs (LCOs). All functions are controlled by the PRPC. A total of two Switch Backer Boards of either size can be used together on the PRPC.
- Expansion Board, EXP401. This board has four 10 A fused relay outputs, four 1 A LCO outputs, and four active low inputs which expand the capability of the PRPC. All functions are controlled by the PRPC. Two Expansion Boards can be used together.

Desktop Programming the PRPC

The InterMotive "a-IPU" kit is sold separately, and allows programming the PRPC on your desktop. It consists of a 12VDC wall power supply and a download cable (see photo at right, the 2 short adapter cables are for other products), and works with the InterMotive Download Manager software utility. This software is a free download from www.intermotive.net/downloads.html.

Note: Do not have the InterMotive Download Manager opened until instructed to do so.

1. Plug the 12VDC wall supply into a 120V AC power source.
2. Locate the 6-Pin Female connector on the module (J19, DLC) but do not connect the 12VDC wall supply to the PRC9xx-A module until indicated in the following steps.
3. Plug the phone jack end of the download cable into the J8 COM port of the PRC9xx-A module and the USB end into your PC.



Loading your previously created Configuration file into the PRPC:

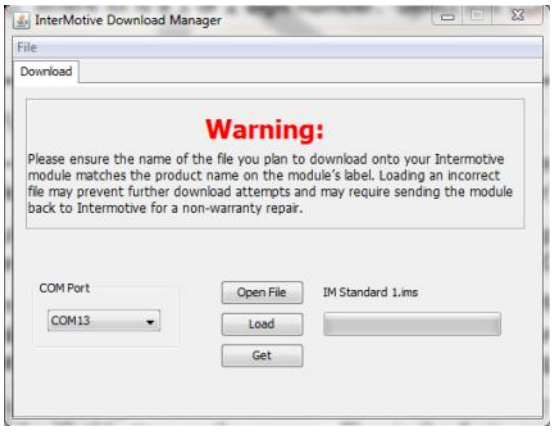
1. Open the InterMotive Download Manager software. Choose the COM Port the USB cable is connected to.

Note: The COM Port can be determined in the Device Manager window. This window is found as follows:

- For Windows XP — Right-click on 'My Computer' and select 'Properties'. From this window select the 'Hardware' tab and click on 'Device Manager'.
- For Windows 7 — In the Start menu select 'Control Panel'. From this window select 'Device Manager'.

In the Device Manager window, expand the 'Ports' menu and the download cable will display as "USB Serial Port (COMxx)" where xx is a 1 or 2 digit number. Select this COMxx port in the software.

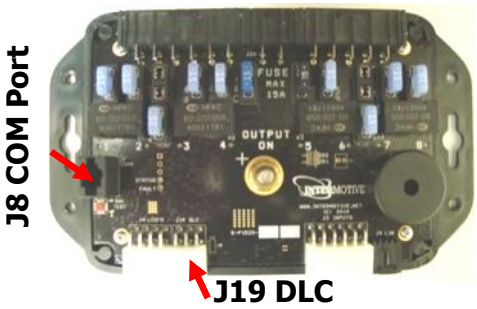
2. Click the 'Open File' button.
3. Open the PRPC——.ims configuration file (that you received back from InterMotive) to load on the PRC9xx-A module. (This file must already be loaded on the computer).
4. Click the 'Load' button on the computer screen. "Waiting" will come up below the progress bar. This means the program is waiting for the power to be plugged into the PRC9xx-A module.
5. Plug the 6 pin connector of the 12VDC wall supply into J19 (DLC) on the PRC9xx-A module. The progress bar on the computer screen will display status as the configuration loads and takes only a few seconds. The configuration is loaded once the screen says "DONE" and programming is complete.
6. To verify that the correct data was loaded into the module, disconnect the 6 pin connector from the module and press the 'Get' button on the screen. Plug in the 6 pin connector and the information will be displayed.



Field Programming the PRPC

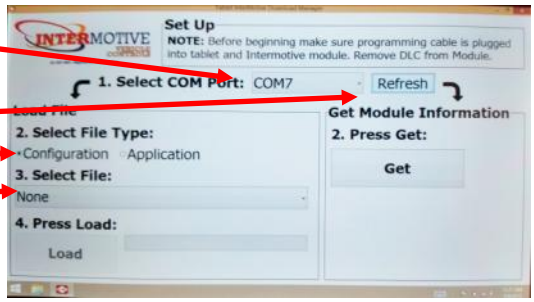
The InterMotive "a-IPM" kit is sold separately, and allows programming the PRPC in the field (including on a vehicle). It consists of a 7 inch tablet computer that has the InterMotive Download Manager software utility built in, a 12VDC wall power supply, and a download cable (see photo below).

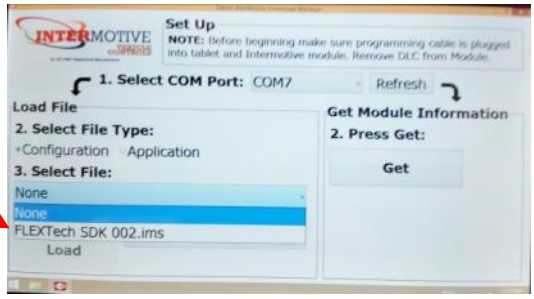
1. If the PRPC module is already installed in a vehicle, locate the 6-Pin Female DLC connector plugged into J19 on the module and disconnect this cable to remove power from the module. The battery needs to be connected on the vehicle for this procedure to work. If there is no battery connected on the vehicle then plug the 12VDC wall supply in (use an extension cord if needed).
2. Plug the phone jack end of the download cable into the J8 COM port of the PRC9xx-A module and the micro USB end into the tablet computer.



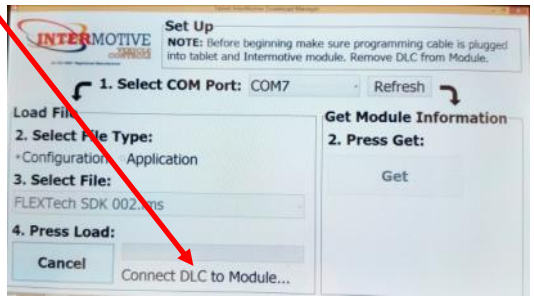
Loading your previously created Configuration file into the PRPC:

1. Turn on the tablet computer by pushing and holding the power button on the side until the screen comes on (about 3-4 seconds). Then release the button.
2. Wait a number of seconds for the main screen to come up. If the screen shown below does not appear within about 30 seconds you may need to find and touch the InterMotive Download Manager (IDM) icon.
3. Check that the COM Port shown is other than "COM1" or "None". If it is one of these two, make sure the micro USB connector on the download cable is securely plugged into the micro USB jack on the right side of the tablet computer. Then touch Refresh.
4. Touch "Configuration" to select it if it is not already selected.
5. Touch the File List which should currently be "None".
6. Touch to select the configuration file (that you received back from InterMotive) to load on the PRC9xx-A module. This file must already be loaded on the tablet computer. The file name shown here is just an example.



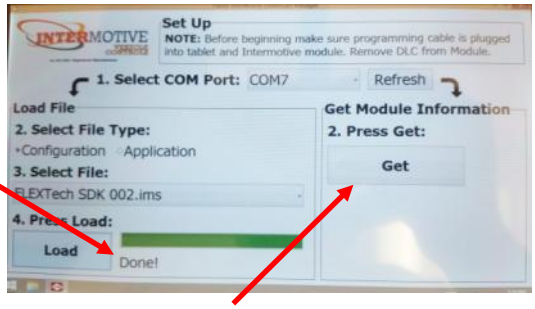


7. Touch the 'Load' button on the computer screen. "Connect DLC to Module" will come up below the

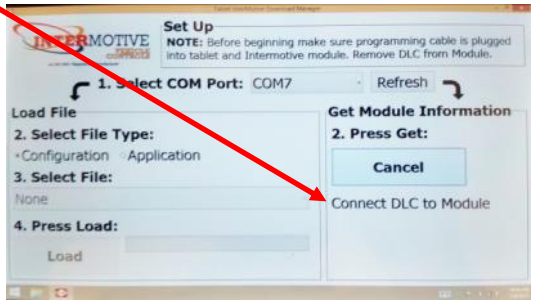


progress bar. This means the program is waiting for the power to be plugged into the PRC9xx-A module.

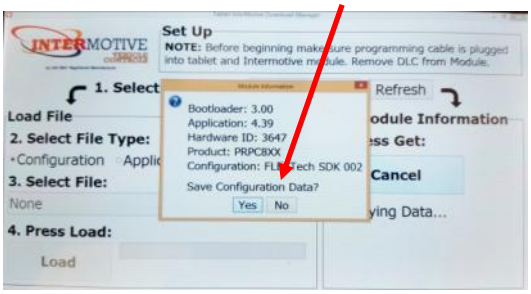
8. Plug the vehicle's 6 pin DLC connector (or the 12VDC wall supply 6 pin connector) into J19 on the PRC9xx-A module. The green progress bar on the computer screen will display the status as the configuration loads. This takes only a few seconds. The configuration is loaded once the screen says "DONE" and programming is complete.



9. To verify that the correct data was loaded into the module, disconnect the 6 pin DLC connector from the module and touch the 'Get' button on the screen. "Connect DLC to Module" will come up below the 'Get' button which now says 'Cancel'.
10. Plug in the 6 pin DLC connector and the information will be displayed. Please note that the specific information shown here may be for a different version of the PRPC.



11. Touch the 'No' button on the information display. That completes the loading of the configuration. Remove the communications cable and turn off the tablet by holding the on/off button until it goes off.



Installation Instructions

Disconnect the battery before proceeding with the installation.

IMPORTANT—READ BEFORE INSTALLATION

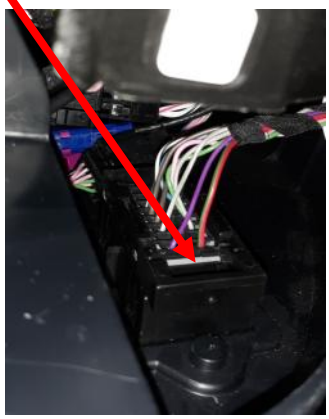
It is the installer's responsibility to route and secure all wiring harnesses where they cannot be damaged by sharp objects, mechanical moving parts or high heat sources. Failure to do so could result in damage to the system or vehicle, and create possible safety concerns for the operator and passengers.

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.

PRC9xx-A Module

Find a suitable location to mount the PRC9xx-A module. Do not mount the module where it will be exposed to excessive heat. Do not mount the module until all wire harnesses are routed and secure. The last step of the installation is to mount the module. There is a drawing on the last page of these instructions that shows where each connector is located on the module. Consider this when picking the location and orientation of the module and the wiring harnesses such that connecting and mounting of the module does not stress the wiring harnesses.

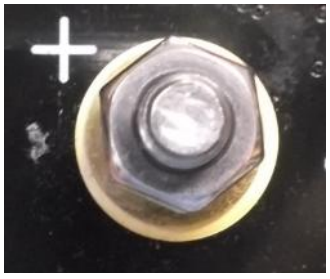
Data Link Harness Installation



1. Locate the vehicle OBDII Data Link Connector, mounted below the lower left dash panel.
2. Remove the OBDII connector from the dash panel by sliding the lock tab forward.
3. Plug the Red connector from the PRC9xx Data Link Harness into the vehicle's OBDII connector. Ensure the connection is fully seated and secure with the supplied wire tie.
4. Mount the Black pass through connector from the PRC9xx Data Link Harness in the former location of the vehicle's OBDII connector and slide the locking tab to secure it.
5. Secure the PRC9xx Data Link harness so that it does not hang below the lower dash panel.
6. Plug the free end of the Data Link harness into the mating 6-pin connector on the PRC9xx module.

NOTE: Do <u>NOT</u> plug the Data Link harness into the 6-pin connector on the PRC9xx-A module. It will be done at a later step. <u>Do not extend the extension harness, under any circumstances.</u>

PRPC Power Lug

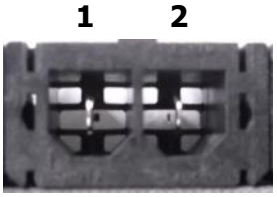


Connect a 65A fused VBAT source to the 1/4" power bolt. The PRPC is designed for a maximum cable size of 2 AWG for this power connection. Installer ***must*** provide strain relief on the cable outside of the PRPC's enclosure. It is recommended that the strain relief is within 6" of the enclosure. The absence of strain relief could result in damage to the module.

Using a calibrated torque wrench, torque the nut to 80-100 in-lbs. (Do Not Exceed 100 in-lbs)

Ensure the terminal is fully seated before applying torque. After torquing, the terminal shall not rotate under light hand force. Do not exceed the maximum torque specified above. Over-torquing may result in brass

2-Pin PRPC Connector



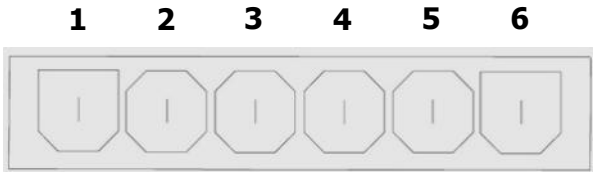
Connector J20 contains the two black ground wires for relay output fuse sensing, motor reversing (if available), and low true relay outputs. This is not an optional connection. The wires in this connector must be attached to a good **bare metal** chassis ground for the system to function properly.

6-Pin PRPC Connector Pin-Out Definition

Connector J18 contains 6 of the PRPC's 11 fused output pins. These 6 fused output pins are connected to 4 configurable relay outputs. Each relay output is capable of 15 Amps maximum. The placement of fuse 3 will determine whether that output is active high or active low. (**NOTE: DO NOT dual load fuses for relay 3. Doing so may damage the module and may cause loss of warranty**) Configurable relay output 4 is shared by fuses 4A, 4B, and 4C. When added together the sum of these three fuses must not exceed 20 Amps. The use of fused outputs 4A, 4B, or 4C is recommended for higher current loads. **The PRC9xx-A module has an absolute maximum current rating of 65 Amps.**

Relay #	4C	4B	4A	3	2	1
Pin #	1	2	3	4	5	6

6 Pin Output



Pin Numbers for the mating connector looking from the back (wire side)

The 6 fused output pins on connector J18 are defined as follows:

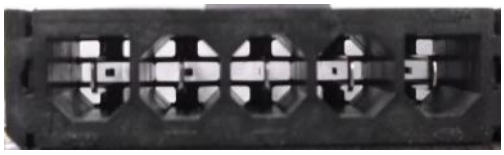
- Pin #1 - Configurable Relay Output 4, Fuse 4C, Active High
- Pin #2 - Configurable Relay Output 4, Fuse 4B, Active High
- Pin #3 - Configurable Relay Output 4, Fuse 4A, Active High
- Pin #4 - Configurable Relay Output 3, Fuse 3, Fuse Selectable Active High/Low
- Pin #5 - Configurable Relay Output 2, Fuse 2, Active High (Motor Reversing if available)
- Pin #6 - Configurable Relay Output 1, Fuse 1, Active High (Motor Reversing if available)

Connect the desired outputs to vehicle equipment as needed.

5-Pin PRPC Connector Pin-Out Definition

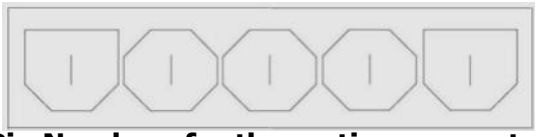
Connector J17 contains 5 of the PRPC's 11 fused output pins. These 5 fused output pins are connected to 4 configurable relay outputs. Each relay output is capable of 15 Amps maximum. Configurable relay output 5 is shared by fuses 5A and 5B. When added together the sum of these fuses must not exceed 20 Amps. Note that the placement of fuse 6 will determine whether the output is active high or active low. (**NOTE: DO NOT dual load fuses for relay 6. Doing so may damage the module and may cause loss of warranty**) The use of fused outputs 5A or 5B is recommended for higher current loads. **The PRPC module has an absolute maximum current rating 65 Amps.**

Relay #	8	7	6	5B	5A
Pin #	1	2	3	4	5



5 Pin Output

1	2	3	4	5



Pin Numbers for the mating connector looking from the back (wire side)

The 5 fused output pins on connector J17 are defined as follows:

- Pin #1 - Configurable Relay Output 8, Fuse 8, Active High (Motor Reversing if available)
- Pin #2 - Configurable Relay Output 7, Fuse 7, Active High (Motor Reversing if available)
- Pin #3 - Configurable Relay Output 6, Fuse 6, Fuse Selectable Active High/Low
- Pin #4 - Configurable Relay Output 5, Fuse 5B, Active High
- Pin #5 - Configurable Relay Output 5, Fuse 5A, Active High

Connect the desired outputs to vehicle equipment as needed.

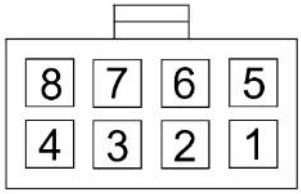
8-Pin PRPC Connector Pin-Out Definition

Connector J4 contains the PRPC's 8 low current output (LCO) pins. Each output is rated at 1/2A and is intended to drive relay coils or other low current loads. Note that Pin 8 of the eight outputs is active low (ground) while the rest are active high (12V). **Note: when driving relays, a diode-protected type must be used. InterMotive recommends Digi-Key #PB682-ND Relay.**

The 8 outputs for PRC505/550/507/557 versions are defined as follows:

- Pin #1 - Configurable Output (LCO #1), Active High
- Pin #2 - Configurable Output (LCO #2), Active High
- Pin #3 - Configurable Output (LCO #3), Active High
- Pin #4 - Configurable Output (LCO #4), Active High
- Pin #5 - Configurable Output (LCO #5), Active High
- Pin #6 - Configurable Output (LCO #6), Active High
- Pin #7 - Configurable Output (LCO #7), Active High
- Pin #8 - Configurable Output (LCO #8), **Active Low**

8 Pin Output



Pin Numbers for the mating connector looking from the back (wire side)

Connect the desired outputs to vehicle equipment as needed. When connecting to relays, use relays with appropriate kick-back suppression, such as Digi-Key #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.

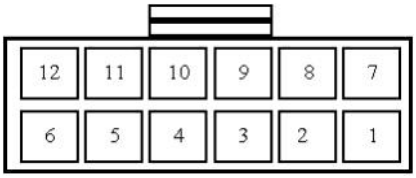
12-Pin Input Connector Definition

Connector J3 contains the PRPC's 12 discrete wire inputs. There are 3 configurable active high/low, 7 active low inputs, 1 analog input, and 1 dedicated ignition input. These inputs have their own internal pull up/pull down resistors so they can be left floating when not used or not active. These inputs can be used as part of the programmable logic to configure the output pins.

- Pin #1 - Input 1, GUI Configurable Active High/Low
- Pin #2 - Input 2, GUI Configurable Active High/Low
- Pin #3 - Input 3, GUI Configurable Active High/Low
- Pin #4 - Input 4, Active low
- Pin #5 - Input 5, Active low
- Pin #6 - Input 6, Active low
- Pin #7 - Input 7, Active low
- Pin #8 - Input 8, Active low
- Pin #9 - Input 9, Active low
- Pin #10 - Input 10, Active low
- Pin #11 - Input 11, Analog
- Pin #12 - Input 12, Dedicated Ignition

Connect inputs as needed.

12 Pin Input



Pin Numbers for the mating connector looking from the back (wire side)

Beeper Definition

The PRC9xx-A has 6 unique beeper logic conditions and sounds to allow custom warnings. The beeper pitch, beep rate, and number of beeps are configurable.

	Example Beeper Configuration				
	Pitch	**Mode (Pulse)**	**IGN/ VBAT**	**# of Beeps or Time**	**Conditions**
1	Low	Fast	Ign hot	10	Virtual Output #1* = On
2	High	Medium	Ign hot	Continuous	ECT > 230F *OR* TFT > 250F
3	High	Continuous	Ign hot	10	Any Fuse Blown
4	Medium	Medium	Ign hot	Continuous	Service Brake = On *AND* Gas Pedal Position = Open
5	Medium	Fast	Ign hot	Continuous	Vehicle Speed > 0 *AND* Park Brake = On
6	High	Fast	Ign hot	Continuous	Vehicle Speed > 76 mph

* See the description of Virtual Outputs and the default configuration on the next page.

Virtual Outputs Definition

The PRC9xx-A has 3 Virtual Outputs that can be used to extend the logic for controlling outputs. These outputs exist only internally to the firmware on the board. They can be used as inputs to the logic for any of the actual outputs. They can even be looped back to their own input logic or that of any other virtual output. This last capability gives the PRPC the unique ability to create very complex control logic that could not be done with the actual inputs and outputs alone.

The default configuration for the PRPC has an easy to understand example of the use of a virtual output. In the configuration table on the previous page, beeper 1 is set to give an alarm whenever the battery voltage is below about 11.8 V. Without the availability of virtual outputs, beeper 1 would be set to activate when VBAT < 11.8V. If the voltage is fluctuating between 11.70V and 11.85V, for example, the beeper would be constantly activated and de-activated every time the voltage changed. This could cause this alarm to be of little value. Instead, the default configuration uses virtual output 1 to turn on beeper 1 as seen in the table on the previous page. The default configuration for virtual output 1, as shown in the table below, gives a hysteresis effect to the alarm. Virtual output 1 is looped back to its input to latch the output on until VBAT returns to more than 12V. This way the alarm will start sounding when VBAT drops below about 11.8V and will continue to sound until VBAT returns to higher than 12V.

Virtual Output #	**Example Virtual Output Configuration**					
	Mode	**Ign/Vbat**	**Off**	**On**	**Conditions**	**Results**
1	Mom	Ign hot	10s	10s	(Vbat < 11.75V *OR* Virtual Output #1 = ON) *AND* Vbat < 12.1875V	Output comes on when Vbat < 11.75V and stays on until Vbat returns to 12.1875V or higher
2	Mom	Ign hot	5s	0	Input #2 = Active	Output On and stays on 5s after Input #2 goes Inactive
3					None	Output Off

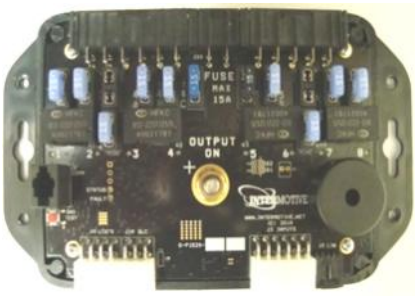
Finishing the Installation and Testing Operation

Module Mounting

1. Ensure all the harnesses are properly routed with strain relief where needed.
2. Mount the PRC9xx-A module as described on page two.
3. Verify that the module is in an area away from any external heat sources (engine heat, heater ducts, etc.).
4. Secure using screws or double sided tape.

Connect the Harnessing:

The following sequence should be performed **prior to** reconnecting the vehicle battery:



1. Connect each of the harness connectors to the corresponding connector on the PRC9xx-A. Each connector has a different number of pins and will only fit into the connector on the board with the same number of pins. Do not use force to insert a connector.
2. Install fuses in the fuse holders of a value that will allow sufficient current for the load. The maximum fuse size is 15A.
3. The vehicle battery may now be reconnected.

Post Installation Testing

1. Turn the ignition ON to wake up and initialize the PRPC module.
2. If the red LEDs are scrolling sequentially it indicates that the VIN is either not been found or is not valid. While the LEDs are scrolling, press and hold the red test button on the PRPC until all of the fuse LEDs flash once in unison, then release the test button. This will cause the PRPC to accept a new model year or engine code in the VIN. In most cases this will solve the problem. If it continues please contact InterMotive.
3. Ensure that **all** desired outputs are responding correctly per their programmed set of conditions in the PRPC configuration (For example, depending on the actual configuration, PRPC relay 4 activates when the engine is running).

The PRC9xx-A is properly installed only if it passes the above tests. If any irregular operational issues persist, recheck the set of conditions in the PRPC configuration. Contact InterMotive at 530-823-1048 for technical assistance.

PRPC Operation:

Turning the vehicle ignition ON will wake up and initialize the PRC9xx-A module. Outputs are controlled based on the module's configuration created using the InterMotive FlexTech Programming Utility program.

When the key is turned OFF, the PRC9xx-A module will go into a low power sleep mode. This may take up to TEN minutes, and the LED's on the module will go out once in sleep mode. Other vehicle activity such as opening doors, inserting key in the ignition, etc. may delay sleep mode.

Scrolling LED's:

This may indicate one of the following errors:

- LED's scrolling sequentially one at a time indicates that an invalid or incomplete VIN was captured.
- LED's scrolling from the middle outward indicates a configuration error. This indicates that the configuration on the module is incomplete or corrupted. If a configuration has recently been loaded please try to load the configuration again.

PCB Temperature Load Shedding:

The PRPC monitors on-board temperature in three different locations. If any one of the readings exceeds a predetermined temperature threshold, the module will shed one relay load every 2 minutes to regulate heat. The outputs where the temperature readings are highest will be shut off first. If at any time a temperature reading is 5C above the predetermined temperature threshold, the module will shed one relay load every second until all relays are off.

If this sequence is triggered, the module will beep 5 times in about 30 seconds at high pitch before shedding any output.

Status Displays and Diagnostics

Relay Outputs:

Each relay has an associated on-board green LED that indicates when the relay coil is active. These green LEDs can be thought of as conditions met indicators. In addition, each fused output has an on-board red LED to indicate when the fuse is blown. These red LEDs are processor controlled. If the module is not in diagnostics mode and a blown fuse is detected on a configured output, the associated on-board red LED will illuminate. No fuse sensing is performed on outputs that are not configured to turn on.

Diagnostics Operation

There are 8 "pages" of diagnostic displays that can be selected. Each page displays a different status using the red Fuse LEDs. Each status page is described below. In addition, when in any of the pages, the red FAULT LED will blink a fault code if there are any problems. The fault codes are described on page 16.

Selecting the Page:

The page to be displayed is selected by pressing and releasing the TEST button (you must have the ignition on - in normal operating mode). When pressing this button, hold it down for about 1 second before releasing it (holding longer than 1 second is not going to cause a problem). To select page 3 starting from normal operating mode, press and release the test button three times. To move from page 1 to page 5, press and release the test button 4 times. The amber STATUS LED will blink the page number alternately with the FAULT LED which is now blinking the fault code. If there are no faults detected, the fault code is three slow blinks of the fault LED. To return to normal operation, move to page 8 then press and release the test button one more time. All LEDs will then return to normal operation with fault and status off.

PAGE 1: Status display of the Low Current Outputs

To enter LCO display mode, momentarily press the red test button once with the ignition on. The on-board amber status LED will repeatedly blink once to indicate page 1. The on-board red fuse LED's will light when a corresponding LCO is active as shown in the table below (fuse LEDs 6, 7, & 8 are not used):

Fuse LED	1	2	3	4A	4B	4C	5A	5B
LCO #	1	2	3	4	5	6	7	8
J4 Pin #	1	2	3	4	5	6	7	8

PAGE 2: Status display of the Inputs

To enter input display mode, momentarily press the red test button twice with the ignition on. The on-board amber status LED will repeatedly blink twice to indicate page 2. Note that input 11 is an analog input and cannot be shown in this display. The on-board red fuse LED's will light when a corresponding input is active as shown in the table below:

Fuse LED	1	2	3	4A	4B	4C	5A	5B	6	7	8
Input #	1	2	3	4	5	6	7	8	9	10	12
J3 Pin #	1	2	3	4	5	6	7	8	9	10	12

PAGE 3: Display of CAN and ILIS Status

To enter CAN and ILIS display mode, momentarily press the red test button three times with the ignition on. The on-board amber status LED will repeatedly blink three times to indicate page 3. The on -board red fuse LED's will light to indicate the status of these activities as shown in the table below:

LED	Indicates
1	ILIS loop processing
2	CAN1
3	CAN2
4C	LIFT DOOR (Input 10)
5A	AUX DOOR (Input 9)
5B	SHIFT LOCK INPUT (Input 8)
6	LIFT INHIBIT (Input 7)
7	ACTIVE COMMAND MODE

PAGE 6: Switch Backer Board Inputs

To enter Switch Backer Board Input display mode, momentarily press the red test button six times with the ignition on. The on-board amber status LED will repeatedly blink six times to indicate page 6. The on-board red fuse LED's will light when a corresponding SBB input is active as shown in the table below (fuse LEDs 6, 7, & 8 are not used):

Red Fuse LED	1	2	3	4A	4B	4C	5A	5B
Input	SW1A|SW1B|SW1C|GPI1	SW2A|SW2B|SW2C|GPI2	SW3|GPI3	SW4|GPI4	SW5	SW6	SW7	SW8

Also in this mode each relay is activated by the SBB inputs. This is a good way to confirm that all relays are functioning properly.

Relay	1	2	3	4	5	6	7	8
Input	SW1A|SW1B|SW1C|GPI1	SW2A|SW2B|SW2C|GPI2	SW3|GPI3	SW4|GPI4	SW5	SW6	SW7	SW8

PAGE 7: Expander Board Inputs

To enter Expander Board Input display mode, momentarily press the red test button seven times with the ignition on. The on-board amber status LED will repeatedly blink seven times to indicate page 7. The on-board red fuse LED's will light when a corresponding EXP input is active as shown in the table below (only fuse LEDs 1, 2, 3, & 4A are used):

Fuse LED	1	2	3	4A
Input	GPI1	GPI2	GPI3	GPI4

PAGE 8: Output Trouble Codes

To enter the Trouble Code display mode, momentarily press the red test button eight times with the ignition on. The on-board amber status LED will repeatedly blink eight times to indicate page 8. The on-board red fuse LED's will light showing a pattern that can be decoded to give a fault code number. This can be interpreted by calling InterMotive Support.

As mentioned before, the red fault LED will be blinking the trouble code when any of the 8 pages is selected. The fault LED blinks out the three digit code alternatively with the Status LED which is blinking the page number. When everything is working properly, the fault LED will be blinking 3 times rather slowly. This is a code of 1-1-1 which means NO fault.

When there is a fault, the LED first blinks a number that tells where in the PRPC the fault is coming from (LCOs, Relays, Beepers, etc.). This will blink from 2 to 15 times (11 to 14 not used), note this count. There will then be a brief pause before the 2nd digit (the same time as between blinks for the 1-1-1 code). The 2nd digit will then blink and will be one of the following: 1, 2, 3, 4, 5, 7, or 15. Note this 2nd count. There will again be a brief pause before the 3rd digit. The 3rd digit will usually indicate which output the fault is on, but there are some other codes where the 3rd count has a different meaning. Again, note this count. The following is an example of a full fault code. It indicates that relay number 4 has an output fault: 3-2-4.

Don't worry about getting the count right the first time. The fault count will repeat alternating with the page count on the Status LED so you will have plenty of time to see the counts over and over to get it right. Only 1 fault will be shown. If there are more than 1 fault in the board, only the highest priority fault will be shown. The fault codes are listed in the table on the next page. The beginning of the table shows lowest priority faults. The end of the table shows the highest priority faults.

PAGE 9 & 10

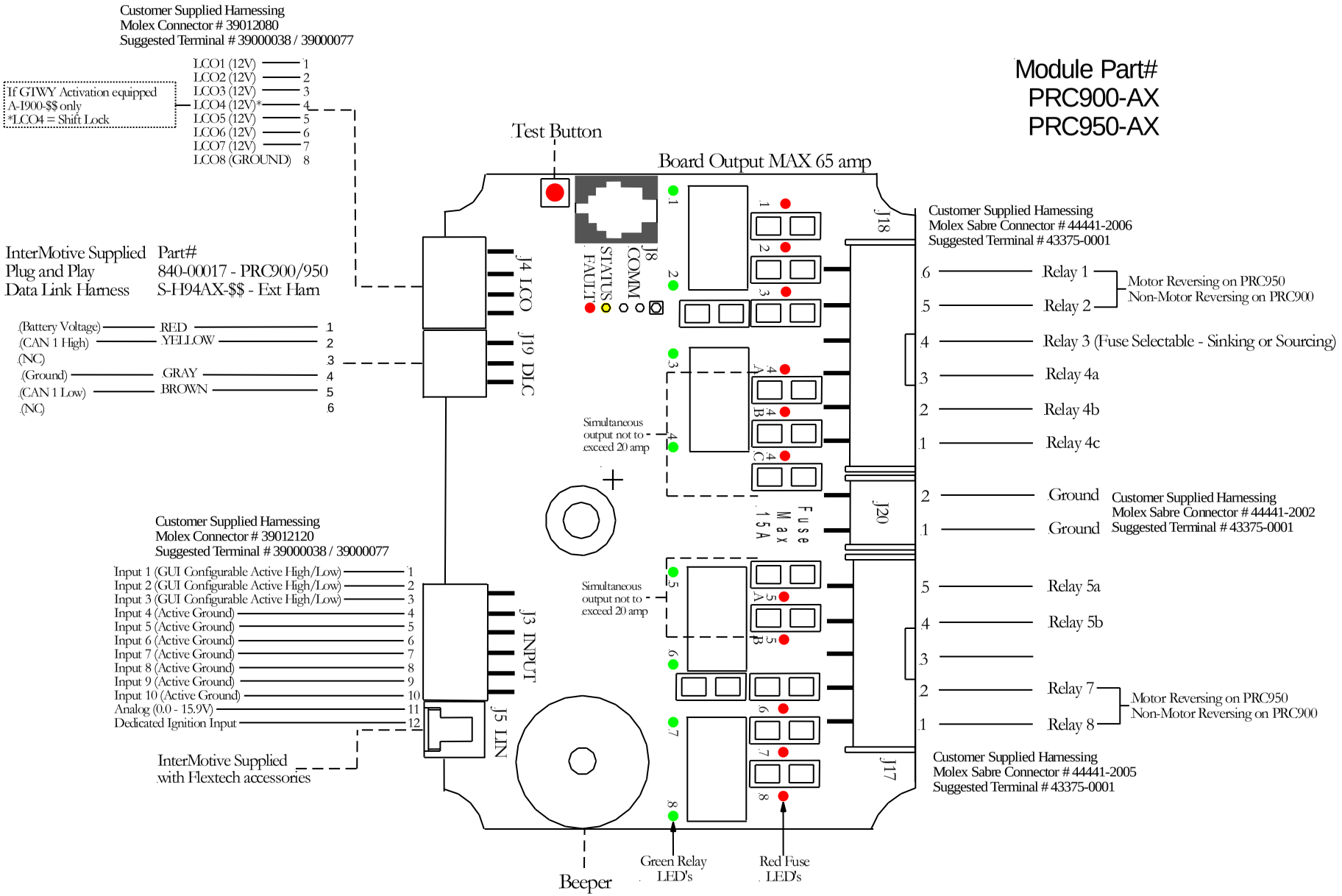
Contact Intermotive for information regarding these pages.

Definition of Fault Code Counts

Fault Code	What The Code Means	Fault Code	What The Code Means
1-1-1	**No Fault, operating normally**	7-1-(LCO #)	SBB2-LCO Fault-LCO #
2-2-(LCO #)	PRPC-LCO-Output Fault*	7-2-(LCO #)	SBB2-LCO Invalid Receive Data-LCO #
2-3-(LCO #)	PRPC-LCO-Invalid Timeout**	7-3-(LLED #)	SBB2-Load LED Fault-LLED #
2-4-(LCO #)	PRPC-LCO-Invalid Receive Data***	7-4-(LLED #)	SBB2-Load LED Invalid Receive Data-LLED #
2-5-(LCO #)	PRPC-LCO-Invalid Unsupported****	7-5-1	SBB2-MCZ33879 Error
2-7-(LCO #)	PRPC-LCO-Unknown Error	7-5-2	SBB2-VN7140 Error
3-2-(Relay #)	PRPC-Relay-Output Fault*	7-5-3	SBB2-MAX13362 Error
3-3-(Relay #)	PRPC-Relay-Invalid Timeout**	8-1-(LCO #)	EXP1-LCO Fault-LCO #
3-4-(Relay #)	PRPC-Relay-Invalid Receive Data***	8-2-(LCO #)	EXP1-LCO Invalid Receive Data-LCO #
3-5-(Relay #)	PRPC-Relay-Invalid Unsupported****	8-3-1	EXP1-MCZ33879 Error
3-7-(Relay #)	PRPC-Relay-Unknown Error	8-4-1	EXP1-Low Battery Voltage
4-2-(Beeper #)	PRPC-Beeper-Output Fault*	8-7-15	EXP1-PCB Temperature Fault
4-3-(Beeper #)	PRPC-Beeper-Invalid Timeout**	9-1-(LCO #)	EXP2-LCO Fault-LCO #
4-4-(Beeper #)	PRPC-Beeper-Invalid Receive Data***	9-2-(LCO #)	EXP2-LCO Invalid Receive Data-LCO #
4-5-(Beeper #)	PRPC-Beeper-Invalid Unsupported****	9-3-1	EXP2-MCZ33879 Error
4-7-(Beeper #)	PRPC-Beeper-Unknown Error	9-4-1	EXP2-Low Battery Voltage
5-5-1	PRPC-CAN1 Error	9-7-15	EXP2-PCB Temperature Fault
5-5-2	PRPC-CAN2 Error	10-1-1	LIN-No Communications-PTIM
5-5-3	PRPC-MCZ33879 Error	10-2-1	LIN-Receive Error-PTIM
6-1-(LCO #)	SBB1-LCO Fault-LCO #	10-1-2	LIN-No Communications-SBB1
6-2-(LCO #)	SBB1-LCO Invalid Receive Data-LCO #	10-2-2	LIN-Receive Error-SBB1
6-3-(LLED #)	SBB1-Load LED Fault-LLED #	10-1-3	LIN-No Communications-SBB2
6-4-(LLED #)	SBB1-Load LED Invalid Receive Data-LLED #	10-2-3	LIN-Receive Error-SBB2
6-5-1	SBB1-MCZ33879 Error	10-1-4	LIN-No Communications-EXP1
6-5-2	SBB1-VN7140 Error	10-2-4	LIN-Receive Error-EXP1
6-5-3	SBB1-MAX13362 Error	10-1-5	LIN-No Communications-EXP2
		10-2-5	LIN-Receive Error-EXP2
		15-15-1	PRPC-PCB Temperature Fault

* Output fault (overcurrent or overvoltage)
** Data timed out (The data associated with the output has timed out)
*** Invalid Data (The data associated with the output is invalid)
**** Unsupported Data (The data associated with the output is not supported on the current vehicle)

*U.S. Patent #9,469,261



Submit product registration at www.intermotive.net

If the PRPC fails any step in the Post Installation Test, review the installation instructions and the loaded configuration by running the FlexTech Programming Utility applic

InterMotive technical Support @ (530)823-1048

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