

Please review this document prior to contacting FRC for technical support. This is a general form and some of the questions may not apply to all products. Be prepared to supply as much information as possible so that FRC's Service and Engineering Departments will be able to respond quickly and efficiently.

The product manual should be consulted prior to contacting FRC. The manual is shipped with the product and available in pdf format on the manuals page at www.fireresearch.com. The manuals contain general information, installation, operation, and calibration procedures, diagnostics, and wiring diagrams. For troubleshooting the manual will be needed as a reference.

The troubleshooting guide on page two of the document should be consulted prior to contacting FRC. It includes general procedures and some product specific checks to help identify the reason for a problem occurrence.

Product Information

Be able to provide the following basic information:

Product / Model

Serial Number

Purchase Date

Engine Type

Chassis Type

Pump Type

Is this a new installation?

What options are installed? What custom or special modifications have been made?

Problem Description

A complete, accurate, and detailed description of the problem will help ensure that a solution will be quickly found. Please be ready to answer all the questions that apply. The questions can be answered with a yes or no, but try to provide as much information as possible.

Is there a problem when power is applied to the control module?

Is this a calibration problem? Was the calibration procedure as outlined in the manual completed?

Are error codes or messages shown in the display?

Are LED indicators or other lights showing an abnormal condition?

Is there a problem in all modes of operation?

Is the problem intermittent?

Is/was there a sequence of events that led to the problem occurring?

Troubleshooting Guide

This is a general guide and some of the questions may not apply to all FRC products. When troubleshooting the product manual operations, calibrations, and wiring diagrams may be needed as a reference. Please have the product information and the specific problem description as outlined on page one available when calling FRC.

Check the wiring against the wiring documentation for assembly/installation type errors.

This is easiest done visually and with a continuity checker look for bad pin crimps or connector fabrication; wires connected to the wrong point; opens across terminal strip or splice connections.

Check for +12 VDC power (red wire) and ground (black wire) to the FRC control module.

Power should be supplied when the ignition is on.

Check for +12 VDC on the interlock input (white wire) to the FRC module.

The safety interlock ensures that certain safety conditions are met before a remote engine controller is allowed to take control of the engine. These may include relays, switches, and/or indicator lights for some of these conditions; parking brake on; PTO engaged; transmission in drive/neutral/park; high idle; ok to pump; throttle ready.

Check that specific ECM programming has been set to allow for remote engine control.

This may require a dealer service tool and programming information.

Check that ECM conditions for remote engine control have been met.

This may include supplying +12 VDC or ground to specific pins on the ECM that are not wired to the FRC control module.

Check the sensor output.

The following shows the wires used in a basic cable that FRC provides to connect the control module to a flow or pressure sensor. The cable may use different connectors depending on the specific application. The sensors have an excitation voltage of 5 VDC that is supplied from the control module.

Wire Color	Description
Red	+5 VDC Supply
Black	Ground
White	Signal to Control Module
Yellow	Shield (only on extension cables)

Flow Sensor output signal will be a +5 volt TTL pulse that varies with the speed of the spinning paddle.

Pump Pressure Sensor output voltages.

	0 psi	100 psi	150 psi	200 psi	250 psi	300 psi	600 psi
PR031PT2	0.5 vdc	1.917 vdc	2.625 vdc	3.33 vdc	4.04 vdc	4.75 vdc	N/A
FP3100PT2	0.5 vdc	1.21 vdc	1.56 vdc	1.92 vdc	2.27 vdc	2.625 vdc	4.75 vdc
FP4000PT1	0.5 vdc	1.21 vdc	1.56 vdc	1.92 vdc	2.27 vdc	2.625 vdc	4.75 vdc
IO3100PT2	0.604 vdc	1.295 vdc	1.640 vdc	1.985 vdc	2.331 vdc	2.677 vdc	4.85 vdc

TankVision Pressure Sensor output voltages.

	0 psi	1 psi	2 psi	3psi	4psi	5 psi
WLPT1	0.5 vdc	1.3 vdc	2.1 vdc	2.9 vdc	3.7 vdc	4.5 vdc

Engine Oil Pressure Sensor output voltages. (Static resistance is 240 to 33 ohms depending on temperature.)

	0 psi	10 psi	20 psi	30 psi	40 psi	50 psi	60 psi	70 psi
TP-O	3.85 vdc	3.62 vdc	3.39 vdc	3.16 vdc	2.93 vdc	2.7 vdc	2.47 vdc	2.24 vdc

Engine Coolant Temperature Sensor resistance values.

	140 °F	180 °F	210 °F	240 °F	300 °F
TP-C / TP-C-M16	410 ohms	176 ohms	100 ohms	63 ohms	26 ohms