



# PF2200-SB

## ALERT CODES

Doc\_v1.3 / FW 1.3.1

# ALARM CODES AND DESCRIPTIONS

The following is a complete list in alphabetical order of all Alarms the PF2200-SB can generate.

Note: the following list has been generated for the SB 1.2 bundle package.

Name	Description
Proof of Closure Contact Open	POC input is open AND Safety Shut Off Valve(s) de-energized
Ambient Temp 1 Invalid	Ambient Temperature sensor 1 on BMS card is reporting an invalid reading.
Ambient Temp 2 Invalid	Ambient Temperature sensor 2 on BMS card is reporting an invalid reading.
Ambient Temp Mismatch	Ambient Temperature Measurement mismatch between sensors. [2]
Analog Output 1 Fault	BMS Card fault associated with Level Echo output.
Analog Output 2 Fault	BMS Card fault associated with Temperature Echo output.
Analog Output 3 Fault	BMS Card fault associated with TCV output.
Aux High Temp ESD	Aux Temp Input is greater than High Temp ESD setpoint
Aux In 1 Configuration Error	Aux In 1 Input In 4-20 mode: <ul style="list-style-type: none"><li>• Firing Rate Enable is Disabled AND Input High Trip less than Input Low Trip plus Input Deadband</li></ul> OR <ul style="list-style-type: none"><li>• Firing Rate Enable is Enabled AND Process Control Mode is not set to Staged Heating</li></ul> OR <ul style="list-style-type: none"><li>• Input Span Max less than Input Span Min</li></ul> OR <ul style="list-style-type: none"><li>• Input High Trip greater than Input Span Max</li></ul>

Name	Description
	<p>OR</p> <ul style="list-style-type: none"> <li>• Input Low Trip less than Input Span Min</li> </ul> <p>Aux In 1 Input In Digital mode:</p> <ul style="list-style-type: none"> <li>• Firing Rate Enable is Enabled</li> </ul>
Aux In 1 Contact Open	<p>Aux In 1 input in 4-20 mode:</p> <ul style="list-style-type: none"> <li>• This alarm cannot be set</li> </ul> <p>Aux In 1 input in Digital mode:</p> <ul style="list-style-type: none"> <li>• Input is open</li> </ul>
Aux In 1 High Trip	<p>Aux In 1 Input In 4-20 mode:</p> <ul style="list-style-type: none"> <li>• Input is greater than Aux In 1 High Trip setting</li> </ul> <p>Aux In 1 Input In Digital mode:</p> <ul style="list-style-type: none"> <li>• This alarm cannot be set</li> </ul>
Aux In 1 I2C Bus Fault	<p>Diagnostic detection of communication bus issue related to the Aux 1 input.</p>
Aux In 1 Low Trip	<p>Aux In 1 Input In 4-20 mode:</p> <ul style="list-style-type: none"> <li>• Input is less than Aux In 1 Low Trip setting</li> </ul> <p>Aux In 1 Input In Digital mode:</p> <ul style="list-style-type: none"> <li>• This alarm cannot be set</li> </ul>
Aux In 1 Out of Range	<p>Aux In 1 Input In 4-20 mode:</p> <ul style="list-style-type: none"> <li>• Input is less than 3 mA OR</li> <li>• Input is greater than 21 mA</li> </ul> <p>Aux In 1 Input In Digital mode:</p> <ul style="list-style-type: none"> <li>• Input is not within a valid range [1]</li> </ul>

Name	Description
Aux In 2 Configuration Error	<p>Aux In 2 Input In 4-20 mode:</p> <ul style="list-style-type: none"> <li>• Process Setpoint Adjust is Disabled AND Input High Trip less than Input Low Trip plus Input Deadband</li> </ul> <p>OR</p> <ul style="list-style-type: none"> <li>• Input Span Max less than Input Span Min</li> </ul> <p>OR</p> <ul style="list-style-type: none"> <li>• Input High Trip greater than Input Span Max</li> </ul> <p>OR</p> <ul style="list-style-type: none"> <li>• Input Low Trip less than Input Span Min</li> </ul> <p>Aux In 2 Input In Digital mode:</p> <ul style="list-style-type: none"> <li>• Process Setpoint Adjust is Enabled</li> </ul>
Aux In 2 Contact Open	<p>Aux In 2 input in 4-20 mode:</p> <ul style="list-style-type: none"> <li>• This alarm cannot be set</li> </ul> <p>Aux In 2 input in Digital mode:</p> <ul style="list-style-type: none"> <li>• Input is open</li> </ul>
Aux In 2 High Trip	<p>Aux In 2 Input In 4-20 mode:</p> <ul style="list-style-type: none"> <li>• Input is greater than Aux In 2 High Trip setting</li> </ul> <p>Aux In 2 Input In Digital mode:</p> <ul style="list-style-type: none"> <li>• This alarm cannot be set</li> </ul>
Aux In 2 I2C Bus Fault	<p>Diagnostic detection of communication bus issue related to the Aux 2 input.</p>
Aux In 2 Low Trip	<p>Aux In 2 Input In 4-20 mode:</p> <ul style="list-style-type: none"> <li>• Input is less than Aux In 2 Low Trip setting</li> </ul> <p>Aux In 2 Input In Digital mode:</p>

Name	Description
	<ul style="list-style-type: none"> <li>• This alarm cannot be set</li> </ul>
Aux In 2 Out of Range	<p>Aux In 2 Input In 4-20 mode:</p> <ul style="list-style-type: none"> <li>• Input is less than 3 mA</li> </ul> <p>OR</p> <ul style="list-style-type: none"> <li>• Input is greater than 21 mA</li> </ul> <p>Aux In 2 Input In Digital mode:</p> <ul style="list-style-type: none"> <li>• Input is not within a valid range [1]</li> </ul>
Aux Temp Configuration Range Error	<p>Aux Temp Input settings are configured incorrectly with respect to one another, mainly:</p> <ul style="list-style-type: none"> <li>• Pilot Off less than Main Off</li> </ul> <p>OR</p> <ul style="list-style-type: none"> <li>• High Temp Less than Main Off</li> </ul> <p>OR</p> <ul style="list-style-type: none"> <li>• High Temp Less than Pilot Off</li> </ul>
Aux Temp I2C Bus Fault	Diagnostic detection of communication bus issue related to the Aux Temp input.
Aux Temp Out of Range	<p>Aux Temp Input:</p> <ul style="list-style-type: none"> <li>• Less than 3 mA</li> </ul> <p>OR</p> <ul style="list-style-type: none"> <li>• Greater than 21 mA</li> </ul>
Bath 1 Out of Range	<p>Bath Temperature Input 1 in RTD Mode:</p> <ul style="list-style-type: none"> <li>• Input is measuring outside of the valid range for RTD</li> </ul> <p>Bath Temperature Input 1 in Thermocouple Mode:</p>

Name	Description
	<ul style="list-style-type: none"> <li>• Input is measuring outside of the valid range for Thermocouple</li> </ul>
Bath 1 Sensor Open	Bath Temperature Input 1 sensor has an open circuit
Bath 1 Sensor Short	Bath Temperature Input 1 in RTD Mode: <ul style="list-style-type: none"> <li>• Input is measuring a short circuit</li> </ul> Bath Temperature Input 1 in Thermocouple Mode: <ul style="list-style-type: none"> <li>• This alarm cannot be set</li> </ul>
Bath 1 Stale Data	Bath Temperature Input 1 is not reading valid data
Bath 2 Out of Range	Bath Temperature Input 2 in RTD Mode: <ul style="list-style-type: none"> <li>• Input is measuring outside of the valid range for RTD</li> </ul> Bath Temperature Input 2 in Thermocouple Mode: <ul style="list-style-type: none"> <li>• Input is measuring outside of the valid range for Thermocouple</li> </ul>
Bath 2 Sensor Open	Bath Temperature Input 2 sensor has an open circuit
Bath 2 Sensor Short	Bath Temperature Input 2 in RTD Mode: <ul style="list-style-type: none"> <li>• Input is measuring a short circuit</li> </ul> Bath Temperature Input 2 in Thermocouple Mode: <ul style="list-style-type: none"> <li>• This alarm cannot be set</li> </ul>
Bath 2 Stale Data	Bath Temperature Input 2 is not reading valid data

Name	Description
Bath High Temp ESD	Bath Temperature Input is greater than High Temp ESD setpoint
Bath Temp Configuration Range Error	<p>Bath Temperature Input settings are configured incorrectly with respect to one another, mainly:</p> <ul style="list-style-type: none"> <li>• Pilot Off setpoint less than Main Off Or Process setpoints</li> </ul> <p>OR</p> <ul style="list-style-type: none"> <li>• High Temp setpoint less than Main Off OR Pilot Off OR Process setpoints</li> </ul> <p>OR</p> <ul style="list-style-type: none"> <li>• Low Temp setpoint greater than Process Setpoint</li> </ul> <p>OR</p> <ul style="list-style-type: none"> <li>• High Temp out of range</li> </ul>
Bath Temp Mismatch	Bath Temperature Input 1 does not match Bath Temperature Input 2
Brownout Reset Voltage Incorrect	BMS card has been programmed with the incorrect brownout reset voltage. [2]
Calibration CRC Failed	Periodic Calibration CRC check has failed
Cross Compare Failure	One or more Settings / Status register(s) do not agree between primary and secondary processors. Note: the event log will call out which register(s) have failed the cross comparison.
Descriptor Failure	BMS card fault associated with failing to load board identification information.
Descriptor Mismatch	BMS card board identification information does not match software that has been programmed.
Digital Input ADC Read Fault	BMS Card fault associated with internal ADC. [2]

Name	Description
Digital Input ADC Start Fault	BMS Card fault associated with internal ADC. [2]
Digital Input ADC Stop Fault	BMS Card fault associated with internal ADC. [2]
ESD Contact Open	ESD contact open (de-energized)
ESD Contact Out of Range	Input is not within a valid range [1]
External Switch Invalid	External switch input is in an invalid position.
External Switch Stuck	External switch input is stuck in the Ignite position.
Factory Calibration Error	BMS card calibration descriptor error. [2]
Failed to Prove Light Off Position	Light off position not proven during the Main Light Off state.
Flame 1 DC Input Open	BMS card internal circuit fault associated with Pilot 1 flame input. [2]
Flame 1 Load Monitor Check Failure	AC voltage on Pilot 1 input too low to reliably detect flame. Note: Usually caused by loading of the flame rod to ground.
Flame 1 Voltage Fault	Pilot Flame 1 flame test failure. [2]
Flame 2 DC Input Open	BMS card internal circuit fault associated with Pilot 2 flame input. [2]
Flame 2 Load Monitor Check Failure	AC voltage on Pilot 2 input too low to reliably detect flame. Note: Usually caused by loading of the flame rod to ground.
Flame 2 Voltage Fault	Pilot Flame 2 flame test failure. [2]
Flash Failed To Read	BMS card fault associated with reading last shutdown code and/or relights remaining status from non-volatile memory.
Flash Failed To Write	BMS card fault associated with writing last shutdown code and/or relights remaining status to non-volatile memory.



Name	Description
High Fire I2C Bus Fault	Diagnostic detection of communication bus issue related to the High Fire output.
High Level/Flow	Level input in 4-20 mode: <ul style="list-style-type: none"> <li>• Input is greater than Level High Trip</li> </ul> Level input in Digital mode: <ul style="list-style-type: none"> <li>• This alarm cannot be set</li> </ul>
High Pressure 4-20	Pressure input in 4-20 mode: <ul style="list-style-type: none"> <li>• Input is greater than Pressure High Trip AND Safety Shut Off Valve(s) are energized</li> </ul> Pressure input in Digital mode: <ul style="list-style-type: none"> <li>• This alarm cannot be set</li> </ul>
High Pressure Contact	High Pressure input is open
High Pressure I2C Bus Fault	Diagnostic detection of communication bus issue related to the High Pressure input.
High Pressure Out of Range	High Pressure input is not within valid range [1]
High Voltage	System Voltage Input is greater than High Voltage Threshold: <ul style="list-style-type: none"> <li>• In 12V Mode: 16.8V</li> <li>• In 24V Mode: 33.6V</li> </ul>
Incomplete Commissioning	The commissioning setting is set to Incomplete.
IO Short ESD Fault	BMS Card fault associated with ESD input.
IO Short POC Fault	BMS Card fault associated with PoC input.
IO Short Start Fault	BMS Card fault associated with Start input.
IO Short Switch Ignition Fault	BMS Card fault associated with Ignition switch.

Name	Description
IO Short Switch Run Fault	BMS Card fault associated with Ignition switch.
IO Short UV Flame Off Fault	The UV Flame Off bit in the IO Short Faults bitset is set
IO Short POC Fault	The POC bit in the IO Short Faults bitset is set
Level/Flow Configuration Error	<p>Level High Trip setting is less than Level Low Trip plus Level Deadband</p> <p>OR</p> <p>Level Span Max less than Level Span Min</p>
Level/Flow I2C Bus Fault	Diagnostic detection of communication bus issue related to the Level input.
Level/Flow Out of Range	<p>Level Input In 4-20 mode:</p> <ul style="list-style-type: none"> <li>• Input is less than 3 mA OR</li> <li>• Input is greater than 21 mA</li> </ul> <p>Level Input In Digital mode:</p> <ul style="list-style-type: none"> <li>• Input is not within a valid range [1]</li> </ul>
Low Level/Flow	<p>Level Input In 4-20 mode:</p> <ul style="list-style-type: none"> <li>• Input is less than Level Low Trip setting</li> </ul> <p>Level Input In Digital mode:</p> <ul style="list-style-type: none"> <li>• Input is open</li> </ul>
Low Pressure	<p>Pressure Input In 4-20 mode:</p> <ul style="list-style-type: none"> <li>• Input is less than Pressure Low Trip setting</li> </ul> <p>Pressure Input In Digital mode:</p> <ul style="list-style-type: none"> <li>• Input is open</li> </ul>

Name	Description
Low Voltage	System Voltage Input is less than Low Voltage Threshold: <ul style="list-style-type: none"> <li>• In 12V Mode: 9.6V</li> <li>• In 24V Mode: 19.2V</li> </ul>
No Process Temp	None of Bath, Outlet, or Aux temp are configured to be in Process Control mode
NOT USED	
NOT USED	
Outlet High Temp ESD	Outlet Temperature Input is greater than High Temp ESD setpoint
Outlet Out of Range	Outlet Temperature Input in RTD Mode: <ul style="list-style-type: none"> <li>• Input is measuring outside of the valid range for RTD</li> </ul> Outlet Temperature Input in Thermocouple Mode: <ul style="list-style-type: none"> <li>• Input is measuring outside of the valid range for Thermocouple</li> </ul>
Outlet Sensor Open	Outlet Temperature Input sensor has an open circuit
Outlet Sensor Short	Outlet Temperature Input in RTD Mode: <ul style="list-style-type: none"> <li>• Input is measuring a short circuit</li> </ul> Outlet Temperature Input in Thermocouple Mode: <ul style="list-style-type: none"> <li>• This alarm cannot be set</li> </ul>
Outlet Stale Data	Outlet Temperature Input is not reading valid data

Name	Description
Outlet Temp Configuration Range Error	<p>Outlet Temperature Input settings are configured incorrectly with respect to one another, mainly:</p> <ul style="list-style-type: none"> <li>• Pilot Off setpoint less than Main Off Or Process setpoints</li> </ul> <p>OR</p> <ul style="list-style-type: none"> <li>• High Temp setpoint less than Main Off OR Pilot Off OR Process setpoints</li> </ul> <p>OR</p> <ul style="list-style-type: none"> <li>• Low Temp setpoint greater than Process Setpoint</li> </ul> <p>OR</p> <ul style="list-style-type: none"> <li>• High Temp out of range</li> </ul>
Pilot 1 Flame Detected While Off	Flame has been detected on Pilot 1 input before Ignition
Pilot 1 Flame Fail	Pilot 1 has lost flame and/or failed to re-light
Pilot 1 I2C Bus Fault	Diagnostic detection of communication bus issue related to the Pilot 1 output.
Pilot 1 Output Voltage Fault	Valve is de-energized and measured voltage on the (+) terminal is greater than 5V.
Pilot 2 Flame Detected While Off	Flame has been detected on Pilot 2 input before Ignition
Pilot 2 Flame Fail	Pilot 2 has lost flame and/or failed to re-light
Pilot 2 I2C Bus Fault	Diagnostic detection of communication bus issue related to the Pilot 2 output.
Pilot 2 Output Voltage Fault	Valve is de-energized and measured voltage on the (+) terminal is greater than 5V.
Pilot 2 Enabled with UV Pilot Detect	UV Detect is set to Pilot and Main and Pilot 2 is Enabled

Name	Description
Pilot ADC Read Fault	BMS Card fault associated with internal ADC. [2]
Pilot ADC Start Fault	BMS Card fault associated with internal ADC. [2]
Pilot ADC Stop Fault	BMS Card fault associated with internal ADC. [2]
POC Contact Out of Range	Input is not within a valid range [1]
Pressure Configuration Error	Pressure High Trip setting is less than Pressure Low Trip plus Pressure Deadband OR Pressure Span Max is less than Pressure Span Min
Pressure I2C Bus Fault	Diagnostic detection of communication bus issue related to the Pressure input.
Pressure Out of Range	Pressure Input In 4-20 mode: <ul style="list-style-type: none"> <li>• Input is less than 3 mA OR</li> <li>• Input is greater than 21 mA</li> </ul> Pressure Input In Digital mode: <ul style="list-style-type: none"> <li>• Input is not outside valid range [1]</li> </ul>
Process Setpoint Adjust Unit Configuration Error	Process Setpoint Adjust Input units are not valid (i.e. not set to a valid Temperature Unit)
Process Setpoint AdjustConfiguration Error	Process Setpoint Adjust is using a temperature that is not set up for Process Control.
Processor Reset	Primary and/or secondary processor(s) of the BMS have reset due to a lock-up.
Proof of Light Off I2C Bus Fault	Diagnostic detection of communication bus issue related to the Proof of Light Off input.

Name	Description
Proof of Light Off Out of Range	Proof of Light Off Input In 4-20 mode: <ul style="list-style-type: none"> <li>• Input is less than 3 mA OR</li> <li>• Input is greater than 21 mA</li> </ul> Pressure Input In Digital mode: <ul style="list-style-type: none"> <li>• Input is not within a valid range [1]</li> </ul>
Safety Output Mismatch	The primary and secondary processors of the BMS card disagree on the state of the Safety Outputs.
Settings CRC Failed	Settings have been corrupted and cannot be verified. Note: a settings reset is usually required.
SSV1 I2C Bus Fault	Diagnostic detection of communication bus issue related to the SSV1 output.
SSV1 Output Voltage Fault	Valve is de-energized and measured voltage on the (+) terminal is greater than 5V.
SSV2 I2C Bus Fault	Diagnostic detection of communication bus issue related to the SSV2 output.
SSV2 Output Voltage Fault	Valve is de-energized and measured voltage on the (+) terminal is greater than 5V.
Stack High Temp ESD	Stack Temperature Input is greater than High Temp ESD setpoint
Stack Out of Range	Stack Temperature Input in RTD Mode: <ul style="list-style-type: none"> <li>• Input is measuring outside of the valid range for RTD</li> </ul> Stack Temperature Input in Thermocouple Mode: <ul style="list-style-type: none"> <li>• Input is measuring outside of the valid range for Thermocouple</li> </ul>
Stack Sensor Open	Stack Temperature Input sensor has an open circuit

Name	Description
Stack Sensor Short	Stack Temperature Input in RTD Mode: <ul style="list-style-type: none"> <li>• Input is measuring a short circuit</li> </ul> Stack Temperature Input in Thermocouple Mode: <ul style="list-style-type: none"> <li>• This alarm cannot be set</li> </ul>
Stack Stale Data	Stack Temperature Input is not reading valid data
Stack Temp Configuration Range Error	Stack Temperature Input settings are configured incorrectly with respect to sensor type, mainly: <ul style="list-style-type: none"> <li>• Pilot Off less than Main Off</li> </ul> OR <ul style="list-style-type: none"> <li>• High Temp Less than Main Off</li> </ul> OR <ul style="list-style-type: none"> <li>• High Temp Less than Pilot Off</li> </ul>
Start Contact Out of Range	Input is not within a valid range [1]
State Mismatch	The primary and secondary processors of the BMS card disagree on the process control state.
System ADC Read Fault	BMS Card fault associated with internal ADC. [2]
System ADC Start Fault	BMS Card fault associated with internal ADC. [2]
System ADC Stop Fault	BMS Card fault associated with internal ADC. [2]
System Voltage Current I2C Bus Fault	Diagnostic detection of communication bus issue related to the System Voltage input.
System Voltage Mismatch	INA226 system voltage is NOT within 2V of ADC reading

Name	Description
User Stop via External Switch	External switch input is in the off position.
User Stop via Interface	The BMS card received a stop command from the UI or remote modbus device.
UV Flame Detect Mismatch	UV Flame On == UV Flame Off
UV Flame Detect Fault	UV Flame Fault open (de-energized)

[1] This fault can occur in one of two scenarios: a negative voltage is present on the Signal In terminal OR the BMS card has been compromised.

[2] This fault usually occurs when the BMS card has been compromised.





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