PF3100

BMS Controller Shutdown Code Summary

DOC-001070 v3.0

PROFIRE

SHUTDOWN CODES

The table below lists the shutdown codes for all alarms available in the PF3100 NA-42.0 firmware.

- The UI column indicates the four digit shutdown code that is displayed on the user interface Alerts Screen and in the event log for each alarm.
- The Modbus column indicates the value reported by Modbus registers 30043 and 40043 for each alarm.

Shutdown Code		Alarm Name	Description
UI	Modbus		
1000	1	Pilot Flame Detected While Off	Pilot flame is detected before the BMS has ignited the pilot.
1001	2	Main Flame Detected While Off	Main Flame is detected before the BMS Ignited the pilot, or before entering the low fire or high fire state.
1002	3	POC Contact Open	The Proof of Closure Contact is open when the BMS is not running in Low Fire or High Fire.
1003	4	POLF Contact Open	Proof of Low Fire (Auxiliary) Contact is open when the BMS is not running in High Fire.
1004	5	POC2 Contact Open	The Proof of Closure 2 (Auxiliary) Contact is open when the BMS is not running in Low Fire or High Fire.
1005	6	POP Contact Open	Proof of Pilot (Auxiliary) Contact is open when the BMS is not running in Pilot, Low Fire or High Fire.
1006	7	Level/Flow Contact Open	The Tank Level Contact is open.
1007	8	Low Level/Flow	The 4-20mA Tank Level reading is below the Tank Level Low Setpoint.
1008	9	Fuel Pressure Contact Open	The Fuel Pressure Contact is open.
1009	10	Low Fuel Pressure	The 4-20mA Fuel Pressure reading is below the Fuel Pressure Low Setpoint.
1010	11	Low Fuel Pressure Dry Contact	The Low Fuel Pressure (Auxiliary) Contact is open.
1011	12	ESD Contact Open	The Emergency Shut Down contact is open.
1012	13	Primary Process Temperature High ESD	The Process Temperature is above the High Temperature Shutdown Setpoint.
1013	14	Incompatible Firmware	An IO Module connected to the BMS has a firmware version that does not match the BMS firmware version.
1014	15	Process Thermocouple Error	A wiring or hardware error is detected on the Process Thermocouple.
1015	16	Aux Thermocouple Error	A wiring or hardware error is detected on the Auxiliary Thermocouple
1016	17	Pilot Solenoid Error	A wiring or hardware error is detected on the Pilot- Contact of the pilot solenoid.
1017	18	SSV1 Solenoid Error	A wiring or hardware error is detected on the SSV1- Contact of the Safety Shutoff Valve 1 solenoid.
1018	19	SSV2 Solenoid Error	A wiring or hardware error is detected on the SSV2- Contact of the Safety Shutoff Valve 2 solenoid.
1019	20	HF Solenoid Error	A wiring or hardware error is detected on the HFV- Contact of the High Fire Valve solenoid.
1020	21	Pilot Solenoid Error	A wiring or hardware error is detected on the Pilot+ Contact of the pilot solenoid.

Shutdown Code		Alarm Name	Description
UI	Modbus		
1021	22	SSV1 Solenoid Error	A wiring or hardware error is detected on the SSV1+ Contact of the Safety Shutoff Valve 1 solenoid.
1022	23	SSV2 Solenoid Error	A wiring or hardware error is detected on the SSV2+ Contact of the Safety Shutoff Valve 2 solenoid.
1023	24	HF Solenoid Error	A wiring or hardware error is detected on the HFV+ Contact of the High Fire Valve solenoid.
1024	25	Low Voltage	The BMS, Temperature or Ignition Modules have detected that the system voltage is lower than the Low Voltage Alarm Threshold
1025	26	High Voltage	The BMS, Temperature or Ignition Modules have detected that the system voltage is higher than the high Voltage Alarm Threshold
1026	27	Pilot Module Comm Error	The PFRN connection with one or more of the IO modules has been lost.
1027	28	Incomplete Commissioning	The commissioning date has not been set.
1028	29	Cross Compare Failure	One of the microcontrollers on the BMS or IO modules does not agree with the other microcontroller when comparing status.
1029	30	Cross Compare Packet Timeout	One of the microcontrollers on the BMS or IO modules failed to perform a cross comparison with the other microcontroller.
1030	31	Factory Calibration Error	One or more of the configured modules have an incorrect or incomplete factory calibration
1031	32	Invalid Configuration	One or more settings has failed a configuration check. This is usually set by a invalid temperature setpoint, interlock setpoint or appliance configuration.
1032	33	Ignition Switch Stuck	The BMS Ignition Switch input is stuck in the start position.
1033	34	Auxiliary Temperature High ESD	The Auxiliary Temperature reading is above the Auxiliary High Temperature Setpoint.
1034	35	Temperature Module Ambient Temp Mismatch	The Temperature Module has a hardware fault.
1035	36	Pilot Load Monitor Error	A wiring or hardware error is detected on a Pilot Flame Detection input.
1036	37	Pilot Flame Detect Voltage Error	A wiring or hardware error is detected on a Pilot Flame Detection input.
1037	38	Pilot Flame Quality Mismatch	A wiring or hardware error is detected on a Pilot Flame Detection input.
1038	39	Main Load Monitor Error	A wiring or hardware error is detected on a Main Flame Detection input.
1039	40	Main Flame Detect Voltage Error	A wiring or hardware error is detected on a Main Flame Detection input.
1040	41	Main Flame Quality Mismatch	A wiring or hardware error is detected on a Main Flame Detection input.
1041	42	Ion Pilot Module Valve Test Failed	A wiring or hardware error is detected on the Valve+ Contact of the Ignition Module solenoid.
1042	43	Ion Pilot Module Valve Test Failed	A wiring or hardware error is detected on the Valve- Contact of the Ignition Module solenoid.

Shutdown Code		Alarm Name	Description
UI	Modbus		
1043	44	Process Temp Mismatch	The two Process Thermocouples are not reading the same temperature value (within 10 percent)
1044	45	Aux Temp Mismatch	The two Auxiliary Thermocouples are not reading the same temperature value (within 10 percent)
1045	46	Pilot Flame Fail	The system failed to ignite the Pilot Flame within the allocated number of retry attempts.
1046	47	Main Flame Fail	The system failed to ignite the Main Flame within the allocated number of retry attempts.
1047	48	High Fuel Pressure After Main On	High fuel pressure was detected on the 4-20mA input after the SSV1 and SSV2 valves have opened.
1048	49	Stopped Via External Switch	The Ignition Switch on the BMS is in the Stop position.
1049	50	User Stop	The Controller received a stop command from a UI Module or remote Modbus device
1050	51	Safety Core Temperature Too High	The microcontroller on the BMS has detected that it is running above 115°C.
1051	52	Safety Core Temperature Too Low	The microcontroller on the BMS has detected that it is running below -40°C.
1052	53	Controller Firmware CRC Failed	The BMS Firmware is no longer valid.
1053	54	Controller Settings CRC Failed	The BMS settings are no longer valid.
1054	55	Ignition Module Valve Test Failed	Internal Ignition Card Fault
1055	56	Input Pin Connection Test Failed	Internal BMS Card Fault
1056	57	State Mismatch	One of the microcontrollers on the BMS or IO modules does not agree with the other microcontroller on the system state.
1057	58	ION Aux In Contact Open	One of the ion pilot modules aux in contacts is not satisfied.
1058	59	ION AUX In Tripped	One of the ion pilot modules aux in contacts is not satisfied.
1059	60	ION Aux In Contact Range Error	One of the ion pilot modules aux in contact is reading an invalid value, typically outside the 4-20mA range.
1060	61	ION Aux In Contact Mismatch	One of the microcontrollers on the ion pilot module disagrees with the other microcontroller on the status of the aux in contact status.
1061	62	ION Aux In Contact Cross Compare Failure	One or more of the microcontrollers on the ion pilot module has failed cross comparing their data values.
1062	63	Level/Flow Input Range Error	The Level Input is measuring out of range.
1063	64	Level/Flow Input Mismatch Error	One of the two internal Level Input reading measurements is faulty.
1064	65	Pressure Input Range Error	Pressure Contact is measuring out of range.
1065	66	Pressure Input Mismatch Error	One of the two internal Pressure Input reading measurements is faulty.
1066	67	Start Contact Mismatch Error	One of the two internal Start Input reading measurements is faulty.
1067	68	ESD Contact Mismatch Error	One of the two internal ESD Input reading measurements is faulty.
1068	69	POC Contact Mismatch Error	One of the two internal POC Input reading measurements is faulty.

Shutdown Code		Alarm Name	Description
UI	Modbus		
1069	70	AUX In Contact Mismatch Error	One of the two internal Auxiliary Input reading measurements is faulty.
1070	71	No Valid Primary Process Temperature	There are no Process Temperature inputs configured in the appliance.
1071	72	No Valid Auxiliary Temperature	There are no Auxiliary Temperature inputs configured in the appliance, when it is configured for use as the Process Temperature.
1072	73	Appliance Process Temp Mismatch	At least one of the Process Thermocouple Inputs in an appliance does not match the other process temperature measurements.
1073	74	Appliance Aux Temp Mismatch	At least one of the Auxiliary Thermocouples in an appliance does not match the other Auxiliary Thermocouple measurements when the Auxiliary Temperature is configured for process control.
1074	75	No Appliance Level/Flow	The appliance does not have a Level Input configured.
1075	76	Not used	
1076	77	Appliance Startup Cancelled	The appliance startup was cancelled by the User Interface or Modbus Module.
1077	78	Appliance Startup Timeout	The appliance was not able to successfully start all of the BMS controllers within the appliance.
1078	79	Appliance Startup Mismatch	During appliance startup one of the BMS modules reported settings that did not match the other BMS modules.
1079	80	No Appliance Leader	NOT USED
1080	81	Controller Disabled	This BMS has been disabled in the appliance settings.
1081	82	Minimum Controllers Rule Violated	Less than the minimum number of controllers are running in the appliance so the entire appliance shutdown.
1082	83	Controller Network Wiring Error	An IO Module is communicating on the Network PFRN Bus (Connected to the UI directly or through a Network Switch/Modbus Card)
1083	84	IO Network Wiring Error	An interface module is communicating on the IO Module Network.
1084	85	Failed to Prove Airflow While Running	The proof of airflow contact entered a failed state while running.
1085	86	Failed to Prove Airflow While Purging	The proof of airflow contact entered a failed state while purging.
1086	87	Multiple Primary Process Temperatures	More than one Primary Process Temperature Input is configured on the BMS.
1087	88	Primary Process Temperature Configuration Error	The Process Temperature configuration is not valid.
1088	89	Auxiliary Temperature Configuration Error	The Auxiliary Temperature configuration is not valid.
1089	90	No Primary Process Temperature Configured	The Process Temperature Input has not been configured.
1090	91	UV Flame Detect Fault	UV Scanner Fault Contact Open
1091	92	UV Flame Detect Mismatch	UV Scanner “Flame On” and “Flame Off” contacts are indicating opposite flame state.

Shutdown Code		Alarm Name	Description
UI	Modbus		
1092	93	UV Input Out of Range	UV Scanner 4-20mA flame signal is invalid.
1093	94	UV Input Address Fault	The UV Pilot Module has experienced a system error.
1094	95	IO Expansion Input Invalid	One or more IO Expansion inputs configured as alarms have measurement errors (e.g., out of range, cross comparison, stale data).
1095	96	I/O Expansion POAF Input Invalid	The Proof of Air Flow contact is not satisfied on the IO Expansion Card.
1096	97	IO Expansion Analog Input High	One or more configured inputs on the IO Expansion card have read a value higher than the allowable range.
1097	98	IO Expansion Analog Input Low	One or more configured inputs on the IO Expansion card have read a value lower than the allowable range.
1098	99	IO Expansion Digital Input Open	One or more configured inputs on the IO Expansion card have an open contact status.
1099	100	IO Expansion Configuration Error	An IO Expansion module is configured incorrectly.
1100	101	Invalid Appliance Firing Rate Input	The IO Expansion input configured for firing rate is not measuring a valid 4-20mA signal.
1101	102	Failed to Prove Purge Position	The controller is unable to determine the position of the TCV while purging.
1102	103	Failed to Prove Pilot Position	The controller is unable to determine the position of the TCV while in the pilot state.
1103	104	Failed to Prove Low Fire Position	The controller is unable to determine the position of the TCV while in the low fire state.
1104	105	FARC Cross Limit Error	The fuel actuator position exceeds the expected fuel position requested by the current air position by more than the configured cross limit error threshold.
1105	106	FARC Valve Position Error	The difference between the requested and actual position of the fuel actuator exceeds the configured position error threshold.
1106	107	FARC Air Position Error	The difference between the requested and actual position of the airflow actuator exceeds the configured position error threshold.
1107	108	FARC Configuration Error	FARC has been enabled and one of the following is not enabled: POAF, Forced Draft, Low Fire, PID.
1108	109	PID Configuration Error	4-20 Aux Out Mode setting is set to PID, Low Fire Mode setting is enabled and any of the following Advanced PID Config conditions exist: 1. Primary Setpoint Min > Primary Setpoint Max 2. Secondary Setpoint Min > Secondary Setpoint Max 3. Secondary Input invalid (Both a temperature input and I/O expansion input have been configured as Secondary PID inputs). 4. Staging Input Invalid (Input type selected in the I/O Wizard is not suitable for PID staging).
1109	110	Pilot Configuration Error	The pilot card configuration is incorrect. The minimum pilots running setting must be equal to or less than the number of pilot cards configured.

Shutdown Code		Alarm Name	Description
UI	Modbus		
1110	111	Bleed Valve Closed with Main Off	The bleed valve proof of open contact is open, indicating the bleed valve is closed (no flow) during main off.
1111	112	Bleed Valve Open with Main ON	The bleed valve proof of open contact is closed, indicating that the bleed valve is open (flow) while the main is on.
1112	113	The Bleed Valve Input is Invalid	The bleed valve proof of open contact input is invalid.
1113	114	BMS Wait Timeout	A BMS wait input has timed out. This means that the BMS has been in a waiting state for longer than the wait timeout time.
1114	115	IO Expansion Wait Timeout	An IO Expansion wait input has timed out. This means that the BMS has been in a waiting state for longer than the wait timeout time.
1115	116	One or more descriptors are Invalid	Internal BMS Card Fault
1116	117	Settings CRC Mismatch	Settings have been corrupted and cannot be verified
1117	118	Failed To Prove No Airflow	The Proof of Airflow contact is closed during the Startup Checks State.
1118	119	Secondary PID Configuration Error	1. Input Mode setting (I/O Wizard > Add Inputs Tab) is configured as “Secondary PID input” for more than one input. 2. Secondary PID input Signal Type setting (I/O Wizard > Add Inputs Tab) is configured as “Digital” 3. Aux Out Mode setting (BMS Settings > Outputs > 4-20 Aux Out) is not set to “BMS PID”. 4. Secondary PID input is not assigned as the Secondary Input (BMS Settings > Process Control > Advanced PID Config).
1119	120	UV Flame Detect Stale Data	A UV Pilot module in the system is reporting a stale data fault.
1120	121	IO 4-20 Output PID Configuration Error	4-20 Output setting (I/O Wixard > I/O Cards Tab) is set to PID Output Controlled by TC/RTD Input but has no temperature input assigned.
1121	122	IO Expansion Dry Contact Configuration Error	IO Expansion Dry Contact setting (I/O Wixard > I/O Cards Tab) is configured as Temp Setpoint Trip or Input Setpoint Trip and Dry Contact Trip Configuration setting (I/O Wixard > I/O Cards Tab) is unassigned.

REVISION HISTORY

Version Number	Date	Applicable Firmware
v3.0	12 MAR 2021	NA-42.0
v2.0	05 JAN 2021	NA-41.1
v1.0	29 OCT 2020	NA-40.1
v0.6	07 SEP 2017	NA-39

PROFIRE

UNITED STATES
1.801.796.5127
321 South, 1250 West Suite 1
Lindon, UT 84042, USA
support@profireenergy.com

CANADA
1.780.960.5278
9671 – 283 Street
Acheson, AB T7X 6J5, Canada
support@profireenergy.com