PF2200 - SB

SOFTWARE RELEASE NOTES

V9.0

PROFIRE

1 CONTENTS

2 INTRODUCTION

SCOPE

This document is meant to provide customers with a list of changes for each software bundle release. The notes are categorized by their software bundle release version (e.g. AA-B.C.D). Where:

AA: Product Variant Type (e.g. SB – Single Burner)

B: Major Software Release (typically with new features)

C: Minor Software Release (typically with fixes / changes)

D: Build Number (internal use only)

Modification to software is generally split up into three main categories:

NEW: Software modifications that add additional functionality (e.g. features).

CHANGES: Software modifications which modify existing behavior.

FIXES: Software modifications which correct identified issues (e.g. bugs).

KNOWN SAFETY ISSUES

Description	Work Around	Affected Version(s)	Fixed Version
In weakly grounded systems, excessive sparking may cause phantom key presses and/or board resets.	Ensure proper grounding. Avoid excessive sparking in weakly grounded systems (e.g. Use a standing pilot, dial back the gas pressure).	All	N/A
Shutdown codes may be inadvertently cleared by a power cycle or low voltage event.	Update the system firmware to SB-1.3.1 or newer version.	SB-1.0.3 SB-1.1.3 SB-1.2.3	SB-1.3.1
When Pilot 2 is *Enabled*, the Maximum Post-Ignition time is 10 seconds instead of the published 2.5 seconds.	None	SB-1.0.3 SB-1.1.3 SB-1.2.3 SB-1.3.1	SB-2.0.4

3 RELEASE NOTES

SB 2.2.0

SB 2.2.0 was released on October 26, 2021.

CHANGES

- Increased Aux In 1 and Aux In 2 max deadband from 1mA to 16mA.

SB 2.1.3

SB 2.1.3 was released on January 27, 2021.

NEW

- Added Modbus Input Register 33740 and Holding Register 43740 for reading the cascaded PID setpoint.

CHANGES

- When using cascaded PID, the bath process setpoint is now displayed in the correct temperature units (was previously unitless).

FIXES

- Fixed an issue where the Aux In spans would be interpreted as Celsius instead of Fahrenheit when using Process Setpoint Adjust (with temperature units configured as Fahrenheit).
- Fixed a bug where flame detect circuit diagnostic data was being erroneously acquired during ignition. In setups which have a single rod for both flame detection and ignition, ignition noise would cause the flame detect circuit diagnostic data to be unreliable and potentially cause a nuisance shutdown.

SB 2.0.4

SB 2.0.4 was released on Sep. 17, 2020. It includes major feature additions and software fixes based on customer feedback.

NEW

- Added support for flame detection via an external UV flame scanner. The system monitors UV flame via three digital inputs: Flame ON, Flame OFF and FAULT. The system can be configured to detect main flame only (ionization for the pilot), or pilot and main flame (ionization not used).
- Added Independent Pilot Control functionality. This allows the operator to set the minimum number of pilots running in dual pilot systems. Extinguished pilots can be relit without shutting the system down either by using the start button on the UI or the external switch. Additionally, extinguished pilots may attempt to auto relight for up to 2 minutes.
- Added Bath Standby Mode. This allows the system to maintain a minimum bath temperature when multiple process temperatures are configured, and the system is configured in on/off control. So long as all process temperatures remain below their main off setpoints, the system can keep the mains on to maintain the bath standby setpoint.
- Added a popup dialog to all numeric settings to allow for better fine-grained control of setting values.
- Added an independent **Level/Flow Control Setpoint** for use when the **Status Contact Mode** is set to *Level/Flow Control*. This allows users to operate the status contact at an independent setpoint from the **High Level/Flow Trip Setpoint**. For example, the system can now use the status contact for pump control while retaining the ability to trip on a high level. The *Level/Flow Control Setpoint Configuration* alarm was added to ensure the new **Level/Flow Control Setpoint** is between the **Level/Flow Control Low/High Trip Setpoints**.
- Hardware product variant information has been added to the info screen.
- Added the **UI Comm Loss** setting. If enabled, the system will shut down if communication between the UI and BMS is lost.
- Added alert numbers to both the status screen and the event log.
- Added the **Light Off Positioning Timeout** setting, allowing the user to define how long the system should wait to prove Light Off Position before alarming (5-900s).
- Added the ability to log Bath 2 temperature (in addition to Bath 1).

CHANGES

- Level and flow units have now been split. Users can now configure the Level/Flow and Aux Inputs independently (e.g. Level/Flow could be configured for level units, while Aux In 1 could be configured for flow units).
- Valve PWM minimum value has been reduced from 10% to 1%.
- Appliance Firing Rate is now enabled via setting the **Process Control Mode** to *External Firing Rate* instead of *Staged Heating* (which was confusing)
- Data Logging and Event Logging improvements:
- Updated data log naming format to prevent potential sharing of data across different BMS'. The data log root directory will now contain a unique serial number for that particular BMS. Each file generated for the data log will contain the name of the status that its logging. Added the BMS serial number to the header of each file as well.

- Updated the event log folder names to use the BMS hardware serial number for differentiation between BMS'.
- Added timestamp so the user can see date when a file was created.
- Added event log export button to event log options dialog. Activating this will concatenate all event log files into a single csv file. Added a progress dialog for this operation.
- Misc. Settings Backup improvements:
- Each BMS will get their own folder for backups (based on serial).
- Updated the bundle version number in the settings backup file to be human readable.
- Added serial number to the backup file.
- System diagnostics screen(s) updated to support proper display of the external switch and digital input states.
- The system now ignores process control temperature deadbands on startup.
- Temperature faults that occur on inputs that are set to *Display Only* now ring in as warnings on the UI (instead of alarms).
- Setpoints are now properly gated while the system is running to prevent erroneous shutdowns due to configuration errors. For example, it is no longer possible to set a Process Setpoint above an associated Main Off Setpoint and shut the system down while running. Note that setpoints are **NOT** gated while the system is stopped.
- PF2100 compatible Modbus setpoint write request are now gated while running to prevent configuration alarms.
- Analog output fault alarms have been changed to warnings in order to avoid erroneous shutdowns due to non-safety critical elements.
- Valve run time diagnostics are now cumulative across the entire power on time of the system instead of resetting when the valves close. Pilot 1 and Pilot 2 run times can also now be tracked independently.
- Replaced Accumulated Relights with Pilot and Main Flame Establishment Failures on the diagnostics screen.
- **PID Configuration** warning has been changed to an alarm.
- Proof of light off position is now considered disabled if TCV manual override is enabled.
- Added the **TCV Manual Override Enabled** warning to notify the user when the TCV is in manual override mode.

FIXES

- Added low temperature compensation to Aux Out 1, Aux Out 2 and the TCV Output, making these outputs accurate over all temperature and current ranges.
- Aux input spans are now locked to the correct values when mapped to a pressure/level/flow that is using % or mA units. Previously these spans were modifiable which was confusing.
- Fixed a bug where the **POC Contact Failed to Open** warning would fail to clear once the mains were closed.
- Fixed a bug where the system would throw a configuration alarm when the main off setpoint was configured incorrectly while the main off setpoint was not used (e.g. On/Off control).
- Fixed an issue with data log disk cleaning utility causing the UI to bog down and lose comms with the BMS.
- Fixed an issue where the incorrect rate limiting was being applied to the PID controller.
- Fixed a bug where various temperature warnings would be incorrectly masked by other warnings.
- Process temperatures are now lower bound by their associated deadbands. This fixes a bug where Process Temp could be configured below the associated Deadband setting, leading to a configuration alarm.

SB 1.3.1

SB 1.3.1 was released March 31, 2020. This is a minor bugfix release.

CHANGES

- Redesigned the System screen to be consistent with the Settings screen (elements are now categorized under different submenus).
- Diagnostics information has been intelligently split into several different screens (instead of being grouped together in one big list). This makes finding specific information easier.
- Changed the default temperature mode to RTD instead of thermocouple.
- Aux In 4-20 Mode, Span Min/Max are no longer editable while running.
- High/low voltage warnings are now hidden if the corresponding wait is active.
- Stop dialog now has a 10 second timeout.
- Increased level/flow span max from 100 000 L to 10 000 000 L.
- Level/flow delay and low pressure delay are no longer editable while running.

FIXES

- Fixed an issue where the system would reset when entering the process control state if the PID proportional band was set to 0.
- Misc. reliability improvements, particularly with respect to the reduction of nuisance shutdowns.
- Fixed an endianness and conversion issue with the ramp time Modbus register.
- Fixed an issue with the digital input voltage calculation being incorrect on the diagnostics screen.
- Start contact and external switch must now perform a double action toggle in order to clear a shutdown code or to start the system (start contact only). Previously the system could inadvertently clear a shutdown code during power on through means of a false toggle on the external switch or start contact.
- Fixed an issue with the PID controller where internal calculations were causing unexpected behavior during PID ramping.
- Fixed an issue where the user interface LCD would stop updating (lock up) after ~23 days.
- Fixed an issue with the Pilot fail count(s) being incorrectly incremented on the diagnostics page.
- Various font issue fixes.
- Fixed an issue where setting Process Setpoint Adjust to certain values would cause the BMS to restart.
- Fixed an issue with erroneous Main Permissive Set events being generated in the event log.
- Fixed an issue where Aux In 2 High / Low Setpoint were reversed on the Status Screen.
- Fixed an issue where the Modbus was sending an extra byte at the end of each transmission. This could cause issues with some systems parsing Modbus messages.
- Fixed an issue where the System Voltage Mismatch alarm would incorrectly show up as N/A on the status screen.

SB 1.2.3

SB 1.2.3 was released on November 29, 2019. This is the first official production-ready release. It contains several new features, bug fixes and reliability improvements.

NEW

- Added basic data logging functionality. Users can select up to 8 items to log from a list of status registers. Data is sampled at a fixed 15 second interval and batch written to the USB every 8 minutes.
- Added event log filtering. Users can now select the type(s) of events they wish to view.

CHANGES

- Temperature sensing reliability significantly improved.
- Reconfigured the Settings screen for easier commissioning
- Improved naming of settings to make them easier to understand and consistent across all product lines.
- Level input functionality expanded to allow configuration as a Flow input with associated units.
- L2 and L1 password authentication timeout extended for convenience while commissioning.
- Made configuration alarms more explicit to help users diagnose various configuration errors.
- Changed the L1 password enable/disabled default value to disabled.
- Changed the L1 and L2 passwords. Contact Profire for more information.
- Changed the Aux In 1/2 configuration settings to be more user friendly and consistent.
- Added the controller state information to the status bar in the About screen for consistency.
- Various event log performance and reliability improvements.

FIXES

- Improved product reliability in noisy environments, reducing the number of nuisance shutdowns.
- Misc. changes that improve product reliability and reduce nuisance shutdowns.
- Firmware update speed and reliability improvements.
- Fixed an issue with the Valve Power Status bitset returning incorrect values, both via Modbus and for diagnostic purposes.
- Fixed an issue with the IO short test false tripping the system when the contact is ~24VDC.
- Fixed issues with level/pressure/aux in 1/aux in 2 span settings.
- Fixed an issue where Outlet Process SP Adjust was not being displayed on the status screen.
- Fixed an issue with the Level/Flow deadband conversion.
- Improved reliability of writing data to the USB (event/data logging).
- Settings restore will now correctly reset the Commissioning Complete setting.
- The aux output is now disabled if Modbus is disabled and the aux out mode is set to Modbus echo.
- Modbus data is now rounded instead of truncated.
- Modbus register 30006 (Pilot Flame Quality) – fixed an issue with the value always reading 0 or 1. It now reads between 0 and 100%.
- Modbus register 10030 (4-20 Alarm) – fixed an issue where the register did not indicate an out of range value.
- Modbus register 10019 (Pilot Solenoid Feedback) – fixed an issue where this register would not work with pilot 2.

- Modbus register 30003 (High Temp Thermocouple Reading) – fixed an issue where this register would read Stack Temp instead of Bath 2 Temp.
- Modbus register 30010 (Pilot Off Setpoint) – fixed an issue where this register incorrectly read the Low Temp Setpoint instead of the Pilot Off Setpoint.
- Modbus register 30115 (UI Clock year) – fixed an issue where setting this register had no effect. This now correctly sets the UI clock year.
- Modbus register 33705 (4-20 High Pressure Input) now has fixed mA units.
- Modbus register 33730 (Status Contact State) -- fixed an issue where status contact state would always read 0.
- Modbus register 33528 (Calibration Format Number) – fixed an issue where this would always read 0.

SB 1.1.3

SB 1.1.3 was released August 30, 2019. This release contains various bug fixes and improvements resulting from internal validation testing and field trials.

NEW

- Added a UI Keypad Test under the System screen.
- Added flame quality status elements to the status screen. Flame quality is binned into the categories "None", "Weak" and "Strong".

CHANGES

- Status LED is now dimmed on boot. LED now goes to full brightness after 5m of inactivity.
- Aux 1 and Aux 2 output settings now have their own screens.
- Status screen zoom buttons no longer wrap (i.e., hitting the + button on the status screen will zoom in until the max zoom level is achieved; further + button presses are ignored)
- The cascaded PID setpoint is now displayed on the status screen.
- Temperatures now display as "N/A" on the status screen if there is a communication loss between the UI and BMS.
- "Manual Control" is now displayed on the title bar when manual mode is enabled and the system is in the "PID Control" state.
- "Factory Calibration Error" is now an alarm instead of a warning. This error is non-recoverable in the field and requires a hardware swap.
- "Remote Start" and "Start via External Switch" are now separate events in the event log.
- UI real time clock is now calibrated (< 5 minutes of error per year).
- Pressure, level and POC inputs are now enabled by default.
- Flame detection method and thresholds changed to support legacy installs.
- Updated flame diagnostics screen to reflect flame detection changes.
- Event log now shows human readable strings for all elements (codes had been used previously, which was less intuitive).
- Event log data is now stored on the USB flash drive (if connected), allowing for the data to persist across power cycles.

FIXES

- Fixed USB remounting issues.
- Authentication now prompts immediately (on button press) for spin box settings. Previously it would only prompt on release which caused issues when adjusting spin box settings.
- Firmware update and Settings Restore now inform the user if the USB stick is not detected.
- Settings backup can no longer occur if communication is lost between the UI and BMS.
- Misc. reliability improvements.
- Fixed an issue with TCV manual mode causing PID integral windup (switching to manual mode now resets the integral).
- Fixed an issue where pressing "OK" on a spin box would open and then fail UI authentication.
- Fixed various text and font issues.

SB 1.0.3

SB 1.0.3 was released July 24, 2019 and is the first major release of the Single Burner product variant.

NEW

Initial release

CHANGES

Initial release

FIXES

Initial release

4 DOCUMENT REVISION HISTORY

Document Version	Date	Description of Changes
v1.0	Jul 24, 2019	Initial document release, including SB 1.0.3 bundle release
v2.0	Aug 28, 2019	SB 1.1.3 bundle release
v3.0	Nov 29, 2019	SB 1.2.3 bundle release
v4.0	Dec 2, 2019	Fixed version history.
v5.0	Mar 31, 2020	SB 1.3.1 bundle release.
v6.0		Internal Release
v7.0	Sep 17, 2020	Added SB 2.0.4 release notes
V8.0	Jan. 27,2021	Added SB 2.1.3 release notes
V9.0	Oct 26, 2021	Added SB 2.2.0 release notes

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