



Culture Inspired by Forward Thinking

V4.2 Software Release Notes

PBS Vertical Wheel® Bioreactor Control Software



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Contents

Summary.....	3
Integrated OPC UA Server	3
Improvements	3
Bug Fixes	4
Other.....	4
Appendix 1 User Events	5
OPC UA Server	5

Summary

This release of the PBS control software enhances and integrates OPC UA server support as a licensed add-on feature, enabling access to controller data and extending functionality comparable to operating through the HMI. Authorized users can now view the OPC UA server status, configure its settings, and start or stop the server directly through the HMI application. The REST API remains available for monitoring and is included in the basic v4.2 installation; no license is required.

This release also includes bug fixes and general feature improvements.

Integrated OPC UA Server

- The OPC UA settings menu is accessible from the side menu (Side Menu → OPC UA), this consolidated menu replaces the separate configuration application used in v4.0/4.1. It now provides a streamlined interface for the following actions:
 - Enabling OPC UA on startup.
 - Configuring server name (default: PBS_OPCUA_SERVER) and port (default: 4840).
 - Viewing server address and status
 - Configuring allowed security policies (None and/or Sign & Encrypt).
 - Managing client trust and anonymous read-only access.
- Performing the previous actions in the OPC UA settings menu requires a newly introduced “OPC UA Settings” permission. For bioreactors getting upgraded from v4.0 or v4.1 software, no user account will be granted the new permission as part of the upgrade. For bioreactors getting upgraded from v3 software, or for new bioreactors, the new permission will be granted to the “pbstech” and “advanced” user groups.
- The OPC UA Server now offers expanded capabilities:
 - Support for additional read/write variable nodes
 - Read, modify, and activate configuration files
 - Start and stop batch
 - Start and stop sequence
 - Access historical data
 - Manual sensor calibration
 - Alarm Event Records (device alarms) and Alarm Conditions
 - User authentication via local or domain user accounts
 - Permission-based access to writeable and executable nodes.
- Additional information regarding OPC UA node definitions and use of the feature can be found in the Bioreactor OPC UA Functionality and Programming Guide.

Improvements

- Updated y-axis maximum of MFCs from 0.5 to 0.55.
- Updated y-axis minimum of DO graph from -5% to -10%.
- Updated Filter Oven setpoint from 50 °C to 38 °C and corresponding Process Alarm limits as follows:

Process Alarm setting name	Old default value	New default value
Filter Oven Low Low (C)	45	33
Filter Oven Low (C)	47	35
Filter Oven High (C)	53	41
Filter Oven High High (C)	55	43

- The Filter Oven will now be interlocked when Temperature PV < 32 °C and the Main Gas controller is in Off mode. This will eliminate the need for operators to turn the Filter Oven Off between runs. There is no impact to functionality during normal operation.
- Added display of actual error message in the Failed to Send Test Email popup.
- Removed DO One-Point (Offset) calibration method. The Span calibration, intended for normal in-process adjustments, remains available.
- Renamed “Last Run” and “Next Run” to “Last Backup” and “Next Backup” in the Scheduled Backup menu.
- Minor styling updates to improve consistency and visual experience.
- When copying a file or backup to a network drive, the system now automatically attempts to re-map the drive if the destination is not available.
- Introduced additional protections to prevent initialization issues after an unexpected power loss or dirty shutdown.
- “Pulse Mode” logic was removed from the Agitation control module. The Agitation “Pulse Mode Timeout (s)” setting is depreciated and no longer used by any part of the control software.

Bug Fixes

- Fixed an issue where the Unacknowledged Alarms list could be an incomplete or empty list in certain circumstances.
- Fixed an issue where scrollbar position would reset after closing the configuration editor.
- Fixed an issue where Level indicator may not display values properly.
- Fixed an issue where system will not force shutdown, restart or log off if other applications were open and blocking the operation.
- Fixed an issue where opening the About menu from the side menu while the Power menu was already open (or vice versa) could cause the menu to fail to load.
- Fixed an issue where level calibration was disabled when agitation or gas were running.
- Fixed an issue where the Acknowledge Alarms Popup could briefly appear in the bottom-right of the screen.
- Fixed an issue where the list of configuration files might not initialize or display correctly.
- Fixed an issue where alarm buzzer wouldn't work until system variables were reloaded.
- Fixed an issue where RIO Version might not display properly.
- Fixed an issue where reboot RIO could generate unnecessary errors.

Other

- The default logger settings deadband for Pumps&ValvesFillSpeed(RPM) has been changed from 5.000 to 0.500.
- The “NI 9425/Onboard Error” alarm has been renamed to “NI 9425 Onboard Error”.

Appendix 1 User Events

User Events have been introduced for OPC UA server configuration and control.

OPC UA Server

Type	Details
OPC UA Server Config Saved	<pre>{ "Name": "<server name>", "Port": <server port>, "Security": { "Trust All Clients": false, "Allow Anonymous": false, "Policies": { "None": true, "Sign&Encrypt": true } }, "Server Certificate": "" }</pre>
OPC UA Server Starting	<pre>{ "Name": "<server name>", "Port": <server port>, "Security": { "Trust All Clients": false, "Allow Anonymous": false, "Policies": { "None": true, "Sign&Encrypt": true } }, "Server Certificate": "" }</pre>
OPC UA Server Started	<server address>
OPC UA Server Stopped	Server stopped.
OPC Session Authenticated	"<username>" user credential is valid.
OPC Session Authenticated	Authentication Attempt Failed for user "<username>": Invalid username or password.
OPC Session Activated	"<username>" is authorized.
OPC Session Closed	"<username>" logged out from OPC UA session.