# Controller v2.1.0-601 Release Notes

**New Features:**
- HTTPS. The Controller's web UI can now be configured to only be accessible over HTTPS.
- NTP (Network Time Protocol) Support.
- A Controller can now configure mSensors and Hubs to be spares.

**Improvements:**
- Offline import for Link. Data is saved to the USB/SD Card when performing a USB backup.
- Changing a limit will no longer interrupt ohmic measurements.
- Service Port IP address now shows on the Controller LX LCD.

**Bug Fixes:**
- Ohmic in progress banner will no longer disappear and reappear when a small string is having its ohmic measurements taken.

# Controller v2.0.1-499 Release Notes

**New Features:**
- Support for new Controller MX

**Improvements:**
- Small strings now have a delay between impedance measurements to allow them to cool down.
- Alarm search when configuring alerts has been improved.
- Sensor Replacement can now replace old hub models with new hub models.
- ModbusRTU speed of 9600 has been added.
- Service Port IP address is set to 169.254.30.1

**Bug Fixes:**
- Network settings subnet mask validation fixed for Internet Explorer.
- Device Comms Error alarms can now correctly be mapped to a relay for specific strings instead of always mapping to all strings.

# Controller v1.3.2-371 Release Notes

**Improvements:**
- Network > Modbus speed setting now offers baud rates 9600 and 28800.

**Bug Fixes:**
- Continuous and discharge log files will be written to after restoring a configuration template.

# Controller v1.3.1-328 Release Notes

**New Features:**
- String state timing can be used to avoid excessive string state changes when in an environment with current spikes.
- Backup - Configuration Template. A template can be created to quickly deploy to other similar Controllers.
- The password for the Installer user can be changed.

**Improvements:**
- Port 2 Modbus library change to improve port 2 communication robustness.
- Security improvements, closed Redis port and require key to SSH into Controller.
- String groups' names can be changed.
- Time zone database updated.
- Diagnostic download now includes more server logs.
- Backup and diagnostic download files are now encrypted.
- Backup now includes all measurement logs.
- LCD displays correct temperature units and ambient temperature values

**Bug Fixes:**
- Ohmic Measurement Error alarm will no longer raise when ohmic readings are made on small strings.
- Daily log files no longer have a row from the next day in them.
- Ambient Median Temperature will no longer display as ERR on the overview screen when the string is configured to have no ambient temperature sensors.

# Controller v1.2.0-265 Release Notes

**New Features:**
- Thermal Runaway Protection (TRP)
- Configuration Report
- Hysteresis for String State Thresholds

**Improvements:**
- Improved defaults for String State Thresholds
- Improved defaults for limits: String Current, Block Temperature, Block Temperature Variation, Ohmic Rise, Ambient Temperature Variation, Ambient-Block Differential
- Network adapter MAC address shows in LAN network settings page
- Alarm History page now shows alarm times in region agnostic format
- Improved direction information popup on the CT calibration page
- Modbus settings speed and stop bits use choices are limited to valid values
- Measurement Logs page will function with up to 50,000 log files

# Controller v1.1.2-181 Release Notes

**New Features:**
- Allow mapping of TRP Hubs

**Improvements:**
- Better handling of Modbus errors

**Bug Fixes:**
- Fix issues with LCD display of values
- Fix broken links in Upgrade page
- Replace instances of the text 'Powershield Controller' with 'Controller'

# Controller v1.1.1-162 Release Notes

**New Features:**
- Include Modbus User Guide Rev C

**Improvements:**
- Better Modbus TCP connection handling

**Bug Fixes:**
- Fix incorrect version number when software changed
- A factory reset will no longer turn unbranded mode off.
- Unbranded mode will no longer show the Powershield logo in the browser tab or bookmarks.
- String delete process has been improved to avoid system problems in rare circumstances.

# Controller v1.1.0-149 Release Notes

**New features:**
- Sensor Replacement
- Recovery Mode
- SNMP Traps
- Unified Error Codes:
    - Error codes are displayed instead of ERR now
    - Error codes are consistent across different sensors

**Improvements:**
- Ohmic Baselines: Outliers uses ticks instead of flags

- Mapping and Detect: Improved reliability in noisy environment, UI improvements (including legend)
- Measurements Page: System Alarms indicator
- Measurements Page: String Alarm counts
- Software Update: Improved UI
- Limits: Changing a limit will no longer stop in-progress ohmic jobs
- System Diagnostic Download: Available to Installers now
- Alarm History: finer grained alarm duration display
- Event Log: more event messages (ohmic baseline operations)
- Restore: improved backup file error detection
- LCD network status 'Not connected' message added*
- SNMP MIB now available via SNMP configuration page
- Added system name to title bar
- Added support for new Hub (internal model type 19, new measurement status registers)

**Bug fixes:**
- Remove Log files when a string is deleted
- Fixed dim Alarm LED on Controller front panel however an additional hardware fix can also be required
- Fix measurement log roll-over time (local time 11:59pm)
- Fix Modbus RS-485 settings
- Fix partial ohmic limits API call (this affects Link when downloading limits)
- Fix when impedance schedule is off API call does not return impedance devices (this affects Link when adding a system and Link is determining the measurement types available)

*LCD network status is not guaranteed to be in sync with the physical connection status due to the operating system behavior.