Firmware Release Summary: 3810 Series Liquid Ultrasonic Flow Meters

ROSEMOUNT™

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VERSION 1.70

Liquid3810_1pt70_Release_Prod_20241227 SHA-2 checksum
6604166e1f51ac29764dba3f4dcfd72d1e678ec27c334f230f714a005fd973eb

New Features

- Added support for reading hourly and daily log records over Modbus serial and Modbus TCP interface.

- Added dependency to block user from setting XdcrType to zero when already set to non-zero value.

Bug Fixes/Additional Minor Enhancements

- Improved RTCSecondsSinceEpochSet audit log entry to provide the time delta of how much the meter's clock was changed wherein old value indicates meter's time at which the clock was set, and the new value indicates the meter's time to which the clock was set.

- Fixed issue where last good flow pressure and temperature values are not maintained through a warm start.

- Fixed issue where connection to meter may fail or exit abruptly or archived log collection may fail when an internal process exits under high CPU load.

- IsWarmStartReq alarm severity is changed from "Fail" to "Warning".

- Fixed issue of IsXdcrMaintenanceRequired Boolean being based on the latched status of IsXdcrMaintenanceRequired<A..H> alarms instead of their present status.

- Fixed issue of undesirable 15 minutes wait before resuming waveform streaming when previous connection to meter breaks abruptly.

- Fixed issue where firmware upgrade process incorrectly mentions "Failure" when user attempts program downloads when meter is write-protected. Also added more verbose for the upgrade process.

- Fixed issue of incorrect responses for HART Command 231 when meter is write-protected and for HART Command 223.

- Cybersecurity improvements

VERSION 1.61

Liquid3810_1pt61_Release_20231221 SHA-2 checksum
1c822cd04c88cfb8ed7c2355503160c12e2ec09ef804777dfd30b46ba4581c2d

New Features

- Registered ultrasonic liquid meters under Rosemount™ brand with FieldComm Group™ for HART interface. Manufacture ID and HART device ID changed to 0x269A (Liquid). FDI package for FDI complaint host and files for AMS Trex Device Communicator are available.

  Note
  HART DD 0701 or later will be required for meter running firmware version 1.61-Release or later.

Bug Fixes/Additional Minor Enhancements

- Fixed issue where connection to meter could not be established after meter firmware is downgraded from version 1.60-Release to version 1.42-Release or earlier.

- Fixed issue where incorrect log record count is reported after device number is changed while the meter has full logs.

- Fixed issue where a delay of upto 5 seconds is observed in updating in-use flow-condition pressure and temperature values from specified pressure and temperature values when input pressure and temperature source is set to "Fixed".

- Fixed issue where a Dual-Configuration communication error alarm (IsColocMeterCommErr) gets activated since clock synchronization stops working.

- Fixed issue where on a Dual-Configuration meter, P and T process may core under high CPU load resulting in meter warm start.

- Fixed issue introduced in version 1.60-Release where a DHCP client may fail to connect to meter on IP address 192.168.135.100 when DHCP switch (CPU Module switch position 2) is ON position.

- Fixed issue introduced in version 1.60-Release where one minute running average calculations are incorrect when BatchUpdatePeriod is changed.

- Fixed issue where the HART master (PDM v9.2 & v9.1) is not able to update device configuration through offline menu.

- Fixed issue where device status on HART master (PDM v9.1) is failed while there is no alert description.

- Fixed issue where when the device is in multi-drop mode then request to perform AO2 trim using HART master fails with error response code 11 (device is in multi-drop mode).

- Fixed issue where on DeltaV device shows "More Status Available" on DeltaV diagnostics while device status shows "good" on both AMS and TREX.

VERSION 1.60

Liquid3810_1pt60_Release_20230214 SHA-2 checksum
7069d6efa9de9b6dece94069719a268d37b7a21930d8c7120d9caeadeefee701

New Features

Support of Meter Authentication

- A valid username and password are required to connect with meter on the DB API, Waveform Streaming, FTP and HTTP protocols. The privileges for the username are determined by the user type. MeterLink™ 1.90 or later is required to connect to meter running 3810 Series Firmware Version 1.60

- Support 3 user types for privileges:
  — **Administrator:** Full read and write privileges and privileges to manage users

  — **Engineer:** Full read and write privileges

  — **Operator:** Read only access

- Support of maximum 25 usernames. All usernames can be of same user type or different user types. There will be at least one username with manage user privilege.

- A default user "administrator" with Administrator user type and unique password for the meter will be created when firmware is upgraded to Firmware Version 1.60. To upgrade to 3810 Series Firmware Version 1.60, MeterLink™ 1.90 or later is required. It is highly recommended to change default credentials after firmware upgrade.

- Using DB API client, a user with manage users privilege can:
  — Add user

  — Delete user

  — Read user information (username, user type, and user state)

  — Write user information (username, user type and password)

  — Export encrypted user database (user IDs, usernames, passwords and associated user types)

  — Import encrypted user database (user IDs, usernames, passwords and associated user types)

- Export and import encrypted user database (user IDs, usernames, passwords and associated user types) can be used to setup one meter and then clone the user database to other meters. Import encrypted user database can

also be used to reconfigure a meter after cold start. Cloning user database means making a copy of the user database using an imported user database file (file exported from the same meter or from another meter).

- DB API client can perform meter cold start or reset users (in case passwords are lost/forgotten) by putting meter into reset mode. Port A override switch is used to enable meter reset mode.

- Modbus serial can be disabled to prevent unauthorized access. Modbus TCP can be configured as read-only or disabled to prevent unauthorized access.

- HART® interfaces can be disabled to prevent unauthorized access.

3810 Series Ultrasonic Flow Meters are rebranded as follows:

- Rosemount™ 3810 Series Ultrasonic Liquid Flow Meters

Major Enhancements and Bug Fixes:

- Cybersecurity improvements

- ReynoldsNumber is always calculated as zero.

- Fixed issue where RunningAvgFlowPressure and RunningAvgFlowTemperature data points values are not getting updated.

- Fixed issue where FLOW_GATED and FLOW_ANALYSIS_GATED data points in the hourly & daily logs will be incorrectly averaged when meter goes into acquisition mode during the log period.

- Fixed issue where IsXdcrMaintenanceReq boolean is set to TRUE while IsXdcrMaintenanceRequired<Chord> booleans all are FALSE.

- Changed DHCP lease time from 10 days to 8 hours.

- Fixed issue where DB API serial connection with meter on Port A will disconnect when Port A is in override mode and BaudPortA is changed.

- Fixed issue where Modbus read and write operation will fail for LONG & INT types when data point native type is UINT16 or UINT32 and the value is above signed integer limit.

- Improvement in Real-Time Clock (RTC) and system clock to handle incorrect time in the meter.
  — Increased the trickle charge rate of the super cap in u-boot for the RTC.

  — Detect if the century bit in the RTC chip is set and if not set (indicating RTC value corruption), the RTC is set to 01 Jan 2000 00:00:00 (Y2K) prior to initializing the system clock.

  — Detect if the system clock value less than Y2K or greater than 9th Jan, 2038 00:00:00 (near end of epoch) and set the system and RTC to Y2K.

  Note
  Y2K is always less than the firmware release date, so it forces an invalid clock alarm and associated log entry.

  — Detect on meter start-up if the RTC oscillator was stopped and raise IsClkInvalid alarm. When RTC oscillator is stopped, it is an indication that the clock is invalid. The RTC oscillator can stop when the voltage present on Vcc is insufficient to support oscillation.

VERSION 1.42

- Before upgrading, please note the following:
  — During the upgrade process to Version Firmware 1.42, the logs will be copied to the extended storage space in the meter; therefore, an additional two minutes of start-up delay may be observed.

  — Once the meter is upgraded to Version Firmware 1.42 or later, downgrading to lower versions of firmware will erase all archive logs.

- New features:
  — Support for Extended Timed Logs. Hourly log size increased from 100 days to 180 days. Daily log size is increased from 1 year to 5 years.

- — Speed improvements to archive log collection.

- — Username and Port identifier is recorded when a configuration change is recorded in the audit log. MeterLink 1.60 or later must be used to make full use of this functionality.

- ■ Additional improvements:
  - — Tracking parameters have been improved in cases of blockages or other aberrations in the flow. This improvement prevents conditions that cause a permanent cycle skip in certain applications.

  - — Addressed possible false alarms on chord length mismatch.

  - — Hourly and daily archive logs now log the same data points. Diagnostic data point in logs are now all logged as a flow analysis gated average.

  - — Added datapoints to hourly/daily logs:
    - • EnergyRate

    - • MassRate

    - • AGA10SndVel

    - • ExpCorrPressure

    - • ExpCorrTemperature

    - • CorrectionFactor

VERSION 1.41

- ■ Minor enhancements include:
  - — Fixed issue where user is not able to collect archive logs from the meter when audit log records have unprintable characters.

  - — Fixed issue where one or more chords are failed when chord is running at minimum gain level. Issue was caused by signals being discarded due to clipped waveforms.

  - — Username and Port identifier is recorded when a configuration change is recorded in the audit log. MeterLink 1.60 or later must be used to make full use of this functionality.

VERSION 1.35

- ■ Added support of read-only serial port. All available serial ports on USM meter can be configured in Read-only or Read-write mode.

- ■ Transducer performance alarms are suppressed until chord performance drops below a configured limit.

- ■ Additional enhancements include:
  - — Fixed issue where meter will get locked when only one component is downloaded after unzipping firmware release file. Now, meter will not allow downloading individual components after unzipping firmware release file.

  - — Fixed issue where AvgFlow will fluctuate briefly immediately after a chord is reacquired.

  - — Fixed issue where IsMeasSndSpdRange<Chord> alarm is logged excessively causing alarm logs to get full.

  - — Fixed issue where HART communication will intermittently drop when archive logs are pulled from the meter.

  - — Fixed issue where HART communication will drop when archive logs are pulled from meter simultaneously by two clients.

  - — Fixed issue where measurement data is discarded on all chords when a chord is marked inactive.

  - — Fixed issue where meter will fail to discard distorted wave forms from measurement due to incorrect positive or negative span as bad.

VERSION 1.31

- Greatly simplified transducer swap-out and replacement with MeterLink. Users no longer need to provide information about their placed transducer(s).

- Additional enhancements include:
  — Raised gas chromatograph communication alarm in a timelier manner

  — Decreased time to get DHCP address

  — Decreased log file generation time

  — Fixed frequency output errors when meter measurement mode
    - Is changed from standard batch to rapid batch

    - Test mode to enabled/disabled

    - Or frequency output is reconfigured

  — Fixed Modbus RTU framing errors at high baud rates.

  — Fixed issue with signal acquisition where meter fails to go into measurement mode when firing sequence is changed from default value.

  — Fixed issue with event and archive logs where a log full alarm is not cleared on enabling log overwrite feature.

VERSION 1.27

- A number of minor enhancements were introduced in this version, including:
  — Fixed issue where measurement was affected during waveform collection when the meter was in rapid batch mode.

  — Fixed issue where firmware intermittently read incorrect pressure and temperature input values when the meter was running under high stress.

  — Fixed issue where the meter generated an empty log file during creation of an event or timed log if the meter's clock was backdated.

  — Fixed issue where the meter did not generate an alarm during firing synchronization (lsXdcrFiringSyncActive) resets.

VERSION 1.24

- Minor enhancements include:
  — Fixed GHOST network vulnerability discovered within Linux libraries.

  — Fixed issue with frequency output in test mode dropping when meter goes from measurement into acquisition mode.

VERSION 1.18

- Added support for RS-485 on Port B.

- Enhanced Transducer Health Monitoring to avoid unnecessary alarms and premature discarding of waveforms.

- Additional minor enhancements include:
  — Prevented issues with reoccurring live pressure and temperature errors in system logs.

- — Prevented condition where, during flow calibration, meter indicated it is in calibration mode when it is not.
- — Fixed issue where Port A RS-485 full duplex did not work at 1200 or 2400 BPS.
- — Fixed issue where units would be forced to 'U.S. Customary' and time base to 'per hour' for Port A when Port A override switch was toggled.
- — Fixed issue that could cause Acquisition Module communication errors while streaming waveform files.
- — Fixed issue where CurrDayFlowTime and CurrHourFlowTime always reported zero.
- — Fixed issue where a chord remained in failure mode after activating an inactive chord.

VERSION 1.16

- Enhanced chord substitution feature to improve the accuracy of the calculated measurement in the event of a chord failure.

VERSION 1.13

- Added display of CRC-32 checksum on local display if installed for compliance to OIML R117.

VERSION 1.09

- Fixed an issue introduced in V1.06 Firmware. If the system clock was set to a date prior to 1 January 2003, as is often the case during installation, then the externally visible meter time (i.e. RTCSecondsSinceEpochRead, RTCSecond) is not properly updated.

VERSION 1.06

- A number of minor enhancements were introduced in this version, including:
  - — Fixed issue in which activating Write Protect while Output Test was underway led to meter rebooting.
  - — Fixed issue to prevent proper chord weightings from being applied when Device Number was changed.
  - — Fixed issue in the local display that could cause task to fail when the local display configuration was changed.
  - — Corrected errors in logging of temperature alarms.

VERSION 1.04

- Added support for HART 7.
- Added support for Local Display.

VERSION 1.03

- Required to achieve accurate analog output values for IOBdType 2 and later. Analog output error was ≤0.38%. IOBdType can be found in MeterLink™ Software in the 'Meter Information' section.

For more information: **Emerson.com/global**

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