Firmware Release Summary: Daniel 3410 Series Gas Ultrasonic Flow Meters

VERSION 1.44

- Minor enhancement that addresses Modbus previously not reporting both halves of 64 bit accumulators.

VERSION 1.42

- Before upgrading, please note the following:
  - During the upgrade process to version 1.42 firmware, 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 firmware version 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.
  - T-200 transducer support added to the firmware.
  - 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 datapoint 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

- Added support for 3418 8-path gas ultrasonic meters.
- Additional 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.

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
- USM Gas firmware supports GERG-2008 (AGA8 Part 2, 2017) calculation for gas thermodynamic properties and speed of sound
- Transducer performance alarms are suppressed until chord performance drops below a configured limit
- Continuous flow analysis alarms (Bore Buildup Detection, Blockage Detection, Liquid Detection, Abnormal Profile Detection and Alarm for error between AGA speed of sound and meter calculated speed of sound) can be configured as Digital Output.
- On Dual-Configuration meters:
  - Uncorrected flow rate range validity alarm can be configured as Digital Output
  - Transmitter Head 2 can be configured to read gas properties, flow-condition pressure, and flow-condition temperature values from Transmitter Head 1
  - Uncorrected flow rate and speed of sound deviation percentage are logged in hourly and daily logs to view trend of Transmitter Head 2 speed of sound and uncorrected flow rate percentage difference with Transmitter Head 1
- Additional enhancements include:
  - Fixed issue where turbulence for diagnostic chord will not be calculated when Chord A fails in batch
  - 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 waveforms from measurement due to incorrect positive or negative span as bad
- Fixed issue where standard deviation of CrossFlow, Symmetry, and ProfileFactor, which are used for detection of Liquids in meter, are calculated incorrectly
- Fixed issue with Dual-Configuration meter where IsColocMeterQFlowRangeErr alarm is activated when there is sudden change in flow rate

**VERSION 1.31**

- Dual Configuration meters sync clocks so time logs and alarms are synchronized providing meaningful time stamp data – released for 3415, 3416, and 3417 meters.
- Added diagnostic chord status indications.
- Greatly simplified transducer swap-out and replacement with MeterLink. Users no longer need to provide information about the replaced 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 flow profile correction factor error on 3411 and 3412 meters when AGA8 calculations are invalid
  - Fixed issue with Modbus TCP/IP where Modbus communication will fail when Modbus TCP/IP port is configured with a reserved port number
  - Fixed issue with transducer maintenance alarm where the alarms fail to clear when meter measurement mode is rapid batch
  - 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

- Enhanced meter connectivity via Ethernet, enabling the meter to communicate with a gas chromatograph (GC) to read gas compositions using Modbus TCP/IP over Ethernet. (Daniel MeterLink v1.31 or newer must be installed)
- Updated HART® commands to Revision 6 to support configuration of:
  - Additional frequency outputs and digital outputs (FODOs) on the Type 4 CPU Board
  - GC Modbus TCP/IP
  - Daniel Dual-Configuration Gas Ultrasonic Flow Meters (Models 3415, 3416 and 3417).

- Additional minor enhancements include:
  - 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 (IsXdcFiringSyncActive) resets.

VERSION 1.24

- Added support for the new Type 4 CPU Board that includes six Frequency/Digital Outputs and removes Analog Output 2.
- Added support for new Daniel T-41 transducers.

- 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.
  - Fixed issues with AGA10 sound velocity and SOS compare difference algorithm where AGA10SndVelStatus and SOSComparePctDiff were incorrectly computed by firmware.

VERSION 1.23

- Added support for new dual-configuration Models 3415 and 3416 meters.
- Added support of diagnostic chord alarms in the dual-configuration Model 3416 meter to detect speed of sound error.

1 Type 4 CPU Module releasing for sale in December 2016.
• Added support for configurable GC gas component indices, allowing the meter to communicate with all Rosemount gas chromatographs as well as third party gas chromatographs that support SIM 2251.
• Enhanced ‘Transducer Health Monitoring’ to avoid transducer maintenance alarms when there is no flow in the meter (i.e. meter is below LowFlowLmt) or when the meter is in acquisition mode.
• Added support to display volume for a minimum of 8000 hours of operation at Qmax without the display rolling back to zero, ensuring the meter is in compliance with the European MID directive and OIML R137.
• Additional minor enhancements include:
  o Fixed issue with Modbus server to prevent locking of the TCP/IP port when client rapidly connects and then disconnects this server from the meter.
  o Fixed issue with hourly and daily logs where any entry with a zero value is not averaged.
  o Fixed issue with local display where the displayed value remains in overflow state and does not refresh.
  o Fixed issue with communications between the CPU and the acquisition module that caused fast configuration waveforms’ packets to reset in the acquisition module.
  o Fixed issue where all chords can be set to inactive on 3410 Series JuniorSonic meters.
  o Fixed issue to prevent writing zero to ‘LA..LD & PipeDiam’ which can cause the meter to reset.
  o Fixed issue with PPP communication where communication drops if UnitsSystem is changed.
  o Fixed issue with local display where value of 9999998 is rounded to 1.000E07.
  o Fixed issue with archive logs causing the meter to not create a new record when DoOverwriteUnreadAlarmLog is set to ‘FALSE’ and the log is full.
  o Fixed issue where system logs are generated for inactivated chords when the meter is in acquisition mode.
  o Fixed issue with archive logs where alarms associated with “archive log is full” are not cleared when logs are marked as read until a new archive log is generated.
  o Fixed issue where meter does not acquire back when min hold time.
  o (MinHoldTm) is written back with a valid value. Fixed issue where transducer firing synchronization (XdcrFiringSyncActive) resets after inactivating chords.
  o Fixed issue with system logs where the system log XML file is not well formed due to a corrupt message.
  o Fixed issue with hourly and daily logs where time slips by one second.

VERSION 1.18

• Added support for 3-slot retrofit enclosure.
• Added support for a Port C serial port.
• Added support for RS-485 on Port B and Port C.
• Enhanced Transducer Health Monitoring to avoid unnecessary alarms and prematurely discarding waveforms.
• Additional minor enhancements include:
  o Prevented issues with reoccurring live pressure and temperature errors in System logs.
  o Fixed issue where Port A RS-485 full duplex did not work at 1200 or 2400 BPS.
  o 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.
  o Fixed issue that could cause Acquisition Module communication errors while streaming waveform files.
  o 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 R137.

VERSION 1.11

• Fixed an issue that caused meters with larger path lengths (i.e. 24″ JuniorSonic meter, etc.) to experience chord failure when the flow rate increased above a certain velocity. Chord recovery occurred during ‘no flow’ conditions.

VERSION 1.09

• Fixed an issue introduced in V1.07 firmware. If the system clock was set to a date prior to 1 January 2003, as is often the case during installation, the externally visible meter time (i.e. RTCSecondsSinceEpochRead, RTCSecond) will not be properly updated.
**VERSION 1.07**

- Enhanced ‘Transducer Type’ command (i.e. SetXdcrType) to default to different tracking parameters if running a JuniorSonic or SeniorSonic 3410 Series Meter. Previously, the meter did not distinguish between these two meter types when setting the tracking parameters.

**VERSION 1.06**

- Added support for T-32 low pressure transducers.
- Additional minor enhancements include:
  - Fixed issue in which activating Write Protect while Output Test is underway led to meter rebooting.
  - Prevented selection of Live GC inputs if GCSerialPort is disabled.
  - Fixed issue to prevent proper chord weightings from being applied when DeviceNumber is changed.
  - Fixed issue in the local display that could cause task to fail when the local display configuration is changed.
  - Corrected errors in logging of temperature alarms.

**VERSION 1.04**

- Added support for HART 7.
- Added support for Local Display.
- Added support for GC Master functionality on serial Port A.

**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 Daniel MeterLink™ Software in the 'Meter Information' section.