Firmware Release Summary: Daniel 3400 Series Gas Ultrasonic Flow Meters with Mark III Electronics

VERSION 1.84

- Improved speed to Hourly and Daily log collection by 40%
- Improved text of start-up system log messages to help understand reason of meter warm-start
- Minor enhancements include:
  - Fixed issue where IsLogMemoryTooFull alarm toggles back and forth between TRUE and FALSE when LogMemoryPercentFull is near to LogMemorySizeLimit. IsLogMemoryTooFull alarm will remain TRUE once set unless LogMemorySizeLimit is changed or the meter is rebooted.
  - Improved text of start-up system log messages to help understand reason of meter warm-start.
  - Fixed issue where transducer serial numbers and meter keys (ContinuousFlowAnalysisKey, GCKey, AGA10Key) are erased when log memory is erased.
  - Fixed issue of repetitive system log messages, when pressure input is not within range or when all gas component proportions are zero, causing system log memory to get filled and overwrite existing log messages.

VERSION 1.83

- Support for T-200 transducers added.
- Minor enhancements include:
  - Reduced occurrences of timeouts while writing meter configuration via DB API.

VERSION 1.80

- Added support for transducer component configuration to fix issues during transducer swap-out / replacement.
- Enhanced Transducer Health Monitoring to avoid transducer maintenance alarms when there is no flow in meter is below LowFlowLmt or when meter is in acquisition mode.
- Additional Minor Enhancements include:
  - Fixed issue where PosVolBase value is incorrectly reported in hourly and daily logs.
- Fixed issue where pressure and temperature validities are logged invalid in hourly and daily logs while Enable<Pressure/Temperature>Input is set to None
- Fixed issue where meter will stop updating live pressure and temperature values
- Fixed issue where CurrDayFlowTime and CurrHourFlowTime always report zero
- Fixed issue with frequency output where meter can output incorrect value on frequency outputs when meter measurement mode is changed from standard batch to rapid batch or when frequency output test mode is changed from enabled to disabled or when frequency output configuration like direction, feedback correction percent is changed
- Fixed issue with frequency output in test mode dropping when meter goes from measurement into acquisition mode
- Fixed issue where measurement is affected when meter is in rapid batch and waveforms are collected
- Fixed issue with flow profile correction factor on Gas JuniorSonic meters where flow profile correction factor is calculated incorrectly on meter warm start when AGA8 calculations are invalid
- Fixed issue with flow profile correction factor on Gas JuniorSonic meters where flow profile correction factor is calculated incorrectly when AGA8 calculation method is selected as None
- Reduced delay prior to start of timed log collection when 2 days logs are collected from meter and improved time to collect all logs from meter when meter has all logs full
- Fixed issue with hourly & daily logs where any entry with value of zero was not averaged
- Fixed issue where meter doesn’t report an error when Live GC is selected while GCSerialPort is set to disabled
- Fixed issue where IsMeasSndSpdRange<Chord> alarm is logged excessively in meter alarm log
- Fixed issue to prevent writing zero to LA..LD which can cause meter to reset
- Fixed issue where meter will reboot when running under stress conditions
- Fixed issue where meter will reboot when acquisition module is disconnected
- Fixed issue where meter will reboot when write lock switch is turned on while one of the output (FODO or AO) is in test mode
- Fixed issue with event and archive logs where a log full alarm is not cleared on enabling log overwrite feature
Fixed issue with one minute running average of standard deviation for ProfileFactor, Symmetry and CrossFlow where calculation results are invalid

VERSION 1.79

- Corrected issue where Analog Output 2 ceases updating when placed in test mode and returned to normal operation mode.
- Added new Modbus registers for MeasVolGrossHeatingVal and SpecificGravity, enabling both to be written in a contiguous block with the gas components.

VERSION 1.78

- Fixed an issue where an excessive number of log entries were being generated which caused Mark III meter memory to prematurely reach full capacity. Highlights of this fix include:
  - Meter memory usage is now monitored and an alarm is generated if usage reaches a user configurable limit. This ‘early warning’ alarm ensures logs can be collected and cleared before logging is halted due to a full memory bank.
  - Logging will stop if memory usage hits a predefined set point. This safeguard ensures the meter will continue to measure event if logging must be halted.
  - Users can now force the meter to empty all log files while keeping the meter configuration intact. A restart is required to clear all log files. (Note: Daniel MeterLink™ Software v1.21 is required to perform this operation.)
- Transducer Health Monitoring, released in v1.76, has been modified to reduce the number of transducer maintenance required alarms that are generated and to prevent transducers from failing prematurely.

VERSION 1.76

- Enhanced chord substitution feature to improve the accuracy of the calculated measurement in the event of a chord failure.
- Added transducer health monitoring to monitor gains and signal-to-noise (SNR) ratios to help identify and pinpoint a transducer with degraded performance.
- Improved signal detection algorithm to prevent acquisition of a reflected signal. A symptom of a reflected signal is when the chord is reading higher than expected gain and the speed of sound measured is about one third the value expected.
- Corrected processing of invalid dates from a gas chromatograph (GC). A symptom of this condition occurs when operators are experiencing alarms from the GC but cannot determine the cause.
- Additional minor enhancements include:
- Fixed timer problem in FPGA device driver.
- Fixed meter reporting flow while at no flow condition and low pressure.
- Fixed false peak switch detection for all chords.
- Fixed dependency that did not function properly for PropUpdtBatches.
- Fixed intermittent peak switch that was detected for all chords while Waveform Viewer indicated no peak switch.
- Changed SetXdrType to 2, 12 and 22 to correctly default to Tspf, TspfHi, TspfLo, TspfHi and Tspe.
- Fixed IsPropUpdtActive data point that was not working properly.
- Fixed IsPropUpdtActive to always set to FALSE for JuniorSonic 2-path meter.
- Fixed [Fwd/Rev]PropVel[A..D][Bin[1..10] data points that were not set to default after cold start.
- Changed default value of IsPropUpdtActive.

VERSION 1.74

- Reinstated chord GAIN Modbus registers 77 to 84 which were removed in version 1.73.
- Reinstated GainHighLmt Modbus register 30 and GainLowLmt Modbus Register 28 which were removed in 1.73.
- Other minor enhancements include:
  - Added chord Gain Modbus registers 10834-10848 as type FLOAT and units DECIBELS.
  - Added GainHighLmt Modbus register 10832 and GainLowLmt Modubs Register 10830 as type FLOAT and units DECIBELS.

VERSION 1.73

- Added support for 75° meters.
- Allowed reading of Modbus register blocks with mixed data types.
- Changed writes to /nvdata/SysLogToText.txt to prevent the file from growing indefinitely.
- Other minor enhancements include:
  - Corrected the handling of Modbus US volume units for registers 14914 and 14868 (i.e. ReverseFlowVolLmt and ReverseFlowVol).
  - Changed reserved and depreciated Modbus registers to read only access.
  - Added detection of a corrupted header in extpd.
  - Sped up identification of “Unsupported” Modbus registers.
• Corrected the counting of Modbus TCP connections when they are closed rapidly to prevent a state where fewer than the specified 10 connections are allowed.
• Changed Modbus TCP to ignore bad MBAP headers.
• Changed extpd to ignore corrupted headers on port 10000.

VERSION 1.72

• Improved chord substitution by zeroing CurrPropUpdateBatches during total chord failure.
• Added sanity check to batch time stamps to prevent frequency feedback from going to extreme states. This fix prevents the meter from transmitting half of the expected frequency output rate or 1.5 times the maximum frequency output rate.
• Additional minor enhancements include:
  o Added band pass filter and support for T-19 transducers.
  o Added Modbus registers for SNRA1-SNRD2.
  o Corrected handling of latched alarms on warm start.
  o Added clearing of IsSndVelCompEnabled when AGA10 Key becomes disabled.
  o Corrected error handling in HART® command 167.
  o Changed default values for XA-XD and LA-LD to allow cold start to compute angles and eliminate system log error message.
  o Changed noise energy from 16 bit to 32 bit value to prevent attenuation at larger values.
  o Corrected handling of waveforms with duplicated timestamps.
  o Prevented ‘super batch’ during chord failure and/or chord inactivity.
  o Depreciated GAIN registers 77 to 84. Registers 10814-10828 can now be read as FLOAT.

VERSION 1.71

• Removed audit log entries for RTCSecondsSinceEpochSet, Viscosity, MeasVolGrossHeatingVal, SpecificGravity, MoleFractionN2Method2, MoleFractionCO2, MoleFractionH2, MoleFractionCO, MoleFractionMethane, MoleFractionEthane, MoleFractionPropane, MoleFractionIsoButane, MoleFractionNButane, MoleFractionIsoPentane, MoleFractionNPentane, MoleFractionNHexane, MoleFractionNHeptane, MoleFractionNOctane, MoleFractionNNonane, MoleFractionNDecane, MoleFractionH2S, MoleFractionHelium, MoleFractionWater, MoleFractionOxygen, and MoleFractionArgon.
• Removed write protection from MeasVolGrossHeatingVal and SpecificGravity.
VERSION 1.70

- Added Continuous Flow Analysis diagnostics (i.e. Blockage, Bore Buildup, Liquid Detection, Reverse Flow, Abnormal Profile and Meter SOS to AGA10 Comparison).
- Added baseline functionality.
- Added Modbus TCP support on Ethernet.
- Additional minor enhancements include:
  - Added reporting of signal-to-noise ratios in units of dB.
  - Fixed turbulence calculation for JuniorSonic meters.

VERSION 1.63

- Duplicated Modbus registers 10000 and larger to an address 8000 or less (i.e. 10640 is also at 2640).

VERSION 1.61

- Added support to indicate if Kernel, FileSystem, and Firmware components are compatible.
- Repackaged firmware to reduce file size.

VERSION 1.60

- Added support for HART Option Board.
- Added support for PPP. Required for serial connects from Daniel CUI or MeterLink using Microsoft® Windows® Vista® or 7.
- Fixed spurious IsCommErrAcqBd alarm.