

AGA Flow Applications Software

The AGA Flow Applications Software provides gas flow calculations capability to FloBoss™ 500-Series Flow Managers. The software computes the gas flow through an orifice meter (AGA3 calculation) or a turbine meter (AGA7 calculation). ROCLINK™ 800 Configuration Software is required to configure the AGA flow calculations.

All units have AGA functionality, with 1992 AGA algorithm contained in the firmware, and use the AGA8 method of determining supercompressibility. The AGA3 calculations conform to the methods described in American Gas Association Report No. 3, *Orifice Metering of Natural Gas and Other Related Hydrocarbon Fluids*.

The AGA7 calculation conforms to the methods described in American Gas Association Report No. 7, *Measurement of Gas by Turbine Meters*, and uses the AGA8 method of determining supercompressibility.

The AGA8 method calculates the supercompressibility factor based on the physical chemistry of the component gasses at specified temperatures and pressures. The user can select either Gross I, Gross II or Detail.

The AGA Reports utility (see Specification Sheet 3.1:FW3) is supplied with the ROCLINK 800 Configuration Software and generates hourly and daily reports of the single configured meter run.

Specifications

FLOW PARAMETERS

- Tag ID:** 10-character description.
- Meter Run ID:** 30-character description of the meter run.
- Latitude:** Geographic latitude of the metering location.
- Elevation:** Elevation or altitude of the metering location.
- Calculation Method:** AGA3 1992 Version or AGA7, AGA8, English or metric units, enable alarming, report-by-exception alarming, enable manual mode.
- Specific Gravity:** Ratio of the molar mass of the gas to the molar mass of air. Can be calculated or entered.
- AGA Configuration:** Selection of flange, calculated or entered specific gravity, upstream/downstream static pressure, gauge or absolute static pressure, calculated or entered heating value, calculated or entered specific gravity.
- Heating Value:** Calculated or entered heating value of the gas composition.
- Gravitational Acceleration:** Calculated or entered value for the local gravity constant.
- Pipe Diameter:** Inside diameter of the pipe at the orifice. (AGA3 only)
- Orifice Diameter:** Diameter of the orifice. (AGA3 only)
- Measuring Temperature:** Temperature when the orifice plate was measured. (AGA3 only)
- Orifice Material:** Specifies orifice plate material (stainless steel, Monel, or carbon steel). (AGA3 only)
- Alarm Code:** Indicates alarm status.

FLOW PARAMETERS CONT'D

- Low/High Alarm:** Limits beyond which an alarm will be indicated.
- Viscosity:** Dynamic viscosity of the flowing gas.
- Specific Heat Ratio:** Ratio of the specific heat at constant pressure to the specific heat at constant volume under flowing conditions.
- Base Pressure:** Flow measurement pressure specified in the gas contract.
- Base Temperature:** Flow measurement temperature specified in the gas contract.
- Low Flow Cutoff:** Value at which the calculated flow is set to zero. (AGA3 only)
- Fpwl:** Gravitational correction factor for dead-weight calibrator.
- Gas Composition:** Entered as a fraction of mole percent. Components are: Nitrogen, Carbon Dioxide, Hydrogen Sulfide, Water, Helium, Methane, Ethane, Propane, n-Butane, i-Butane, n-Pentane, i-Pentane, n-Hexane, n-Heptane, n-Octane, n-Nonane, n-Decane, Oxygen, Carbon Monoxide, Hydrogen.
- Contract Hour:** Specifies start of contract day.
- Integral Multiplier Period:** Frequency of Integral Value (IMV) calculation. (AGA3 only)
- Base Multiplier Period:** Frequency of Base Value (BMV) calculation. (AGA7 only)
- K Factor:** Linear meter constant. (AGA7 only)

Specifications (Cont'd)

FLOW PARAMETERS CONT'D

Input Point Assignments: The following are assigned to specify field inputs and to determine stacked Differential Pressure transmitter operation:

- Meter Input
- Static Pressure Input
- Temperature Input
- Stacked DP Enable (AGA3 type parameter)
- Low DP Input (AGA3 type parameter)

Atmospheric Pressure: Manually entered or calculated value for the atmospheric pressure at the metering location.

AGA8 Characterization Method: Select detailed or gross characterization method, Gross method I or II, calculated or entered atmospheric pressure.

Pipe Reference Temperature: Temperature of pipe when it was measured. (AGA3 only)

Pipe Material: Metering pipe material (stainless steel, Monel, or carbon steel). (AGA3 only)

Flow Factors: Current value of AGA3 factors (Fn, Fr, Expansion, Fpb, Ftb, Ftf, Fgr, and Fpv) and AGA7 factors (Fpm, Ftm, Fpb, Ftb, and S).

History Variables: Specify history point (hourly, daily, last 60 minutes), rollup method, and conversion technique for up to 8 pre-defined flow parameters and 7 user-definable flow parameters.

MONITORED (READ-ONLY) VALUES

Values for any parameter listed above can be monitored or archived for each meter run, plus those listed below:

- Instantaneous Volumetric Flow
- Instantaneous Thermal Flow
- Today's Accum. Volumetric Flow
- Today's Accum. Thermal Flow
- Yesterday's Accum. Volumetric Flow
- Yesterday's Accum. Thermal Flow
- Pressure Extension (hwpf)
- Integral Multiplier Value (IMV) (AGA3 only)
- Base Multiplier Value (BMV) (AGA7 only)
- Volumetric Flow¹
- Energy Flow¹
- Minutes of flow measuring¹
- Uncorrected Flow¹ (AGA7 only)
- Orifice Diameter, temp. compensated (AGA3 only)
- Pipe Diameter, temp. compensated (AGA3 only)
- Beta (orifice to pipe ratio)
- Velocity of Approach
- Coefficient of Discharge
- Reynolds Number
- Upstream Pressure
- Molecular Weight.

1. Values for today, yesterday, current month, previous month, and since last rollover are monitored.

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