Specification Sheet

AGA Flow Applications Software

The AGA Flow Applications Software provides gas flow calculations capability to ROC300-Series Remote Operations Controllers and FloBoss™ 407 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 firmware. The ROC300-Series units have the 1985 algorithm also; for the FloBoss 407, it is optional. The AGA3 calculations conform to methods described in American Gas Association Report No. 3, *Orifice Metering of Natural Gas and Other Related Hydrocarbon Fluids.*

For the 1985 AGA3 calculation, the user can select either the NX-19 or the 1985 version of AGA8 method of determining the super-compressibility factor. For the 1992 calculation, only AGA8 super-compressibility applies.

The AGA7 calculation conforms to methods described in American Gas Association Report No. 7, *Measurement of Gas by Turbine Meters,* and uses either the AGA8 or the NX-19 method of determining the super-compressibility.

The AGA8 method calculates the super-compressibility 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 Spec. Sheet 2.1:FW6), supplied with the ROCLINK Configuration Software, generates hourly and daily reports of each configured meter run.

Specifications

MAXIMUM METER RUNS

ROC306/ROC312: 3 runs
ROC364: 5 runs
FloBoss 407: 4 runs

1985 & 1992 COMMON 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. (1985 algorithm with NX-19 or AGA8 is optional in the FloBoss 407.)

Specific Gravity: Ratio of the molar mass of the gas to the molar mass of air. Can be calculated or entered.

Scan Period: Number of time periods between flow calculations.

AGA Configuration: Selection of flange (or pipe tap in 1985 version), calculated or entered specific gravity, upstream/downstream static pressure, gauge or absolute static pressure, calculated or entered heating value, calculated or entered gravitational acceleration, volume or mass heating value basis.

Heating Value: Calculated or entered heating value of the gas composition.

COMMON FLOW PARAMETERS CONT'D

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)

Orifice Reference 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.

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.

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Specifications (Cont'd)

COMMON FLOW PARAMETERS CONT'D

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.

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)

1992 AGA PARAMETERS

Tag ID: 10-character description.

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.

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

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

History Variables: Specify history point, rollup method, and conversion technique for up to 16 flow parameters in ROC300-Series and 10 in FloBoss 407.

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)
Orifice Factor (C')
Sample Time

If 1992 calculations are enabled, the following parameters can also be monitored:

Volumetric Flow[1]
Thermal Flow[1]
Minutes of flow measuring[1]
Uncorrected Flow[1] (AGA7 only)
Orifice Diameter, temp. compensated
Pipe Diameter, temp. compensated
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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