Coriolis Interface Module

The Coriolis Interface Module is designed for Emerson's FloBoss™ 107 Flow Manager and works in conjunction with other user programs that run on the flow computer.

The Coriolis Interface Module can be connected directly to a Micro Motion™ Coriolis meter core processor (model 700 or Model 800) or a Micro Motion Transmitter (models 1500,1700, 2500, 2700, and 3700). An "Intrinsically Safe" barrier is required between the FloBoss 107 and the core processor when connecting to a core processor without a transmitter. A direct connection to the transmitter or core processor allows the Coriolis Interface Module to read a fixed set of predefined registers using Modbus. This allows the module to poll up to four devices recording all defined registers once per second regardless of flow rate.

The data collected from all the registers evaluates performance of the Coriolis Meter and assesses the calibration of the unit. ROCLINK™ allows the data from the core processor and the Coriolis Interface Module to perform tasks that include:

General Display
Display showing these data elements: Modbus Address of the Coriolis Flow Meter, polling status, flow direction, volumetric flow rate, mass flow rate, sensor temperature, flowing density, and drive gain.

Calibration Data
Information including meter factors, flow rates, temperature, and density calibration data.

Diagnostics
Display showing the status of many alarms and common performance data such as flow rates, temperatures and drive voltages.

Meter Zeroing
The meter zero is an adjustment at established process conditions of temperature, pressure and density while the stream is not flowing. When confirmed there is no flow through, the meter zeroing procedure specified in the meter manual should be followed to ensure the meter indicates zero flow under zero flow conditions.

Smart Meter Verification
An easy-to-use automatic diagnostic tool checks the entire Coriolis Meter's performance and integrity without having to stop process flow. When scheduled or combined with a digital control network or Emerson's Smart Wireless, there is no requirement to visit the field.

Transient Bubble Remediation

A routine process in the Coriolis core processor monitors drive gain when it exceeds a set threshold and the calculations for flow are adjusted. Transient Bubble Remediation (TBR) is used to handle occasional gas bubbles or slugs in the process fluid. A transient bubble condition is defined by the sensor's drive gain. If the drive gain exceeds the configured threshold for more than three seconds, the configured TBR actions are performed. The transient bubble interval continues until drive gain is below the configured threshold for three seconds.

Continuous Mode

The data is collected regardless of flow rate and is continuously available for the user programs to calculate flow rates, correct the volume, and accumulate flow in the stream. The user programs extract the data from the Coriolis Interface Module and convert successive readings of the accumulated register to calculate the rate of flow and eliminate the need for a transmitter to convert the reading to a pulse. Thus, a direct calculation of gas flow or liquid flow is possible.

Dump Valve Mode

In the Dump Valve mode the unit monitors liquid flow rate up to four meters continuously via Modbus. When new data is received the module compares the volume flow rate from the meter to the user-defined volume low flow cutoff value and performs the following actions:

- If the value of the volume flow rate register is zero, the parameters in the module's point type corresponding to the values received from the meter are updated, and no further processing of the data is performed.
- If the value is greater than zero but less than the volume low flow cutoff value, the module considers the volume and mass accumulated to be trickle flow. The accumulated volume and mass values are added to both the daily totals parameters and the separate trickle flow totals.
- If the volume flow rate is greater than the module's low flow cutoff value, the module considers the values received during the period at which the volume flow rate remains above the volume low flow cutoff value to be part of a dump cycle.
- The module keeps track of the total volume and mass accumulated during a dump cycle, and updates the volume and mass totals once the dump cycle has ended. The maximum/minimum density and drive gain values that occurred during the dump cycle are also determined.

The values for the current and previous day are saved. Monthly totals for volume, mass, and the number of dump cycles are also recorded by the module. These values are set to zero at the beginning of a new month.

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