Bristol® ControlWave® XFC
Model 3820-EX Explosion-proof Flow Computer Version 4.71 and Application Program with Measurement Canada Approval

The Bristol ControlWave XFC from Emerson Process Management is a cost-effective, competitive solution when requirements call for a chart replacement or flow computer in a compact, explosion-proof package. A Measurement Canada-approved version of the model 3820-EX is available that includes a certification data plate, drilled caps for sealing and an approved application load. This application load is pre-installed and provides a dual meter run device. A set of pre-defined web pages provide access to each meter run configuration and history.

Meter Run Measurement and Communication

The first meter run uses the internal DP/SP (Differential Pressure/Static Pressure) cell to get pressure data, and an external 3-wire RTD (Resistance Temperature Detector) to get temperature data for the flow calculation. This meter run is selectable as either orifice or turbine. If you select orifice, then all data comes from the internal measurement cell. Both the High Speed Counters (HSC1 and HSC2) counters can be used as volumetric totalizers, allowing you to connect secondary check devices to the XFC. These pulses accumulate and the associated volumes record as part of the history for run 1.

When you select turbine meters, you must also choose either a standard or Auto Adjust® turbine. A single pulse device uses HSC1. With the single pulse turbine, the second HSC input can be used as a volumetric totalizer for a secondary check meter. These pulses accumulate and the associated volume records as part of the history for run 1. If you select the Auto Adjust option, then HSC1 is the main rotor and HSC2 is the sense rotor.

A second meter run uses the RS485 port to communicate with an external 3808-30A transmitter to gather the required DP/P/T for the flow calculation. The second flow calculation is based on an orifice meter only.

Web Page Configuration

The ControlWave XFC is designed to be configured via web pages. These web pages enable you to configure data such as meter run information, gas composition and contract data. The web pages also allow you to place the unit in calibration mode, collect and display trend or history data, and save this data as a CSV file for offline Excel® access.

Communication

The unit comes with three communication ports. Use the local port for data entry, commissioning and sealing. The Network port is fully RS-232 compatible and can be connected to a wide range of devices, including radios, satellite or telephone. The network port is bilingual, using either Gould Modbus or our native BSAP

(Bristol Synchronous/Asynchronous Protocol). The RS-485 port is configured to communicate with the 3808 multivariable transmitter to gather data for the second meter run.

Flow Calculations

The model 3820-EX is approved for the following flow calculations:

- AGA-3 (1992)
- AGA-7
- AGA-7 with auto adjust
- AGA-7 Ultrasonic

Supercompressibility Calculations

The ControlWave XFC is approved for the following supercompressibility calculation:

- AGA-8 (1992) Detail only

Pulse Inputs

The ControlWave XFC has up to two pulse inputs which accept square wave (preamp) inputs.

Flowing Gas Temperature Measurement

The flowing gas temperature can be measured using an external, 3-wire, platinum RTD connected to the terminal plate for the meter Run 1, and using an external, approved and compatible, transmitter communicating over a serial connection for meter run 2.

For RTDs, the default configuration is either a class A or B type designation of the IEC 751 specifications, measuring 100 ohms at 0°C and having an alpha coefficient of 0.00385 ohm/ohm/°C. Other values for R0, alpha, and beta can be programmed into the unit.

Gas Pressure Measurement

Gauge pressure for meter run 1 is measured using the integral gauge pressure transmitter (GPT) or multi-variable transmitter (MVT). Meter run 2 uses an external approved-and-compatible transmitter over a serial connection.

For meter run 1, you measure the differential pressure for differential producing meters using the integral MVT. For meter Run 2, you use an external approved-and-compatible transmitter communicating over a serial connection.

Communications Protocols

The ControlWave XFC uses digital communication with Modbus or BSAP protocol, over the RS485 serial connection, to obtain temperature and pressure process parameters for meter run 2 from an approved-and-compatible transmitter. This is Measurement Canada-approved for custody transfer.

For more detailed information regarding the Measurement Canada approval requirements and how this product can work for your application, please contact us. More information about the requirement can also be found on the Measurement Canada website, reference AG-547 (https://strategis.ic.gc.ca/pics/lm/gas/ag/0547.pdf).

Ordering Information

Model Number: 3820-EX

Firmware/Software Versions

The following firmware and software load versions are approved:

Firmware 4.71

Software load XFC_MC_V004

For more information on the ControlWave XFC, visit www.bristolbabcock.com/products/CW_XFC.htm.

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