

Overview of Typical Applications for Bristol® 3808 MVT Smart Multivariable Transmitter

Designed by Emerson Process Management to be the ideal transmitter for all metering and remote site management applications.

Features

- Very low power consumption, less than 2 mA at 5 Vdc, is perfect for remote sites
- High reference accuracy for DP and pressure measurements: $\pm 0.075\%$ URL - plus, the 3808 MVT holds this specification over the full temperature range!
- Excellent DP and pressure measurement over operating temperature: $\pm 0.21\%$ URL over 60°C (108°F) combined zero and span effects
- Excellent DP performance over operating pressure:
 - $\pm 0.1\%$ URL zero effect
 - $\pm 0.1\%$ Reading span effect over 1000 psi
- Excellent temperature measurement $\pm 0.1^\circ\text{C}$
- Approved for operation in hazardous areas – Intrinsically safe, explosion proof and non-incendive for Class I, Division 1 and Division 2 installations

Communication and I/O

- Two versions: Digital, RS 232/ RS 485 or Analog Output with FSK
- Two-wire RS 485 network at 19.2K baud allows sampling of all live variables for 8 transmitters once per second - meets API-21
- Analog output is low power, 1-5 Vdc or 4-20 mA
- Bilingual BSAP and Modbus protocol operation
- Optional 4 ½ digit LCD with low power, continuous service



The Bristol® 3808 MVT P/T version excels in applications such as ultrasonic meters, for which both pressure and temperature measurements are very important.



The Bristol® 3808 MVT with DP/P/T measurement is ideal for custody transfer meter stations using orifice meters.

Typical Applications

- Custody transfer/fiscal metering – DP/ P/T measurement for orifice meters, P/T measurement for ultrasonic or turbine meters
- Oil or gas wells - flow measurement or meter corrections
- Coal seam gas wells – measurement at each orifice or V-cone meter with networking to a common PLC or RTU
- Injection wells – measurement at both injection and production meter runs
- Tank farms: level measurement using DP or pressure and multi-drop networking
- Water distribution and irrigation: flow correction and reservoir level measurement

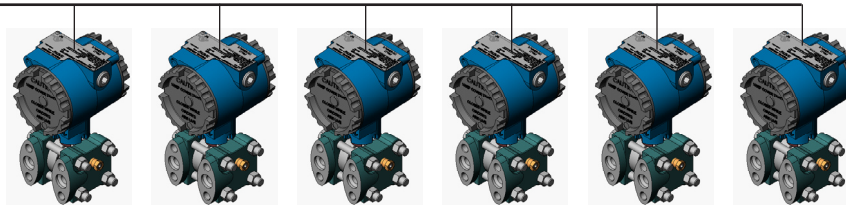
For these applications, a key benefit of Emerson's Bristol® 3808 MVT is that a single instrument performs the functions of three or more, individual devices, e.g. single-variable transmitters. Not only is the single instrument less expensive to purchase, it also provides remote site users the benefits of faster installation and start-up as well as reduced costs in operation and maintenance.



*Emerson Controller or RTU
e.g. ControlWave Micro*

Low power consumption makes the 3808 MVT perfect for remote, solar-powered installations such as well sites (above).

Bristol 3808 MVT transmitters on 2-wire RS 485 network

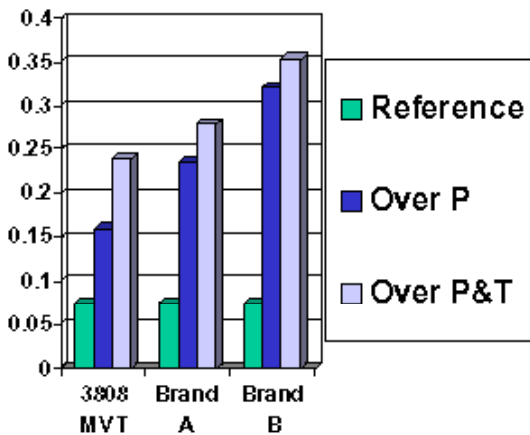


For natural gas custody transfer, the 3808 MVT allows you to definitively meet API Chapter 21, Section 1.4.2.1, which calls for sampling of any dynamic input variables at least once per second.

Using just a single serial port and a two-wire, multi-drop network, the RS 485 interface allows controllers and RTU's, such as ControlWave Micro, to read all live inputs for six meter runs. Using two RS 485 ports, you can do the same for 12 meter runs.

Performance

The 3808 MVT has been designed not only to provide excellent reference accuracy but also excellent measurement performance over the full range of operating pressure and temperature conditions.

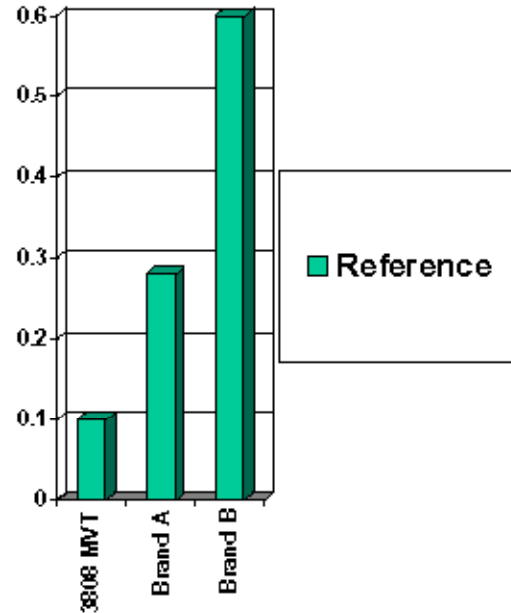


pressure and temperature of the 3808 MVT and the two most popular MVT's used in gas measurement.

In most multivariable transmitter (MVT) applications, operating pressure and temperature conditions differ significantly from reference conditions. In oil & gas production and pipeline applications, operating pressures can be 1000 to 2000 psi or higher and temperatures can vary significantly, as well. The 3808 MVT was designed with these installations in mind.

Emerson has also not forgotten about the process temperature measurement, which is very important for applications such as ultrasonic metering. Temperature measurement accuracy is $\pm 0.1^\circ\text{C}$ or $\pm 0.1\%$ reading—industry best for an MVT.

While the designs of most MVT's on the market consider only the "transmitter side" of temperature measurement, the RTD probe can introduce significant error. Unlike other MVT's, the 3808 MVT allows the user to enter the constants in the DIN EN 60751 equation: A, B and R_0 and considerably improve performance of the entire temperature system.



Reference accuracy (%URL) for process temperature measurement among the same three MVT's as those in the diagram to the left.

Long term stability of the 3808 MVT, $\pm 0.1\%$ URL typical over one year, has been determined over the full operating conditions of our users, not factory reference or other, limited conditions. This performance allows users to save "windshield time" by visiting sites no more often than once per year.

Networking

The 3808 MVT offers users a "best of both worlds" networking scenario:

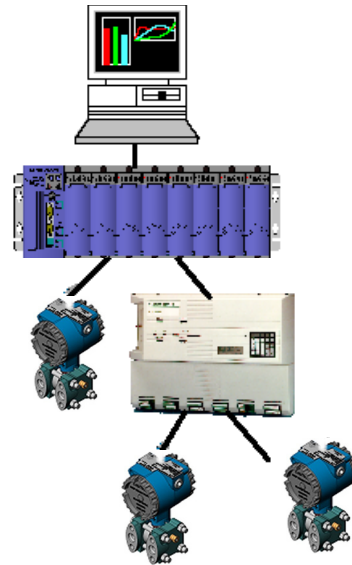
- Using the BSAP protocol, the 3808 MVT seamlessly drops in to an "Emerson" network. It can be accessed, globally, via ControlWave, 33XX and TeleFlow products and is fully compatible with OpenBSI.
- Using Modbus, the 3808 MVT is easy to integrate in a measurement or SCADA system with virtually any controller, PLC or RTU.
- Even further, the 3808 MVT supports bilingual BSAP/Modbus and will respond to messages in either protocol.

Calibration and Configuration

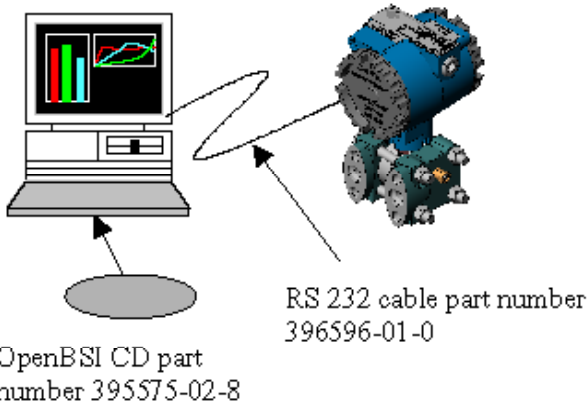
Calibration and configuration of the 3808 MVT are accomplished using web pages, which, today, are familiar to virtually everyone. Web page functions are also compatible at any point on an Emerson network.

Users of the digital, RS 232/485 version of the 3808 MVT can perform local operations by simply connecting a PC to the RS 232 port.

Users of the 3808 MVT with analog output and FSK communication can perform local operations by connecting the TIU. This is exactly the same as the hardware used with Emerson's Bristol 3508 TELE-TRANS multivariable transmitter.



The 3808 MVT drops into a BSAP network and works seamlessly with ControlWave, 33XX and TeleFlow products as well as OpenBSI. Modbus works with most any PLC, RTU or SCADA system.



For local calibration of a 3808 MVT with digital RS 232/485 communication, a user requires only a lap-top PC, RS 232 cable and web pages. A 3808 MVT with Analog/FSK communication requires the TIU assembly (just like a 3508) instead of the RS 232 cable.

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Emerson Process Management Remote Automation Solutions

Watertown, CT 06795 USA T 1 (860) 945-2200
Mississauga, ON 06795 Canada T 1 (905) 362-0880
Worcester WR3 8YB UK T 44 (1) 905-856950

Website: www.EmersonProcess.com/Remote

