AeroMate™ WSC

Check Meter Supplement

Non-Incendive, Intrinsically Safe for
Class 1, Division 1 Hazardous Locations

Introduction

Gas Flow Meter

The AeroMate Gas Flow application module provides a low cost solution for stable, precise gas flow measurement. The range of applications include flow check meters, flow allocation and gas well flow rate control.

AGA-3 1992 Calculation

The AeroMate's OpSys™ operating system provides full floating point math calculations as required for AGA-3 gas flow measurement. Orifice plate and pressure offset are calibration factors.

Configurable Sensor Inputs

The AeroMate Gas Flow unit can use any stable, high resolution +5Vdc output type sensors. Calibration includes zero offset voltage, full scale voltage and units scaling for most industry standard voltage output type transducers.

Configurable Switch I/O

Two switch outputs are available for digital switch gage applications. Switch configuration allows for normally open (NO) or normally closed (NC) operation as well input Time Constant and output Pulse Width control.

Hook Up Connections

J1 XDR 1
SIG - DP Flow sensor input.
GND - Common ground connection.
PWR - Sensor power (+10 Vdc*).

J2 XDR 2
SIG - Sales Line sensor input.
GND - Common ground connection.
PWR - Sensor power (+10 Vdc*).

J6 EXT
PWR - Solar / External power
GND - Common ground connection.

J3 I/O
SW1 - Output switch 1 terminal.
GND - Common ground connection.
SW2 - Output switch 2 terminal.

JP1 / JP2
DO – Select J3 as switch outputs.

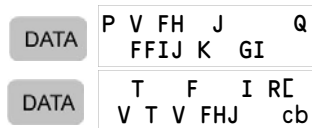* Sensor power may range from +9.5 Vdc to +12 Vdc.

Meter Displays

A typical application for the 1x Flow sensor is for gas flow measurement. This configuration uses a DP transmitter (inW) and a static pressure transducer (psi) to compute gas flow rate (MCF/HR). Using this data, other information may be computed such as total accumulated MCF gas volume.

Measured variables, such as InW and psi, may also be used for internal or networked control parameters and alarms. Sample displays below show digital gage set points and entry of the calibration factor (Fb) used to adjust for AGA-3 1992 flow rate calculations.
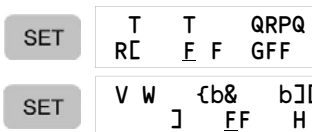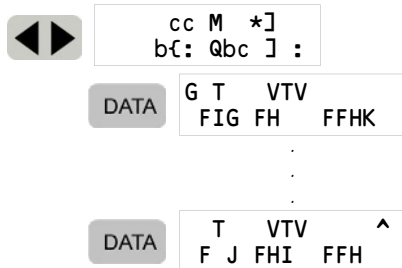
Use these keys to change selections.

Production History

InW, psi and flow rate are also used for the generation of more extensive on-board reporting. Report items include average daily Flow (FLO in InW) and Sales Line pressure (SLS in psi) as well as daily gas production (Rate in MCF/day).

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       b{: Qbc] :

DATA   G T   VTV
        FIG FH   FFHK
          .
          .
          .
DATA   T   VTV   ^
        F J FHI FFH

The above displays show the Flow Meter's last seven (7) day production history. Press the Cursor (<>) key to access the historical records. Then successive presses of the DATA key shows each day's production statistics, beginning with the current day (1) and up to the 7th previous day. The current day (1) shows the daily averages as they are progressing throughout the day. Daily updates are at midnight (00:00:00 am).
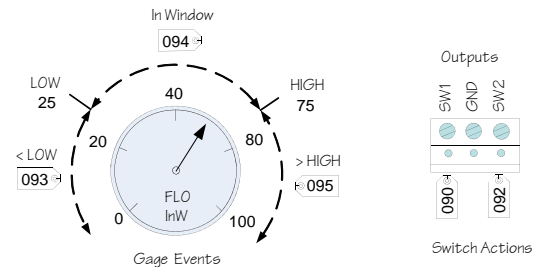
Digital Switch Gage

AeroMate programs associate sensor measurement set points with output switch actions by assigning an aTag to the output. This emulates a MurphyGAGE™ switch gage where "LOW" and "HIGH" set points define "< LOW", "In Window" and "> HIGH" regions for output switch control.

As shown above, selecting transducer XDR1-SIG as the measurement source and assigning output switch action tags (aTag) to match switch gage event tags (eTag), provides a versatile digital switch gage setup. In this example, the DP Flow Transmitter is used for the gage readings to give a stable, precise digital switch gage for flow control applications.

Switch Output Displays

Switch outputs (DO) are robust power switches capable of switching loads up to 20 Vdc at 2 Amperes and act as standard MurphyGAGE™ outputs. Switch outputs have a common ground and should be used to "ground" the load connected to the switch terminal.
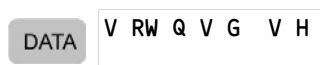
SET   V G W: W @
        V W QRPQ FKI FFF

Use these keys to change selections. ◀▶ ▲ ▼

TYPE: Output switch active state.
   LOW – Switch is normally open (NO).
   HI – Switch is normally closed (NC).

Pulse Width: Time the output will stay active. PW can be from 000 up to 999 seconds. A 000 setting maintains the active state only as long as switch stays active.

DATA   V RW Q V G   V H

ON = Active.   OFF = Not Active.

Accessories

Part Number	Accessory Description
9203-2002110	Pipe Mounting Kit. 2-1/4 U-Bolt with extra 5/16" nuts. Uses universal mounting plate.
5510-1502500	Pressure Transducer w/ 6ft cable. 2500 psig , 0.5-5V Non-Ratiometric. 316 SS w/ ¼-NPT Male Port.
5520-5500138	DP Transmitter 0-5psid (138 InW). 1000 psi Static Pressure Rated. 316 SS w/ ¼-NPT Female Ports.
1980-2032400	Wireless XBee Kit. Maxstream 2.4 GHz Module. 300 ft. (100m) Line of Sight range.
1980-2032401	Wireless XBee-Pro Kit. Maxstream 2.4 GHz Module. 3000 ft. (1km) Line of Sight range.
9200-0490560	Ext. 2 W Solar Panel w/ stand. 4.1 Vdc @ 520 mA charging. 6 ft. Power Jack cable provided.
9200-0501200	Ext. 6 W Solar Panel w/ stand. 5 Vdc @ 1200 mA charging. 6 ft. Power Jack cable provided.