FLOW KING

FLOW COMPUTER & MEASUREMENT PLATFORM DATA SHEET

DATA SHEET

OVERVIEW

The Flow King measurement platform represents the industry's first ultra-low power, buildable device that provides best-in-class measurement accuracy, integrated I/O and fully wireless capabilities. Multivariable Transmitter (MVT) and Single-Run Gas Flow Computer variants are available.

DESCRIPTION

The Flow King transmitter incorporates ultra-low power consumption while retaining the highest level of sensor accuracy. Built-in solar panel and rechargable lead-acid battery options offer long-term wireless lifespan and substantial installation cost reduction. Flagship differential and gauge pressure sensors offer industry-leading accuracy, yet are rugged by design and have a 33% over-pressure sensing capability right out of the box.

BSAP, Enron MODBUS and ROC protocol capabilities ensure compatibility with a variety of industry-standard communication equipment. The optional Cellular Modem rounds-out total independence from wired installations, utilizing most up-to-date MQTT Sparkplug B protocol.

Optional Flow Computing Package incorporates API Chapter 21 compliant flow calculations, utilizing AGA-3, AGA-5, AGA-7 and AGA-8 reports as a guide.

The Flow King Measurement platform is truly customizable (buildable). Simply select an appropriate pressure range, add optional flow computing package, select from optional external power sources and communication equipment.

OUT-OF-THE-BOX FEATURES

- Ultra-low power consumption: <600 µA @ 4.0 VDC
- Differential or Gauge Pressure Sensor options
- +/-0.1% Accuracy while withstanding 133% Upper Range Pressure Limit
- 1.5x Upper Range Pressure Limit Proof Pressure, no recalibration required
- (11) Total I/O Points
  - (4) User-configurable DI/DOs
  - (2) Dedicated DIs
  - (2) 1-5V AIs with 10% overrange capability
  - (1) High-speed Counter
  - (1) High-speed Switch (Plunger Arrival Sensor)
  - (1) 100-Ohm Three-wire platinum RTD per DIN 43760
- Class 1, Division 1, Groups C, D Approvals
- Explosion-proof UL/CUL
- Single-Seal Certified
- Canadian Registration Number (CRN)
- Free Graphical User Interface (GUI)
  - Field Configuration
  - Field Calibration
  - Field Firmware Updates
- User-configurable LCD
- Network Port: RS485
- Auxiliary Port: RS232
- Local Port (configuration): USB
  - Unit will power-up on USB

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AVAILABLE OPTIONS

- Flow Computing Package
  - API Chapter 21 Compliant
  - In accordance with AGA Reports:
    - AGA-3: Orifice Metering of Natural Gas
    - AGA-5: Natural Gas Energy Measurement
    - AGA-7: Measurement of Natural Gas by Turbine Meter
    - AGA-8: Thermodynamic Properties of Natural Gas & Related Gases
- Internal Power Systems
  - 2.5 AH Lead-Acid Battery Pack w/Internal Solar Panel
  - 25 AH Lithium Battery Pack
- Wireless Communication Options
  - CAT-M1 Cellular Modem
  - 2.4 GHz ISM Band Transmitter
- Compatible wireless Gateway available for ease of install
- Neck-Mount Bracket
- External Antenna
  - CAT-M1 Cellular Modem version
  - 2.4 GHz ISM Band Transmitter version
- Explosion-proof antenna coupler
  - N-Type Female - Isolated
  - RPSMA Female

PRESSURE SENSOR RANGES

MULTIVARIABLE TRANSMITTER(MVT):

- 150-inH_2O / 1000 PSI_S
- 150-inH_2O / 2000 PSI_S
- 300-inH_2O / 1000 PSI_S
- 300-inH_2O / 2000 PSI_S
- 400-inH_2O / 2000 PSI_S

SINGLE VARIABLE STATIC PRESSURE SENSOR:

- 25 PSI_G
- 100 PSI_G
- 500 PSI_G
- 1000 PSI_S
- 2000 PSI_S

DUAL SINGLE VARIABLE STATIC PRESSURE SENSORS:

- Available in all static pressure sensor ranges.

HIGH ACCURACY FOR CUSTODY TRANSFER

- Industry-leading 0.05% DP measurement accuracy is standard.
- Best-in-class static pressure (0.035%) and temperature (0.1°C) measurements.
- Best-in-class pressure (0.1%) and temperature (0.125%) effects on DP.

DESIGNED FOR LOW-COST INSTALLATION & EASE OF USE

- Wireless technology eliminates need for power/signal cable trenching, expensive solar arrays, & battery banks.
- Free Graphical User Interface (GUI) offers intuitive operation, live trending and easy start up and configuration.

PHYSICAL OVERVIEW

The Flow King is designed specifically for remote measurement of Differential Pressure, Static Pressure and Temperature with external RTD.

DIAPHRAGM MATERIAL: 316SS or Hastelloy C
FLANGE MATERIAL: 316SS or Hastelloy C
FILL MEDIUM: DC 200 Silicone Oil
PROCESS CONNECTIONS: ¼" NPT on flanges or manifold mount
ELECTRICAL CONNECTIONS: Two ½" NPT and two ¾" NPT conduit connections
EXPLOSION-PROOF HOUSING: Low copper aluminum, polyester paint
LOCAL INDICATION: 6- ½ - Digit LCD display selectable engineering units
USER CONNECTIONS: Pluggable terminal blocks

POWER SUPPLY INFORMATION

OPERATING VOLTAGE RANGE:

- 4.0 to 30.0 VDC

MOUNTING EFFECTS

MOUNTING TORQUE EFFECTS: None
FLOW DIRECTION CHANGE EFFECTS: No "oil canning"

ENVIRONMENTAL SPECIFICATIONS

TEMPERATURE LIMITS:
AMBIENT: -40 to +60°C
PROCESS: -40 to +100°C
WITH DISPLAY: -30 to +60°C

** The LCD will recover if exposed to temperatures outside the listed range, once the ambient temperature returns to a value within the allowable range.*

STORAGE: -40 to +85°C
HUMIDITY LIMITS: When covers are properly installed, unit will withstand 0 to 100% RH (Type 4 enclosure)

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FLOWWORX

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MODEL NUMBER MATRIX: JT500-AB-C-D-E-F

	CODE-AB (GP MODELS)		NOTES
GP MODELS GAUGE PRESSURE	25 PSIG	02	Consult Factory
	100 PSIG	03	Consult Factory
	500 PSIG	04	Consult Factory
	1000 PSIS	05	Consult Factory
	2000 PSIS	06	Consult Factory
	3000 PSIS	07	Consult Factory
	5000 PSIS	08	Consult Factory

	CODE-AB (DP MODELS)		NOTES
DP MODELS DIFFERENTIAL PRESSURE	150-inH20/1000 PSIS	11	
	150-inH20/2000 PSIS	12	
	300-inH20/1000 PSIS	13	
	300-inH20/2000 PSIS	14	
	400-inH20/2000 PSIS	15	
	700-inH20/2000 PSIS	16	Consult Factory

	CODE-C (GP MODELS)		NOTES
DIAPHRAGM & FITTING MATERIAL	316 SS	0	
	Hastelloy	1	Consult Factory

	CODE-C (DP MODELS)		NOTES
DIAPHRAGM MATERIAL	316 SS	0	
	Hastelloy	1	Consult Factory

	CODE-D		NOTES
FLANGE MATERIAL	316 SS	0	For GP model, material must be the same as C
	Hastelloy	1	Consult Factory

	CODE-E		NOTES
FLANGE ORIENTATION	Vertical (Facing Down)	0	
	Facing Front	1	Consult Factory
	Facing Rear	2	Consult Factory

	CODE-F		NOTES
HAZARDOUS AREA APPROVAL	UL/CUL C1 D1 Explosion Proof	0	
	Other	1	Consult Factory

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	OPTIONS	ORDER CODE	NOTES
FLOW COMPUTING PACKAGE	API Ch. 21 Compliant	F501	AGA-3, AGA-5, AGA-7, AGA-8
INTERNAL POWER SYSTEM	25 AH Lithium Battery Assembly	F502	25 AH Lithium Battery, Internal Bracket/Wiring
	2.5 AH Lead-Acid Battery Assembly Internal Solar Panel Included	F503	2.5 AH Lead-Acid Battery, Interal Bracket/Wiring Second Window Cover for Light Transmission
WIRELESS COMMUNICATION	CAT-M1 Cellular Modem	F504	Requires Internal Power System Requires Explosion-Proof Antenna Coupler Explosion-Proof External Solar Panel required for Multiple Transmissions per day
	2.4 GHz ISM Band Transmitter	F505	Internal Antenna included. Requires Internal Power System Requires use of Gateway Wireless Receiver
	Gateway - Wireless Receiver	F506	2.4 GHz ISM Band Transmitter Compatible, Pending UL Approval, Consult Factory

	ACCESSORIES	ORDER CODE	NOTES
MOUNTING BRACKET	Neck-Mount Bracket	A100	Compatible with all DP and GP models
EXTERNAL ANTENNA	2.4 GHz ISM Band Radio Compatible	A101	Explosion-Proof Antenna Coupler Required
	CAT-M1 Cellular Modem Compatible	A102	Explosion-Proof Antenna Coupler Required
EXPLOSION-PROOF ANTENNA COUPLER: 316 SS (500 MHZ - 3.9 GHZ)	N-Type Female - Isolated	A103	Required for External Antenna Use
	RPSMA Female	A104	Required for External Antenna Use

	REPLACEMENT PARTS	ORDER CODE	NOTES
BATTERIES	25 AH Lithium Battery	R100	25 AH Lithium Battery Only
	2.5 Lead-Acid Battery	R101	ww2.5 AH Lead-Acid Battery Only
RADIO	2.4 GHz ISM-Band Transmitter	R102	Internal Antenna Included
CELLULAR MODEM	Cellular CAT-M1	R103	Consult factory for SIM Card setup
COMM CABLE	USB Communication Cable	R104	

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