



The E-Plus P2DAAA is a field mounted flow computer with a built in Rosemount® 205 Multivariable Transmitter (DP, P and TEMP) for custody or non-custody transfer measurements. It is a single bi-directional meter run computer that can be used in gas or liquid applications. Multiple primary elements and density equations are supported. A unique graphical interface allows users to have up to three trend screens with two user selectable parameters per screen. This mimics a chart recorder display and allows users the ability to get at-a-glance information concerning their flow conditions.

The E-Plus P2DAAA was developed with a focus on brining the needs of a vast array of specialized industries into a single hardware package. This has allowed users to reduce spare parts requirements, reduce training time for new users, and reduce the total cost of ownership. Whether being implemented as a standalone solution or being integrated into a plant wide control system, the E-Plus P2DAAA has "got you covered".

The E-Plus P2DAAA calculates all the necessary standard equations (AGA, API, ISO, NIST, etc.) for Liquids & Gases. Monthly, daily, or hourly reports are stored in flash memory. If you include the E-Plus P2DAAA's impressively low power consumption, battery back-up capabilities, solar power options, and built-in wireless communications the E-Plus P2DAAA proves itself to be the number one flow computer for all applications.



Features

- Low operating power (0.3 watts)
- 0.075% accuracy
- 32 bit processor
- 64x128 programmable display
- Min-max charting
- Wireless radio/Modem ready
- Multiple I/O options
- Custody transfer accuracy
- Test separator reports
- Built-in multivariable 3-in-1 transmitter
- Smart field I/O
- Auxiliary meter input

Communications

- RS232 Modbus
- RS485 Modbus
- Analog and digital I/O
- Zigbee Wireless Radio
- Freewave Wireless Radio
- Bluetooth

Applications

- Liquid and gas measurement
- Well head measurement and automation
- Custody measurement and control
- Compressor stations
- Well optimization
- PID control
- Field mounted trending
- Multiple primary elements

Reports

- Hourly
- Daily
- Monthly
- Monthly day by day
- Calibration and audit
- Data storage in years

Alternative Power

- Battery backup
- Solar power

The E-Plus P2DAAA flow computer has the capacity to measure a single bi-directional gas or liquid measurement train. Multiple equations are included among which are AGA3/API14.3, API14.9, API 5,6, API5.7, API2540, AGA7, AGA9, API21, with more being added continuously. The E-Plus P2DAAA accepts any type of primary element: Venturi, Annubar, Turbine, PD, Ultrasonic, V-Cone, Wedge, Vortex, etc. Additionally, it can carry out density calculations according to the following standards: API12, AGA8; 24A, B, C; NBS for steam, saturated and supersaturated steam, NBS1045 for ethylene, etc. Contact our offices or visit our website for available equation updates.

The E-Plus P2DAAA includes a factory integrated Multivariable 3-in-1 digital transmitter manufactured by Rosemount® for the simultaneous measurement of temperature, pressure, and differential pressure. It can also control pneumatic or electrical valves (on-off or variable by means of analog outputs or process PID control).

The E-Plus P2DAAA can have up to three textual display screens with four user-selectable parameters being displayed per screen. In addition, three graphical trend screens can be displayed showing two user-selectable parameters per trend. All screens are scrolled at user-defined intervals.

The input/output assignment, flow equations, historical data storage, and other functions are carried out using Dynamic Flow Computers' DYNACOM® software. This software is Windows based, free of charge, and available for download/update at any time on our website.

DYNACOM® Software Capabilities:

- Flow computer diagnostics
- Configure inputs and outputs
- Configure PID control
- Personalize report time and content
- Configure and select the local LCD screen displayed parameters
- Reassign and customize MODBUS® registers and values
- Create and implement custom math and formulas
- Input and output calibration
- Automatic and periodic downloading of flow computer reports
- Obtain historic data for display, saving, exportation, or printing

Historic data is available in the memory of the flow computer for download or display.

Maximum Report Storage:

- Hourly reports: 1536 hours*
- Daily reports: 64 *
- Daily reports, hour by hour: 64*
- Monthly reports: 6*
- Monthly, day by day: 2 months*
- Calibration reports: 20*
- Audit reports: 100*
- Alarm reports: 100*
- Special reports: HTML, and others

*The number of reports stored can vary according to application.

Multivariable Transmitter



The Multivariable Sensor is a 3-in-1 model 205 transmitter manufactured by Rosemount® Inc. for Dynamic Flow Computers. This sensor measures static/ absolute pressure, differential pressure, and using an optional RTD, process temperature. These three process variables are available all the time and updates are sent to the flow computer up to NINE times per second.

The model 205 is a culmination of the vast technological experience that Rosemount® Inc. has in the multivariable field. It includes the well recognized and tested 3051C technology using capacitive cells for differential pressure as well as a patented piezoresistive/silicon sensors for measurement of absolute/ static pressures.

The digital technology utilized in the production of the 205 module is the most advanced measurement technology on the market, assuring maximum accuracy and rangeability. The extensive use of patented technology concerning the sensors internal circuitry significantly reduces the size and the weight of the 205 sensor.

The Multivariable Sensor measures three process variables at one time. It incorporates a capacitive differential pressure sensor, a piezoresistive absolute/static pressure sensor, and an optional connection for a two, three, or four wire RTD. The sensors convert the process variables to a digital format for direct communication with the flow computer.

PHYSICAL SPECIFICATIONS

Electrical/Conduit Connections	Two 3/4" NPT.
Process Connection	Two 1/4 -18 NPT (multivariable)
Housing (Flow Computer)	Material: copper free aluminum Painting: epoxy or polyurethane. Classification: NEMA 4X class 1 div. 1 – IP66
RTD Connection	To flow computer terminal block or directly to multivariable
Multivariable	3-in-1 (pressure, differential pressure, and temperature), manufactured by Rosemount® Inc.
Display	Text - 8 Lines x 16 characters Graphics – 64 x 128 pixels
Terminal Blocks	Easily accessible; removable for easy connection
Certifications	CSA for class 1, div. 1, groups B, C and D UL for class I, zone 1, AEx d IIB+H2
Temperature Limits	Operation: -40 to 185 °F (-40 to 85 °C) Storage: -50 to 190 °F (-46 to 87 °C)
Humidity	100%

ELECTRICAL SPECIFICATIONS

Voltage	10 to 28 VDC
Power Consumption	0.3 watt
Temperature	-40 to 185 °F (-40 to 85 °C)
Humidity	100%
Solar Board (Optional)	10/20 watts, 12 volts
UPS (Optional)	7 day backup
Polarity	Reverse polarity protected
Processor	32 bits @ 16.7Mhz
Flash ROM	4 MB @ 70 Nano seconds
RAM	2 MB @ 70 Nano seconds
Real Time Clock	Years/Months/Days/Hours/Minutes
Internal Battery	Lithium ion

INPUT SPECIFICATIONS

Optic Isolation	Each input is optically isolated with ± 250 VDC chassis isolation
Analog Input	Three 4-20mA (or 0-5V) inputs 24 bit resolution
Digital/Switch Input	One input (4 optional with slow pulse) 5-28 VDC 0.25Amp rating For frequency input - square wave only Frequency range 0 - 6000 HZ Signal must be > 3 volts
Frequency Input	Two inputs (Frequency inputs uses one digital input channel and/or one digital output) Square wave 0 - 6kHz, signal > 3 V Sine wave 0 - 1200Hz, signal > 70mVp-p Minimum 10uA @ 1KOhm resistance.
RTD	One RTD Input (Direct connection to flow computer uses two of the analog input channels) 24 bit resolution

OUTPUT SPECIFICATIONS

Optic Isolation	Each output is optically isolated with ± 250 VDC chassis/ground isolation
Digital/Switch/Pulse Output	Two outputs 8-28 VDC 0.25Amp rating On/Off or pulses (to 125 pulses/sec.)
Analog Output	One output (16 bit) 4-20mA (external power required) For PID control or for data transmission

COMMUNICATION SPECIFICATIONS

RS232/485	Quantity 1 @ 1200 – 19200 bps
RS232 (w/Elbow Option)	Quantity 1 @ 1200 – 19200 bps
Protocol	MODBUS® RTU/ASCII
Optional	Modem, Radio, Bluetooth

DIAGNOSTIC SPECIFICATIONS

Monitor/Alarm	Multivariable: P, DP, T Analog inputs/outputs Digital/switch inputs Digital/switch outputs Pulse/frequency inputs Internal temperature Battery voltage Internal power supply
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FLOW COMPUTATION SPECIFICATIONS

Number of Trains	One (+2 Aux meter)
Flow Calculation	Gas or liquid
Primary Elements	<u>Differential:</u> Orifice, V-Cone, Wedge, Annubar, Venturi, etc. <u>Pulse / Frequency:</u> Turbine, PD, Vortex, Ultrasonic, etc.
Engineering Units	US and Metric
Base Conditions	60°F, 14.7 PSIA (15 °C and 1 Kg. /Cm ²) 68°F, 14.7 PSIA (20 °C and 1 Kg/Cm ²)
Equations	AGA8 methods 1, 2, and detailed; 24A,B,C; Steam NBS Others added continuously, Consult factory for complete list

MULTIVARIABLE SPECIFICATIONS

Function	Gas, oil, water, steam, and others
Differential Sensor Limits	<u>Range 2:</u> -250 to 250 in H ₂ O (-0.622 to 0.622 bar) <u>Range 3:</u> -1000 to 1000 in H ₂ O (-2.49 to 2.49 bar)
Absolute Sensor Limits	<u>Range 3:</u> 0.5 to 800 psia (3447 to 5516 kPa) <u>Range 4:</u> 0.5 to 3626 psia (3447 to 25000 kPa)
Gage Sensor Limits	<u>Range C:</u> 0 to 800 psig (0 to 5516 kPa) <u>Range D:</u> 0 to 3626 psig (0 to 25000 kPa)
Temperature Sensor (does not consider error from external RTD)	Compatible with any 100 Ohm Platinum RTD <u>Range 3:</u> -300 to 1200 °F (-184 to 649 °C) accuracy ±1.0 °F (±0.56 °C) <u>Range 4:</u> 1200 to 1500 °F (649 to 816 °C) accuracy ±0.5 °F by each 50 °F
Temperature Limits (Multivariable Flange temperature. Does not apply to process temperature)	-40 to 250 °F (-40 to 121 °C) (Silicon fill) 0 to 185 °F (-17.8 to 85 °C) (Inert fill)
Environmental Temperature Limits	-40 to 185 °F (-40 to 85 °C) (Silicon Fill) 0 to 185 °F (-17.8 to 85 °C) (Inert Fill)
Storage Temperature Limits	-40 to 230°F (-40 to 110 °C)
Humidity	0 –100% relative humidity

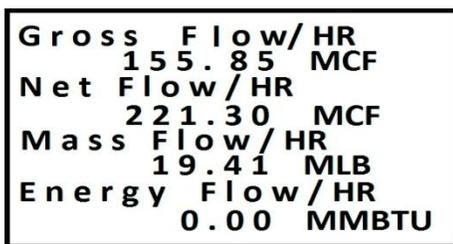
MULTIVARIABLE ACCURACY

(Includes the combined effects of linearity, hysteresis and repeatability)

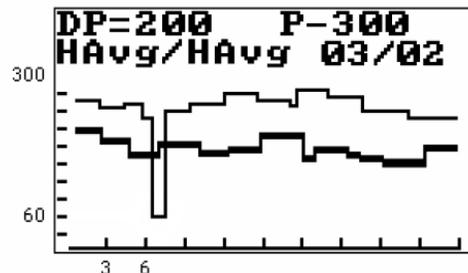
Differential Pressure	± 0.075% of the span for spans from 1:1 to 10:1 of the URL. For spans smaller than 10:1 calculate according to: Accuracy = ±[0.025 + 0,005 (URL/Span)]% of span
Pressure absolute/static	± 0.075% of the span for spans from 1:1 to 10:1 of the URL. For spans smaller than 10:1, calculate according to: Accuracy = ±[0.03 + 0,0075 (URL/Span)]% of span
Temperature	Accuracy ±1.0 °F (±0.56 °C) from -300 to 1200 °F (-184 to 649 °C)

MULTIVARIABLE CONSTRUCTION MATERIAL

Process Connections	<u>Transmitter</u> ¼–18 NPT on 2½" centers ½–14 NPT on 2", 2½", or 2¼" centers with optional flange adapters <u>RTD</u> RTD dependent
Wetted Parts	<u>Isolating Diaphragms</u> 316L SST or Hastelloy C-276® <u>Drain Vents / Valves</u> 316 SST or Hastelloy C-276® <u>Flanges</u> Plated carbon steel, 316 SST, or Hastelloy C-276 <u>Wetted O-Rings</u> Glass-Filled PTFE
Non-Wetted Parts	<u>Screws</u> Plated carbon steel per ASTM A449 Grade 5 or austenitic 316 SST <u>Fill Fluid</u> Silicone or halocarbon inert oil <u>O-Rings</u> Buna N



Text Display



Graphic / Trend Display

Optional Accessories

RS-232 Elbow



SmartCone®



Armored RTD Cable



Shielded RTD Cable



Solar Panel



FreeWave Radio



Zigbee Radio



Bluetooth



L-Shaped Mounting Bracket



Back-Up Battery



5-Valve Manifold

