900 SERIES
INTELLIGENT PROCESS INSTRUMENT

- **Manual and Serial Batch, Dose, and PID Controls**
- **Dual Totalizer and Rate Meter**
- **Digital and Analog Input/Output**
- **Analog Input/Output Range Scaling**
- **Local and Remote Operation and Reporting**

The 900 Series is a line of intelligent, reliable, and versatile microcomputer-based process monitors and controllers. They have been designed to provide precision liquid and gas flow measurement, value monitoring, data communication, and process control for a variety of commercial, industrial, and general instrumentation applications.

MULTIPLE COMMUNICATION OPTIONS

Batches are controlled manually from the front panel keypad, serially through the RS-232C port, or remotely through the telecommunication interface. The batch quantity is permanently saved in non-volatile memory when programmed from the keypad, and a complete set of serial commands and responses for all control functions. A communication capability is incorporated allowing alarms to be sent to a pager.

Information is accessed through the menu-driven integrated keypad and LCD, the RS-232C serial port, or remotely using the internal or external telecommunication interface.

The telecommunication option enables programming and operation for monitors distributed in a wide area network distant from a network control center. The report feature sends monitored information to a remote host computer, based on alarms, service time or clock-calendar schedules.

FULL FEATURED

Multicolored front panel LED's indicate quantity totalizer state, flow rate, control progress, report state, and telecommunication status. There is on-board audio annunciation for alarms and keypad key activation.

Outputs may be either relay or process analog voltage or current. A relay output is available with contacts suitable for security system applications. Medical-style input and output connector plugs and shielded cables are used to enhance operating reliability and eliminate ambient noise from affecting measurements.

BESSEL MEASUREMENT FILTERING

Input signals are accepted from a variety of digital transducers and analog process signal sources — digital pulse/frequency or process analog voltage or current. A programmable smoothing filter compensates for erratic process input rates encountered with metering pump applications. A balanced differential method is provided for magnetic sensor inputs to reject ambient noise for extended cable distances.

MULTIPLE ALARM SOURCES

Setpoints may be programmed to trigger local LED's and audio annunciation, produce signal outputs, and invoke local and remote alarm signaling. Programmable setpoints include quantity, high/low and average flow rates, time in service, and clock-calendar time.

The reporting and alarm features provide a front end for operations management information gathering, remote billing systems, automated customer service dispatch systems, and equipment maintenance notification systems.

LOW POWER OPERATION

Non-volatile memory retains accumulated and programmed information without a backup battery, and a long life lithium battery supports the clock-calendar.

900 Series Technical Specifications

Measured Values

Process Input	Volts, mA, Hz	**Process Rate**	0.00±9,999,999.99 units/time
Process Quantity	0–99,999,999.99 units	**Process Offset**	0.00±9,999,999.99 units/time
Service Time	0–65,535 hrs	**Clock Date–Time**	day:month:year:hrs:min:sec
Date–Time	day:month:year:hrs:min:sec	**Next Report**	day:month:year:hrs:min:sec

Program Values

Control Functions	PID, Batch, Dose, Manual, Monitor	**Control Amount**	0.00±9,999,999.99 units
Port Select	Input, Output, Off	**Process Input**	Volts, mA, Hz
Rate Time Base	sec/min/hrs	**Process Output**	Volts, mA, Relay
Hi/Lo Rate Limits	0.00±9,999,999.99 units/time	**Quantity 1,2 Limits**	0.00–99,999,999.99 units
Time Limit	0–65,535 hrs	**Rate Filter/PID Response**	Bessel 0 to –20 dbHz
Measure Type	Quantity and Scalar	**Measure Units**	3 chars, a-z, 0–9, A-Z, and other symbols
Pulse Constant	1-999,999 (pulse/qty ratio)	**Interpolate Input/Output**	Value Low/High=0-10.000V/20.000mA
Rate Alarm Valid	0-255 sec		Units Low/High=0.00±9,999,999.99 units/time
Process Offset	0.00±9,999,999.99 units/time		
Comm Port Select	Sio/Wan, Report/Alarm	**Network Address**	0–65,535
Wan Numbers	2 each 16 chars (0-9, *, #, A, B, C, D, T, P, ', ')	**Auto-Answer**	0–255 rings
Date–Time	day:month:year:hrs:min:sec	**Report Start**	day:month:year:hrs:min:sec
Report Frequency	0–999 sec/min/hrs/days/months		

Configuration

On/Off	Pager, Logging, Secure keypad, Error control, Compression, Program lock, Alarm latch
Calibration	Analog input and output, Factory defaults

Controls and Indicators

Keypad	Six key soft-touch - CHAN (RST2), QTY, PROG (F2), VIEW (F1), ZERO/TARE (RST1), RATE
Display	Liquid crystal nematic 2x16 alphanumeric dot matrix gray ±20° view
Audio	Magnetic 2.0 KHz 85db @ 10 cm
Lamps	LED Qty/Rate/Time tri-color

Input Port

Interface	3.5mm three conductor plug or screw terminal plug (option) sleeve=gnd ring=signal tip=excitation
Digital	0-18.396 KHz accuracy ±0.01% ±0.5bit
Pulse	0–24V range 2.4V threshold (typ) z-in 47K hall effect open collector TTL/CMOS dry contacts
Magnetic	0.007Vrms to 35Vp-p psuedo-sinuoid, balanced differential z-in 10K (max) sleeve=shield ring=coil1 tip=coil2
Analog Voltage	0–10.000V z-in 10.0K accuracy ±0.005% (typ) stability ±30ppm/°C 0-4.096V z-in 15 meg (typ) accuracy ±0.002% (typ) stability ±30ppm/°C
Analog Current	0–20.000mA z-in 200 ohm accuracy ±0.005% (typ) stability ±30ppm/°C
Excitation	5.0V 50mA or external regulated supply voltage

Output Port

Interface	3.5mm three conductor plug or screw terminal plug (option)
Analog Voltage	0–10.000V z-out 1.0 ohm accuracy ±0.005% (typ) stability ±10ppm/°C sleeve=neg ring=n/c tip=pos
Analog Current	0–20.000mA source z-out > 2.0 meg ohms accuracy ±0.005% (typ) stability ±10ppm/°C sleeve=neg ring=n/c tip=pos
Relay	1 Form A (B option) 28 VAC 1.0 A carry 0.5A switch 1KV iso sleeve=no/nc tip=com

WAN Port	RJ-11 FCC Subpart "H" modem full duplex V.22bis
Local Serial Port	3.5 mm audio stereo plug EIA/TIA 232D (RS-232C) full duplex 2400bps sleeve=gnd ring=txd tip=rxd
Value Memory	Non-volatile error detect eerom 100 year retention without power, capacity=64x8 (extrnl)/512x8 (intrnl), 1.0 ms/x 10^6 write
Diagnostics	Memory check sum, installation, local serial, WAN communication
Power Required	2.1 mm center pos 10–16 VDC std (10-24V opt) US 110–130 VAC 50/60 Hz adapter with Europe 220VAC (option)
Consumption	0.60 watts @ 12V (lamps on - no options)
Date-Time Clock	Battery 1216 3.0V 35 mA/hr lithium 9 years
Environment	Operate 0–55°C, 0–95% RH non-condense, ship/store –20° to +85°C, 30 min warm to rated accuracy
Enclosure	NEMA 4X front panel/surface mount, ABS, dark gray, UL94V0 (option)
Size/Weight	6.3x4.3x1.3 (160x110x33 mm), 10.5 oz (300 gm)
Publications	Operator's Manual, Warranty Registration, Key Reference Card, Web available
Regulatory	FCC Part 15 Class A, Part 68 5TUUSA-23969-DT-E, UL/CSA/VDE power adapter, CE mark available

Made In USA Pub No. 75062, 2/04 Specifications are subject to change at any time without notice.

Application Example