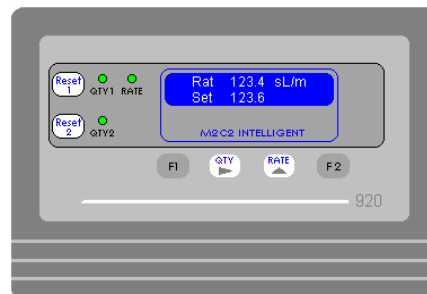


# 900 SERIES

## Universal Process Controller



- Manual and Serial Batch, Dose, and PID Controls
- Totalizer and Rate Meter
- Digital and Analog Input/Output
- Analog Input/Output Range Scaling
- Local and Remote Operation and Reporting
- Onboard Data Logging
- LWAN Communication



The 900 Series is a line of innovative, technically superior, high quality, reliable 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

Set-points may be programmed to trigger local LED's and audio annunciation, produce signal outputs, and invoke local and remote alarm signaling. Programmable set-points 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, Ohms  
**Process Quantity** 0–99,999,999.99 units  
**Service Time** 0–65,535 hrs  
**Date–Time** day:month:year:hrs:min:sec

**Process Rate** 0.00±9,999,999.99 units/time  
**Process Offset** 0.00±9,999,999.99 units/time  
**Clock 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  
**Port Select** Input, Output, Off  
**Rate Time Base** sec/min/hrs/scalar  
**Hi/Lo Rate Limits** 0.00±9,999,999.99 units/time  
**Time Limit** 0–65,535 hrs  
**Measure Type** Quantity and Scalar

**Control Amount** 0.00±9,999,999.99 units  
**Process Input** Volts, mA, Hz  
**Process Output** Volts, mA, Relay  
**Quantity 1,2 Limits** 0.00–99,999,999.99 units  
**Rate Filter/PID Response** Bessel 0 to –20 dbHz  
**Measure Units** 3 chars, a-z, 0–9, A-Z, and other symbols

**Pulse Constant** 1–999,999 (pulse/qty ratio)  
**Rate Alarm Valid** 0–255 sec  
**Process Offset** 0.00±9,999,999.99 units/time

**Interpolate Input/Output** Value Low/High=0–999,999.999 V/mA/Hz/ohm  
 Units Low/High=0.00±9,999,999.99 units/time

**Comm Port Select** Sio/Wan, Report/Alarm  
**Wan Numbers** 2 each 16 chars (0-9, \*, #, A, B, C, D, T, P, ', ')  
**Date–Time** day:month:year:hrs:min:sec  
**Report Frequency** 0–999 sec/min/hrs/days/months

**Network Address** 0–65,535  
**Auto-Answer** 0–255 rings  
**Report Start** day:month:year:hrs:min:sec

## Configuration

**On/Off** Logging, Secure keypad, Pager, Error control, Compression, Port 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-sinuid, 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 88.7 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

**Local Serial Port** RJ-11 FCC Subpart "H" modem full duplex V.22bis  
 3.5 mm audio stereo plug EIA/TIA 232D (RS-232C) full duplex 2400bps sleeve=gnd ring=txd tip=rxd

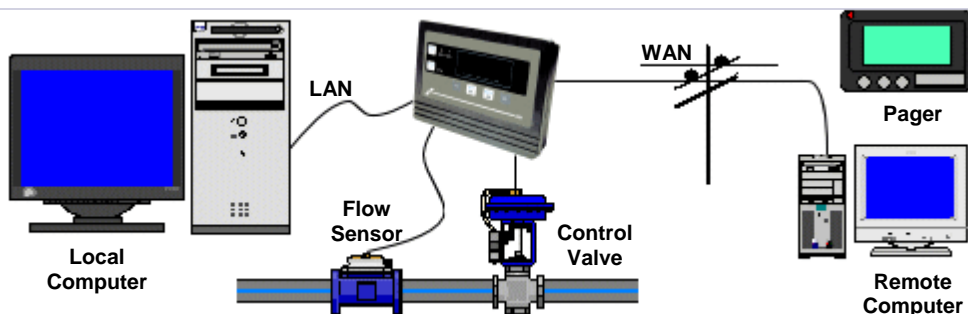
## Value Memory

**Diagnostics** Non-volatile error detect eeprom 100 year retention without power, capacity=64x8 (extrnl)/512x8 (intrnl), 1.0 ms/x 10<sup>6</sup> write  
 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

**Enclosure** Operate 0–55°C, 0–95% RH non-condense, ship-store –20° to +85°C, 30 min warm to rated accuracy  
 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

## Application Example



D10144—031109