

# Model 991R Universal Process Controller

## System Basics

- Menu Driven Graphic Controls
- Single Thermal Mass Flow Controller Channel; or Mix Up To Four Independent Input-Output Ports
- Measurement Accuracy to 0.05%
- Instrument Keypad & LWAN Remote Operation
- Input Measurements - Digital, Current, Volts
- Output Controls - Relay, Current, Volts

## Display & Indicators

- Large Graphic 8x20 High Contrast Backlit Display
- Backlight Intensity Control
- Process Measurement and Alarm Status
- Audio and Visual Alarm Indicators

## Process Control Capability

- Batch Quantity Deliveries
- Quick-Tune Closed Loop PID
- Dosing and Proportional Mixing

## Information Reporting

- Onboard Data Logging
- Real-Time Clock-Calendar
- Programmable Report Selection with Auto-Routing
- Programmable Clock or Alarm Instigated Reports

## Communications

- Built-in RS232 Serial Communication Port
- Multiple Unit Networked Operation
- Serial Data Packet Error Controlled
- Multiple Network Access Addresses
- Remote Serial Computer Control

## Alarm Services

- Dual Independent Input Quantity Alarms
- Operation and Maintenance Service Time
- Rate-Value High, Low, Inclusive, Exclusive & Detection

## Special Functions

- Keypad Security
- User Programmable Measure Units
- Selectable Quantity-Rate Time Base
- Universal Independent Input-Output Scaling

## Zero-Tare Capabilities

- Zero Any One or All Measured Values
- Rate-Value Offset Tare

## Diagnostic Tests

- Total Self Auto-Diagnostics on Every Power-Up

## Mounting Accessories

- Panel Hardware
- Table Top Hardware
- Rack Hardware

## Compliances

- RoHS, CE, FCC Part 15 Class A, FCC Part 68, UL & CSA



## The Overview

Functionally and operationally identical to the Model 990X, the Florite Model 991R is an innovative, technically superior, high quality and reliable microcomputer-based controller suitable for any commercial or industrial application. Connect a single thermal mass flow meter/controller, or connect any mix of up to four inputs and or outputs regardless of the signal type. Unlike standard fixed instrument platforms, any standard sensor signal can be quickly connected directly to the Model 991R allowing the user to select from a vast number of sensor and control products, decreasing the total system cost.

## Installation and Operation

The instrument set-up and operation is performed via the keypad or using the standard RS-232 serial communication port provided with every Model 991R. The user simply configures the various programmable values required to achieve the required application performance, the Model 991R does the rest of the computing work.

## Onboard Data Logging

The onboard data logger acquires date-time stamped measurement records based on the data logger's selectable rates of seconds, minutes, hours, days, weeks, or months. The data records may be exported directly into common spreadsheet or database programs such as Microsoft™ Excel™ and Access™ for data interpretation, trending, or long-term storage.

## Communications

The instruments communication capabilities provide for sending process information, programming commands, support information, reporting and alarm signaling via its RS-232 serial communication port.

## Information Reports and Alarms

Information reports are a configurable feature that utilizes the instruments internal date-time clock. Independent channel alarms can be set for quantities, scalar values, process rates, process input measurements, and maintenance service time. Any of the independent alarms may be set to activate the audio-visual indicators and set to produce analog or relay output signals.

## Operator Controls

The Model 991R features a large high contrast backlit graphic display enabling a user to view up to eight processes simultaneously from one screen and adjust any of the programmable values as the process is occurring. The display, in conjunction with the audio-visual indicators provide quick and easy process status information and alarm indications.

## Diagnostics

Total self auto-diagnostic tests upon every power-up support easy installation and ensure a long and trouble-free operating life.

# Model 991R Technical Specifications

<b>Control Functions</b>	Monitor, Batch, PID, Manual	<b>Process Rate</b>	0.00±9,999.99 unit/time-base
<b>Measure Type</b>	Rate-Total, Scalar, Pressure	<b>Totalize Range</b>	0-9,999.99 units
<b>Process Input</b>	Digital, Current, Volt	<b>Process Output</b>	Current, Compensated Voltage, Relay
<b>Programmable Values</b>			
Port Select	Off, Input, Output	Rate Time Base	scalar (none), sec, min, hrs, day
Rate Set-Point	0.00±9,999.99 units	Batch Set-Point	0.00±9,999.99 units
Blend Set-Point	0.00±9,999.99%	PID Response	1.0-20 sec
Rate-Value Filter	1.0-20 sec 10%-90%	Output Interpolate	Lo-Hi Value=0-10.000/20.000
Input Signal Interpolate	Lo-Hi Value=0-10.000/20.000		Lo-Hi units=0.00±9,999.99
	Lo-Hi units=0.00±9,999.99	Measure Units	5 Chars (a-z, 0-9, A-Z, other)
Pulse Signal Interpolate	0.00±9,999.99 pulse/qty ratio	Rate Hi-Lo Alarm	0.00±9,999.99 units
Quantity 1, 2 Alarm	0.00-9,999.99 units	Service Time Alarm	0-65,535 hrs
Measure Units	5 Chars (a-z, 0-9, A-Z, other)		
<b>Global Functions</b>			
WAN Addresses	Dual 16 characters	Answer Rings	0-255 (WAN option only)
Network Address	0-65,535	Serial Port Functions	Sio-Wan-Lan, Report-Log-Alarms
Date-Time Clock	dd-mm-yy, hrs-min-sec	Report/Log Frequency	0-999 sec-min-hrs-day-month
<b>Indicators</b>			
Display	Graphic Backlit LCD		
Keypad	8 metal dome tactile - [Select-Prog] [Back] [Home-Start] [Stop] [Up] [Down] [Left] [Right-Alt]		
Audio	2.0 KHz, 85 db @ 10 cm		
<b>Input Interface</b>			
Channels Isolation	>85 dbv (nom)		
Interface	1x3 plug signal gnd excitation <or> DA15S option		
Excitation	Vr (4.096V±0.01%) +5v Vpwr @ ~25mA max		
Digital Pulse	0-24 V threshold 2.4V (typ) Zi~10K pulled to +5V		
	>20KHz ±0.001% hall, open collector 5V cmos switch contacts		
Analog Voltage	0-10.000V ±0.10% Zi~10.0K DA15S sense compensated		
Analog Current	0-20.000 mA ±0.10% Zi=100 ohm		
Analog Resistance	0-0.2M ohms		
<b>Output Interface</b>			
Interface	1x3 plug signal gnd aux-signal <or> DA15S option		
Analog Voltage	0-10.000V ±0.10% Zo<0.25 ohm DA15S option sense compensated		
Analog Current	0-20.000mA ±0.10% Zo~2M sourcing		
Relay Rating	Form C 28 VDC-vac 1.0A Isolated 1KV		
Aux Signal	-4.0V to +8V @ +/- 4.0mA		
Power Control	2.0 Amps Max.		
<b>Serial Ports</b>			
Sio	EIA-TIA232D fdx D9S		
Wan	USOC RJ-11 tip-ring FCC Subpart H fdx WAN option		
Lan	EIA-TIA485 multidrop master-slave option <or> 10-100 Ethernet option		
<b>Value Memory</b>			
	Nvram 8Kx8 non-volatile parallel		
	Eerom 512x8 non-volatile 100 yr retention, Eerom 256Kx8 non-volatile serial log option		
	Static ram 1Kx8 parallel, Static ram 32x8 serial battery backed		
<b>Power Required</b>			
Volts-Power	12-24 VDC 2.0w (without options)		
Jack Unipolar	2.1<or>2.5mm 2A<or>5A center pos UL/CSA		
Plug Bipolar	DE9P 5A rated UL/CSA		
Battery	Lithium 3.0V 12mm 35 mA-hr 9 yr operate date-time clock option		
<b>Operating Environment</b>			
Operation	0-55°C 0-95% RH non-condensing		
Ship-Storage	-20° to +85°C 0-95% RH non-condensing		
Warm Up	3 sec typical to rated accuracy		
<b>Self Diagnostics</b>			
	Memory validities, installation, communication local-remote		
<b>Enclosure</b>			
Mounting	ABS plastic NEMA 4X front panel		
Panel Cut-Out	Frame, panel, desk-top, rack		
	Rectangular 4.4 x 4.3		
<b>Weight</b>			
	350gm (without options)		
<b>Compliances</b>			
	CE Mark RoHS FCC15-A FCC68 5TUUSA-23969-DT-E		

Specifications are subject to change at any time without notice. ©2013, Florite International, Inc

For more information regarding the Model 991R please contact Florite International, Inc.

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