Florite
Process Control by Design

Model 991R
Universal Process Controller

System Basics
- Menu Driven Graphic Controls
- Single Thermal Mass Flow Controller Channel
- 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
- CE Class B, RoHS, REACH, FCC 15 Class B, FCC Part 68, UL61010-1

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

Control Functions	Monitor, Batch, PID, Manual	**Process Rate**	0.00±9,999.99 unit/time-base
Measure Type	Rate-Total, Scalar, Pressure	**Totalize Range**	0–9,999.99 units
Process Input	Digital, Current, Volt	**Process Output**	Current, Compensated Voltage, Relay

Programmable Values

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%		
Rate-Value Filter	1.0-20 sec 10%-90%	PID Response	1.0-20 sec
Input Signal Interpolate	Lo-Hi Value=0-10.000/20.000 Lo-Hi units=0.00±9,999.99	Output Interpolate	Lo-Hi Value=0-10.000/20.000 Lo-Hi units=0.00±9,999.99
Pulse Signal Interpolate	0.00±9,999.99 pulse/qty ratio	Measure Units	5 Chars (a-z, 0–9, A-Z, other)
Quantity 1, 2 Alarm	0.00–9,999.99 units	Rate Hi-Lo Alarm	0.00±9,999.99 units
Measure Units	5 Chars (a-z, 0–9, A-Z, other)	Service Time Alarm	0–65,535 hrs

Global Functions

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

Indicators

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

Input Interface

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

Output Interface

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.

Serial Ports

Sio	EIA-TIA232D fdx D9S
Wan	USOC RJ-11 tip-ring FCC Subpart H fdx WAN option
Lan	EIA-TIA485 multidrop master-salve option <or> 10-100 Ethernet option

Value Memory

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

Power Required

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

Operating Environment

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

Self Diagnostics

Memory validities, installation, communication local-remote

Enclosure

ABS plastic NEMA 4X front panel

Mounting	Frame, panel, desk-top, rack
Panel Cut-Out	Rectangular 4.4 x 4.3

Weight

350gm (without options)

Compliances

CE Class B, RoHS, REACH, FCC 15 Class B, FCC Part 68, UL61010-1

Specifications are subject to change at any time without notice.

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

Domestic: 866-4-Florite (435-6748)
International: 818-994-3454
www.florite.com

D10171-020817