Florite
Process Control by Design

Model 991R - MFC

Power Supply, Readout & Set Point Controller

System Basics
- Menu Driven Graphic Controls
- Single Channel Mass Flow Controller
- Measurement Accuracy to 0.075%
- Instrument Keypad & LWAN Remote Operation
- Input Measurements - mA, Volts
- Output Controls - mA, Volts

Display & Indicators
- Large Graphic High-Contrast Backlit Display
- Process Measurement and Alarm Status
- Audio and Visual Alarm Indicators
- See SP and PV values on one screen

Process Control Capability
- Batch Quantity deliveries
- Set Point control
- Reset-able Dual Totalizer
- Valve Override (VOR) control

Communications
- Built-in RS-232 Serial Communication Port
- Multiple Unit Networked Operation
- Serial Data Packet Error Controlled
- Multiple Network Access Addresses
- Remote Serial Computer Control

Alarm Services
- Input Quantity Alarm
- Rate High, Low, Inclusive, Exclusive and Detection

Special Functions
- Preprogrammed list of units of measure
- User Programmable units of measure
- Selectable Quantity-Rate Time Base
- Universal Input-Output Scaling

Diagnostic Tests
- Total Self Auto-Diagnostics on Every Power-Up

Mounting Accessories
- Panel Hardware
- Table Top Hardware
- Rack Hardware
- DIN Rail Hardware

Compliances
- CE Class B, RoHS, REACH, FCC 15 Class B, FCC Part 68, UL61010-1, EN 13849-1 Safety and Performance Levels Machinery Directive, EN 61010-1 Low Voltage Directive

The Overview
Functionally and operationally identical to the Model 990X-MFC, the Florite Model 991R-MFC is an innovative, technically superior, high quality and reliable microcomputer-based Power Supply, Readout and Set Point controller suitable for any commercial or industrial MFC application.

The instrument's secure DA15 connector allows for quick attachment to any Mass Flow Controller or Meter.

Installation and Operation
The instrument set-up and operation is performed via the keypad or using a standard RS-232 serial communication port provided with every 991R-MFC.

Communications
Every 991R-MFC unit comes with an RS-232 port, giving users serial communication capability. Remote readout, set point control, and data acquisition information are all provided via its RS-232 serial communication port.

Operator Controls
The Model 991R-MFC features a large high-contrast backlit graphic display enabling a user to view the real-time Process Variable and the programmed Set Point for each connected device on one screen. Users can rapidly identify and make in-process adjustments in seconds. The easy-to-read display and audio indicators provide immediate status for rates and diagnostic operating status.

Diagnostics
Built-in diagnostic tests support easy installation and assist in ensuring a long, trouble-free operating life. Tests include overall system operating status, memory conditions, communication adapter status, display functionality, and keypad operation on every power-up.

Model 991R- MFC Technical Specifications

Control Functions	Rate, Batch	**Process Rate**	0.00±999,999 unit/timebase
Measure Type	Rate-Total, Scalar	**Totalize Range**	0 to 999,999 units
Process Input	mA, Volt	**Process Output**	mA, Volt

Programmable Values

Ranges	Off, 0-20mA, 4-20mA, 0-10V, 2-10V, 0-5V, 1-5V	Rate Time Base	scalar (none), sec, min, hrs, day
Rate Set-Point	0 to 999,999 units		
Input Signal Interpolate	Lo-Hi Value=0-10.000/20.000 Lo-Hi units=0 to 999,999	Output Interpolate	Lo-Hi Value=0-10.000/20.000 Lo-Hi units=0 to 999,999
Pulse Signal Interpolate	0.00 ± 999,999 pulse/qty ratio	Rate Hi-Lo Alarm	0.00±999,999 units
Quantity 1 Alarm	0.00–0 to 999,999 units	Service Time Alarm	0–65,535 hrs
Programmable Measure Units	5 Chars, a-z, 0–9, A-Z, others		
Pre-programmed Measure Units	ml, mls, mln, l, ls, ln, cm^3, cm^3s, cm^3n, m^3, m^3s, m^3n, g, lb, kg, ft^3, ft^3s, scc, sl, bar, mbar, psi, kPa, Torr, atm, Volt, mA, oC, oK, oR, oF, g/cc, sg, %, lb/in^3, lb/ft^3, lb/gal, kg/m^3, g/ml, Kg/l, g/l		

Global Functions

LWAN Addresses	Dual 16 characters		
Network Address	0–65,535	Serial Port Functions	Sio-Wan-Lan

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

Interface	DA15 plug signal and excitation
Excitation	4.096V±0.1% reference or +5v at ~20mA max
Analog Voltage	0–10.000V ±0.02% Zi~10K
Analog Current	0–20.000 mA ±0.02% Zi=100Ω

Output Interface

Interface	DA15 plug signal and excitation
Analog Voltage	0–10.000V or 0-5.000V FS ±0.02% 22mA limit Zo~0.25Ω range limit <10%FS
Analog Current	0–20.000mA FS±0.02% Zo~2M source range limit <10%FS
Aux Signal	-4.0V to +8V @ -/+ 4.0mA
Power Control	1.0 Amp

Serial Ports

Sio	EIA-TIA232D fdx D9S 9600bps 8N1

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	-15 to +24 VDC 2.0w
Jack Unipolar	2.1<or>2.5mm 2A<or>5A center pos UL/CSA
Plug Bipolar	DE9P 5A rated UL/CSA

Operating Environment

Operation	32 to 104 °F (0-40°C), 0-95% non-condensing
Ship-Storage	(–)40° to 185°F (-) 40 –85°C, 0-95% RH non-condensing
Warm Up	3 sec typical to rated accuracy

Self Diagnostics

Memory valid, installation, communication local-remote

Enclosure

Plastic ABS FR1

Mounting	Frame, panel, table-top, rack mount
Panel Size	Rectangular 7.67x4.28, R 0.125 4x (195x109, R 3.0 4x)

Weight

595gm (with no options)

Compliances

CE Class B, RoHS, REACH, FCC 15 Class B, FCC Part 68, UL61010-1, EN 13849-1 Safety and Performance Levels Machinery Directive, EN 61010-1 Low Voltage Directive

Specifications are subject to change at any time without notice.

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

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