

WATER FLOWMETER AND CONTROLLER



FLR-1616A, \$1338,
shown smaller
than actual size.

FLV-4604A, \$1866,
shown smaller
than actual size.

FLR-1600A/FLV-4600A
Starts at

\$1338



- ✓ **Response Time**
Up to 20 ms
- ✓ **Turndown Ratio of 50:1**
- ✓ **Pushbutton Tare**
(with Display)
- ✓ **±2% FS Accuracy**
- ✓ **NIST Traceability**
- ✓ **Battery Pack for**
Portable Use
(FLR-1600A Series Only)

The OMEGA® Series FLR-1600A and FLV-4600A flowmeters and controllers were designed with DI water in mind. These units use internally compensated laminar (ICL) flow measurement technology (same as FMA-1600A and FLV-4600A gas devices) to

determine the volumetric flow rate. Both units feature bleed port screws for releasing bubbles from the line before tare and operation. For media other than water, please contact OMEGA for calibration and compatibility verification.

The FLR-1600A water meter provides data on the flow rate, line pressure, and temperature via the standard local display and RS232 serial output. It also produces a standard 0 to 5 Vdc output signal of the flow rate.

The FLV-4600A closed-loop water flow controllers couple a proportional control valve to the FLR-1600A. Internal PID control software continuously checks the flow setpoint and adjusts the drive to the control valve accordingly (≈1000/second). This software can be field-tuned for specific application requirements.

SPECIFICATIONS

Accuracy: ±2% FS
Repeatability: ±2% FS
Turndown Ratio: 50:1
Response Time:
FLR-1600A: 20 ms
FLV-4600A: 100 ms

Input Control Signal (FLV-4600A Units):
0 to 5 Vdc and RS232

Output Signal: 0 to 5 Vdc, RS232

Optional Input/Outputs:

4 to 20 mA, 0 to 10 Vdc

Operating Temperature:

1 to 50°C (34 to 122°F)

Compensated Temperature:

10 to 50°C (50 to 122°F)

Zero Shift: 0.02%/ATM FS/°C

Span Shift: 0.02%/ATM FS/°C

Humidity Range:

0 to 100%, non-condensing

Excess Flow Rate: Approx. 2% overage is shown on display; units can see about 10x rated full scale flow before damage may occur

Maximum Pressure: 100 psig

Pressure Drop: 0.4 psid

Supply Current (Typical):

FLR-1600A: 30 mA

FLV-4600A: 250 mA

Supply Voltage:

FLR-1600A: 7 to 30 Vdc, 0.035 A

FLV-4600A: 12 to 30 Vdc, 0.250 A

Note: 15 Vdc minimum for 4 to 20 mA output option

Electrical Connections:

8-pin circular mini DIN

Wetted Materials: 303 and 302 SS, FKM, polythermide, silicone glass; controllers also have 400 SS, nickel and brass



FLR-1614A, \$1698,
shown smaller
than actual size.

Dimensions: mm (in)

Flow Range (Full Scale)	Height	Length	Depth
FLR-1600A			
0.5 to 1 SCCM	100 (3.9)	61 (2.4)	27 (1.05)
2 to 200 SCCM	104 (4.1)	61 (2.4)	27 (1.05)
500 to 1 SLPM	106 (4.2)	61 (2.4)	27 (1.05)
2 to 10 SLPM	111 (4.4)	102 (4.1)	41 (1.6)
FLV-4600A			
50 to 500 SCCM	104 (4.1)	92 (3.7)	27 (1.05)

Please allow approximately 44.5 mm (1.75") on top of unit for electrical cable connection.

MOST POPULAR MODELS HIGHLIGHTED!

To Order (Specify Model Number)					
Model No. Water Flowmeter	Price	Model No. Water Flow Controller Min $\Delta P = 5$ psig	Price	Connection	Flow Range
FLR-1601A	\$1878	—	—	10-32 thread	0.01 to 0.5 SCCM
FLR-1602A	1878	—	—	10-32 thread	0.02 to 1 SCCM
FLR-1614A	1698	—	—	$\frac{1}{8}$ FNPT	0.04 to 2 SCCM
FLR-1615A	1698	—	—	$\frac{1}{8}$ FNPT	0.1 to 5 SCCM
FLR-1603A	1506	—	—	$\frac{1}{8}$ FNPT	0.2 to 10 SCCM
FLR-1616A	1338	—	—	$\frac{1}{8}$ FNPT	0.4 to 20 SCCM
FLR-1604A	1338	FLV-4604A	\$1866	$\frac{1}{8}$ FNPT	1 to 50 SCCM
FLR-1617A	1338	FLV-4617A	1866	$\frac{1}{8}$ FNPT	2 to 100 SCCM
FLR-1618A	1338	FLV-4618A	1866	$\frac{1}{8}$ FNPT	4 to 200 SCCM
FLR-1619A	1338	FLV-4619A	1866	$\frac{1}{8}$ FNPT	0 to 500 SCCM
FLR-1620A	1338	FLV-4620A	2226	$\frac{1}{4}$ FNPT	0.02 to 1 SLPM
FLR-1605A	1338	FLV-4605A	2226	$\frac{1}{4}$ FNPT	0.04 to 2 SLPM
FLR-1606A	1602	FLV-4606A	2226	$\frac{1}{4}$ FNPT	0.1 to 5 SLPM
FLR-1607A	1992	—	2226	$\frac{1}{4}$ FNPT	0.2 to 10 SLPM

Comes complete with 24 Vdc universal power supply (100 to 240 Vac, 50/60 Hz), 1.8 m (6') cable with 8-pin mini DIN connector, NIST certificate and operator's manual.

Ordering Examples: FLR-1602A-I2P, 0.02 to 1 SCCM flowmeter with 10-32 thread connections, with optional 2nd analog output of 4 to 20 mA for pressure, \$1878 + 60 = **\$1938**.

FLV-4618A-V2T, 4 to 200 SCCM water flow controller with $\frac{1}{8}$ FNPT connection, with optional 2nd analog output of 0 to 5 Vdc for temperature, \$1866 + 60 = **\$1926**.

Accessories for FLR-1600A/FLV-4600A Series

Model No.	Price	Description
FMA1600-BP	\$210	Battery pack for portable use (for FLR-1600 water meters only)
FMA1600-C1	35	Replacement single-ended 1.8 m (6') 8-pin mini DIN cable connector
FMA1600-C3	42	1.8 m (6') adaptor cable with male 8-pin DIN to male DB9
FMA1600-PSU	80	24 Vdc universal power supply
FTNY-K210BN	4	Nylon body, tube ID $\frac{1}{8}$ " BAXB to 10-32 UNF connector
FTPP-K23ONP	4	Polypropylene body, tube ID $\frac{1}{8}$ " hose band to 10-32 UNF connector
FW-317	63	Reference Book: Instrumentation and Control Systems

Options

Order Suffix	Add'l Price	Description
-IN	N/C	4 to 20 mA input for FLV-4600 units (replaces 0 to 5V)
-I	\$60	4 to 20 mA output (replaces 0 to 5V)
-I2P	60	2nd analog output, 4 to 20 mA, for pressure
-I2T	60	2nd analog output, 4 to 20 mA, for temperature
-V2P	60	2nd analog output, 0 to 5 Vdc, for pressure
-V2T	60	2nd analog output, 0 to 5 Vdc, for temperature
-TOT	120	6-digit totalizer, with fixed decimal point, Consult Flow Engineering for details

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