- "EZ Setup"- Guided Setup for First Time Users
- Liquid, Gas, Steam and Heat Flow Equations
- Utility Metering
- Menu Selectable Hardware & Software Features
- Internal Data Logging Option
- Isolated Pulse and Analog Outputs Standard
- RS-232 Port Standard, RS-485 Optional Windows™ Setup Software
- NX19 Gas Equations, Stacked DP Transmitters
- DDE Server & HMI Software Available
- Remote Metering by Wireless or Modem
- NEW! Attractive, Rugged, Field Mount Enclosure

Description:

The MS-748 Flow Computer satisfies the instrument requirements for a variety of flowmeter types in liquid, gas, steam and heat applications. Multiple flow equations are available in a single instrument with many advanced features.

The alphanumeric display offers measured parameters in easy to understand format. Manual access to measurements and display scrolling is supported

The versatility of the Flow Computer permits a wide measure of versatility within the instrument package. The various hardware inputs and outputs can be "soft" assigned to meet a variety of common application needs. The user "soft selects" the usage of each input/output while configuring the instrument. Consider the following illustrative examples.

The isolated analog output can be chosen to follow the volume flow, corrected volume flow, mass flow, temperature, pressure, or density by means of a menu selection. Most hardware features are assignable by this method.

The user can assign the standard RS-232 Serial Port for external data logging, transaction printing, or for connection to a modem for remote meter reading.

A Service or Test mode is provided to assist the user during start-up system check out by monitoring inputs and exercising outputs. The system setup can also be printed.

Rugged, Field Mount **Multi-Function Flow Computer**



Specifications:

Environmental

Operating Temperature: -20 to 55 C Storage Temperature: -40 to +85 C Humidity: 0-95% Non-condensing Materials: UL, CSA, VDE approved

Display

Type: 2 lines of 20 characters

Types: Backlit LCD and VFD ordering options

Character Size: 0.3" nominal

User selectable label descriptors and units of measure

Keypad

Keypad Type: Membrane Keypad Keypad Rating: Sealed to Nema 4

Number of keys: 16

Enclosure

Size: See Dimensions

Materials: Aluminum, UL94V-0 Keypad

Enclosure Rating: NEMA 4X Provisions for sealing unit





Power Input

The factory equipped power option is internally fused. An internal line to line filter capacitor is provided for added transient suppression. MOV protection for surge transient is also supported

Universal AC Power: 85 to 276 Vrms, 50/60 Hz DC Power Option: 24 VDC (16 to 48 VDC)

Power Consumption AC Power: 6.5 V/A DC Power: 300 mA max.

Flow Meter Types:

Linear: Vortex, Turbine, Positive Displacement, Magnetic, GilFlo, Laminar and others

Square Law: Orifice, Venturi, Nozzle, V-Cone, Wedge, Averaging Pitot, Target and others

Multi-Point Linearization: May be used with all flowmeter types. Including: 16 point, UVC and dynamic

compensation.

Flow Inputs: **Analog Input:**

Accuracy: 0.01% FS at 20° C

Ranges

Voltage: 0-10 VDC, 0-5 VDC, 1-5 VDC

Current: 4-20 mA, 0-20 mA,

4-20 mA stacked, 0-20 mA stacked

Basic Measurement Resolution: 16 bit

Update Rate: 4 updates/sec

Automatic Fault detection: Signal over/under-range,

Current Loop Broken

Calibration: Operator assisted learn mode

Extended calibration: Learns Zero and Full

Scale of each range

Fault Protection:

Fast Transient: 500 V Protection (capacitive clamp)

Reverse Polarity: No ill effects

Over-Voltage Limit: 50 VDC Over voltage

protection

Over-Current Protection: Internally current limited

protected to 24VDC

Pulse Inputs:

Number of Flow Inputs: one Input Impedance: 10 k Ω nominal Trigger Level: (menu selectable)

High Level Input

Logic On: 2.5 to 30 VDC Logic Off: 0 to 2 VDC Low Level Input (mag pickup)

Selectable sensitivity: 10 mV and 100 mV Minimum Count Speed: 0.25 Hz (to maintain rate

Maximum Count Speed: Selectable: 0 to 50 kHz

Overvoltage Protection: 50 VDC

Temperature, Pressure, Density Inputs

The compensation inputs usage are menu selectable for temperature, temperature 2, pressure, density or not used.

Calibration: Operator assisted learn mode

Operation: Ratiometric Accuracy: 0.01% FS at 20° C

Basic Measurement Resolution: 16 bit Update Rate: 2 updates/sec minimum

Automatic Fault detection:

Signal Over-range/under-range

Current Loop Broken

RTD short RTD open

Reverse Polarity: No ill effects

Over-Current Limit

(current input) Internally limited to protect input to

24 VDC

Available Input Ranges

Current: 4-20 mA, 0-20 mA Resistance: 100 Ohms DIN RTD

100 Ohm DIN RTD (DIN 43-760, BS 1904):

Three Wire Lead Compensation

Internal RTD linearization learns ice point resistance

1 mA Excitation current with reverse polarity

protection

Temperature Resolution: 0.01 C

Stored Information (ROM)

Steam Tables (saturated & superheated),

Fluid Properties: Water, Air, Natural Gas and Other

Common Fluids or Generic

User Entered Stored Information (EEPROM / Nonvolatile RAM)

Transmitter Ranges, Signal Types

Fluid Properties

(reference density, expansion factor, specific heat, viscosity, isentropic exponent, combustion heating

value, Z factor)

Units Selections (English/Metric) Language Translations (optional)

Excitation Voltage

24 VDC @ 100 mA (fault protected)





Relay Outputs

The relay outputs usage is menu assignable to (Individually for each relay) Hi/Lo Rate Alarm, Hi/Lo Temperature Alarm, Hi/Lo Pressure Alarm, Pulse Output (pulse options), Wet Steam or General purpose warning (security).

Number of relays: 2 (3 optional) Contact Style: Form C contacts Contact Ratings: 240 V, 5 amp

Analog Outputs

The analog outputs are menu assignable to correspond to the Uncompensated Volume Rate, Corrected Volume Rate, Mass Rate, Heat Rate, Temperature, Density, or Pressure.

Number of Outputs: 2

Type: Isolated Current Sourcing (shared common) Available Ranges: 0-20 mA, 4-20 mA (menu selectable)

Resolution: 16 bit

Accuracy: 0.05% FS at 20 Degrees C

Update Rate: 5 updates/sec

Temperature Drift: Less than 200 ppm/C

Maximum Load: 1000 ohms

Compliance Effect: Less than .05% Span

60 Hz rejection: 40 dB minimum

EMI: No effect at 3 V/M

Calibration: Operator assisted Learn Mode

Averaging: User entry of DSP Averaging constant to

cause a smooth control action

Listing: CE Compliant, UL/CSA Pending

Serial Communication

The serial port can be used for printing, datalogging, modem connection, two way paging and communication with a computer.

RS-232:

Device ID: 01-99

Baud Rates: 300, 600, 1200, 2400, 4800, 9600, 19200

Parity: None, Odd, Even

Handshaking: None, Software, Hardware

Print Setup: Configurable print list and formatting

RS-485:

Device ID: 01-247

Baud Rates: 300, 600, 1200, 2400, 4800, 9600,

19200

Parity: None, Odd, Even

Protocol: Modbus RTU (Half Duplex)

Data Logging

The data logger captures print list information to internal storage for approximately 1000 transactions. information can be used for later uploading or printing. Storage format is selectable for Comma-Carriage Return or Printer formats.

Isolated Pulse output

The isolated pulse output is menu assignable to Uncompensated Volume Total, Compensated Volume Total, Heat Total or Mass Total.

Pulse Output Form (menu selectable): Open Collector

NPN or 24 VDC voltage pulse Nominal On Voltage: 24 VDC Maximum Sink Current: 25 mA Maximum Source Current: 25 mA Maximum Off Voltage: 30 VDC Saturation Voltage: 0.4 VDC Pulse Duration: User selectable

Pulse output buffer: 8 bit

Fault Protection

Reverse polarity: **Shunt Diodes** Over-current Protected Over-voltage Protected

Real Time Clock

The Flow Computer is equipped with a non-volatile real time clock with display of time and date.

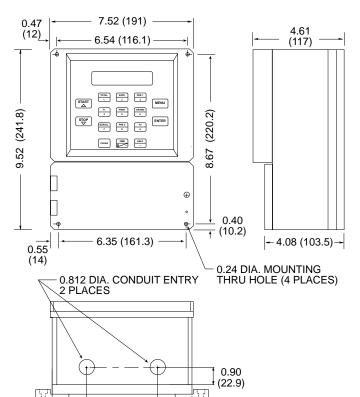
Format:

24 hour format for time Day, Month, Year for date





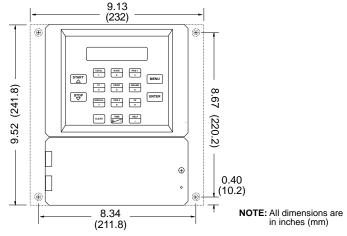
Dimensions



Optional Mounting Bracket (MB)

1.82

(46.2)



1.82

(46.2)

Terminal Designations

,	00.00		Ē
7	PULSE IN	Ξ	Vin (+) PLOW
3		- lin	lin (+)
4	COMMON		
2	RTD EXCIT (+)		TEMPERATURE
9 1	RTD SENS (+) RTD SENS (-)		NI (+)
	DC OUTPUT		
6	RTD EXCIT (+)	(±)	PRESSURE
10	RTD SENS (+)	_	
1	RTD SENS (-)		lin (+) nlN
12	PULSE OUTPUT (+)	(+) TUT	
13	PULSE OUTPUT (-)	PUT (-)	
14	ANALOG OUTPUT	١.	1 (+)
15	ANALOG OUTPUT		2 (+)
16	ANALOG OUTPUT		COMMON (-)
17	ON		
18	COM RLY1		
19	NC		
20	NC		
7	COM RLY2		
22	NO		
23	AC LINE	DC (+)	POWER IN
24	AC LINE	DC (-)	

Ur	dering	Intorma	ntion		
Example MS-748	L '	1 () '	/ N	IB
Series:					
MS-748 = Flow Com	puter				
Display Type: ———	j				
L= LCD					
V= VFD					
Input Type: ———		J			
1= 85 to 276 VAC					
3= 24 VDC (16 to 48	VDC)				
Network Card: ——	-				
0= None					
1= RS485/Modbus					
Mounting: ———				l	
V= Field, Skid, Vehic	le Mount				
Options: ———					l

1 = Peak Demand

2 = AGA NX-19 calculation for natural gas

3 = Three Relays

4 = Stacked DP option

5 = Datalogger option (consult factory)

6 = Stack Emissions Controller option

7 = Manifold Flowmeter Controller option

9 = 3 Relay Super Chip (options 1, 2, 4, 6,7)

10 = 2 Relay Super Chip (options 1, 2, 4, 6,7)

TU = Translation Utility Disk

MB= Aluminum Mounting Brackets (2)

Accessories:

KEPS-KEP1-32 = KEP RS232 OPC/DDE server for SUPERtrol. KEPS-MBS32 = Modbus RTU OPC/DDE server SUPERtrol 2 and LEVELtrol 2 • 32 Bit OPC/DDE Server P1000 Printer (see Accessories) IM-2400 = Internal Modem for SUPERtrol Family MPP2400 = Port Powered Modem MPP2400N = Port Powered Modem in NEMA4 enclosure TWP = Industrial Two Way Pager Wireless Data Transceiver



