

System-40 BTU Measurement System

Chilled Water • Hot Water • Domestic Water

Selection & Ordering Guide



ONICON's System-40 Series is a family of inline Btu meters that provide accurate, reliable energy, flow and temperature measurement for a variety of applications. System-40 Series meters range in size from 1/2" to 2 1/2" in diameter.

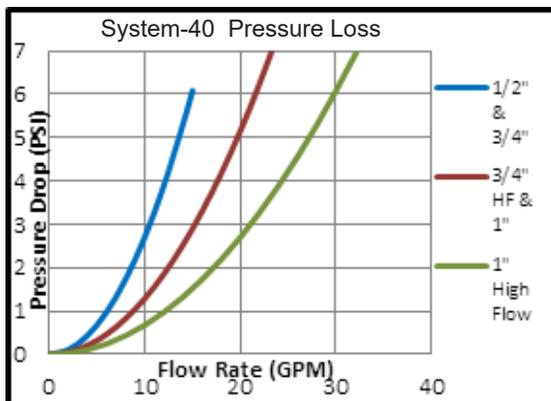
SELECTING THE RIGHT METER AND CALCULATING PRESSURE LOSS



For optimum performance, meters should be selected by the process connection size and expected design* flow rate for the application. In some cases ONICON offers more than one flow rate range option based on the process connection size. The following information is provided to assist in selecting the most appropriate meter size for your application.

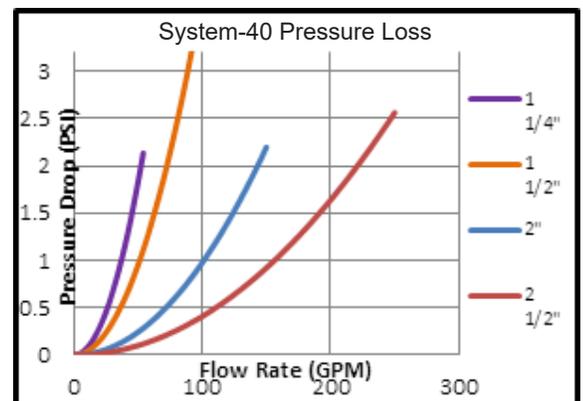
1. Select the preferred process connection size.
2. Review the design flow rate and maximum flow rate for the meter you have selected. Where more than one choice is available, choose the meter that most closely matches your expected design flow rate with the meter's stated design flow rate.
3. If your design flow rate is significantly higher than that of the meter you have chosen, determine the pressure drop for your design flow rate using the chart below and confirm that it is acceptable for your application. If necessary, select a meter with a larger process connection size to achieve an acceptable pressure drop for your application.

Meter Size	Process Connection Type	Typical Design Flow	1% of Rate Flow Range	2% of Rate Flow Range	Minimum Flow	C _v
(Nominal)	(Nominal)	(gpm)	(gpm)	(gpm)	(gpm)	(gpm)
½"	Male NPT	6.6	0.6 – 15	0.15 – 15	0.03	6.08
¾"	Male NPT	6.6	0.6 – 15	0.15 – 15	0.03	6.08
¾" (high flow)	Male NPT	11	1 – 25	0.25 – 25	0.05	8.81
1"	Male NPT	11	1 – 25	0.25 – 25	0.05	8.81
1" (high flow)	Male NPT	15.4	1.4 – 35	0.35 – 35	0.07	12.17
1¼"	Male NPT	26.4	3 – 60	0.6 – 60	0.12	36.95
1½"	Male NPT	44	5 – 100	1 – 100	0.2	51.20
2"	Male NPT	66	8 – 150	1.5 – 150	0.3	101.2
2½"	Class 150 Flange	110	12 - 225	2.5 - 250	0.5	156.2



$$\Delta p = \left(\frac{Q}{C_v} \right)^2$$

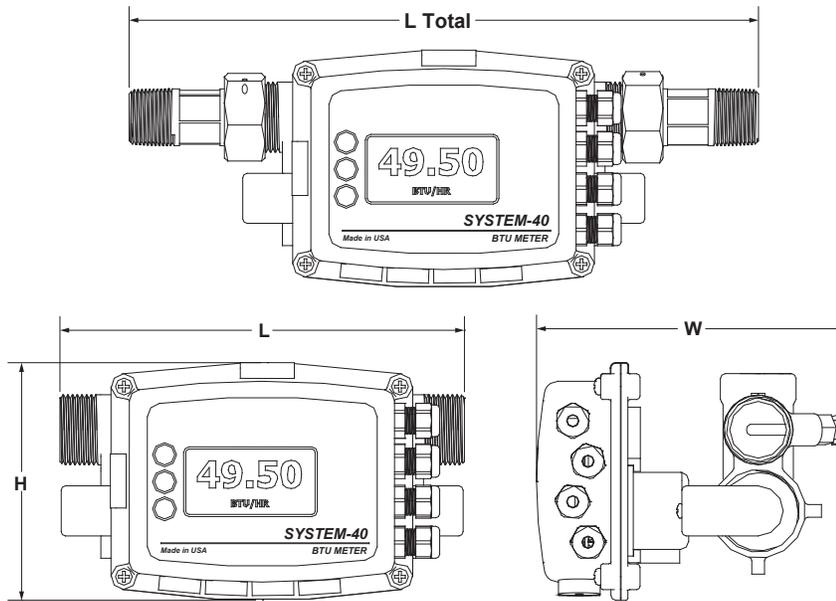
Where: Q = Flow Rate (GPM)
 C_v = Flow Coefficient
 Δp = Pressure Loss (PSI)



*ONICON defines the “design” flow rate as the maximum continuous flow expected by the application under normal operating conditions. The pressure drop for the ONICON design flow rates is ≤1.7 psi.

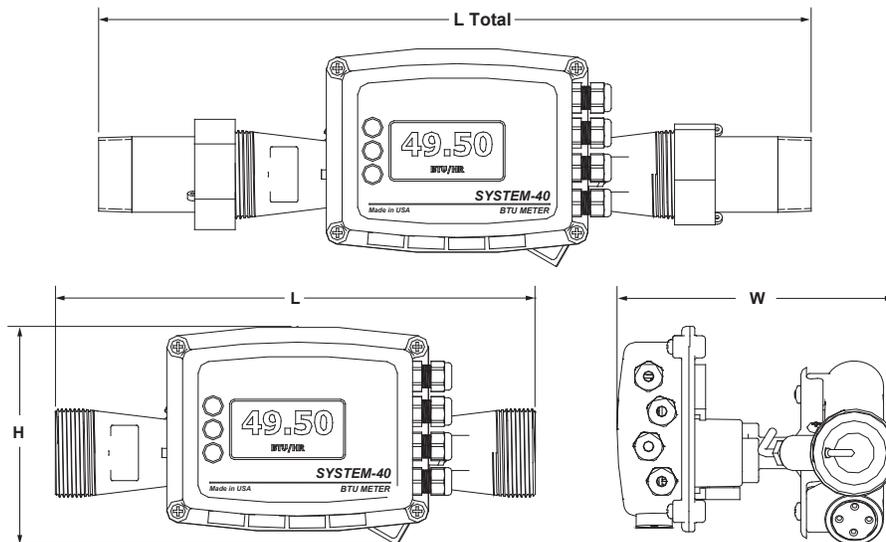
METER DIMENSIONS

1/2" - 1" METER DIMENSIONS



Size	L Total	L	W	H
1/2"	11.2"	7.48"	5.75"	4.50"
3/4"	11.7"	7.48"	5.75"	4.50"
3/4" high flow	11.7"	7.48"	5.75"	4.50"
1"	12.3"	10.23"	5.75"	4.50"
1" high flow	15"	10.23"	5.75"	4.50"

1 1/4" - 2-1/2" METER DIMENSIONS



Size	L Total	L	W	H
1 1/4"	15.25"	10.20"	5.75"	4.50"
1 1/2"	17.00"	11.80"	6.25"	5.00"
2	17.60"	11.80"	6.50"	5.50"
**2 1/2"	11.81"	10.23"	8.75"	7.00"

**** Connection type is ANSI 150 flanges. Not shown above.**

STRAIGHT RUN REQUIREMENTS*

Upstream Obstruction	Minimum Upstream Straight Run Required (Pipe Diameters)	
	Meter Size	
	1/2" - 1"	1 1/4" - 2 1/2"
Single Elbow	0	0
Expander / Reducer	0	2
Coil, Upstream	3	3
Isolation Valve, 2 Position	3	5
Control Valve	10	15
Notes		
1	Straight run is based on use of manufacturer provided couplings	
2	Avoid the following obstructions where possible: Modulating valves, pump discharge, multiple elbows out of plane.	
3	Do not install the flow meter at the inlet of pump. To prevent cavitation, the minimum operating pressures at the inlet of the meter must always exceed the pressure drop across the meter.	

METER ORDERING INFORMATION

Meter Model Number Coding = **SYS-40-AAA-BCD-EFG**

AAA = Nominal Meter Size in Inches

050 = 1/2" 130 = 1 1/4"
 340 = 3/4" 150 = 1 1/2"
 341 = 3/4" high flow 020 = 2"
 010 = 1" 250 = 2 1/2"
 011 = 1" high flow

B = Process Connection Type

0 = NPT Threads
 1 = ANSI Class 150 Flange (Required for 2 1/2"
 meter, **NOT** available on 1/2" to 2" meters)

C = Display / Interface

1 = IP65 enclosure, detachable backlit LCD
 display / Interface with mounting bracket

D = Input Power

0 = 24V ac/dc

E = Serial Communications

1 = RS-485 (BACnet® MS/TP or MODBUS® RTU.
 Default setting is BACnet)

F = Analog & Pulse Input / Output Configuration

2 = 2 aux pulse inputs & 1 aux pulse output
 6 = 1 aux pulse input, 1 aux pulse output &
 1 analog output
*Other input/output selections jumper
 configurable*

G = Temperature Sensor Type

0 = Direct insertion (1 integral sensor, 1 remote.
 Requires reducer bushing. Valid only for
 "AAA" meter size - 050-011.)
 1 = Remote (Requires thermowell kit. Required
 when pipe material = PVC. Valid for all
 "AAA" meter sizes. Default for "AAA =
 130-250.)