Residential Meters

The Spectrum Single-Jet Meter is the widest range, single measuring element meter available to U.S. utilities. They have been designed to replace limited range displacement and multi-jet meters. The Spectrum meters can accurately measure much lower flow rates than modern displacement meters of comparable size. The **Spectrum models 15D, 25D, 30D, S30DB and S30DL** are a single-element meter which utilizes the innov8 electronic register. A composite (reinforced plastic) and lead-free bronze models are available. This combination of design simplicity, superior grade materials, and high quality manufacturing standards allows for years of virtually new meter performance with no maintenance.

Residential Spectrum features include:

- High accuracy – exceeding high and low range of AWWA residential standards
- Starting flow below 1/16 gpm
- Single moving element – No maintenance
- Excellent performance in adverse water conditions
- Unaffected by sand or small debris in line
- No straight pipe requirements upstream or downstream of meter
- High resistance to freezing
- Lightweight, compact design for simple installations
- No strainer requirement
- Utilizes the innov8 electronic register
- 10-year materials and workmanship warranty
- 10-year AWWA New Meter Accuracy Guarantee

Environmental Specifications

Fluids measured – Potable cold and reclaim water
Flow Range – See Table 1.
Accuracy – ± 1.5% See Figure 1.
Repeatability – 0.5 % of flowrate
Pressure Loss – See Figure 1.
Max Operating Pressure – 230 PSI
Max Operating Temperature – 140° F (60°C)

Physical Specifications

Model – MP-5
Composite Body – Reinforced Nylon (Polyamide 12)
Bronze Body - EcoBrass™
Impeller – Polypropylene
Impeller Shaft – Tungsten Carbide
Impeller Bearing – Nivaflex
Impeller Pivots – Sapphire
End Connections – NPSM Threads
Dimensions – Compliant with AWWA residential standards - See Table 2
Weight – 1.0 lb (0.45kg)

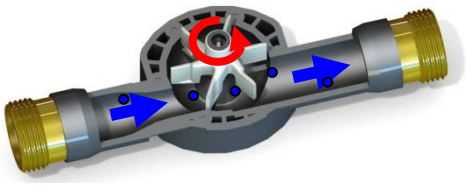
Available innov8 Outputs

900 MHz Radio
Virtual Network
3W Standard AMR
2W AMR
2W Standard Touchpad
Scalable Pulse
4-20mA SCADA

Applicable Standards

AWWA C712-15
NSF-61/372 (Composite)

Operation
Incoming water rotates a suspended impeller with an embedded magnet on the top.



The offset impeller allows the meter to pass sand and other particulates through the measuring chamber with no effect.

A low friction sapphire pivot bearing supports the floating impeller at low flow rates while a thrust bearing provides the support at high flow rates. This patented "dual bearing" design provides unparalleled accuracy and durability at both high and low flows.


@ low flow

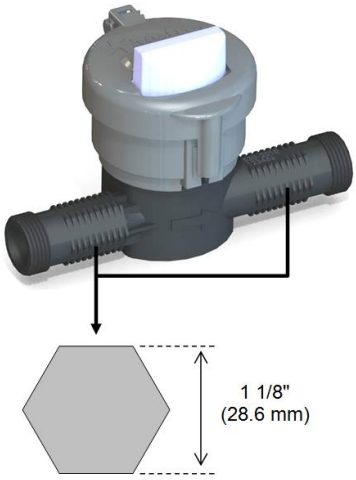

@ high flow

Design & Materials
The composite body is made of a material with additives chosen for high strength, toughness, dimensional stability, and full compliance with no lead standards (NSF 61 / annex G). The bronze body is made from a proven lead-free material, Ecobrass™.

Thanks to a unique design, the meter withstands higher water pressures (over 1000 PSI) than most other residential meters. The residential Spectrum meters can withstand freezing and the measuring chamber is protected from impacts, UV radiations or other external disturbances.

Installation
To maintain accuracy, the Spectrum meters should be installed horizontally (±10°) in the direction of water flow, with the register face up. In most applications, no straight pipe length, upstream or downstream is necessary. Under normal usage conditions the Spectrum meter is not affected by sand or suspended particles and does not require a strainer.

The Spectrum meter body has a hexagonal shape for a wrench to be used during installation.



Threads
The NPSM threads of the Spectrum meters have been tested in comparison to typical brass meter threads. The reinforced composite material is comparable in tensile strength and has improved hardness over common leaded and unleaded brass alloys.

Detailed reference sheets for meter installation can be provided by Metron-Farnier upon request.

Accuracy Testing
For optimal performance during meter accuracy tests observe the following:

- Register is level to the horizontal
- Upstream pipe should be the same diameter or larger than meter connection
- Upstream valve should be fully opened during test, use downstream valve to regulate flow rates
- Inspect for leaks between the Spectrum and downstream volumetric tank or reference meter
- Time low flow test to confirm accuracy of flowrate indicator

The innov8 register has a test mode for accuracy tests. This mode automatically sets the LCD display for higher display resolution and isolates the test volumes from the customer total.

Detailed reference sheets for meter testing can be provided by Metron-Farnier upon request. The next revision of the AWWA M6 manual will include testing methods and recommendations for single-jet meters.

Register
The Spectrum 30D water meter uses the innov8 electronic register. The innov8 register utilizes a magnetic sensor to track the impeller rotation and exerts no drag on the measurement. This ensures the optimum meter accuracy.

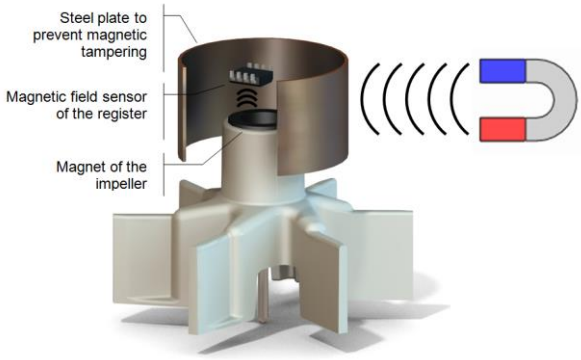
The innov8 register is a replaceable register with tamperproof features.

Consult Metron for innov8 technical and installation information.

Tamper-Proof Features
The Spectrum meters employ a tamper-resistant and tamper-evident register housing.

The innov8 register is fixed to the meter body with a plastic housing and a tamper-proof screw. Installers can obtain the special tamperproof bits from their Metron representative. Unauthorized removal will break the snap ring and indicate tampering.

The Spectrum 30D has an interference ring to protect the sensor from external magnetic fields.



Available Outputs
The innov8 electronic register can be utilized within virtually any AMR/AMI system. The innov8 employs defacto communication standards for 2-wire (touchpad), 3-wire (radio) interfaces and a scalable pulse. The innov8 will also have options for embedded M2w 900 MHz datalogging radios with either integral or remote antennas.

Reference the innov8 technical specifications and AMR application notes for more information.

Flow Specifications

Table 1

Residential Spectrum Water Meters

Model - MP5	Size	Min Test Flow (95%-101.5%)	Normal Operating Range (98.5%-101.5%)		Safe Maximum Operating Capacity [1]	Max Cont. Duty [2]	Short-term Deluge [3]	Head Loss @ SMOC
	in	*gpm*	*gpm*	*gpm*	*gpm*	*gpm*	*gpm*	*psi*
	mm	*m3/hr*	*m3/hr*	*m3/hr*	*m3/hr*	*m3/hr*	*m3/hr*	*kPa*
AWWA C712	1/2							
	13							
Spectrum 15D	**5/8**	**0.06**	**0.088**	**15**	**15**	**12**	**20**	**10**
	15	**0.014**	**0.02**	**3.4**	**3.4**	**2.7**	**4.5**	**69**
AWWA C712	5/8	0.25	1.0	20	20	10		15
	15	0.06	0.20	4.5	4.5	2.3		103
Spectrum 25D	**5/8**	**0.0625**	**0.125**	**20**	**20**	**10**	**30**	**22**
	15	**0.0142**	**0.0284**	**4.5**	**4.5**	**2.3**	**6.8**	**151**
AWWA C712	5/8 x 3/4	0.25	1.0	20	20	10		15
	15x20	0.06	0.20	4.5	4.5	2.3		103
Spectrum 30D	**5/8 x 3/4**	**0.0625**	**0.125**	**30**	**30**	**24**	**40**	**13**
Spectrum 30DB	**15x20**	**0.0142**	**0.0284**	**6.8**	**6.8**	**5.5**	**9.1**	**90**
AWWA C712	3/4	0.50	2.0	30	30	15		15
	20	0.11	0.50	6.8	6.8	3.4		103
Spectrum 30DL	**3/4**	**0.0625**	**0.125**	**30**	**30**	**24**	**40**	**13**
	20	**0.0142**	**0.0284**	**6.8**	**6.8**	**5.5**	**9.1**	**90**

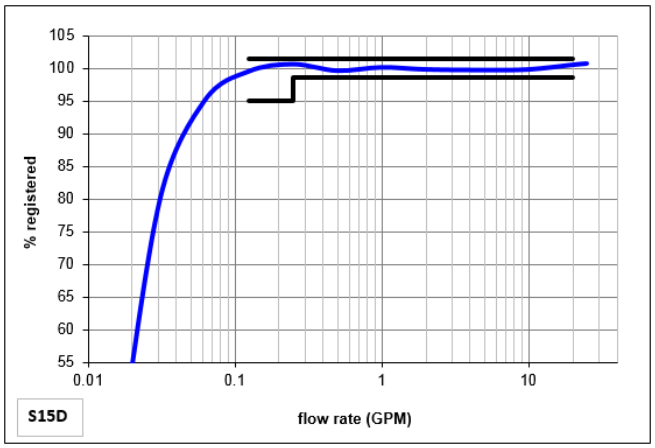
1 Safe Maximum Operating Capacity (SMOC): As defined by AWWA, this is the flow sustained for 10% (or 2-hr) per 24 hrs

2 Max Continuous Flow: This is defined as the flow rate which can be maintained 12 hrs/day for 7 days/week

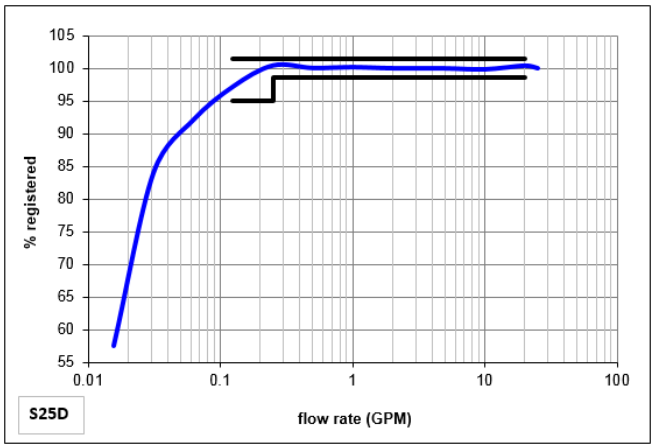
3 Deluge Flow: This is defined as the flow rate which can be sustained for very short periods

Accuracy Curves

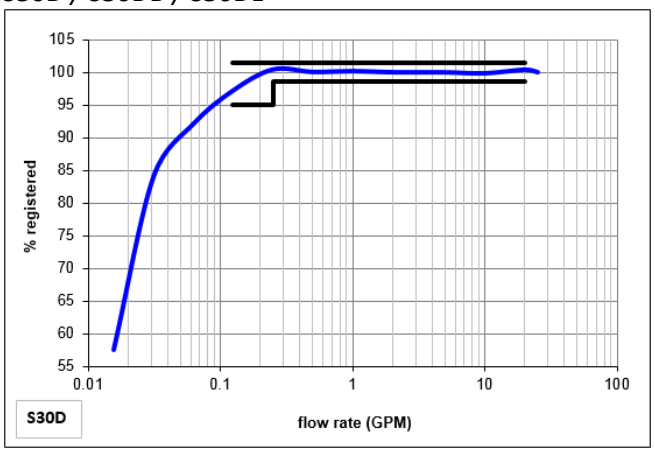
S15D



S25D

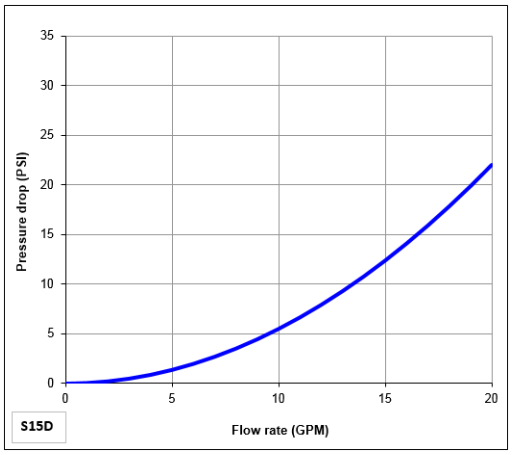


S30D / S30DB / S30DL

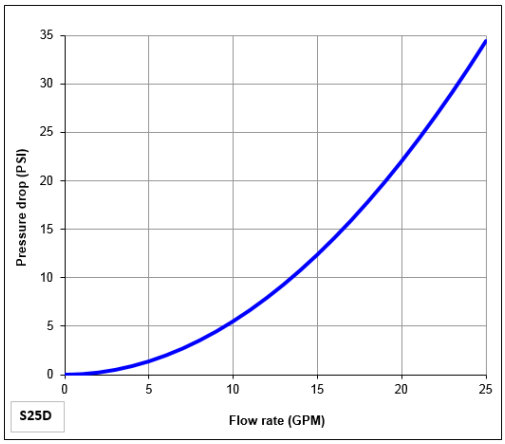


Pressure Drop Curves

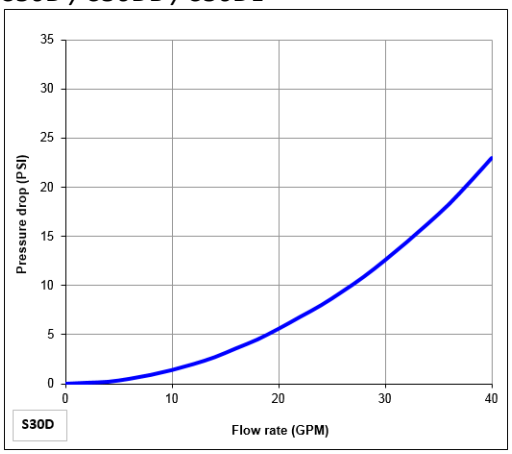
S15D



S25D

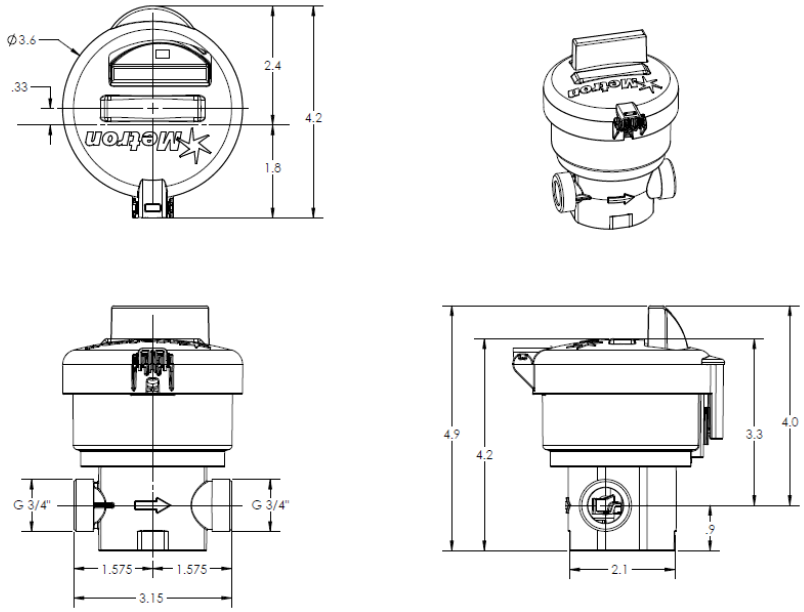


S30D / S30DB / S30DL

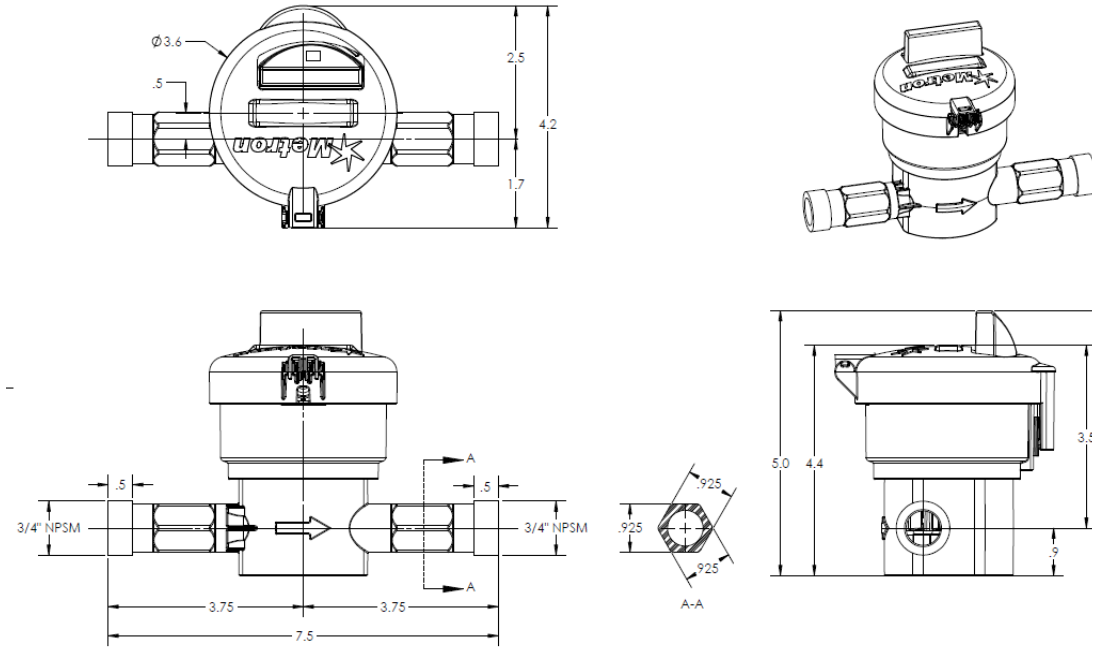


Meter Dimensions

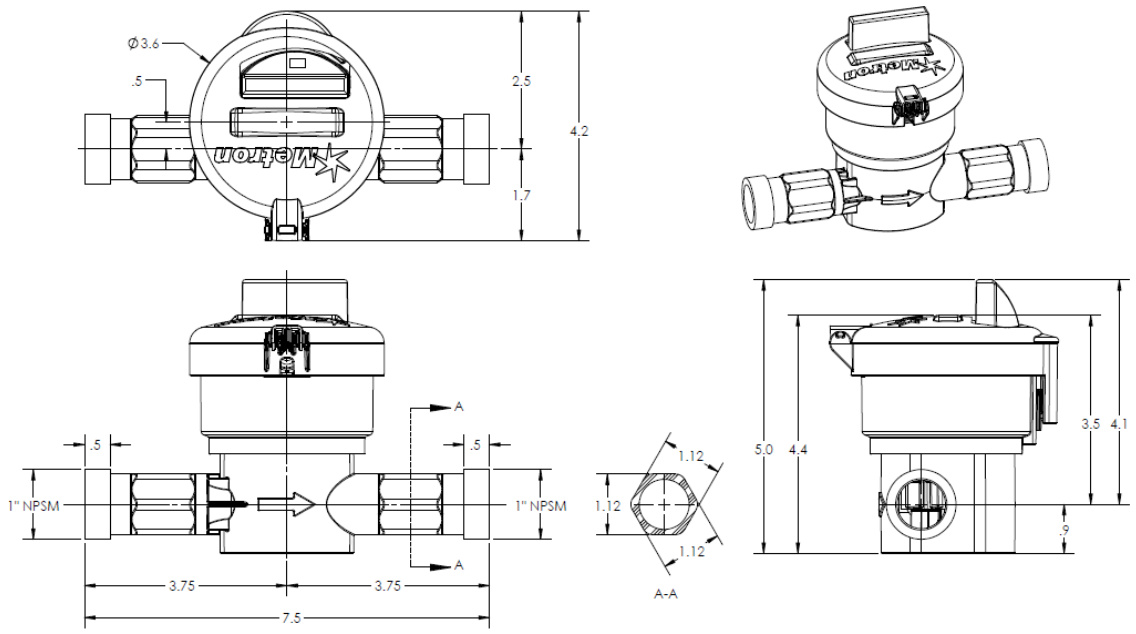
Spectrum 15D – 5/8” Short



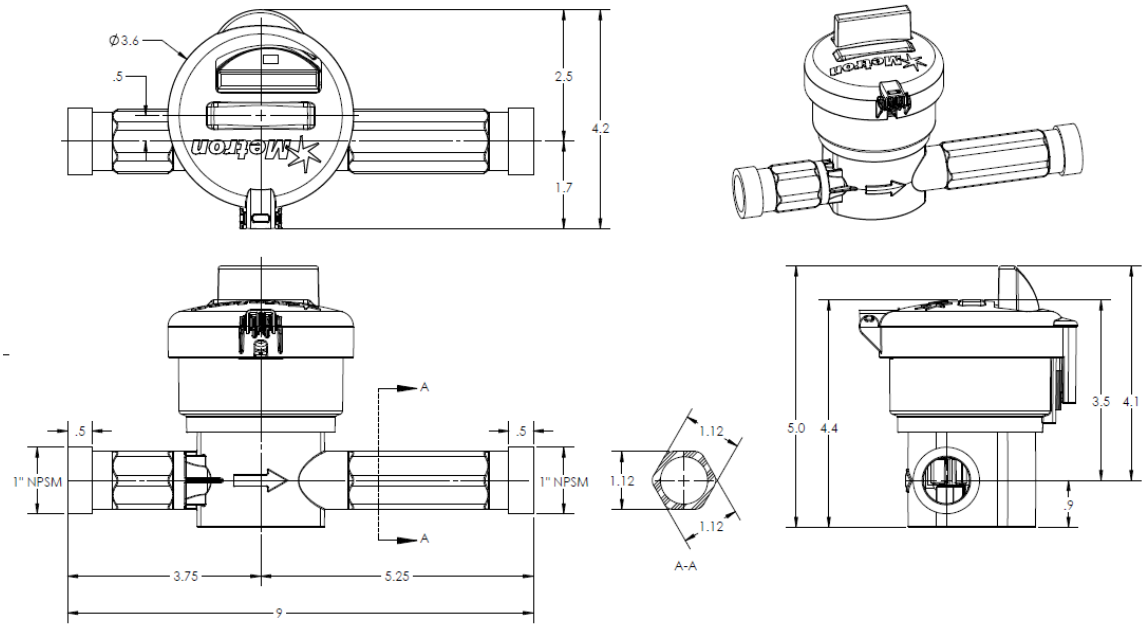
Spectrum 25D - 5/8“



Spectrum 30D and 30DB – 5/8" x ¾"

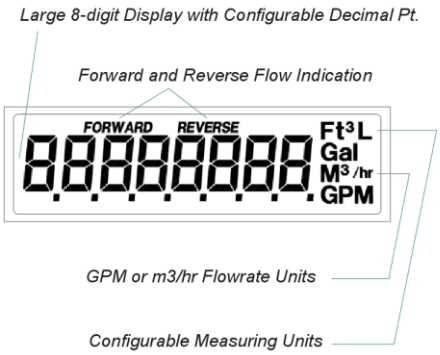


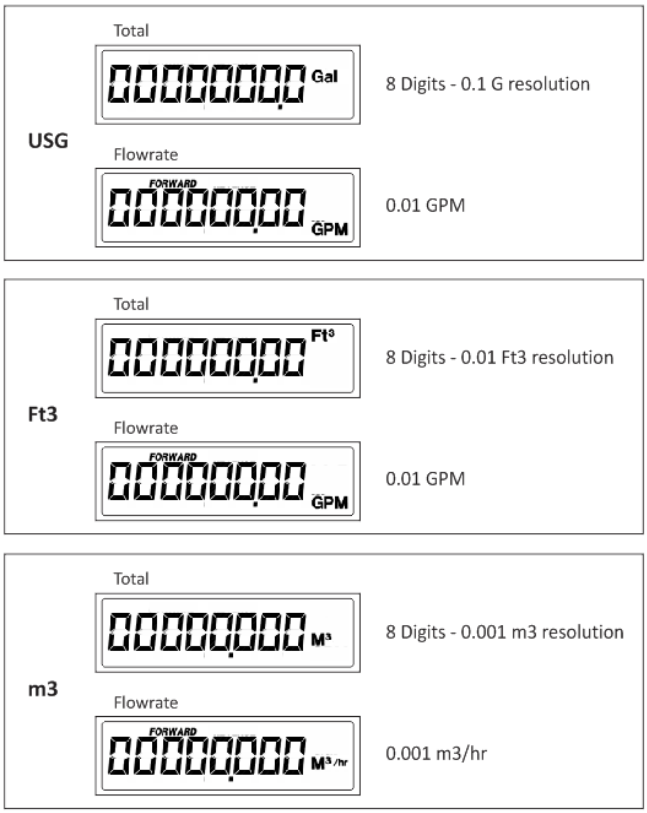
Spectrum 30DL – ¾"



Register Information

Innov8 Default Residential Configuration





Meter Identification

Each Spectrum meter will have a unique serial number laser etched into the meter body.

Attached innov8 registers will also have an identification number engraved into the top lid.

Consult your Metron representative for more information.