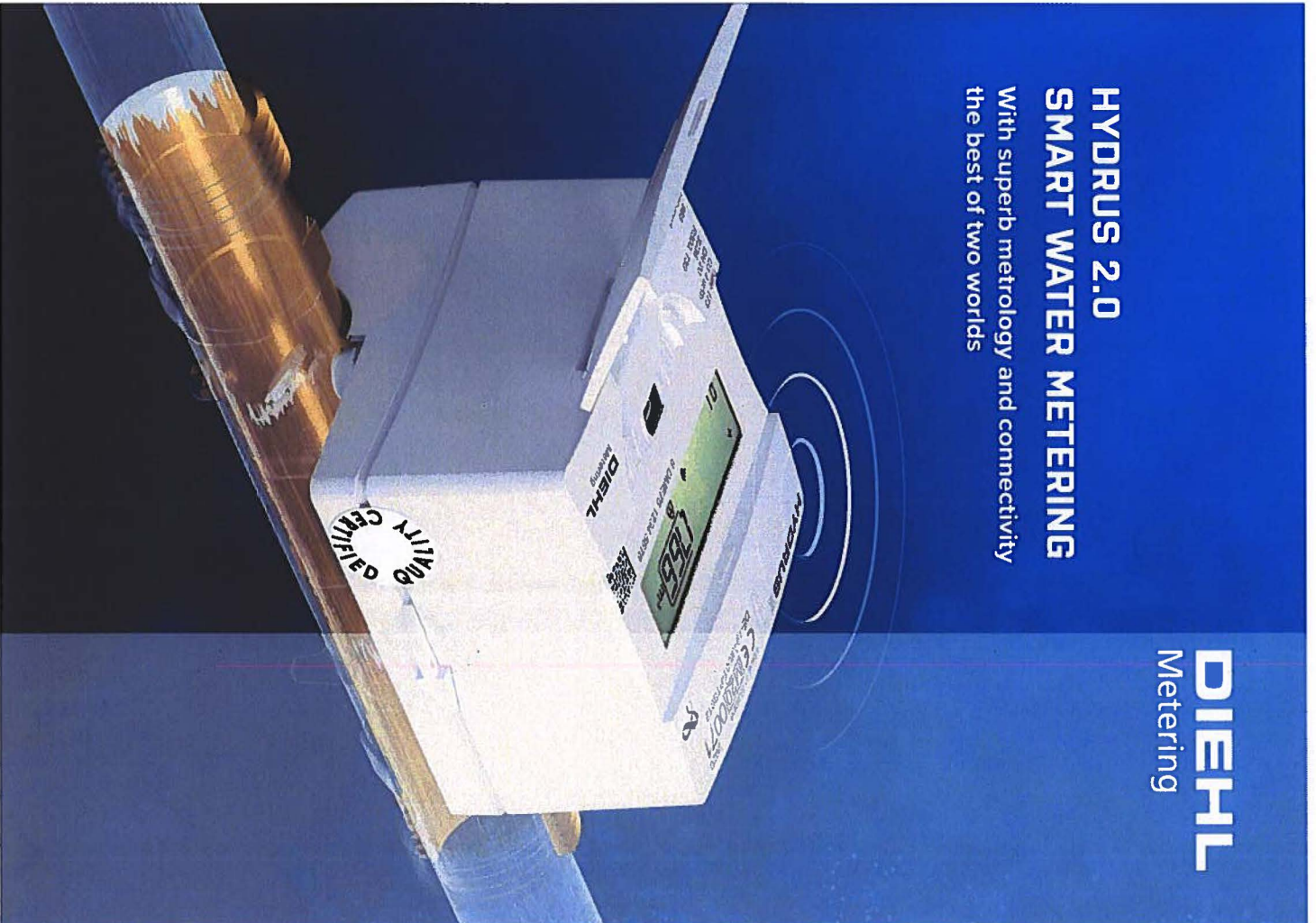


# HYDRUS 2.0 SMART WATER METERING

With superb metrology and connectivity  
the best of two worlds

**DIEHL**  
Metering



Empower a sustainable future

# HYDRUS 2.0 – THE BEST OF TWO WORLDS.

THE HYDRUS SUCCESS STORY CONTINUES. THE NEXT ULTRASONIC WATER METER GENERATION OF THE HYDRUS SERIES WITH A BRAND-NEW DESIGN AND OPTIMIZED FEATURES.

## FOR METROLOGY AND ...

### Measures. Just better.

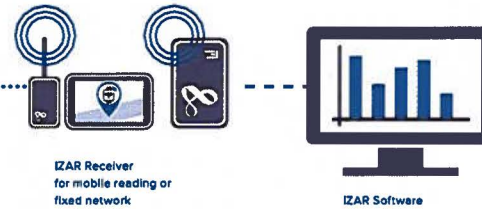
Everything that cannot be measured will not be billed. So do not miss a drop. With HYDRUS 2.0 and its enhanced measuring performance, you can provide your customers even more accurate consumption values for billing and decrease non-revenue water.

- ▶ Precise ultrasonic measuring technology
- ▶ Extended measuring dynamic range of up to R 600
- ▶ Minimal starting flow of 1.4 l/h for DN 15
- ▶ High overload flow rate of up to 2x Q<sub>s</sub>
- ▶ Full range from DN 15 to DN 50 with all common body lengths

### Measures. Just longer.

HYDRUS 2.0 is a sustainable investment, since this quality product ensures endurance and durability over its entire lifetime. Benefit from exact measuring results for a long time and save costs for meter exchanges.

- ▶ Long-term measuring stability
- ▶ Resistance towards particles
- ▶ Ultra-robust and waterproof design (IP 68)
- ▶ No calming sections (UOD0) and grounding required
- ▶ Lead-free brass
- ▶ No magnetic manipulation possible
- ▶ No measurement of air
- ▶ Battery lifetime up to 16 years



## ... CONNECTIVITY.

### Generates information. Just smarter.

HYDRUS 2.0 provides more than only the total water volume for billing. Its smartness creates valuable information about unwanted events which need quick measures, e.g. leakages inside the building.

- ▶ Generates billing and metrological information as well as parameters for grid monitoring on-site at the meter or for the overall water network
- ▶ Easy-to-read display with new symbols, loops and error & alarm codes
- ▶ Extensive data logging functions with hourly, daily, weekly, monthly values and due dates
- ▶ Self-check monitoring, e.g. regarding transducers, temperature sensor functionality, occurrence of measurement interferences

### Transmits information. Just more efficient.

The combination of HYDRUS 2.0 and Diehl Metering's IZAR connectivity solutions makes a powerful system infrastructure that helps you to easily obtain the information of all meters in your distribution network.

- ▶ Integrated communication functions for mobile reading and fixed network
- ▶ Read-out via radio R4, R4+, mloty4metering, wired M-Bus or L-Bus or Pulse
- ▶ High radio range and robustness even for challenging meter installation locations
- ▶ High data granularity and timeliness
- ▶ OMS Generation 3 or 4, profile B
- ▶ Other IoT technologies possible like LoRaWAN® and NB-IoT – please contact our sales team for more details

LoRaWAN® is a registered trademark of Semtech Corporation and is therefore legally protected

## GENERATED INFORMATION FOR YOUR USE CASES

What you can see in the IZAR software with high data granularity and timeliness

### – BILLING

Easy export to your billing software



### – CONSUMPTION MONITORING

Clear visualization of water consumption history per household



### – DEVICE & ANOMALIES MONITORING

Error & alarm codes to act quickly



### – WATER LOSS MANAGEMENT

Detection of losses in zones of your distribution network



# METROLOGY AT ITS BEST.

HYDRUS 2.0 – enhanced meter technology with optimized ultrasonic performance and long-term operation.



## Application

This domestic meter can be used for billing or for water consumption monitoring in stand-alone houses, high-rise buildings as well as apartments (depending on applicable pipe and meter sizes). In combination with bulk meters you can capture the supply and consumption of the complete water network which is helpful for water balance or water loss detection purposes.

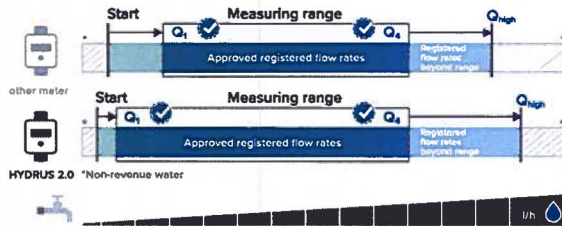
## Ultrasonic for ultra performance

Thanks to Diehl Metering's proven ultrasonic measuring technology based on the transit time difference principle, HYDRUS 2.0 sets new standards for water metering with more dynamic and more accuracy.

## MEASURES. JUST BETTER.

### MEASURING DYNAMIC

- ▶ Approved measuring range of up to R 800
- ▶ A huge spectrum of water flows used in practice can be covered



#### Your benefit

Only what is measured can be billed. The higher the dynamic, the less is the non-revenue water level.

### STARTING + OVERLOAD FLOW RATE

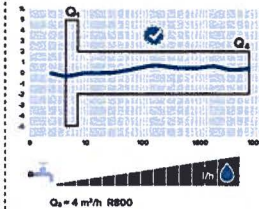
- ▶ Registers very low and high flow rates
- ▶ High overload flow rate up to  $2 \times Q_4$
- ▶ Minimal starting flow of 1.4 l/h for DN 15

#### Your benefit

Regardless, if your customers use very small or extremely high water flows – every registered flow reduces non-revenue water.

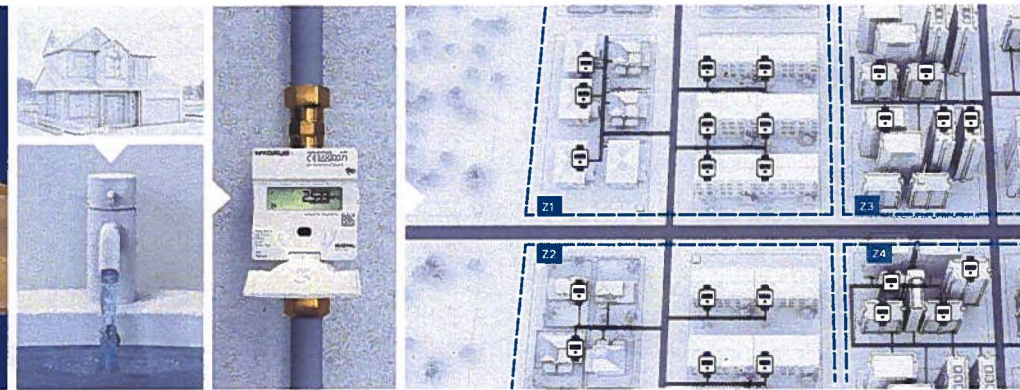
### MEASURING ACCURACY

- ▶ Less deviations at all measured water flows
- ▶ More accurate results
- ▶ Repeatability and reproducibility tests prove its precision



#### Your benefit

No matter what kind of consumption profile is applied, accuracy for the overall spectrum is the goal. Less deviations lead to more precise billing.



## Long-term measuring operation and accuracy

The static free-flow principle of HYDRUS 2.0 without any moving parts guarantees an unaffected measurement. Even better – the flow-dynamic design of the ultrasonic reflectors

ensures their permanent self-cleaning during water flow. With IP 68 the meter is robust, water and dust proof. With all these features combined, HYDRUS 2.0 maintains its measuring function with accurate results for a long period of time.



## MEASURES. JUST LONGER.

### MEASURING STABILITY

- The measuring accuracy of typical mechanical meters can get less with time due to increasing wear and tear.
- ▶ HYDRUS 2.0 assures precise measuring results during the entire meter lifetime
- ▶ Strong battery that lasts for up to 16 years (depending on meter configuration)

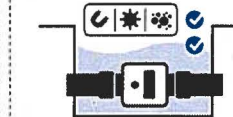


#### Your benefit

Permanent measuring accuracy over the entire meter lifetime to provide always reliable results and to reduce non-revenue water.

### ROBUSTNESS

- HYDRUS 2.0 performs even under extreme environmental conditions. Besides using robust lead-free brass, it is resistant towards:
- ▶ Particles such as sand in the pipe
- ▶ Pressure surges
- ▶ Vibrations
- ▶ Magnetic manipulation
- ▶ UV radiation
- ▶ Flooding

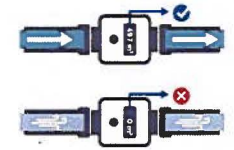


#### Your benefit

Maintenance-free and long-term smooth operation extends the meter lifetime. Therefore, you can save costs and effort for meter exchanges.

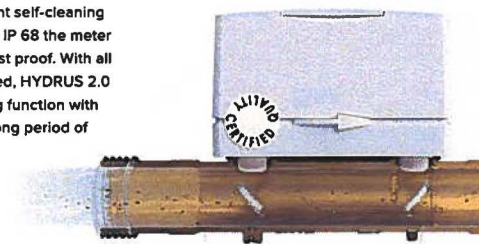
### MEASURING VALIDITY

- HYDRUS 2.0 guarantees always reliable measuring values.
- ▶ Measures the forward volume precisely
- ▶ Only water will be registered and no air



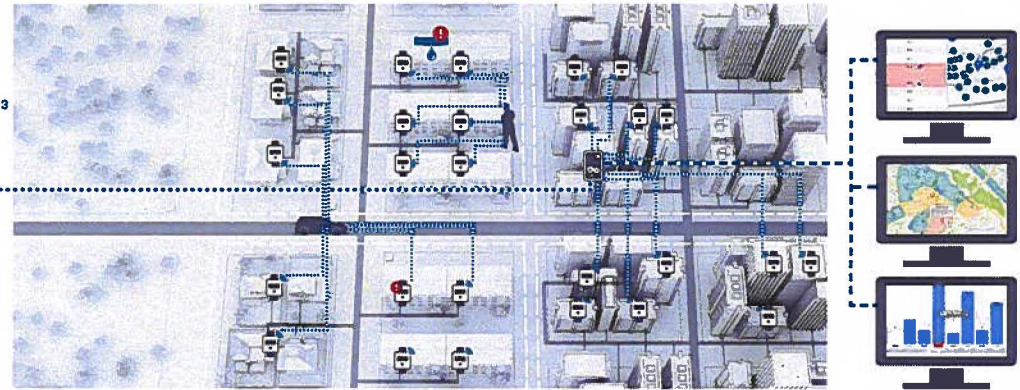
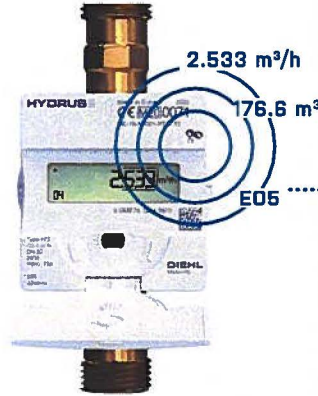
#### Your benefit

The validity of the consumption values for billing can be assured.



# CONNECTIVITY AT ITS BEST.

Digitalized processes and valuable information about your distribution network with optimized smart and connectivity functions.



### Smart functions

HYDRUS 2.0 allows you to benefit from a considerable amount and variety of valuable information you would miss without this smart device installed. Not only does it save the due date consumption volume for billing, with also metrological information and other parameters generated permanently along its operation, it creates a water consumption history and informs about

possible anomalies at the households' water network. Leakage or reverse flow alerts could give a hint that the grid at the consumer's needs to be checked. HYDRUS 2.0 makes use of its continuously self-check function that generates instantly error and alert codes when something is wrong with the device. With quick actions, long function interferences can be avoided.

## GENERATES INFORMATION. JUST SMARTER.

### SMART INFORMATION

- Billing & metrological information**
- ▶ Total volume
  - ▶ Due date volumes
  - ▶ Current & reverse flow volume
  - ▶ Temperature (ambient/medium)

### Error & alarm codes

For grid anomalies on-site, e.g.

- ▶ Leakages
- ▶ Air in the pipe
- ▶ Reverse flows

For device status, e.g.

- ▶ Low battery
- ▶ Measurement interferences



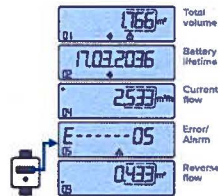
### Your benefit

Obtain the consumption volume on the due date for billing and information about water grid or meter anomalies to reduce or avoid severe damages.

### DISPLAY

Easy to read on-site with the new display design.

- ▶ High resolution with 9 digits
- ▶ Switching loops for more information
- ▶ Helpful symbols, e.g. leakage or low battery



### Your benefit

See smart information on-site for taking actions immediately when anomalies occur.

### DATA LOGGING

- ▶ Data logging memory capability with hourly, daily, weekly, monthly values and due dates
- ▶ Stores measuring values, errors and alarms
- ▶ Logging can be read-out with an opto head on-site



### Your benefit

In case of anomalies, get more transparency about what happened by tracking down past information and rectify the problem on-site.

### Connectivity for digitalized processes

The integrated communication function of each installed HYDRUS 2.0 enables the gathering of the data (e.g. for billing) via AMR/AMI meter read-outs. That is why the HYDRUS 2.0 is the smart key component of the complete connectivity solution which – with system and software – makes the effortful and time-consuming meter reading processes obsolete.

### Connectivity for analysis

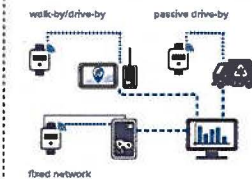
Imagine the possibilities with the aggregation of all HYDRUS 2.0 and smart bulk meters in a fully automatic system infrastructure. A fixed network solution does not only read-out all meters at once, you get also information about your overall distribution network. The highly granular (up to hourly) consumption history and other metrological information get visualized

in the IZAR software which assists you to analyze the water supply and usage. Alerts about the device status or leakages in zones or houses will be obtained in real time due to a high data timeliness. Make smart and fast decisions to lower costs and non-revenue water. Save resources and optimize your water network to provide a crucial contribution to sustainability.

## TRANSMITS INFORMATION. JUST MORE EFFICIENT.

### MOBILE READING AND FIXED NETWORK

- ▶ For walk-by/drive-by/passive drive-by incl. fixed network ready
- ▶ For fixed network
- ▶ For wired M-Bus, L-Bus, Pulse
- ▶ Other IoT technologies possible like LoRaWAN® and NB-IoT

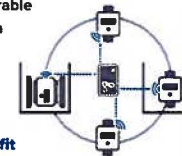


### Your benefit

Have efficiencies in the way you get values and obtain information to take actions in your distribution network. Select the best communication technology fitting your requirements.

### IZAR RADIO PERFORMANCE

- ▶ Integrated radio communication
- ▶ Drive-by up to 50 km/h
- ▶ Uses mQTY4metering as Extreme Extended Range Mode reaching up to 11 km and provides a best-in-class robustness
- ▶ For reaching meters in challenging installation situations like pits or other hard-to-read locations
- ▶ High data granularity and timeliness
- ▶ Configurable telegram content



### Your benefit

Reliable coverage for large areas with less receivers to have lower total cost of ownership for your system infrastructure.

### DATA SECURITY & PRIVACY

- ▶ OMS Generation 3 or 4, profile B
- ▶ Role concept to give the right person the right access key



### Your benefit

Your customers appreciate a safe data flow and their privacy.

### HYDRUS 2.0 BATTERY LIFETIME OF UP TO 16 YEARS

- Independent from:
- ▶ Reading technology
  - ▶ Interferences by other radio networks



# Residential Spectrum Jet Meters

## Product Datasheet

### Applications

The Spectrum Jet single-jet meter is the widest range single measuring element meter available to North American utilities. Spectrum Jet residential meters are designed for extremely wide range and long-term accuracy. The single-jet technology is highly impervious to dirt, sand or grit in the water system. The combination of design simplicity, superior grade materials, and high quality manufacturing standards allows for years of virtually new meter performance with no maintenance.

Spectrum Jet residential meters are available in composite (reinforced plastic) and lead-free bronze models across all common residential sizes.

Coupled with the advanced Prism cellular registers, Spectrum Jet single-jets are the meters of choice for your revenue assurance and water loss programs.

### Operations

Incoming water rotates a suspended impeller that is magnetically linked to the register. A low friction tungsten carbide bearing supports the impeller at low flow rates while a tungsten carbide thrust bearing provides the support at high flow rates. This unique "dual bearing" design provides unparalleled accuracy and durability at both high and low flows.

To maintain accuracy, the meter must be installed horizontally ( $\pm 10^\circ$ ) in the direction of water flow.

All Spectrum Jet Model D meters utilize Prism registers. These sealed electronic registers provide a high resolution interface to the meter and have multiple cellular, AMR, AMI and SCADA outputs. All registers are attached with a robust tamper-resistant housing.

### Materials

All residential Spectrum Jet Model-D meters are designed and manufactured to meet or exceed AWWA C712 standard design and performance specifications. All models are maintained with NSF-61G lead-free certifications.

### Standards

AWWA C712 – Single-jet meters

NSF-61G – Drinking water system components health effects



Spectrum Jet 25D and 30D



Spectrum Jet 30DL



Spectrum Jet 30DB



Spectrum Jet 50DL



Spectrum Jet 50DLC

All meters are shown with Prism cellular registers installed

### Design Features

- High accuracy – exceeding high and low range of AWWA residential standards
- Starting flow below 1/16 gpm
- Excellent performance in adverse water conditions
- Advanced materials for long-term durability
- 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
- Compatible with all Metron Prism registers and associated AMR/AMI capabilities

## Mechanical Specifications

| CONSTRUCTION  | THREADS    | LAY LENGTH     |
|---|------------|----------------|
| <b>Spectrum Jet 25DS Short - AWWA 5/8 x 1/2" (15mm)</b> |            |                |
| Composite   | 3/4" NPSM  | 4.0" (100mm)   |
| <b>Spectrum Jet 25D - AWWA 5/8 x 1/2" (15mm)</b>        |            |                |
| Composite   | 3/4" NPSM  | 7.5" (190mm)   |
| <b>Spectrum Jet 30D - AWWA 5/8 x 3/4" (15x20mm)</b>     |            |                |
| Composite   | 1" NPSM    | 7.5" (190mm)   |
| <b>Spectrum Jet 30DB - AWWA 5/8 x 3/4" (15x20mm)</b>    |            |                |
| Lead-free brass body + Composite plates                 | 1" NPSM    | 7.5" (190mm)   |
| <b>Spectrum Jet 30DL - AWWA 3/4 x 3/4" (20mm)</b>       |            |                |
| Composite   | 1" NPSM    | 9.0" (230mm)   |
| <b>Spectrum Jet 50DL - AWWA 1" (25mm)</b>               |            |                |
| Lead-free brass   | 1.25" NPSM | 10.75" (273mm) |
| <b>Spectrum Jet 50DLC - AWWA 1" (25mm)</b>              |            |                |
| Composite   | 1.25" NPSM | 10.75" (273mm) |

## Materials

### Spectrum Jet 25DS, 25D, 30D, 30DL and 50DLC models

| Composite Body & Top-plate      | Brass Body & Top-plate      | Impeller      | Impeller Bearing | Impeller Pivot | Impeller Shaft   |
|---------------------------------|-----------------------------|---------------|------------------|----------------|------------------|
| Reinforced Nylon (Polyamide 12) | EcoBrass™ - Lead Free Brass | Polypropylene | Nivaflex         | Sapphire       | Tungsten Carbide |

### Spectrum Jet 30DB / 50DL models

| Body                       | Impeller      | Impeller Bearings | Impeller Shaft                |
|----------------------------|---------------|-------------------|-------------------------------|
| Low-lead Bronze: ASTM C875 | Polypropylene | Tungsten Carbide  | AISI 303 Tungsten Carbide Tip |

Register Housing: Thermoplastic

## Markings

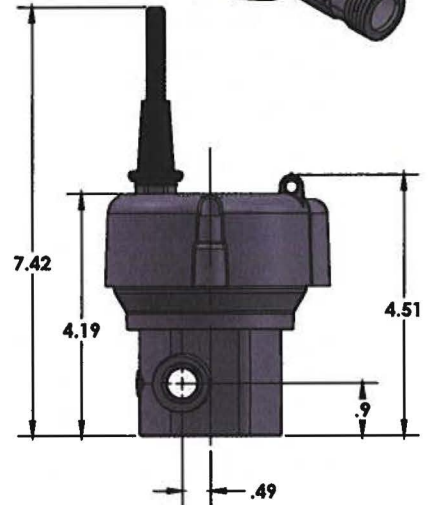
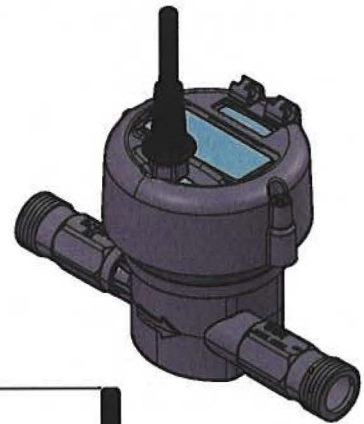
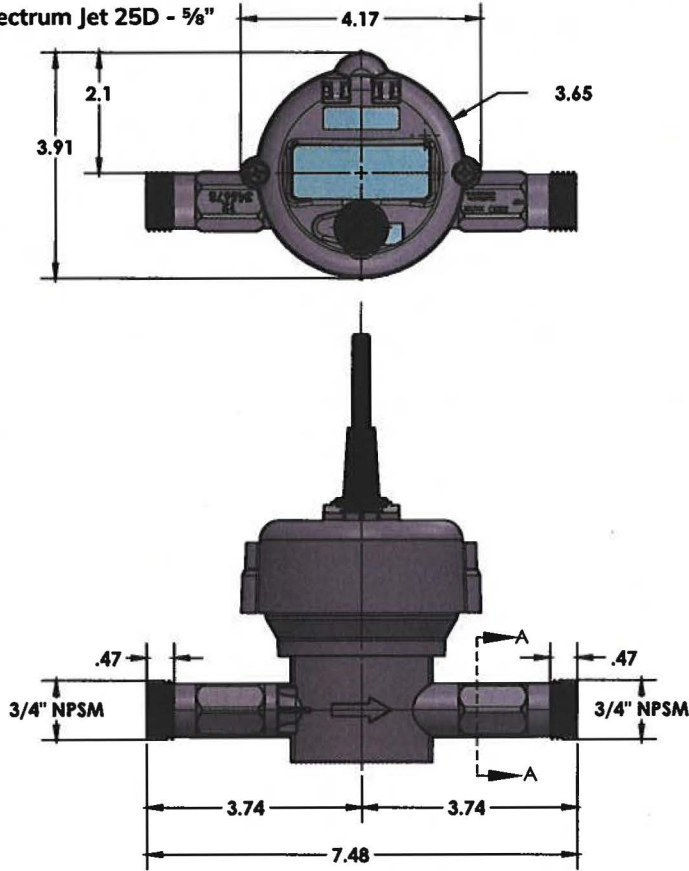
Engraved on Meter Body:

- Model
- Serial Number
- Date of Manufacture
- NSF-61
- Direction of Flow

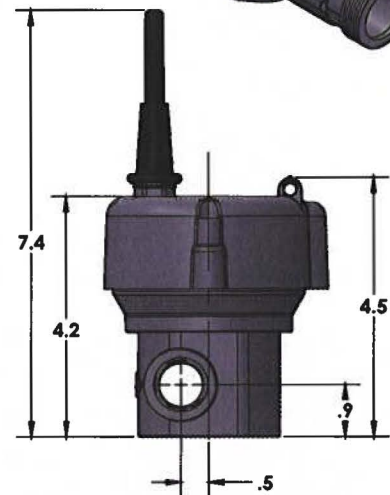
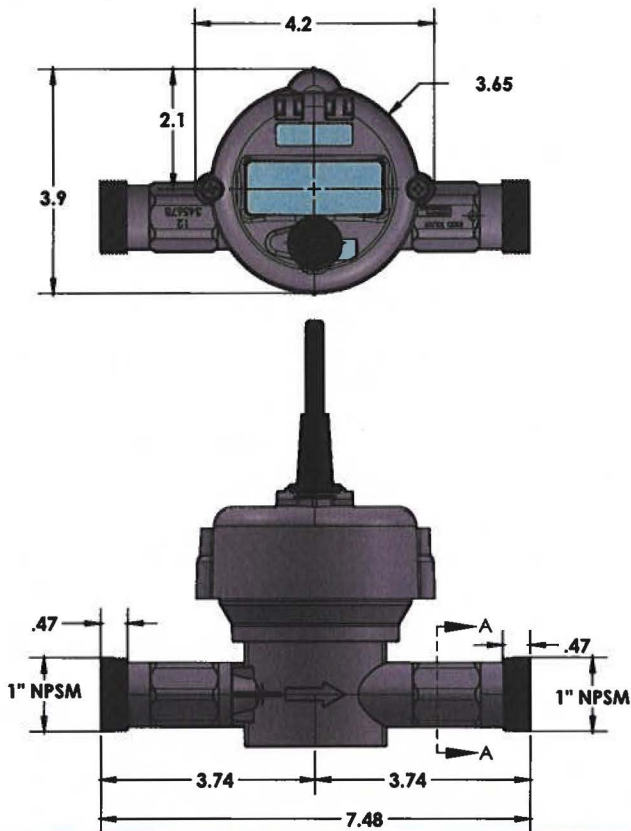
## Dimensions (inches)

Spectrum Jet 25DS Short lay length model - 5/8": Contact Metron for dimensions

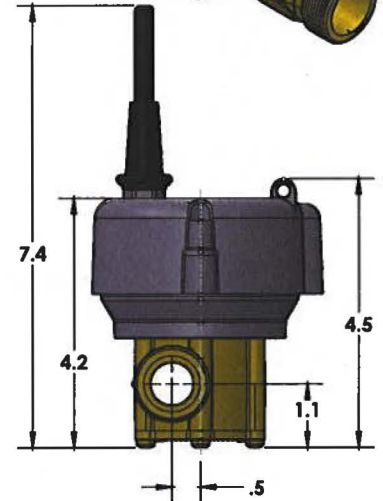
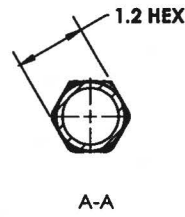
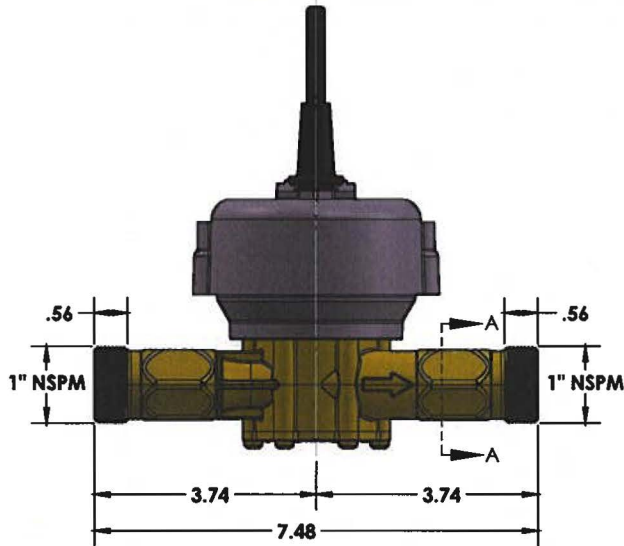
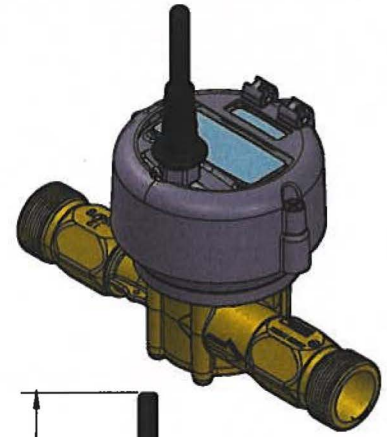
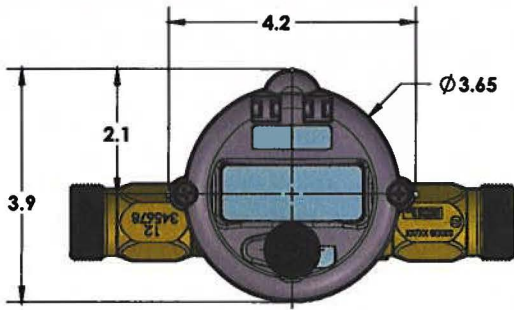
Spectrum Jet 25D - 5/8"



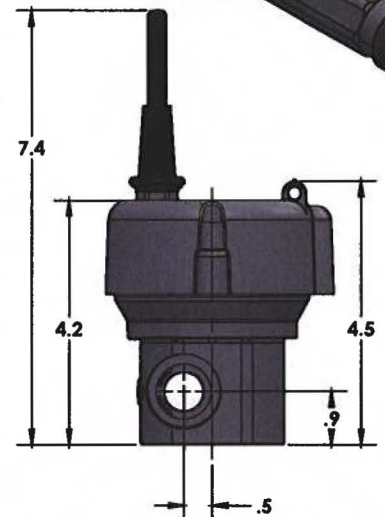
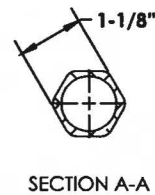
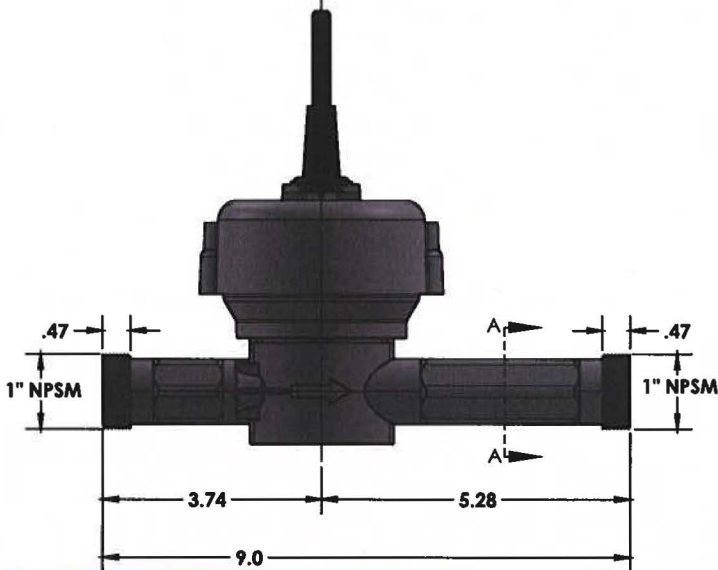
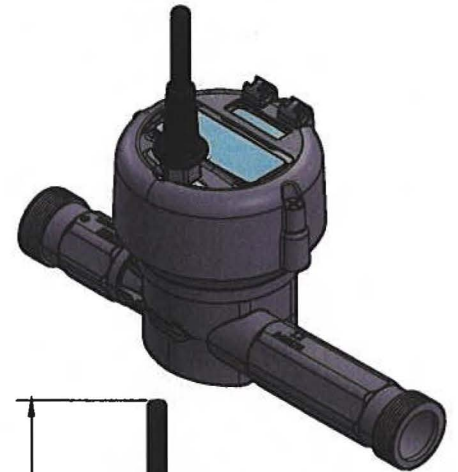
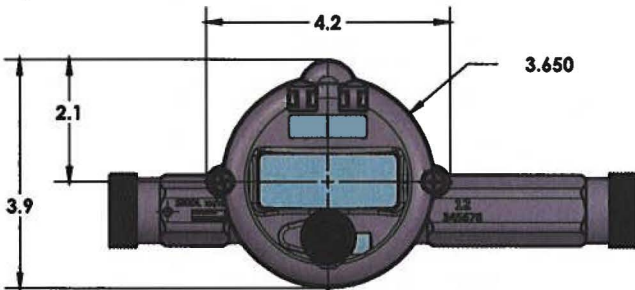
Spectrum Jet 30D - 5/8 x 3/4"



Spectrum Jet 30DB - 3/4"

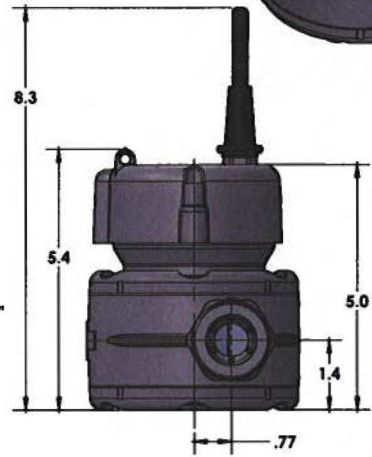
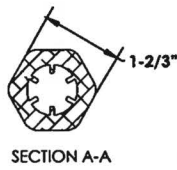
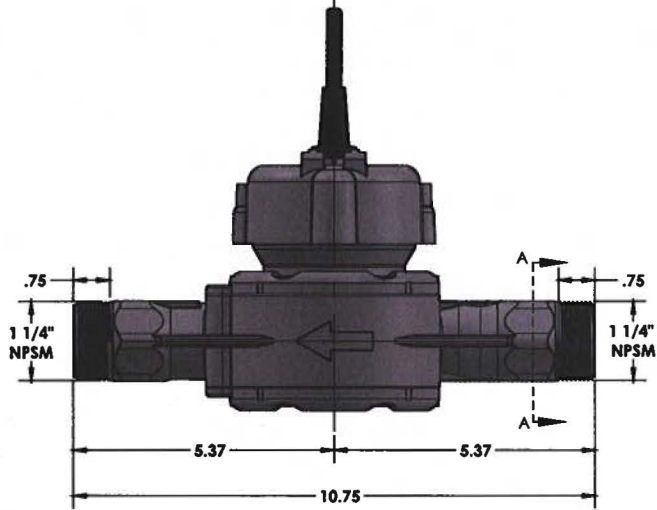
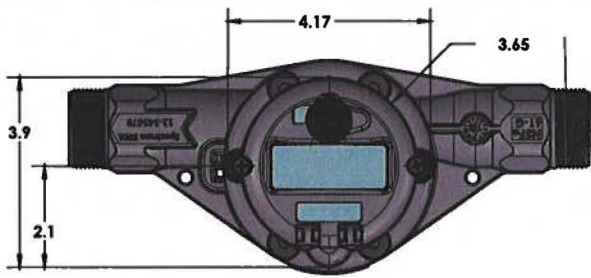


Spectrum Jet 30DL - 3/4"

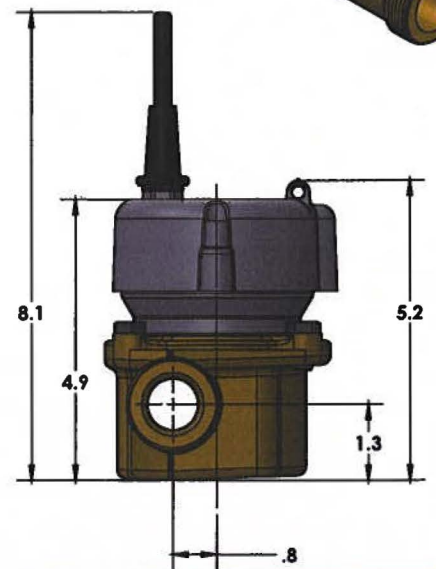
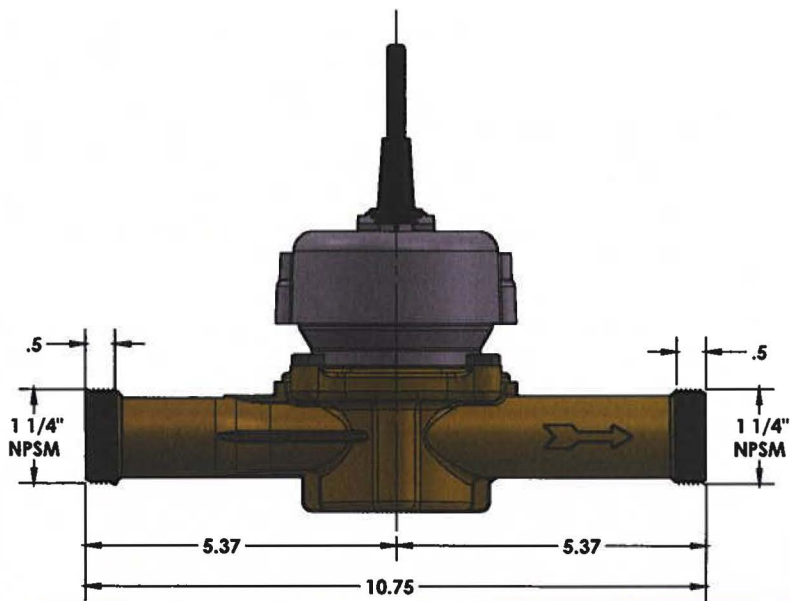
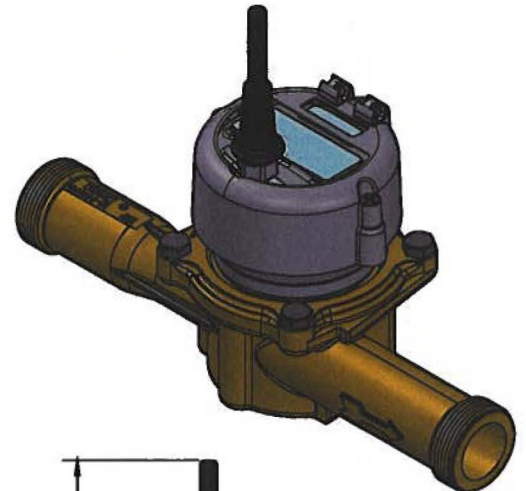
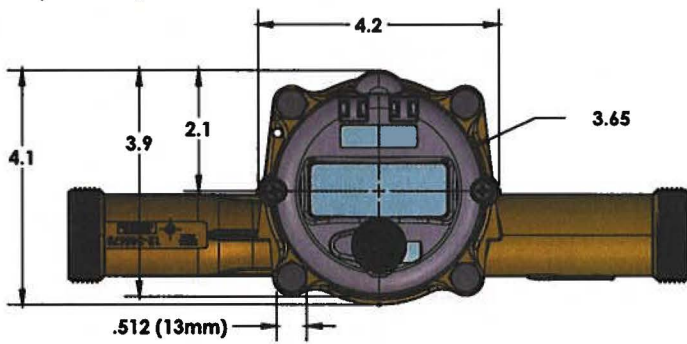




**Spectrum Jet 50DLC - 1"**



**Spectrum Jet 50DL - 1"**



## Flow & Pressure Specifications

### Spectrum Jet 25D - 5/8" Model and 25DS Short model

|                                  |                 |                                 |
|----------------------------------|-----------------|---------------------------------|
| Operating Range (98.5 to 101.5%) | 0.125 to 20 gpm | 0.028 to 4.5 m <sup>3</sup> /hr |
| Low Flow (95% min)               | 0.0625 gpm      | 0.0142 m <sup>3</sup> /hr       |
| Max Continuous Duty <sup>1</sup> | 20 gpm          | 4.5 m <sup>3</sup> /hr          |
| Max Intermittent <sup>2</sup>    | 30 gpm          | 6.8 m <sup>3</sup> /hr          |
| Pressure Loss at Max Continuous  | 22 psi          | 1.51 bar                        |
| Max Operating Pressure           | 230 psi         | 15.9 bar                        |
| Max Operating Temperature        | 140° F          | 60° C                           |

### Spectrum Jet 30D/30DB - 5/8 x 3/4" Model

|                                  |                 |                                 |
|----------------------------------|-----------------|---------------------------------|
| Operating Range (98.5 to 101.5%) | 0.125 to 30 gpm | 0.028 to 6.8 m <sup>3</sup> /hr |
| Low Flow (95% min)               | 0.0625 gpm      | 0.0142 m <sup>3</sup> /hr       |
| Max Continuous Duty <sup>1</sup> | 30 gpm          | 6.8 m <sup>3</sup> /hr          |
| Max Intermittent <sup>2</sup>    | 40 gpm          | 9.1 m <sup>3</sup> /hr          |
| Pressure Loss at Max Continuous  | 13 psi          | 0.9 bar                         |
| Max Operating Pressure           | 230 psi         | 15.9 bar                        |
| Max Operating Temperature        | 140° F          | 60° C                           |

### Spectrum Jet 30DL - 3/4" Model

|                                  |                 |                                 |
|----------------------------------|-----------------|---------------------------------|
| Operating Range (98.5 to 101.5%) | 0.125 to 30 gpm | 0.028 to 6.8 m <sup>3</sup> /hr |
| Low Flow (95% min)               | 0.0625 gpm      | 0.0142 m <sup>3</sup> /hr       |
| Max Continuous Duty <sup>1</sup> | 30 gpm          | 6.8 m <sup>3</sup> /hr          |
| Max Intermittent <sup>2</sup>    | 40 gpm          | 9.1 m <sup>3</sup> /hr          |
| Pressure Loss at Max Continuous  | 13 psi          | 0.9 bar                         |
| Max Operating Pressure           | 230 psi         | 15.9 bar                        |
| Max Operating Temperature        | 140° F          | 60° C                           |

### Spectrum Jet 50DL/50DLC - 1" Model

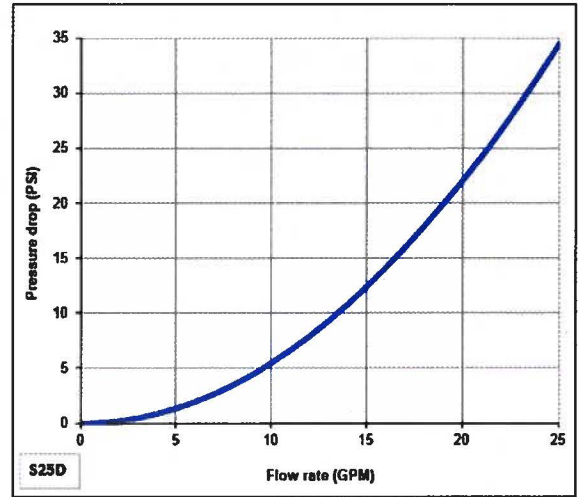
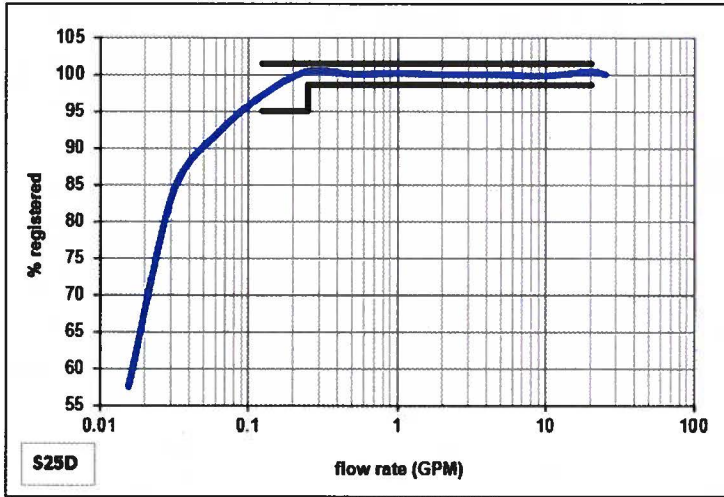
|                                  |               |                                  |
|----------------------------------|---------------|----------------------------------|
| Operating Range (98.5 to 101.5%) | 0.5 to 70 gpm | 0.114 to 15.9 m <sup>3</sup> /hr |
| Low Flow (95% min)               | 0.125 gpm     | 0.028 m <sup>3</sup> /hr         |
| Max Continuous Duty <sup>1</sup> | 50 gpm        | 11.4 m <sup>3</sup> /hr          |
| Max Intermittent <sup>2</sup>    | 70 gpm        | 15.9 m <sup>3</sup> /hr          |
| Pressure Loss at Max Continuous  | 8.0 psi       | 0.55 bar                         |
| Max Operating Pressure           | 230 psi       | 15.9 bar                         |
| Max Operating Temperature        | 140° F        | 60° C                            |

#### Notes:

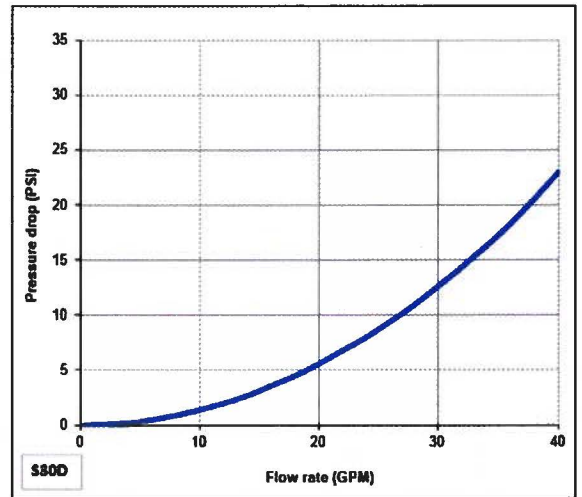
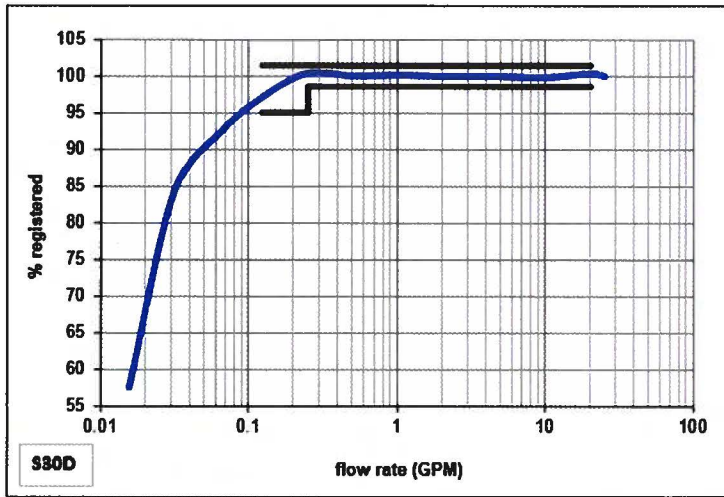
1. Starting flow rate for reference only
2. Max Continuous defined by AWWA as flow rate which can be maintained 24 hrs/day x 7 days/week
3. Max Intermittent defined as flow rate which can be maintained 1 hr/day average

# Flow & Pressure Specifications

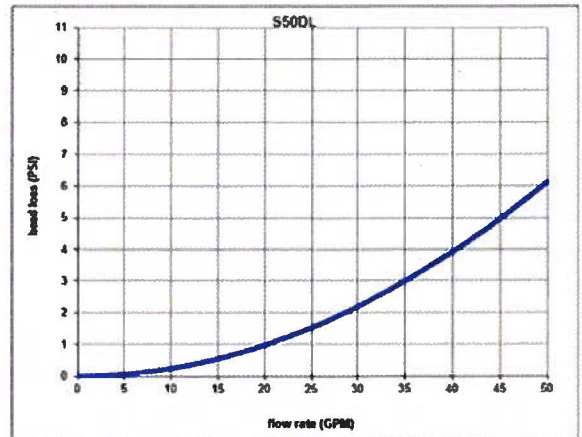
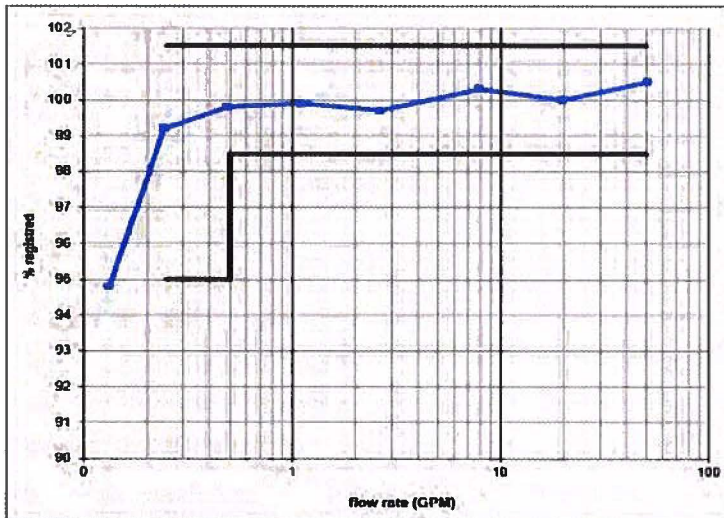
## Spectrum Jet 25D



## Spectrum Jet 30D / 30DB / 30DL

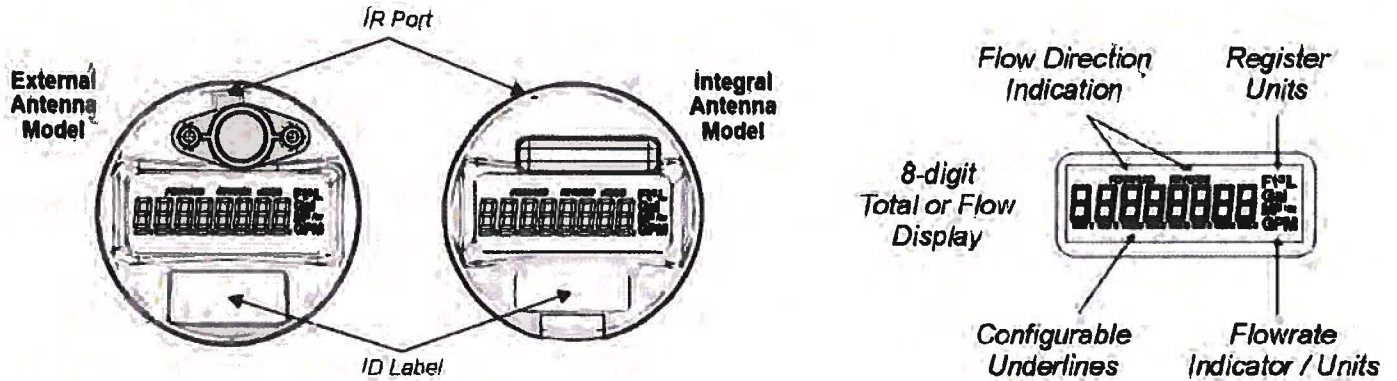


## Spectrum Jet 50DL / 50DLC



## Applications

The Prism electronic register is the water industry's new standard for register performance. The Prism offers maximum resolution, a multitude of standard features, on-board datalogging and a variety of cellular, AMI, AMR and SCADA output options. The Prism is designed for all environments and incorporates the largest battery available for utility applications. The Prism can be deployed on any Metron Spectrum Jet water meter.



**USG Configuration**  
0.1 Gallon Resolution

USG - Residential Meters (x0.1)



USG Flowrate - All Meters (x0.01)



**Ft<sup>3</sup> Configuration**  
0.01 Ft<sup>3</sup> Resolution

Ft<sup>3</sup> - Residential Meters (x0.01)



Ft<sup>3</sup> Flowrate - All Meters (x0.01)



**m3 Configuration**  
0.001 m<sup>3</sup> Resolution

m<sup>3</sup> - Residential Meters (x0.001)



m<sup>3</sup> Flowrate - All Meters (x0.001)



## Warranty

Please contact your Metron representative for formal warranty certificates.

## Legal

Due to updated regulations and product improvements, Metron-Farnier reserves the right to change the product specifications without notice.