

# Explosion Proof Magnetostrictive Level Sensors Series: MPX



MPX-E

MPX-E Chem

MPX-R

MPX-T

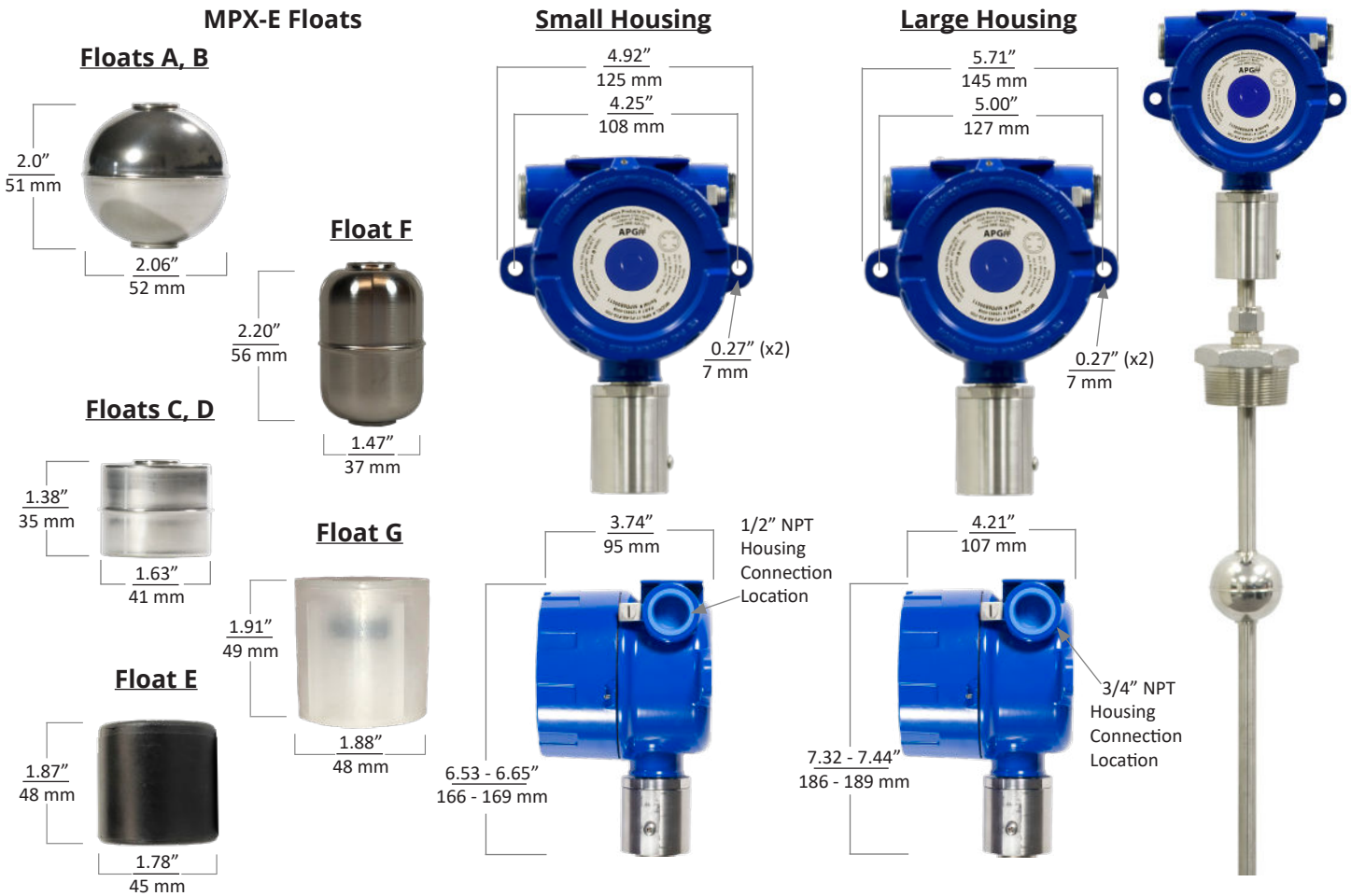
The MPX Series Magnetostrictive Level sensor provides highly accurate and repeatable level readings in a wide variety of liquid level measurement applications. The MPX-R's large, buoyant, and robust float allows it to be used in harsh applications where fouling or buildup might otherwise be of concern. The MPX-E's light-weight design allows it to be used in applications where space is limited. The MPX-E Chemical has a chemical resistant sleeve, allowing for use in corrosive, acidic, and marine environments, while the MPX-T's 1"Ø titanium stem extends its chemical capabilities for use in rougher, tougher environments, including H<sub>2</sub>S. All four stems carry Class I, Division 1 & 2 and Class I, Zone 1 & 2 approvals for use throughout North America.

## Features

- Class I Division 1 Groups C & D, Class I Zone 1, Class I Zone 2
- Highly accurate and repeatable readings
- 4-20 mA (single or dual float), RS-485 (Modbus RTU) output
- Rugged and reliable, lengths up to 31.5 feet (9.60 m)
- Dual level (interface) measurement
- Tank volume/level, strapping table



# MPX-E Specifications



## Performance

- Resolution:
  - 4-20 mA: 14 bit DAC (1 mm)
  - Modbus: 0.04 in. (1 mm)
- Distance Accuracy: 4-20 mA, Modbus: Greater of  $\pm 0.05\%$  of FS or 1 mm
- Temperature Accuracy: RTD - 1k Ohm:  $\pm 1^\circ\text{C}$

## Programming

- RS-485: optional RST-6001 USB to RS-485 converter
- 4-20 mA: factory set or optional RST-4100 programming module

## Environmental

- Probe Operating Temperature:  $-40^\circ - 85^\circ\text{C}$  ( $-40^\circ - 185^\circ\text{F}$ )
- IP65

## Physical

- Housing: Cast aluminum, epoxy coated
- Stem: 0.5"  $\varnothing$  316L SS
- Stem Length: 1 - 12.75 ft. (0.3 - 3.9 m)

## Electrical

- Electrical Connection: Terminal Block, 12-24 VDC
- Typical current draw:
  - 4-20 mA: (single) 4-22 mA, (dual) 8-44 mA
  - Modbus (RS-485): 25 mA
- Reverse polarity protection
- Surge protection (Output 4 only)

## Connectivity

- Output:
  - Single or dual loop-powered 4-20 mA
  - Set points: 4 mA, probe bottom; 20mA, 6 in. below probe zero point or at customer specified point
  - Modbus RTU (RS-485), optional temperature output

## Certification

- CSA:
  - Rated 12-24 VDC; 4-20 mA or 80 mA; Ta 85°C
  - Class I, Division 1 & 2, Groups C & D T4
  - Ex d IIB T4
  - Ex nA IIB T4
  - Class I, Zone 1; AEx d IIB T4
  - Class I, Zone 2; AEx nA IIB T4

# Model Configuration Options

Model Number: MPX -   E   -   A     B     C   -   D     E   -   F     G     H     B   -   I   -   J     K  

## A. Stem Type

- E** 0.5 in. diameter 316L SS

## B. Output

- 2** Single float, 4-20 mA (loop powered, 2 wire)
- 3** Dual float, 4-20 mA (loop powered, 3 wire)
- 4** Modbus RTU, surge protection

## C. Housing Type

All Housing Die-cast Aluminum, IP65, Blue

- <sup>▲</sup> Large Housing
- A** Small Housing†

## D. Float 1 (Top Float)

- A** 316L SS Round (0.65 SG)
- B** 316L SS Round (0.92 SG)
- C** 316L SS Cylindrical (0.65 SG)
- D** 316L SS Cylindrical (0.92 SG)
- E** Buna-N (0.5 SG)
- F** 316 SS 3A Cylindrical (0.5 SG)
- G** Kynar Cylindrical (0.66 SG)

## E. Float 2 (optional)

- N** None
- B** 316L SS Round (0.92 SG)††

## F. Mounting Type

- P**<sup>▲</sup> NPT Plug 150#
- N** None

## G. Mounting Size

- 1.5** 1.5 in. (welded or slide connection)
- 2**<sup>▲</sup> 2 in. (welded or slide connection)
- 3** 3 in. (slide connection only)
- N** None

## H. Mounting Connection

- W** Welded (fixed)
- S** Slide with Compression Fitting (adjustable)

## I. Stem/Finish Material

- B** 316L SS

## J. Total Stem Length in Inches

- Min. 12 in. - Max. 153 in.

## K. Optional Temperature Sensor

MPX-E4

- N**<sup>▲</sup> None
- T** Stem RTD, 1 kΩ, 6 in. from bottom of probe

<sup>▲</sup>Note: This option is standard

†Note: Small housing only available with Modbus RTU (Output 4)

††Note: Float 2 option B requires Float 1 option A

## MPX Accessories

Please order separately, by part number.

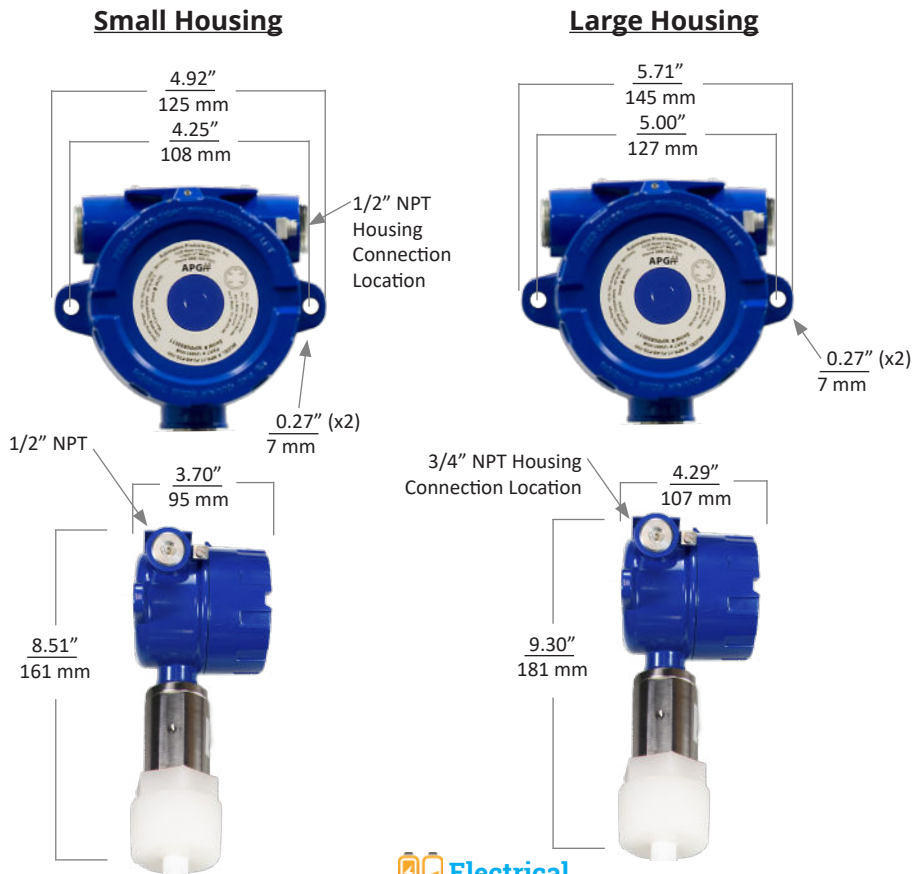
Description	Part Number
<b>Programming Module</b>	
RST-6001 (Modbus: MPX-x4)	125734
RST-4100 (4-20mA: MPX-x2, MPX-x3)	125759
Sold with 6 ft USB cable	



# MPX-E Chemical Specifications

## MPX-E Chemical Float

### Float K1, H



### Performance

- Resolution:
  - 4-20 mA: 14 bit DAC (1 mm)
  - Modbus: 0.04 in. (1 mm)
- Distance Accuracy
  - 4-20 mA, Modbus: Greater of  $\pm 0.05\%$  of FS or 1 mm
- Temperature Accuracy
  - RTD - 1k Ohm:  $\pm 1^\circ\text{C}$

### Programming

- RS-485: optional RST-6001 USB to RS-485 converter
- 4-20 mA: factory set or optional RST-4100 programming module

### Environmental

- Probe Operating Temperature:  $-40^\circ - 85^\circ\text{C}$  ( $-40^\circ - 185^\circ\text{F}$ )
- Float Maximum Operating Pressure: 30 PSIA @  $70^\circ\text{F} / 21^\circ\text{C}$
- IP65

### Physical

- Housing: Cast aluminum, epoxy coated
- Stem: 0.67"  $\varnothing$  PVDF (rigid)
- Stem Length: 1 - 12.75 ft. (0.3 - 3.9 m)
- Float: 2"  $\varnothing$  PVDF, 0.94 SG or 0.65 Max SG

### Electrical

- Electrical Connection: Terminal Block, 12-24 VDC
- Typical current draw:
  - 4-20 mA: 4-22 mA
  - Modbus (RS-485): 25 mA
- Reverse polarity protection
- Surge protection (Output 4 only)

### Connectivity

- Output:
  - Loop-powered 4-20 mA
  - Set points: 4 mA, probe bottom; 20mA, 6 in. below probe zero point or at customer specified point
- Modbus RTU (RS-485), optional temperature output

### Certification

- CSA:
  - Rated 12-24 VDC; 4-20 mA or 80 mA; Ta  $85^\circ\text{C}$
  - Class I, Division 1 & 2, Groups C & D T4
  - Ex d IIB T4
  - Ex nA IIB T4
  - Class I, Zone 1; AEx d IIB T4
  - Class I, Zone 2; AEx nA IIB T4

# Model Configuration Options

Model Number: MPX -   E   -    -    -    -   P   -   2   -   W   -   N   -    -     
                  A   B   C   D   E   F   G   H   I   J   K

## A. Stem Type

- E** 0.5 in. diameter 316L SS

## B. Output

- 2** Single float, 4-20 mA (loop powered, 2 wire)
- 3** Dual Float, 4-20mA (loop powered, 3 wire)
- 4** Modbus RTU, surge protection

## C. Housing Type

All Housing Die-cast Aluminum, IP65, Blue

- <sup>▲</sup> Large Housing
- A** Small Housing†

## D. Float 1

- K1**<sup>▲</sup>/**H** 3.5h x 2d in. PVDF (0.65 SG Max / 0.94 SG)

## E. Float 2

- N**<sup>▲</sup> None
- H** 3.5h x 2d in. PVDF (0.94 SG)

## F. Mounting Type

- P** NPT Plug

## G. Mounting Size

- 2** Size 2

## H. Mounting Connection

- W** Welded (fixed)

## I. Stem/Finish Material

- N** 0.67" diameter PVDF Sleeve

## J. Total Stem Length in Inches

- Min. 12 in. - Max. 153 in. \*

## K. Optional Temperature Sensor

MPX-E4

- N**<sup>▲</sup> None
- T4** Stem RTD, 1kΩ, 4 in. from bottom of probe
- T6** Stem RTD, 1kΩ, 6 in. from bottom of probe

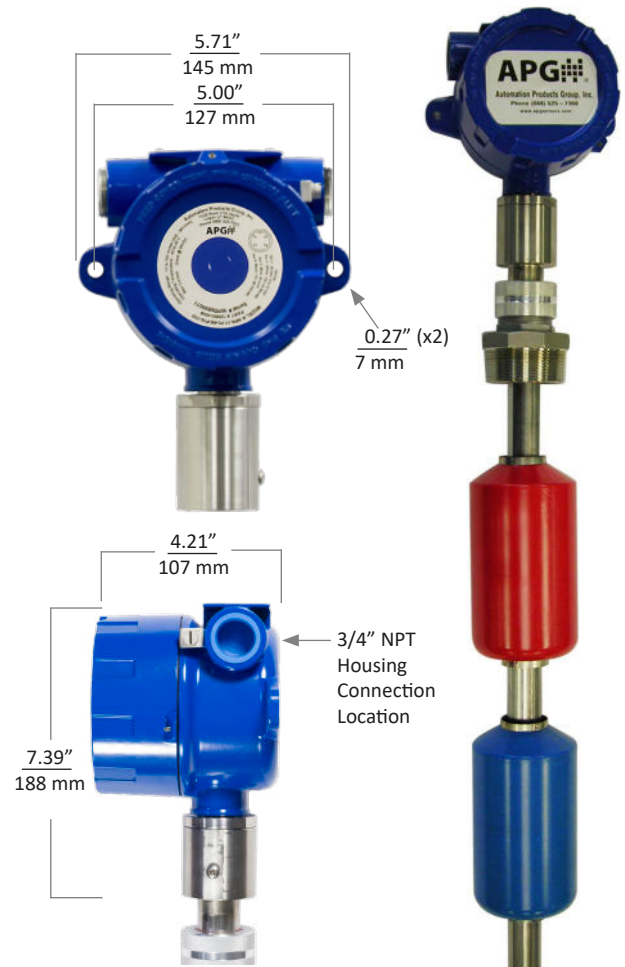
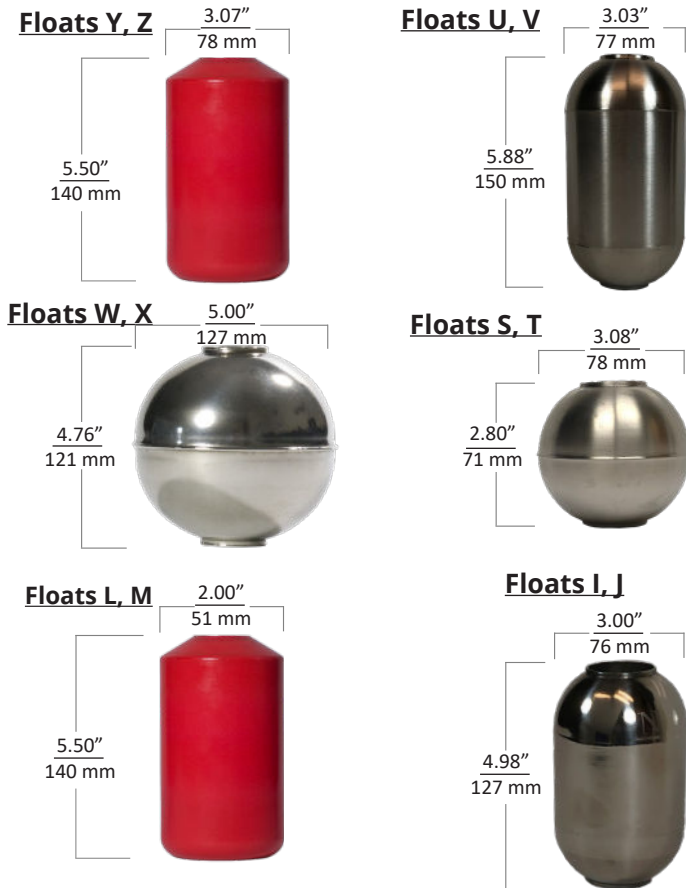
<sup>▲</sup>Note: This option is standard

†Note: Small housing only available with Modbus RTU (Output 4)

\*Note: The Kynar stem is susceptible to thermal expansion when the process temperature exceeds 73°F / 23°C. This expansion can be calculated as follows: Expansion = (Max Process Temperature (°F) - 73)\*.000108 \* Kynar Stem Length). This is the distance that must be left between the end of the Kynar stem and the tank bottom at the maximum process temperature. Please account for this expansion by reducing the stem length to allow for this gap when installed. The gap is zero if the process temperature is less than or equal to 73 °F.

# MPX-R Specifications

## MPX-R Floats



### Performance

- Resolution:
  - 4-20 mA: 14 bit DAC (1 mm)
  - Modbus: 0.04 in. (1 mm)
- Distance Accuracy: 4-20 mA, Modbus: Greater of  $\pm 0.05\%$  of FS or 1 mm
- Temperature Accuracy: RTD - 1k Ohm:  $\pm 1^\circ\text{C}$

### Programming

- RS-485: optional RST-6001 USB to RS-485 converter
- 4-20 mA: factory set or optional RST-4100 programming module

### Environmental

- Probe Operating Temperature:  $-40^\circ - 85^\circ\text{C}$  ( $-40^\circ - 185^\circ\text{F}$ )
- IP65

### Physical

- Housing: Cast aluminum, epoxy coated
- Stem: 1.0"  $\varnothing$  316L SS
- Stem Length: 4 - 31.5 ft. (1.22 - 9.60 m)

### Electrical

- Electrical Connection: Terminal Block, 12-24 VDC
- Typical current draw:
  - 4-20 mA: (single) 4-22 mA, (dual) 8-44 mA
  - Modbus (RS-485): 28 mA
- Reverse polarity protection
- Surge protection (Output 4 only)

### Connectivity

- Output:
  - Single or dual loop-powered 4-20 mA
  - Set points: 4 mA, probe bottom; 20mA, 10 in. below probe zero point or at customer specified point
  - Modbus RTU (RS-485), optional temperature output

### Certification

- CSA:
  - Rated 12-24 VDC; 4-20 mA or 80 mA; Ta 85°C
  - Class I, Division 1 & 2, Groups C & D T4
  - Ex d IIB T4
  - Ex nA IIB T4
  - Class I, Zone 1; AEx d IIB T4
  - Class I, Zone 2; AEx nA IIB T4



# MPX-T Specifications

## MPX-T Floats



## Performance

- Resolution:
  - 4-20 mA: 14 bit DAC (1 mm)
  - Modbus: 0.04 in. (1 mm)
- Distance Accuracy
  - 4-20 mA, Modbus: Greater of  $\pm 0.05\%$  of FS or 1 mm
- Temperature Accuracy
  - RTD - 1k Ohm:  $\pm 1^\circ\text{C}$

## Programming

- RS-485: optional RST-6001 USB to RS-485 converter
- 4-20 mA: factory set or optional RST-4100 programming module

## Environmental

- Probe Operating Temperature:  $-40^\circ - 85^\circ\text{C}$  ( $-40^\circ - 185^\circ\text{F}$ )
- IP65

## Physical

- Housing: Cast aluminum, epoxy coated
- Stem: 1.0"  $\varnothing$  Titanium 2
- Stem Length: 4 - 25 ft. (1.22 - 7.62 m)

## Electrical

- Electrical Connection: Terminal Block, 12-24 VDC
- Typical current draw:
  - 4-20 mA: (single) 4-22 mA, (dual) 8-44 mA
  - Modbus (RS-485): 28 mA
- Reverse polarity protection
- Surge protection (Output 4 only)

## Connectivity

- Output:
  - Single or dual loop-powered 4-20 mA
  - Set points: 4 mA, probe bottom; 20mA, 10 in. below probe zero point or at customer specified point
  - Modbus RTU (RS-485), optional temperature output

## Certification

- CSA:
  - Rated 12-24 VDC; 4-20 mA or 80 mA; Ta  $85^\circ\text{C}$
  - Class I, Division 1 & 2, Groups C & D T4
  - Ex d IIB T4
  - Ex nA IIB T4
  - Class I, Zone 1; AEx d IIB T4
  - Class I, Zone 2; AEx nA IIB T4



# Model Configuration Options

Model Number: MPX -          -          -                   -          -         

A B C D E F G H I J K

## A. Stem Type

- T** 1 in. diameter Titanium

## B. Output

- 2** Single float, 4-20 mA (loop powered, 2 wire)
- 3** Dual float, 4-20 mA (loop powered, 3 wire)
- 4** Modbus RTU, surge protection

## C. Housing Type

All Housing Die-cast Aluminum, IP65, Blue

- Large Housing

## D. Float 1 (Top Float)

- J/I** 5h x 3d in. Oval Titanium (0.60/0.94 SG)
- N** None

## E. Float 2 (optional)

- N** None
- I** 5h x 3d in. Oval Titanium (0.94 SG)

## F. Mounting Type†

- P**▲ NPT Plug 150#
- N** None

## G. Mounting Size

- 2**▲ 2 in. (slide connection)
- 3** 3 in. (slide connection only)
- N** None

## H. Mounting Connection

- S** Slide with Compression Fitting (adjustable)

## I. Stem/Finish Material

- T** Titanium

## J. Total Stem Length in Inches

- Min. 48 in. - Max. 300 in.

## K. Optional Temperature Sensor

MPX-T4

- N** None
- T**▲ Stem RTD, 1kΩ, 6 in. from bottom of probe

▲Note: This option is standard

†Note: All listed Mounting Types are 316L stainless steel. Consult factory regarding additional options.

# Tank Cloud



## Put Your Tanks In The Cloud

### 1 Remote Sensors

Connect to any 4-20mA signal or APG Modbus sensor for constant access to your data. Access up to 10 sensors on a single connection.

### 2 Use the Internet Backbone

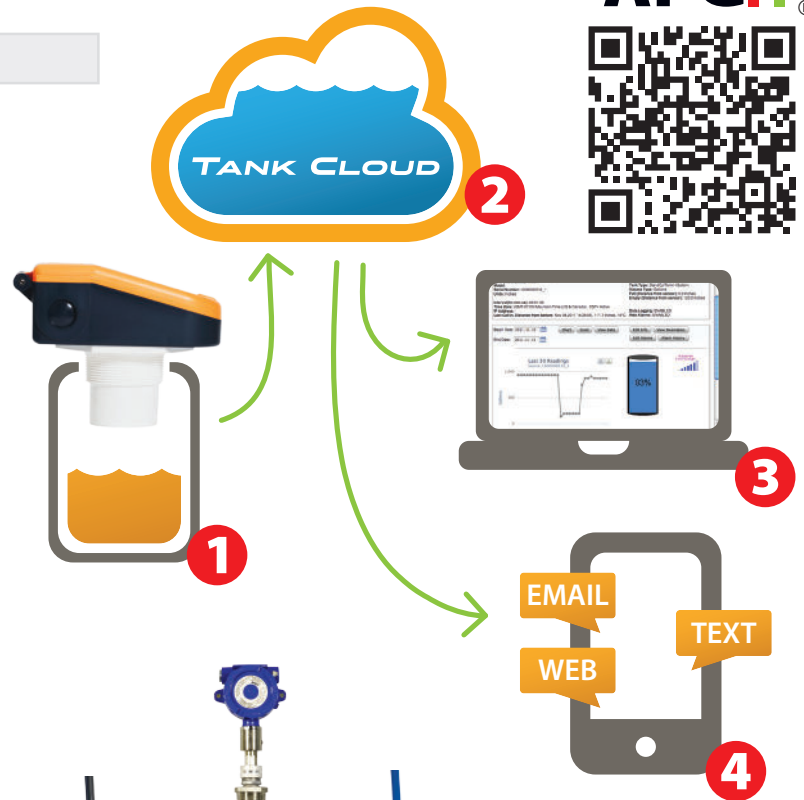
Connect the APG sensor or module to the Internet via landline, radio, cellular, or satellite.

### 3 View Secure Data 24/7

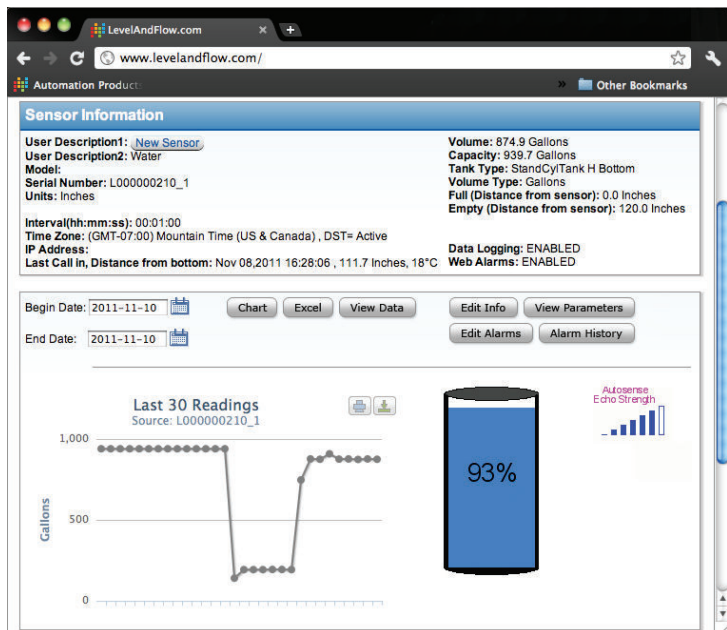
Access sensor data online through our secure portal at [levelandflow.com](http://levelandflow.com). If the Internet is accessible, so is your information.

### 4 Stay Up-To-Date

Program custom alarms - receive email and text (sms) message alerts on your computer, mobile phone, or tablet.



## The Line-Up:



## Online Data Portal

The Tank Cloud data portal, located online at [www.levelandflow.com](http://www.levelandflow.com), displays everything you need to know about your measurement.

Here you can:

- View your current and past readings,
- Manage alarms,
- Configure your sensors,
- and Setup user permissions for others in your organization.

Measurements are sorted by location and grouped into sites. Simply select the site you would like to view, and then choose the sensor. Current readings are prominent in the center of the screen.

Contact us today at 888-525-7300 to set-up a demonstration of our sensors and online software. We are excited to show you how it can impact your business.