



# USM

## UNIVERSAL SMART METER

Intelligent Flow, Level and  
Water Quality Monitoring

# UNIVERSAL SMART METER - USM

The USM is a small but powerful meter available in three formats

- › Level and Pump control
- › Open Channel Flow
- › Water quality measurement -pH, Redox, Dissolved Oxygen, Conductivity, Turbidity, Temperature

In common with all Smart Storm products the USM has been designed with the user in mind. Its four button keypad allows fast and simple programming. The intuitive menu guide the user through clearly worded choice fields and help the user to navigate to a successfully programmed unit in a matter of minutes.



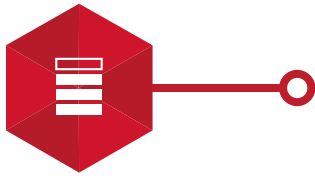
## MEASURES AND CONTROLS



## WATER AND WASTEWATER SPECIALISTS

Built on its research and advanced capability Smart Storm has always been at the forefront of innovative products for the water and waste water industries and has won many prestigious UK and European awards for its innovative technology.

## LEVEL MEASUREMENT



- > Level
- > Tonnes
- > Volume
- > Distance

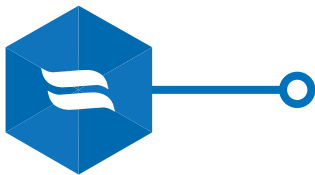
The USM is a powerful level monitor and controller ideal for cost effective solutions. Using a smart ultrasonic sensor, the USM will measure up to 20m in liquids and 10m in solids. With all standard tank shapes available in the look-up menu and non-standard tanks programmable through a multipoint input

table the USM will meet all your level and volume measurement requirements.

Simple pump control is available through the programmable relays and with a 4-20mA output and a RS485 (Modbus) output the USM can readily communicate with other instruments.

Ultrasonic level monitoring often suffers from erroneous results due to false echoes from artefacts inside tanks and silos. The USM echo profile map can be accessed through a pc connected to the RS485 interface and false echoes simply removed from the profile allowing accurate and reliable level and volume measurement.

## FLOW MEASUREMENT



- > Ultrasonic Sensor for primary devices
- > Non-standard look up table
- > All standard Flumes and weirs
- > Area Velocity Sensor for partially filled and surcharged pipes and open channels

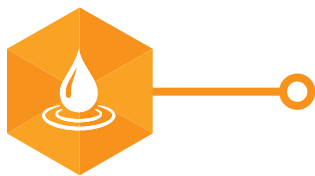
The USM coupled with either a Digison ultrasonic airborne sensor for flumes and weirs or a Digison area velocity sensor for open channels, irrigation channels or pipes, offers a low cost option

for water and waste water flow measurement.

All ISO type flumes and weirs are preprogrammed into the USM for primary structures and for

non-standard devices a 21-point look-up table is programmable. A Manning formula for numerous pre-programmed channel shapes and pipes allows simple set-up for area-velocity measurement.

## WATER QUALITY MEASUREMENT



- > pH
- > Redox
- > Temperature
- > Dissolved Oxygen
- > Conductivity
- > Turbidity

The USM measures a wide range of environmental parameter and as standard the USM will measure pH or redox plus one of the other variables, conductivity, DO and Turbidity. Conductivity, and Turbidity. All sensors incorporate an in-built temperature sensor so temperature is a no cost added value input.

Sensor can be either free mounted in tanks or channels or inserted into pipes using Smart Storms bespoke pipe brackets.

Additional to the USM environmental USM is an optional data logger which will record in excess of 22 years of data. A windows based reporting software

package allows the user to download data using a USB port and display and print graphs and detailed reports.



# USM SPECIFICATIONS

DISPLAY	
Display	3" Graphic LCD Display 128 x 64 px, white on blue
PHYSICAL	
Dimensions (mm)	130 (H) x 160 (W) x 60 (D) mm
Ratings	IP66/NEMA 4X
Approvals	ASA+PC, UL 94V-0
Mounting	Wall mounted
POWER	
Supply (AC)	100 - 240Vac, 5W (5V @ 0.38A)
Supply (DC)	9 - 36Vdc, 5W (5V @ 0.38A)
ELECTRONIC PERFORMANCE	
Processor	Texas Instrument MSP430, 16-Bit architecture
Temperature Range	-20 to +80°C (-4 to +176°F)

INPUTS & OUTPUTS		
	USM pH Meter	USM Flow / Level
Dedicated Measurement Inputs	Ph sensor OR Redox sensor temperature compensated	1 x ultrasonic Digisens sensor OR 1 x area velocity (AV) digital sensors
Auxiliary Measurement Inputs	1 x Modbus sensor: Turbidity, Conductivity, Salinity, DO, pH, Redox, NTU	
Outputs	2 x 4-20mA isolated	1 x 4-20mA isolated
Comms	RS485 Modbus RTU	RS485 Modbus RTU
Relays	3 x relays, 230Vac 5A / 30Vdc 6A contact rating	3 x relays, 230Vac 5A / 30Vdc 6A contact rating
Options	Datalogger >20 years' storage. Inquisitor Windows based reporting software	

WATER QUALITY (DIGISENS SENSORS)	PH / REDOX (ORP) & TEMPERATURE		Applications:
	<b>SSPH Sensor</b> Range: pH 0-14 units Radox -1,000 - +1,000 mV		
	<b>CONDUCTIVITY / SALINITY &amp; TEMPERATURE</b> <b>SSCS Sensor</b> Range: 0-200 mS/cm		<ul style="list-style-type: none"> <li>Urban wastewater treatment</li> <li>Industrial effluent treatment</li> <li>Surface water monitoring</li> <li>Sea water</li> <li>Drinking water</li> </ul> 
	<b>NEPHELOMETRIC TURBIDITY &amp; TEMPERATURE</b> <b>SSNT Sensor</b> Range: 0-4000 NTU or 0-4500 mg/L		<ul style="list-style-type: none"> <li>Urban wastewater treatment (inlets/outlet controls)</li> <li>Sanitation network</li> <li>Industrial effluent treatment</li> <li>Surface water monitoring</li> <li>Sea water</li> <li>Drinking water</li> </ul> 
	<b>OPTICAL DISSOLVED OXYGEN &amp; TEMPERATURE</b> <b>SSDO Sensor</b> Range: 0,00-20,00 mg/L, 0,00-20,00 ppm, 0-200%		<ul style="list-style-type: none"> <li>Urban wastewater treatment</li> <li>Industrial effluent treatment</li> <li>Surface water monitoring</li> <li>Drinking water</li> </ul> 
LEVEL	Range Frequency		Applications:
	DIGISON 3 3m 150kHz DIGISON 6 6m 80kHz DIGISON 10 10m 60kHz DIGISON 20 20m 40kHz (All models include temperature sensors)		
FLOW	Open Channel Range Frequency		Applications:
	DIGISON 3 3m 150kHz DIGISON 6 6m 80kHz (All models include temperature sensors)		
AREA VELOCITY	SSAV		Applications:
	Dual-Wave Ultrasonic Doppler technology. High resolution 15PSI stainless steel pressure transducer. Measures flow in channels up to 9m without loss of depth accuracy.		

Note: Measurement ranges are based on optimum conditions. Please see relevant data sheets for full sensor specifications.