

## Model X80 Universal Transmitters S88 Intelligent Sensors for Hazardous Locations



Measure pH, ORP, Specific Ion, Dissolved Oxygen,  
Turbidity, Conductivity, Resistivity and Chlorine with  
**Model S88 and S80 Intelligent Sensors**



**ELECTRO-CHEMICAL DEVICES**

# Model X80 Universal Transmitter

## The ECD **6** Point Advantage

- 1 Universal Transmitter:** Single or dual channel measures pH, ORP, DO, Specific Ion, Turbidity, Chlorine, Conductivity and/or Resistivity
- 2 Hazardous Location Approved**
- 3 Graphic LCD Display & Intuitive Menu Structure:** Easy Navigate
- 4 Use with ECD Digital Intelligent Sensors** that are factory calibrated sensors and store data
- 5 4-20 mA output with MODBUS RTU or HART® communication:** Flexible configurations for all applications
- 6 Rugged Corrosion Resistant 316 Stainless Steel Housing**

## Description

The **ECD Model X80 Universal Transmitter** is a single or dual channel transmitter designed for the continuous measurement of pH, ORP, pION, Dissolved Oxygen, Turbidity, Conductivity or Resistivity in a general purpose industrial environment. The Model X80 transmitter digitally communicates with any ECD Model S88 or S80 Intelligent Sensor, automatically configuring the transmitter's menus and display screens to the measured parameter. The same transmitter can be used for any of the measurements, i.e. plug an S88 Conductivity Sensor into a Model X80 pH transmitter and it will automatically reconfigure into a conductivity transmitter. There is no longer any need to inventory multiple instrument types, the one Model X80 transmitter will automatically configure to any of the listed measurements.

### SENSORS

The Model S88 Intelligent Sensors facilitate two way communication with the Model X80 transmitters. The type of sensor, identity and serial number are stored in the sensor's memory along with calibration registers. The Model S88 sensors are calibrated at the factory so they are ready to use when connected to a Model X80 transmitter. The Model S80/S88 sensors are waterproof and submersible with all internal components epoxy encapsulated inside the 3/4" O.D. housing. The Model S88 sensors use the same field proven, easily replaceable electrodes as the Model S10,S17, S80 sensors saving time and money.

### DISPLAY

The Model X80 Transmitter features a large easily viewed LCD display. Loop powered instruments have Black lettering on a Grey background, while the 24 VDC powered instruments have blue lettering on a white background when the LED backlight is on. The Model X80 has three easily switchable Main Display screens; the Data Screen, the Millivolt Screen and the Graphical Display screen. (six screens for two channel units) The Data Screen displays the



ATEX / IECEx Approved X80 Transmitter and S88 Sensors



Optional Sensor Process Fittings

# Model X80 Universal Transmitter

measurement type, the measured value with units, the % milliamp output of the 4-20 mA channel and the temperature. The mV Screen displays the measurement type, the raw millivolt signal from the sensor, the % milliamp output of the 4-20 mA channel and the temperature. The Graphical Screens display the measurement type, the measured value with units and a graphical representation of the % milliamp output. Three graphical styles are available; a Trend line, a Bar graph or a Gauge. The status of alarm relays, energized/de-energized is displayed on transmitters with relays.

## MENUS

Menu navigation is accomplished using magnetic switches. Soft keys display the function associated with each button. Pressing any of the buttons twice within 2 seconds activates the Model X80 soft key menus. The primary selections are the Calibration menu, Configuration menu, Info Screens and Simulate menu.

## CALIBRATION

Model S80/S88 sensors come precalibrated from the factory. Field calibrations are easily performed with the Model X80. The Calibration menu includes the Auto Cal function, a two point calibration, the Standardize function, a single point calibration or the Manual Calibration, where previously determined Offset and Slope values are entered manually into the Model X80 transmitter.

## CONFIGURATION

The Configuration menus allow the Model X80 transmitter's Display and Output functions and the Model S88 sensor's characteristics to be configured or adjusted. Display screens include the Hold function, Graphical Display Style, Back Light and Contrast adjustments, Labels/Tags for naming the transmitter, Password Protection and a Factory Default reset. Output screens include setting the addresses for MODBUS or HART® outputs, setting the 4-20 mA range and fault settings and configuring the Alarm Relays.

## INFO

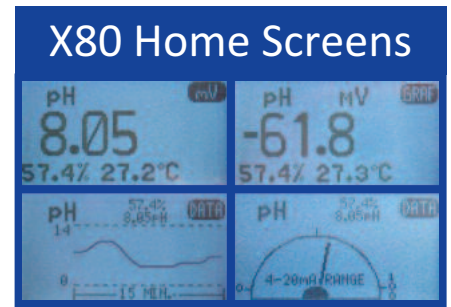
The Info screens provide Transmitter and Sensor Information. The transmitter screens display the Name, Power, Serial#, Firmware version and the output configuration. The sensor screens display the Name, Part #, Serial # and stored Calibration data.

## SIMULATE

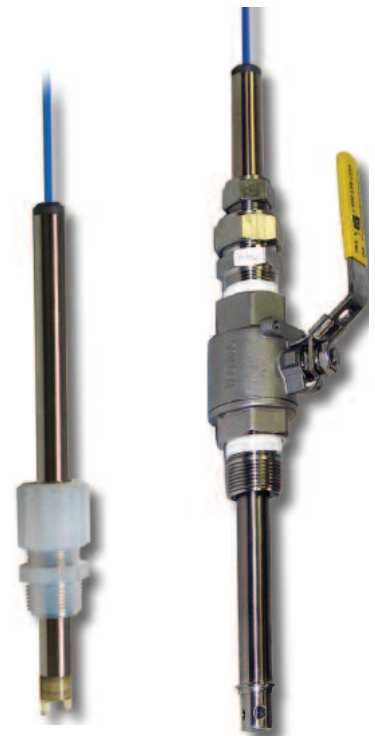
The Simulate Menu allows the input and output signals to be simulated. The outputs are easily tested by entering a 4-20 mA output value or energizing and de-energizing each of the relays. The Ramp function cycles the signal across the configured 4-20 mA range, i.e. the transmitter generates a signal from 0 pH to 14 pH and back to 0 pH generating a 4-20 mA output. The cycle time and the duration are adjustable allowing sufficient time for an individual to walk to the control room to verify the output.

## POWER SUPPLY and OUTPUTS

The Model X80 transmitter is available as a loop powered transmitter or a 24 VDC powered transmitter. The loop powered version has a 4-20 mA output with an optional HART® output. The line powered instruments have a 4-20 mA output with MODBUS RTU (standard) or the optional HART® output. The 24 VDC Transmitter is also available with (3) Alarm Relays that can be configured as Alarm relays (setpoint), Timed Relays or as a Fault relay.



S88 Sensors for Class I, Div 1, Groups B, C and D



# Specifications

## Input Specification

Digital protocol, ECD S80/S88 sensors,  
Liquid, Gas, Process sensors

### Input Ranges

pH	-1.00 – 15.00 pH
ORP	-1500 - +1500 mV
pION	000.1 – 999.9, Auto Ranging: ppb ↔ ppm ↔ppthousand
Dissolved Oxygen	000.1 – 999.9 Auto Ranging: ppb,ppm, % SAT, mg/L
Conductivity	0.055 μS – 2.00S Auto Ranging: μS, mS, S
Resistivity	0.001 - 50.00 meg-ohms
Turbidity	000.0 - 4000NTU Auto Ranging: NTU, FNU, mg/L, ppm, % Solids
Chlorine (Free or Total)	Auto Ranging: ppb ↔ ppm
Temperature	-30°C - 140°C

## Electrical / Mechanical

### Materials:

Electro Polished 316 SS

### Mounting:

2 x M4 (3/16") and 3 x 3/8" FNPT

### Environmental Conditions

Ambient Temperature	-20°C - 70°C
Storage Temperature	-30°C - 85°C
Relative Humidity	0 – 90% NC

### Display

128 x 64 pixels (2.75" x 1.5") LCD,  
Black/Grey background on loop powered  
instruments, Blue/White background LED  
backlight on 24 VDC powered instruments

### Input Power

Code -0: Loop powered, 24 VDC, 600 Ω  
maximum load (18-36VDC @ 35 mW min)  
Code -1 24 VDC (18-36 VDC @ 250 mW  
minimum)

### Outputs

**4-20 mA output(s)** standard single channel  
or an optional second channel

**Modbus RTU** (standard)

**HART®** (optional)

**Alarm Relays** (Optional) Three (3) SPDT,  
form 1C, 250 VAC, 3 Amp resistive  
maximum relays, user configurable as  
Hi/Lo or Fault alarms

### Shipping

Size: 8" x 8" x 5"(20.5 x 20.5 x 12.7 cm)  
Weight: 316 SS, 8.0 lbs. (3.65 kg)

## Hazardous Location Approvals

### ATEX Certified:

Certification No: ITS16ATEX101458X

### IECEx Certified:

Certification No: ETL 16.0049X



### X80 Transmitter:



0359



II 2 G Ex db mb [ia IIC Ga] IIC T4 Gb

Model X80 Transmitter is intended for  
installation in hazardous locations with  
Zone 1, Ex db mb Gb classification,  
-20°C < Ta < 55°C

### S88 Sensor:



0359



II 2 G Ex ia IIC T4 Ga

Model S88 Sensor is intrinsically safe and  
intended for installation in hazardous  
locations with Zone 0, Ex ia Ga  
classification, -20°C < Ta < 85°C

### CSA Certified Explosion Proof Enclosure:

#### X80 Enclosure:

Class I, Zone 1, Ex d IIB+H2, IP68

### FM Approved Explosion Proof Enclosure:

#### X80 Enclosure:

Class I, DIV 1, Groups B, C and D, CLASS II,  
DIV 1, GROUPS E, F and G, CLASS III, DIV 1  
NEMA 4X, IP66

Model X80- Transmitter Part Number Guide					
Number of Channels	10	Single Channel, pH, ORP, pION, Conductivity, Resistivity, Dissolved Oxygen, Chlorine & other measurements			
	11	Dual Channel, pH, ORP, pION, Conductivity, Resistivity, Dissolved Oxygen, Chlorine & other measurements			
	Power Supply	-0	Loop Powered Transmitter (Single Channel only)		
		-1	24 VDC Powered Transmitter		
	Alarm Relays	0	No Relays		
		1	(3) formC 250 V 3A relays		
		Output	0	4-20 mA output and MODBUS RTU	
	1		HART®		
	2		2 x 4-20 mA with MODBUS RTU		
	3		2 x 4-20 mA with HART®		
Approvals	-00	CSA and FM Enclosure Approvals only			
	-01	FM Approved (pending)			
	-02	ATEX & IECEx Approved Single Channel			
	-03	ATEX & IECEx Approved Dual Channel			
(Example) Model X80-	10	-0	0	1	-00

Specifications subject to change without notice.

## Represented by:

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