

# Model 223 Conductivity Transmitter

## Features

- Measures Conductivity, Resistivity, % Concentration, TDS, ppm
- 96 X 96 mm Panel Mount Enclosure Takes Up Less Panel Space
- Temperature Slope Adjustment Provides Greater Accuracy in Chemical Concentration Control
- “Live Check” Continuously Monitors Sensor Performance
- Up To Four Alarm Contacts Including Temperature
- Dedicated Fault Alarm
- NAMUR Fault Current Alarm
- PID Controller
- 2<sup>nd</sup> Current Output for Temperature



## Applications

- Ultrapure Water
- Reverse Osmosis
- Demineralizers
- Boiler Water and Cooling Water
- Metal Cleaning and Plating

## Description

The Model 223 Conductivity Transmitter with the appropriate sensor measures conductivity up to 2000 mS/cm, resistivity in megohms and concentration in percent, ppm, mg/l or TDS. The basic transmitter is available with either a 115 VAC or 24 Volt AC/DC power supply, linear isolated current output and one alarm. Features include the addition of a second output for temperature and up to four alarms which may be configured for on-off control functions, alarm limits, timer for cleaning or PID control functions. The PS version adds the diagnostic function Live Check as well as a non-linear programmable current output. Live Check signals an alarm when the sensor signal does not change over a defined period.

Base Transmitter (PR)	Plus Package (PS)
Measurement, display and calibration of the process variable (PV) and temperature. Isolated current output (Code 0) Temperature output (Code 1) One alarm (Code 05) <ul style="list-style-type: none"> <li>• On – Off</li> </ul> Dedicated fault alarm (Standard) NAMUR fault current (Standard) <ul style="list-style-type: none"> <li>• 2.4 or 22.0 mA</li> </ul>	Adaptive Calibration for Inductive Conductivity Cells  Polarization Detection  Live Check sensor signal monitoring and alarm.  Programmable non-linear current output.
Code 10	Additional Features
Two Alarm Contacts for PV and Temperature <ul style="list-style-type: none"> <li>• On – Off</li> <li>• Timer for cleaning</li> <li>• P(ID) Controller</li> </ul>	USP 24 Alarm for Pharmaceutical Grade Water (WFI Systems)  Automatic Cleaning initiated by an internal alarm or limit violation
Code 16	Additional Features
Four Alarm Contacts for PV and Temperature <ul style="list-style-type: none"> <li>• On – Off</li> <li>• Timer for cleaning</li> <li>• P(ID) Controller</li> </ul>	Cleaning initiated externally or automatically by an internal alarm or limit violation

# Model 223 Conductivity Transmitter

## Specifications

Conductivity Measurement	
Measuring Range	Conductivity; 0 to 2000 mS/cm Resistivity; 0 to 20 Megohms cm Concentration; 0 to 9999 (% , ppm, mg/l, TDS)
Resolution	0.5% of Measured Value
Repeatability	0.2% of Measured Value
Deviation, Output / Input	0.75% of Current Output Range
Compatible Cell Constants	0.0025 to 99.99 cm <sup>-1</sup>
Measuring Frequency	Conductivity; 299.75 to 1077.6 Hz Resistivity; 32.5 to 425 Hz
Maximum Cable Length Sensor to Transmitter	Conductivity; 100 meters (328 ft.) Resistivity; 20 meters (65 ft.)

Inductive Conductivity Measurement	
Measuring Range	0 to 2000 mS/cm (uncompensated)
Cell Constant	0.0025 to 99.99 cm <sup>-1</sup>
Measuring Frequency	2 kHz
Maximum Cable Length Sensor to Transmitter	55 meters (180 ft.)

Temperature Compensation	
Temperature Sensor	Pt 100 or Pt1000
Reference Temperature	25°C (77°F)
Measuring Range	-35 to 250°C (-31 to 482°F)
Resolution	0.1°C
Repeatability	1.0% of Measuring Range
Compensation Curves	Linear, NaCl, Ultrapure Water, Programmable

Digital Inputs 1 and 2	
Voltage	10 to 50 V
Power Consumption	Maximum 10 mA

Current Output	
Range	Selectable 0 to 20 mA or 4 to 20 mA
NAMUR Fault Current	2.4 or 22.0 mA
Maximum Load	500 Ohms
Output Scale Expansion	10% to 100%
Output Isolation	Max. 350V <sub>rms</sub> / 500Vdc
Over Voltage Protection	EN 61000-4-5:1995

Auxiliary Voltage Output	
Output Voltage	15 V
Output Current	Max. 10mA

# Model 223 Conductivity Transmitter

---

## Specifications

<b>Alarms</b>	
Programmable	Conductivity, Resistivity, Temperature, USP 24
Alarm Delay	0 to 2000 sec
Contacts	Dry, SPDT, NO / NC
Resistive Load, Current Rating	2.0 Amps
Inductive Load, Current Rating	2.0 Amps
Voltage Rating	250 VAC, 30 VDC
Resistive Load, Power Rating	1250 VA AC, 150 Watts DC
Inductive Load, Power Rating	500 VA AC, 90 Watts DC

<b>Controller</b>	
Pulse Length	Solenoid Valves
Pulse Frequency	Solenoid Operated Metering Pumps
Control Functions	P, PI, PD, PID
Proportional Band (P)	0.01 to 20.00
Integral (I)	0.0 to 999.0 min
Derivative (D)	0.0 to 999.0 min
Period for Pulse Length Controller	0.5 to 999.9 sec
Frequency for Pulse Frequency Controller	60 to 180 min <sup>-1</sup>

<b>Physical Specifications</b>	
Dimensions (H X W X L)	96 X 96 X 145 mm (3.8 X 3.8 X 5.7 in.)
Mounting Depth	165 mm (6.5 in.)
Weight	0.7kg (1.54 lb.)
Housing	Polycarbonate
Front Panel	Polyester, UV resistant

<b>Operating Conditions</b>	
Temperature	-10 to 55°C
Storage and Transport	-25 to 65°C
Relative Humidity	10 to 95%, non-condensing
Enclosure Rating	IP54 (front panel), IP30 (housing)
EMI / RFI	EN 61326-1:1997

# Model 223 Conductivity Transmitter

## Ordering Information

Model	Description
M – 223 - CD	Conductivity / Resistivity Transmitter
M – 223 - CS	Conductivity / Resistivity Transmitter with Plus Package
M – 223 - ID	Inductive Conductivity Transmitter
M – 223 - IS	Inductive Conductivity Transmitter with Plus Package
Code	Description
1	115 VAC, 50/60 Hz Power
8	24 VAC or VDC Power
Code	Description
0	Conductivity Current Output
1	Conductivity and Temperature Output
Code	Description
05	One Alarm
10	Two Alarms
16	Four Alarms
<b>M – 223 - CD - 1 - 1 - 10</b>	<b>Order Number Example</b>

## Outline and Mounting Dimensions

