

# 900 Series

## Multi-Parameter Monitor / Controller

Myron L® Company's new 900 Series Multi-Parameter Monitor / Controllers combine Accuracy, Reliability, Simplicity, and Flexibility. The user intuitive GUI (Graphical User Interface) allows easy and complete programmability of the instrument all from the LCD touch screen. These highly accurate instruments have the ability for simultaneous monitoring and controlling of multiple inputs/outputs.

### Benefits

- Affordable • Ease of Operation • Low Maintenance
- Ensure Product Quality • Prevent Equipment Damage
- Reduce Waste • Protect the Environment

### Parameters

- Conductivity • Resistivity • Salinity • TDS • pH • ORP
- Temperature • mV Input • Flow • % Rejection
- 4-20 / 0-20 mA Multi-Parameter Input

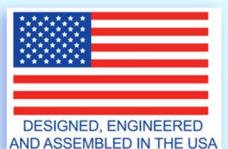
### High Performance Features

- Flexibility to Meet any Application
- Mobile Device Style GUI and OS
- Large, Sharp, Color Touch Screen (3.5" QVGA LCD)
- Customizable Screen Layout
- Quick, Easy Installation
- Simultaneous Monitoring of Multiple Sensors Including up to 7 Inputs:
  - › 2 – Conductivity/Resistivity/TDS/Salinity
  - › 1 – Pre-amplified pH/ORP
  - › 1 – BNC pH/ORP/mV
  - › 1 – 4-20 mA Input
  - › 1 – Flow Rate and Volume Totalizer, Pulse Counter/Frequency Counter
  - › 1 – Additional RTD Temperature Input
- % Rejection
- ¼ DIN Size Chassis
- Password Security Features
- Up to 3 Alarm/Control Relays, Configurable
- 0-10V Recorder Output, Fully Scalable
- 4-20/0-20 mA Isolated Output, Fully Scalable
- Up to 2 Remote Alarm Outputs
- Flow Switch Input
- Digital Calibration
- 3 Temperature Compensation Standards for Greatest Accuracy in Diverse Applications (KCl, NaCl, and 442 Natural Water™)
- User Adjustable Temperature Compensation (0 - 10%/°C); can be Disabled for Non-compensated Readings
- RS-485 Serial Communications ASCII Output



### Applications

- Power Plants
- Agriculture
- Waste Water Management
- Boilers & Cooling Towers
- Reverse Osmosis
- Deionization (DI)
- Electronics
- Pharmaceuticals
- Laboratories
- Paper and Pulp
- Process Control
- Seawater Desalination
- Environmental
- Potable Water
- Hydroponics
- Aquaculture
- Food and Beverage Processing
- Plating
- Swimming Pools & Spas
- Printing
- Brewing
- Distillation
- Bleach Manufacturing
- Coffee Industry
- Reduction of Chromate Waste



# Accuracy – Reliability – Simplicity ...

Since 1957 the Myron L<sup>®</sup> Company has designed and manufactured accurate, reliable and simple to use instruments for a wide variety of applications. Tens of thousands of professionals around the world rely on the performance of our instruments every day. Some of our instruments have been in continuous use for over 50 years. We are proud of the trust our handheld instruments and monitor/controllers have earned.

## ... Flexibility

Whenever the quality of your water is a critical, make-or-break characteristic that determines your success or failure, the 900 Series Multi-Parameter Monitor/Controller is designed to be exactly what is needed whether water is your end product, an ingredient, or a secondary but vital process component. The design includes a variety of inputs, measurement types, and several different types of control and data outputs, all of which can be combined and configured to operate in the most complex water quality applications.

### Multi-Parameter Inputs

Because no two applications are exactly the same, the 900 Series' large suite of signal inputs can be configured for a variety of measurement types.

Need to interact with a remote sensor? The 900 Series includes a 4-20 mA current loop (two-wire transmitter) input and a DC mV input. Each allows you to select the units and range of measurement for display.

### Adaptable Outputs

The 900 Series' outputs also provide flexibility. Standard outputs include: 0-10 VDC recorder output and a single remote alarm and relay. Alarm status is clearly displayed with attention getting alerts.

Need to control several water tanks interactively based on conditional criteria? An optional Control Module adds 2 relays, 1 alarm, a 4-20 mA output, and an RS-485 ASCII Serial Communications Output.

### 21<sup>st</sup> Century Interface

The 900 Series' interface combines all of the qualities you would expect from a 21<sup>st</sup> Century instrument. Its intuitive Graphical User Interface (GUI) is easy to navigate and super simple to use.

Its large, brightly colored, touch-screen display is crisp and easy to read even if you are standing off to the side or across the room.

### Quick and Easy Installation

Installation of the 900 Series is simple. Each connection uses pluggable terminal blocks. Once their mating connectors are wired-up, just plug each connector into the appropriate terminal blocks, supply power to the instrument, and begin programming.

The first time the 900 Series is powered up it leads the user through an Initial Setup process that focuses on the basic arrangement of the instruments display, assigns inputs and configures outputs.

Need to precisely define the cell constant of your conductivity sensors? You can do that.

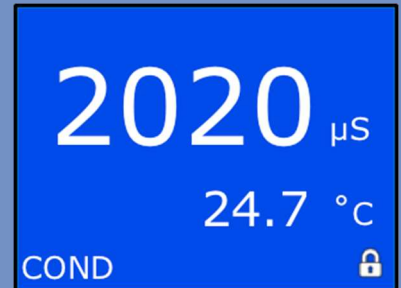
Cable length of your sensors an issue? The input setup can account for it.

### Flexible Display Formats

Need to display information of multiple types and from multiple sources at the same time?

The 900 Series can be configured to display information from up to four different inputs simultaneously, each displaying a different measurement type.

#### Single Channel Layout



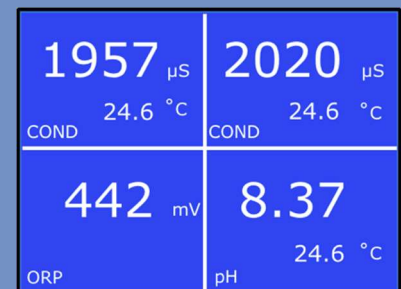
#### Dual Channel Layout



#### Triple Channel Layout



#### Quad Channel Layout



# Overview of Features and Functions

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## PASSWORD SECURITY

Set different levels of password protection to prevent unauthorized changes in settings or configuration.

## DISPLAY SETTINGS

Select/adjust the following settings:

**Screen Layout:** Select the number of input channels you want displayed during normal operating mode.

**Brightness:** Adjust the brightness of the display.

**Night Mode:** Dims the LCD during times when no one will be available to view the screen.

**Timeout:** Allows the user to program the instrument to exit setting screens and return to normal measurement mode after a user specified time of inactivity.

## MLC PRE-AMPLIFIED pH/ORP SENSORS

The pH/ORP input channel is intended for use with Myron L<sup>®</sup> Company pre-amplified pH and ORP sensors. These sensors contain precision circuitry that increases the accuracy and permits application of the sensors over greater distances.

All Myron L<sup>®</sup> Company pre-amplified pH sensors contain a precision 1000Ω RTD for increased temperature accuracy.

## 4-20 mA INPUT

The flexibility of this input means you can connect to almost any 4-20 mA sensor, transmitter, or external device that transmits a 4-20 mA or 0-20 mA current.

Once connected, the input is easy to scale and the user can select from a variety of available units of measure.

## OUTPUTS

### 4-20mA / 0-20mA Output (Model 900M-3C only)

The 4-20mA / 0-20mA output gives the 900 Series Multi-Parameter

Monitor/Controller the ability to send a signal over a long distance with minimal interference and signal degradation.

The output is an isolated 4-20mA / 0-20mA signal that corresponds to a user selectable range. This output is easily configured to be either self-powered (powered by the 900) or remote-powered (aka loop powered) as required for your application.

### 0-10V Recorder Output

The 900 Series 0-10V Recorder Output can be programmed to output 0-10 or 0-5 VDC and export signals from any input channel or derived value.

### Relays and Alarms

The relays and alarms operate independently but may be programmed to work in conjunction. Relays and alarms may be set to trigger on measurement values rising above, falling below, In Window (within an upper and lower range of values), or Out Window (outside an upper and lower range of values) for any of the input channels or for derived % rejection.

### RS-485 Output (Model 900M-3C only)

The 900 Series features an RS-485 Serial Communications Output that streams measured and derived data in ASCII format.

## PERCENT (%) REJECTION

The Percent Rejection measurement feature compares feed water to the permeate (product) water to determine the percent of dissolved solids removed or rejected by a filtration system thereby quantifying the effectiveness of water filtration systems.

## SOLUTION CHARACTERISTICS

Because temperature greatly affects the ionization and solubility of liquids, many water quality measurements (such as conductivity, resistivity, TDS and salinity) are heavily temperature dependent and are normally corrected to read what they would be at 25°C. Real world applications, however, measure a wide range of materials and mixtures of electrolyte solutions.

For many industrial and laboratory users, the standard temperature compensation model is based on KCl, which is favored for its stability. Users dealing with seawater, need a compensation model based on NaCl for their concentration calculations. Users dealing with freshwater and work with mixtures that include combinations of sulfates, carbonates and chlorides should use 442™.

The 900 Series contains temperature compensation algorithms for 3 of the most common reference models:

- KCl
- NaCl
- Myron L<sup>®</sup> Company's proprietary 442 Natural Water™ model, which is specifically designed to approximate the characteristics of freshwater.

## USER MODE TEMPCO AND RATIO SETTINGS

If none of these standard models fit your needs, the 900 Series also includes a User Mode solution type that allows you:

- Program a customized temperature compensation factor (from 0 to 10%/°C).
- Disable temperature compensation (0%/°C).
- Program a custom conductivity to TDS Ratio (from 0.20-7.99).

## SPECIFICATIONS:

	Conductivity	TDS	Resistivity	Salinity	pH	ORP/mV IN	Temperature
Ranges	0 $\mu$ S - 200 mS	0 ppm - 200 ppt	10 K $\Omega$ - 40 M $\Omega$	0 ppm - 200 ppt	0 - 14 pH	$\pm$ 2000 mV	0 - 250 $^{\circ}$ C
Accuracy	$\pm$ 1% of reading	$\pm$ 1% of reading	$\pm$ 1% of reading	$\pm$ 1% of reading	$\pm$ 0.01 pH	$\pm$ 2 mV	$\pm$ 0.1 $^{\circ}$ C
Resolution	0.01 (<100 $\mu$ S) 0.1 (<1000 $\mu$ S) 1 (<10,000 $\mu$ S) 0.01 (<100 mS) 0.1 ( $\leq$ 200 mS)	0.01 (<100 ppm) 0.1 (<1000 ppm) 1 (<10,000 ppm) 0.01 (<100 ppt) 0.1 ( $\leq$ 200 ppt)	0.01 (<100 k $\Omega$ ) 0.1 (<1000 k $\Omega$ ) 0.01 (<10 M $\Omega$ ) 0.1 ( $\leq$ 40 M $\Omega$ )	0.001 (<10 ppt) 0.01 (<100 ppt) 0.1 ( $\leq$ 200 ppt)	0.01 pH	1 mV	0.1 $^{\circ}$ C/F
Auto Temperature Compensation	0-71 $^{\circ}$ C 32-160 $^{\circ}$ F	0-71 $^{\circ}$ C 32-160 $^{\circ}$ F	0-71 $^{\circ}$ C 32-160 $^{\circ}$ F	0-71 $^{\circ}$ C 32-160 $^{\circ}$ F	0-71 $^{\circ}$ C 32-160 $^{\circ}$ F	-	-
Adjustable Temperature Compensation	0 - 10%/ $^{\circ}$ C	0 - 10%/ $^{\circ}$ C	0 - 10%/ $^{\circ}$ C	0 - 10%/ $^{\circ}$ C	On/Off	-	-
Cond/TDS Ratios Preprogrammed	KCl, NaCl, 442 <sup>TM</sup>	KCl, NaCl, 442 <sup>TM</sup>	-	KCl, NaCl, 442 <sup>TM</sup>	-	-	-
Adjustable Cond/TDS Ratio Factor	0.20-7.99	0.20-7.99	-	0.20-7.99	-	-	-



### WARNING

These products can expose you to chemicals including Di(2-ethylhexyl)phthalate (DEHP), which is known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).

## ORDERING INFORMATION

		Models	
		900M-1C	900M-3C
<b>INPUTS</b>			
COND / RES 1	Conductivity, Resistivity, TDS, or Salinity Sensor Input	✓	✓
COND / RES 2	Conductivity, Resistivity, TDS, or Salinity Sensor Input	✓	✓
pH / ORP	Myron L <sup>®</sup> Company model pH or ORP Sensor Input	✓	✓
mV IN	BNC Style mV Model Sensors	✓	✓
FLOW SW	Flow Switch Input	✓	✓
4-20 mA IN	4-20 mA Signal Input (<600 $\Omega$ )	✓	✓
FLOW / PULSE	Flow Rate and Volume Totalizer/Pulse Counter/Frequency Counter (0.5-50,000 Hz)	✓	✓
RTD	Temperature Sensor Input (1000 $\Omega$ RTD)	✓	✓
24 VAC / 12-24 VDC	Power Supply Input (1A Max)	✓	✓
<b>OUTPUTS</b>			
RELAY #1	Normally Open or Normally Closed Relay Output (5A@30VDC, 8A@250VAC)	✓	✓
RELAY #2	Normally Open or Normally Closed Relay Output (5A@30VDC, 8A@250VAC)		✓
RELAY #3	Normally Open or Normally Closed Relay Output (5A@30VDC, 8A@250VAC)		✓
RA #1	Remote Alarm Output	✓	✓
RA #2	Remote Alarm Output		✓
4-20 mA OUT	4-20 mA Signal Output (20-36VDC)		✓
REC O/P	0-10 VDC Recorder Output (20mA Max)	✓	✓
RS-485	ASCII Serial Communications Output		✓

### Housing Specifications:

Enclosure Material: PC/ABS  
Enclosure Rating: IP65/NEMA 4X (front/face only), IP20 (housing)  
Dimensions (housing, without connectors):  
¼ DIN – 3.78 H x 3.78 W x 4.85 D inches [96 H x 96 W x 123 D mm]

### Display / User Interface

Display: 3.5" Color LCD, Hi Brightness, TFT  
Status LED: Tri-color  
User Interface: Resistive Touch Screen

### Operating Temperature

0 – 60  $^{\circ}$ C / 32 – 140  $^{\circ}$ F

## LIMITED WARRANTY

All Myron L<sup>®</sup> Company 900 Series Multi-Parameter Monitor/Controllers have a TWO Year Limited Warranty. If any Monitor/Controller fails to function normally, return the faulty unit to the factory prepaid. If, in the opinion of the factory, failure was due to materials or workmanship, repair or replacement will be made without charge. A reasonable service charge will be made for diagnosis or repairs due to normal wear, abuse or tampering. Warranty is limited to the repair or replacement of Monitor/Controller only. The Myron L<sup>®</sup> Company assumes no other responsibility or liability. Sensors and Accessories are sold separately and carry their own warranties.

2450 Impala Drive  
Carlsbad, CA 92010-7226 USA

Tel: +1-760-438-2021

Fax: +1-800-869-7668 / +1-760-931-9189

[www.myronl.com](http://www.myronl.com)

**Built On Trust.** Founded in 1957, the Myron L<sup>®</sup> Company is one of the world's leading manufacturers of water quality instruments. Because of our commitment to product improvement, changes in design and specifications are possible. You have our assurance any changes will be guided by our product philosophy: accuracy, reliability, and simplicity.

