

# Signet 8860 Two-Channel Conductivity/Resistivity Controller



Member of the ProcessPro® Family of Instruments



**Not recommended for new designs,  
please see the 9950 Transmitter**

The Signet 8860 Two-Channel Conductivity/Resistivity Controller is packed with a set of features and capabilities ideal for the real needs of water treatment applications. It accommodates two separate and independent input sources and can be powered with AC/DC voltage. The 8860 programs via a simple and intuitive menu system. The unit can also be programmed to measure a raw conductivity value by turning off the temperature compensation mode.

To control the process, the 8860 is equipped with four dry contact relays and three 4 to 20 mA output loops. Calculated measurement include Difference, Ratio or % Rejection. Two of the relays may be converted into open collector outputs with the flip of a switch. Operating modes for the relays and open collector outputs are high, or low alarm, pulse, or special USP alarm mode. The 8860 is offered with a NEMA 4X/IP65 front panel with a self-healing window in a 1/4 DIN package for easy panel installation.

## Features

- Meets USP requirements for measuring raw conductivity, USP alarm mode
- Dual sensor input
- AC or DC powered
- Display and/or control:  $\mu\text{S}$ , mS, PPM or PPB (TDS), k $\Omega$ , M $\Omega$ , % rejection, difference, ratio,  $^{\circ}\text{C}$  or  $^{\circ}\text{F}$
- Three fully scaleable 4 to 20 mA outputs
- Two open collector outputs
- Four programmable relays
- Time delay relay function
- Proportional pulse control capability
- Compatible with ALL Signet conductivity electrodes
- Programmable temperature compensation
- NEMA 4X/IP65



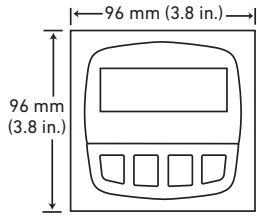
## Applications

- RO/DI System Control
- Demineralizer Regeneration and Rinse
- Scrubber, Cooling Tower & Boiler Protection
- Chemical Concentration
- Rinse Tank Water Quality
- Desalination
- Leak Detection
- Aquatic Animal Life Support Systems
- Aquaculture
- Environmental Studies

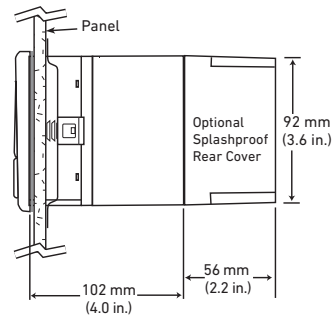
# Specifications

| General                       |  |  |                                      |
|-------------------------------|--|--|--------------------------------------|
| Compatible Electrodes         | All Signet conductivity/resistivity electrodes                             |  |                                      |
| Operating Range               |  |  |                                      |
|                               | Conductivity   | 0.055 to 400,000 $\mu\text{S}/\text{cm}$                                 |                                      |
|                               | Resistivity  | 10 $\text{K}\Omega\cdot\text{cm}$ to 18.2 $\text{M}\Omega\cdot\text{cm}$ | 0.055 to 100 $\mu\text{S}/\text{cm}$ |
|                               | TDS  | 0.001 to 999999 ppm or ppb (display limit)                               |                                      |
|                               | Temperature  | Pt1000: -25 °C to 120 °C   | -13°F to 248°F                       |
| Accuracy                      |  |  |                                      |
|                               | Conductivity/Resistivity   | $\pm 2\%$ of reading   |                                      |
|                               | Temperature  | $\pm 0.5$ °C   |                                      |
| Materials                     |  |  |                                      |
| Case                          | PBT  |  |                                      |
| Keypad                        | Sealed 4-key silicone rubber   |  |                                      |
| Window                        | Polyurethane coated polycarbonate  |  |                                      |
| Electrical                    |  |  |                                      |
| Power Requirements            |  |  |                                      |
|                               | 3-8860-AC  | 100 to 240 VAC $\pm 10\%$ , regulated 50-60 Hz, 20 VA                    |                                      |
|                               | 3-8860   | 12 to 24 VDC $\pm 10\%$ , regulated, 0.5 A max.                          |                                      |
| Display                       | Alphanumeric 2 x 16 LCD  |  |                                      |
| Contrast                      | User selected, 5 levels  |  |                                      |
| Update Rate                   | 1.5 seconds  |  |                                      |
| <b>Current Outputs</b>        | (3 each) 4 to 20 mA, isolated, passive, fully adjustable and reversible    |  |                                      |
| Maximum Loop Impedance        | 150 $\Omega$ @ 12 V<br>450 $\Omega$ @ 18 V<br>750 $\Omega$ @ 24 V          |  |                                      |
| Update Rate                   | Approx. 100 mS   |  |                                      |
| Accuracy                      | $\pm 0.03$ mA @ 25 °C, 24 VDC  |  |                                      |
| <b>Open-Collector Outputs</b> | (2 each) Isolated, 50 mA sink or source, 30 VDC max. with pull-up resistor |  |                                      |
| Operational Settings          | High, Low, USP, Pulse, Off   |  |                                      |
| Hysteresis                    | User adjustable  |  |                                      |
| Time Delay                    | 0 to 6400 seconds  |  |                                      |
| Maximum Pulse Rate            | 400 pulses/min   |  |                                      |
| <b>Alarm Contacts</b>         | (up to 4 each) SPDT relays   |  |                                      |
| Maximum Voltage Ratings       | 5 A @ 30 VDC or 5 A @ 250 VAC  |  |                                      |
| Operational Settings          | High, Low, USP, Pulse, Off   |  |                                      |
| Hysteresis                    | User adjustable  |  |                                      |
| Time Delay                    | 0 to 6400 seconds  |  |                                      |
| Maximum Pulse Rate            | 400 pulses/min.  |  |                                      |
| Environmental                 |  |  |                                      |
| Operating Temperature         | -10 °C to 55 °C  | 14 °F to 131 °F  |                                      |
| Storage Temperature           | -15 °C to 80 °C  | 5 °F to 176 °F   |                                      |
| Relative Humidity             | 0 to 95%, non-condensing   |  |                                      |
| Maximum Altitude              | 2,000 m (6,560 ft)   |  |                                      |
| Enclosure                     | NEMA 4X/IP65 (front face only)   |  |                                      |
| Shipping Weight               |  |  |                                      |
|                               | 8860-AC  | 0.581 kg   | 1.3 lb                               |
|                               | 8860   | 0.544 kg   | 1.2 lb                               |
| Standards and Approvals       |  |  |                                      |
|                               | CE, FCC, UL, CUL   |  |                                      |
|                               | RoHS compliant, China RoHS   |  |                                      |
|                               | Manufactured under ISO 9001, ISO 14001 and ISO 45001                       |  |                                      |

# Dimensions



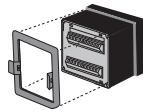
Front View



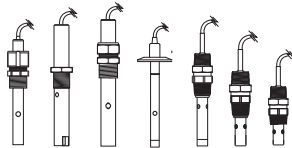
Side View

## Panel Mount

### Signet 8860 Conductivity/Resistivity Controller



Signet Electrodes  
 - 2818-2823  
 - 2839-2842



Note: Submersible installation not applicable for Sanitary Electrode.

All sold separately

In-Line Installation -  
 Customer supplied fittings

Submersible Installation -  
 3-8050 Universal Mount Kit  
 or 3-8052 Integral Mount Kit  
 and Pipe extension or conduit  
 with 3/4 in. FNPT threads\*



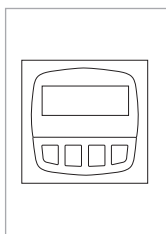
\*Refer to the Signet Submersion Kit brochure (3-0000.707) located on our website for installation suggestions and options.

## Ordering Notes

- 1) An optional splashproof rear cover can be ordered separately if needed.
- 2) Use the heavy duty wall mount bracket to mount instrument on a wall
- 3) Order RC filter kits to protect relays from voltage spikes.

Please refer to Wiring, Installation, and Accessories sections for more information.

## Ordering Information



| Mfr. Part No.                                   | Code               | Description   | Power          |
|---|--------------------|---|----------------|
| Two-channel Conductivity/Resistivity Controller |                    |   |                |
| 3-8860  | <b>159 000 677</b> | with three 4 to 20 mA outputs and 4 relays or 2 relays with 2 open collectors (switch selectable) | 12 to 24 VDC   |
| 3-8860-AC                                       | <b>159 000 678</b> | with three 4 to 20 mA outputs and 4 relays or 2 relays with 2 open collectors (switch selectable) | 100 to 240 VAC |

## Accessories and Replacement Parts

| Mfr. Part No.                  | Code               | Description  |
|--------------------------------|--------------------|--|
| <b>Mounting</b>                |                    |  |
| 3-8050.395                     | <b>159 000 186</b> | Splashproof Rear Cover (panel mount only)                |
| 3-8050.392                     | <b>159 000 640</b> | ¼ DIN Retrofit Adapter                                   |
| 3-5000.399                     | <b>198 840 224</b> | Panel Adapter, 5 x 5 in. to ¼ DIN                        |
| 3-0000.596                     | <b>159 000 641</b> | Heavy Duty Wall Mount Bracket (panel mount only)         |
| 3-5000.598                     | <b>198 840 225</b> | Surface Mount Bracket (panel mount only)                 |
| <b>Liquid Tight Connectors</b> |                    |  |
| 3-9000.392                     | <b>159 000 368</b> | Liquid Tight Connector kit for rear cover (3 connectors) |
| 3-9000.392-1                   | <b>159 000 839</b> | Liquid Tight Connector kit, NPT (1 connector)            |
| 3-9000.392-2                   | <b>159 000 841</b> | Liquid Tight Connector kit, PG 13.5 (1 connector)        |
| <b>Other</b>                   |                    |  |
| 3-8050.396                     | <b>159 000 617</b> | RC Filter Kit (for relay use), 2 per kit                 |