

# Autonics DIGITAL PRESSURE SENSOR (Fluid type) PSQ SERIES INSTRUCTION MANUAL



Thank you for choosing our Autonics product. Please read the following safety considerations before use.

## Safety Considerations

- Please observe all safety considerations for safe and proper product operation to avoid hazards.
- Safety considerations are categorized as follows.
  - Warning** Failure to follow these instructions may result in serious injury or death.
  - Caution** Failure to follow these instructions may result in personal injury or product damage.
- The symbols used on the product and instruction manual represent the following.
  - Symbol represents caution due to special circumstances in which hazards may occur.

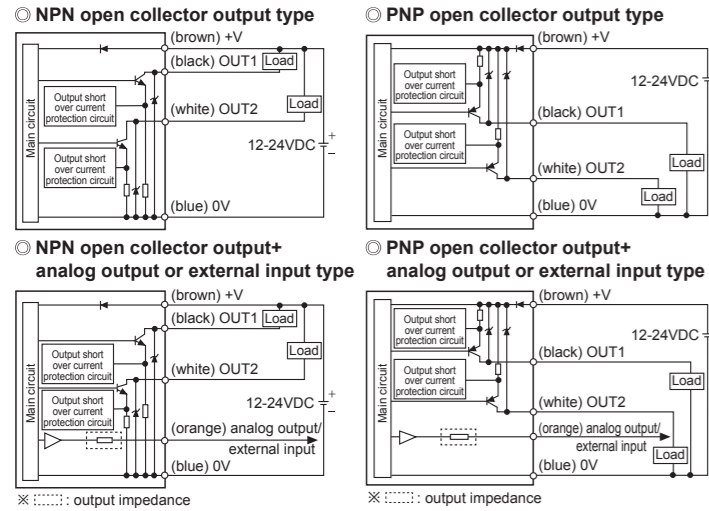
## Warning

- Fail-safe device must be installed when using the unit with machinery that may cause serious injury or substantial economic loss. (e.g. nuclear power control, medical equipment, ships, vehicles, railways, aircraft, combustion apparatus, safety equipment, crane/disaster prevention devices, etc.)
- Failure to follow this instruction may result in personal injury, fire, or economic loss.
- Do not use it in flammable gas because it does not have an explosion proof construction. Failure to follow this instruction may result in explosion.

## Caution

- Do not use the unit outdoors. Failure to follow this instruction may result in shortening the life cycle of the unit. The unit is proper indoor environment.
- Do not apply the pressure beyond rated pressure. Failure to follow this instruction may result in product damage.
- Do not use the unit beyond power supply. Failure to follow this instruction may result in product damage by fire.
- Do not short the circuit for load. Failure to follow this instruction may result in product damage by fire.
- Check the polarity of the power before wiring the unit for correct connection. Failure to follow this instruction may result in product damage by fire.
- Do not use corrosive gas or liquid to the unit as the unit is only for non-corrosive gas. Failure to follow this instruction may result in product damage.
- Do not supply excessive power to the unit case or twist the unit case strongly. Failure to follow this instruction may result in product damage.

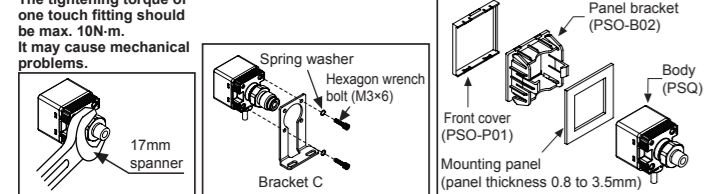
## Input/Output Circuit and Connections



## Installation

- Pressure port is R1/8. Therefore, make sure use commercially available one touch fitting.
- Use a spanner (17mm) at the metal part of the unit in order not to overload on the body when connecting one touch fitting.
- Fixing bracket is provided for PSQ Series.
- At first, please unscrew hexagon wrench bolt and assemble the bracket on this unit by fixing hexagon the wrench bolt. In this case, tightening torque of hexagon wrench should be max. 3N·m. It may cause mechanical problems.
- PSQ Series has panel bracket (PSO-B02), front cover (PSO-P01) are sold separately. When mounting the unit on panel, please follow the below figure.

## Caution

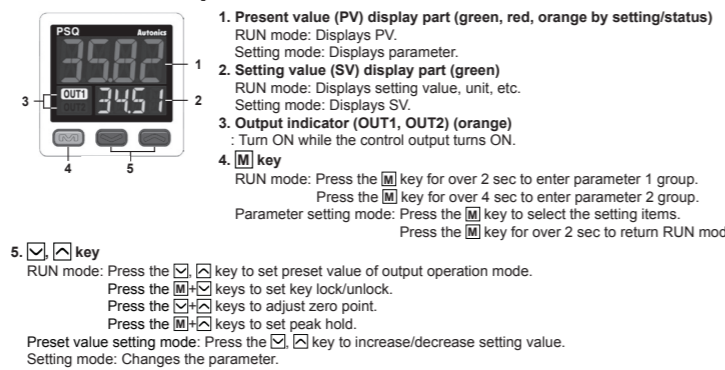


## Error and Troubleshooting

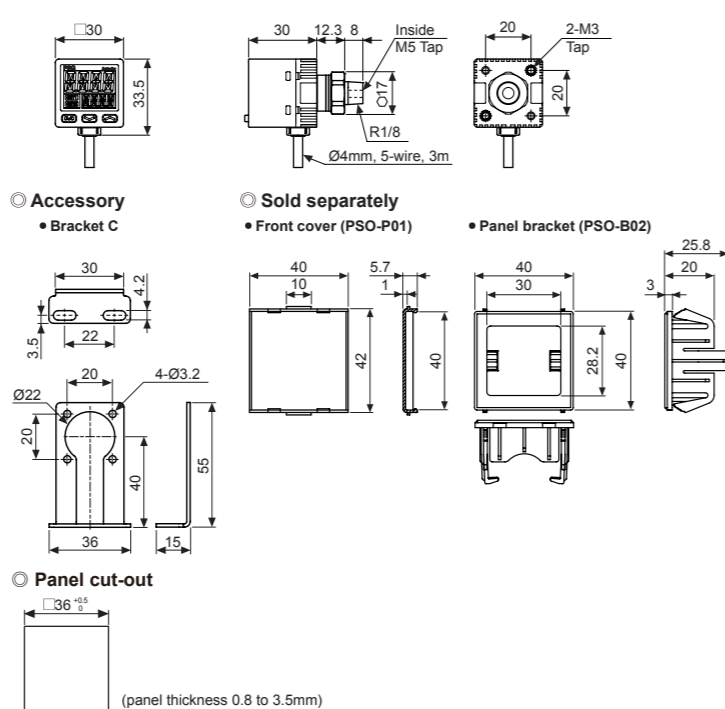
When occurring error, follow the below troubleshooting.	Troubleshooting
<b>ERR1</b> When adjusting zero point while external pressure is input.	Try again after removing external pressure.
<b>ERR2</b> When over-current is applied on control output	Remove the over current condition by adjusting load resistance.
<b>ERR3</b> When the range of Auto sensitivity setting mode 5t 1, 5t 2 is set incorrectly.	Check the setting range and set 5t 1, 5t 2.
<b>ERR4</b> When connection between master and slave is wrong during copying parameters.	Check the cables between sensors and the connection of the same models.
<b>ERR5</b> When entering invalid password.	Enter valid password.
<b>HHHH</b> When applied pressure exceeds the high-limit of display pressure range.	Apply pressure within the display pressure range.
<b>LLLL</b> When applied pressure exceeds the low-limit of display pressure range.	
<b>-H-</b> When the correction value of auto shift, remote zero exceeds the high-limit of the setting range.	
<b>-L-</b> When the correction value of auto shift, remote zero exceeds the low-limit of the setting range.	Set the correction value of auto shift, remote zero within the setting range.
<b>-H-L-</b> When [H], [L] input both.	

※The above specifications are subject to change and some models may be discontinued without notice.

## Unit Descriptions



## Dimensions

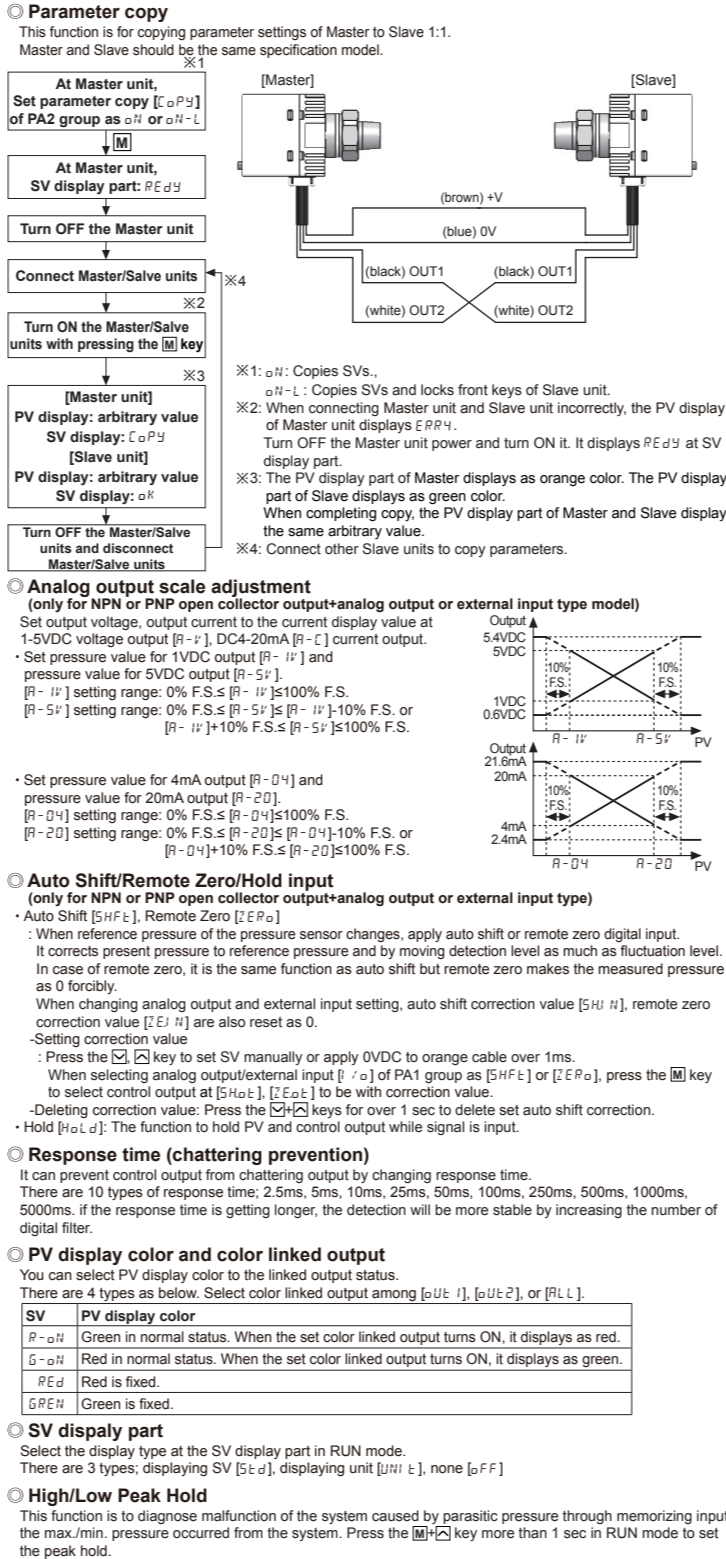


## Specifications

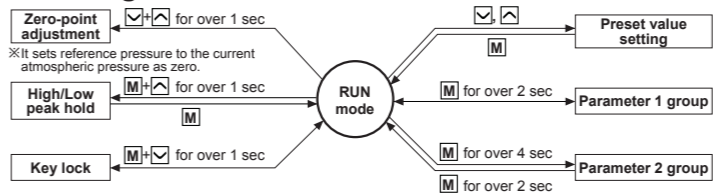
Pressure type	Sealed gauge pressure*1	NPN or PNP open collector output type		NPN or PNP open collector output + analog output or external input type
Type	PSQ-BC01-R1/8	PSQ-BC1-R1/8	PSQ-BC01U-R1/8	PSQ-BC1U-R1/8
Rated pressure range	-100.0 to 100.0kPa	-100 to 1,000kPa	-100 to 100.0kPa	-100 to 1,000kPa
Display & Setting pressure range	-101.3 to 110.0kPa	-101 to 1,100kPa	-101.3 to 110.0kPa	-101 to 1,100kPa
Min. display unit	0.1kPa	1kPa	0.1kPa	1kPa
Max. pressure range	3 times of rated pressure			
Applied fluid	Air, Non-corrosive gas and fluid that do not corrode stainless steel 316L			
Power supply	12-24VDC= (ripple P-P: max. 10%)			
Allowable voltage range	90 to 110% of rated voltage			
Current consumption	Max. 50mA		Max. 50mA (current output: max. 70mA)	
Control output	NPN or PNP open collector output		• Load voltage: Max. 30VDC=	• Residual voltage: Max. 2VDC=
	• Load current: Max. 100mA			
Hysteresis*2	Min. display interval			
Repeat error	±0.2% F.S. ±Min. display interval			
Response time	Select one: 2.5ms, 5ms, 10ms, 25ms, 50ms, 100ms, 250ms, 500ms, 1,000ms, 5,000ms			
Protection circuit	Output short over current protection circuit			
Voltage output		• Output voltage: 1-5VDC ±2.5% F.S.	• Linear: Max. ±1% F.S.	• Resolution: 1/2,000
Current output		• Output impedance: Approx. 240Ω	• Response time: 50ms	• ON voltage: Max. 0.4VDC=
External input*3		• Output current: DC4-20mA ±2.5% F.S.	• Linear: Max. ±1% F.S.	• OFF voltage: 5-Vin or open
Auto shift/Remote zero/Hold		• Resolution: 1/2,000	• Output impedance: Approx. 100kΩ	• Resolution: 1/2,000
Display digits	12 segment LCD method			• Output impedance: Approx. 100kΩ
Display method	0.001	0.001	0.001	
MPa	0.001	1	0.1	
kPa	0.1	1	0.001	
kgf/cm <sup>2</sup>	0.001	0.01	0.01	
bar	0.001	0.01	0.001	
psi	0.02	0.2	0.02	
mmHg	1	—	1	
inHg	0.1	—	0.1	
mmH <sub>2</sub> O	0.1	—	0.1	
Display accuracy	0 to 50°C: Max. ±0.5% F.S., -10 to 0°C: Max. ±1% F.S.			
Insulation resistance	Over 50MΩ (at 500VDC megger)			
Dielectric strength	1,000VAC 50/60Hz for 1 min			
Vibration	1.5mm amplitude at frequency of 10 to 55Hz (for 1 min) in each X, Y, Z direction for 2 hours			
Cable	Ø4mm, 5-wire, 3m, (AWG24, core diameter: 0.08mm, number of cores: 40, insulator out diameter: Ø1mm)			
Protection structure	IP65 (IEC standard)			
Material	Front case: Polycarbonate, Rear case: Polyamide 6, Pressure port: Stainless steel 316L			
Approval	CE			
Weight*4	Approx. 210g (approx. 125g)			

※1: The unit is sealed structure. It is based on atmospheric pressure 101.3kPa.  
 ※2: In hysteresis output mode, it is variable.  
 ※3: Select one between analog output (voltage or current) and external input.  
 ※4: The weight includes packaging. The weight in parentheses is for unit only.  
 ※Environment resistance is rated at no freezing or condensation.

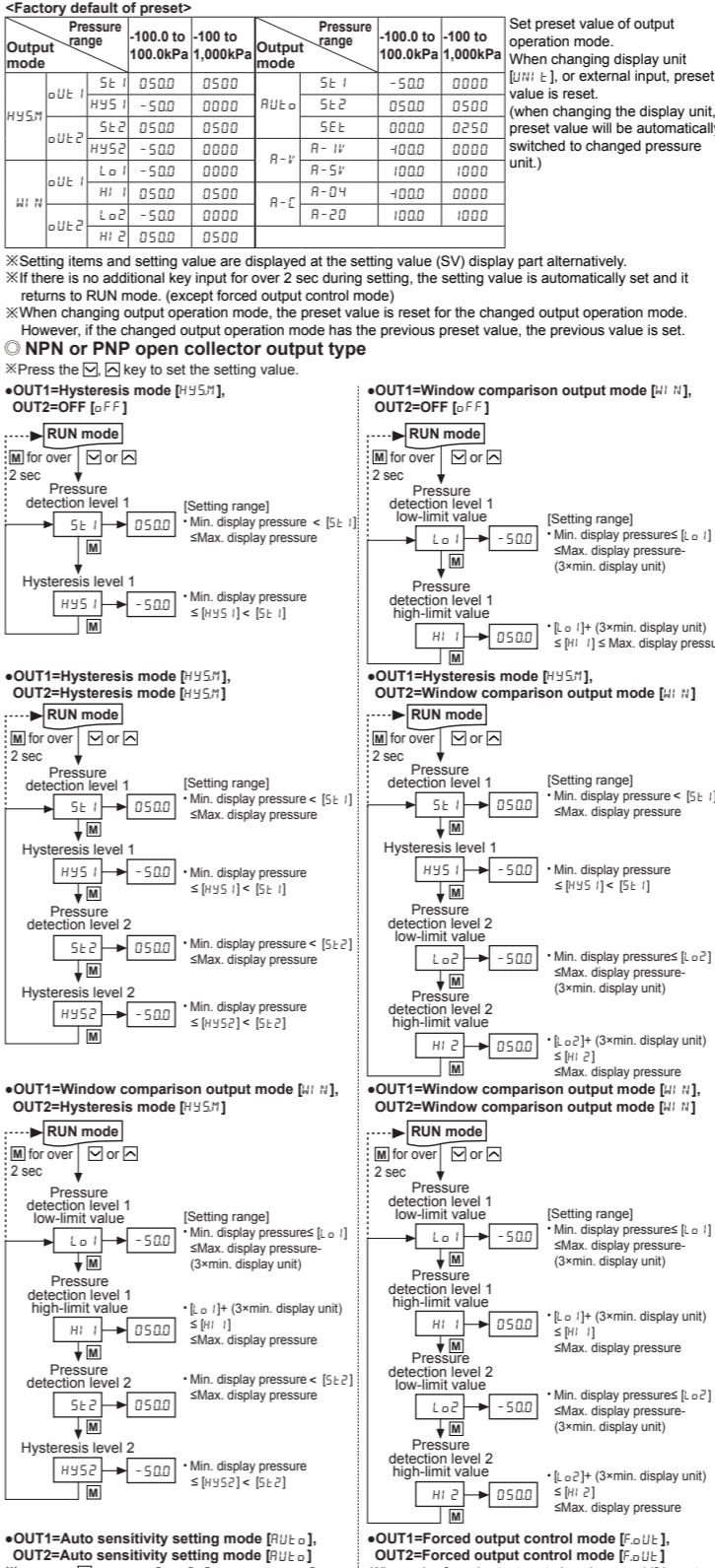
## Functions



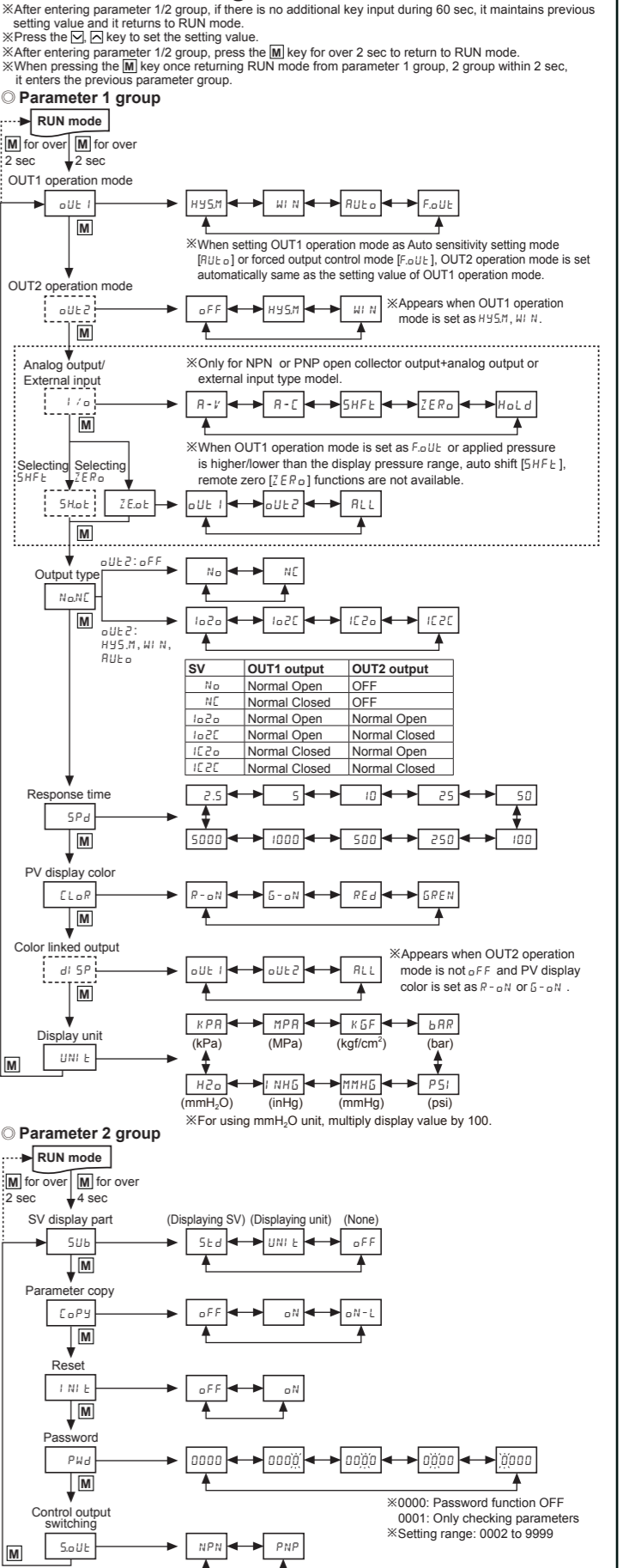
## Setting For Each Mode



## Presets Setting



## Parameter Setting



## Cautions During Use

- In case of 12-24VDC model, power supply should be insulated and limited voltage/current or Class 2 SELV power supply device.
- Do not insert any sharp or pointed object into pressure port. Failure to follow these instructions may result in malfunction and damage to the sensor.
- Be sure that this unit must avoid direct touch with water, oil, thinner, etc.
- Do not use the product in preparation time (within 3 sec) for operating after power-on.
- When using switching mode power supply, frame ground (F.G.) terminal of power supply should be grounded.
- Avoid wiring with power line or high voltage line. It may cause malfunction by noise.
- When moving this unit from cold place to warm place, please remove the humidity on the cover.
- Do not press the setting button with sharp or pointed object.
- Do not apply a tensile strength in excess of 30N to the cables or connector.
- This unit may be used in the following environment.
  - Indoor
  - Pollution degree 3
  - Altitude max. 2,000m
  - Installation category II
- Failure to follow these instructions may result in product damage.

## Major Products

- Photoelectric Sensors
  - Fiber Optic Sensors
  - Door Sensors
  - Door Side Sensors
  - Area Sensors
  - Proximity Sensors
  - Pressure Sensors
  - Rotary Encoders
  - Connector/Sockets
  - Switching Mode Power Supplies
  - Control Switches/amps/Buzzers
  - I/O Terminal Blocks & Cables
  - Stepper Motors/Drivers/Motion Controllers
  - Graphic Logic Panels
  - Field Network Devices
  - Laser Marking System (Fiber. CO<sub>2</sub>. Nd: YAG)
  - Laser Welding/Cutting System
  - Temperature Controllers
  - Temperature/Humidity Transducers
  - SSRs/Power Controllers
  - Counters
  - Timers
  - Panel Meters
  - Tachometer/Pulse (Rate) Meters
  - Sensor Controllers
- Autonics Corporation**  
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