

Installation, Operation and Maintenance

Pressure Sensor 088

Introduction

The Pressure Sensor 088 provides a ratiometric signal to a controller to measure the pressure of a hydronic system between 0 to 150 psi (0 to 1034 kPa). The sensor bulb is designed to install into a tee using $\frac{1}{8}$ "-27 NPT threads and includes a 10 foot (3 m) long cable.



WARNING



Please read carefully before proceeding with installation. Your failure to follow any attached instructions or operating parameters may lead to the product's failure.



Keep this Manual for future reference.

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Important Safety Information

It is your responsibility to ensure that this control is safely installed according to all applicable codes and standards. Watts® is not responsible for damages resulting from improper installation and/or maintenance.



This is a safety-alert symbol. The safety alert symbol is shown alone or used with a signal word (DANGER, WARNING, or CAUTION), a pictorial and/or a safety message to identify hazards. When you see this symbol alone or with a signal word on your equipment or in this manual, be alert to the potential for death or serious personal injury.

⚠ WARNING

- It is the installer's responsibility to ensure that this sensor is safely installed according to all applicable codes and standards.
- This sensor is not intended for use as a primary limit device. Other devices that are intended and certified as safety limits must be placed into the control circuit.

NOTICE

Do not attempt to service the sensor. There are no user serviceable parts inside the sensor. Attempting to service the sensor voids the warranty.



This pictorial alerts you to electricity, electrocution, and shock hazards.

⚠ WARNING

This symbol identifies hazards which, if not avoided, could result in death or serious injury.

⚠ CAUTION

This symbol identifies hazards which, if not avoided, could result in minor or moderate injury.

NOTICE

This symbol identifies practices, actions, or failure to act which could result in property damage or damage to the equipment.

⚠ WARNING



Read manual and all product labels BEFORE using the equipment. Do not use unless you know the safe and proper operation of this equipment. Keep this manual available for easy access by all users. Replacement manuals are available at tekmarControls.com

**THINK
SAFETY
FIRST**

Installation

Check the Contents

Check the contents of this package. If any of the contents listed are missing or damaged, please refer to the Limited Warranty and Product Return Procedure on the back of this brochure and contact your wholesaler or tekmar® sales representative for assistance. Type 088 includes:

- One pressure sensor bulb
- One 10 foot electrical cable with connector
- One Installation and Operation Manual IOM-T-088

Preparation

Tools Required

- 22 mm or Crescent wrench
- Flathead screwdriver

Materials Required

- Pipe joint compound or PTFE tape

Installation Location

- A tee with 1/8"-27 NPT threads should be located on a pipe near the hydronic system's expansion tank.
- Keep dry. Avoid potential leakage onto the sensor.

Step 1 – Rough In Wiring

- The sensor cable is 10 feet (3 m) in length. This can be extended up to 100 feet (30 m) using 3-conductor 18 AWG solid or stranded cable. The cable is color coded with black, red and green wire jackets.
- Strip wire to 3/8" (10 mm) for all terminal connections.

Step 2 - Mounting

- Apply pipe joint compound or PTFE tape to the sensor threads.
- Thread sensor into the tee. Tighten with wrench.
- Connect the cable to the sensor using the Metri-Pack electrical connector.
- Should the cable need to be disconnected from the sensor bulb, use a flathead screwdriver to release the electrical connector spring-loaded clip.

Step 3 - Wiring

Conduit Connector

- Pull wires through a conduit as required by electrical codes.

Terminating

- Terminate the black conductor to the control's power common.
- Terminate the red conductor to the control's 5 V(dc) reference voltage.
- Terminate the green conductor to the control's ratiometric signal input.

Testing and Troubleshooting

An electrical multimeter capable of measuring between 0 to 5 volts DC is required.

Using the electrical meter probes, measure the voltage between the black (power common) and red (reference voltage) wires. The expected voltage is 5.0 V(dc).

Using the electrical meter probes, measure the voltage between the black (power common) and green (ratiometric signal input) wires. The voltage signal should be between 0.5 to 4.5 V(dc). Using the lookup table below, compare the measured voltage to a mechanical pressure gauge mounted on the hydronic system. The signal should be accurate within 1% over the full scale.

Pressure vs Voltage Table

Pressure (psi)	Pressure (kPa)	Ratiometric Voltage (Vdc)
0	0	0.50
5	34	0.63
10	69	0.77
15	103	0.90
20	138	1.03
25	172	1.17
30	207	1.30
40	276	1.57
50	345	1.83
60	413	2.10
70	482	2.37
80	551	2.63
90	620	2.90
100	689	3.17
110	758	3.43
120	827	3.70
130	896	3.97
140	965	4.23
150	1034	4.50

Technical Data

Pressure Sensor 088

Literature	Submittal, Installation and Operating Manual
Maximum Operating Pressure	0 to 150 psi (0 to 1034 kPa)
Operating Temperature Range	-40 to 257°F (-40 to 125°C)
Burst Pressure	450 psi
Acceptable Fluid Media	Water, glycol solution, steam
Dimensions	0.87" ø x 2.3" L (22.0 mm ø x 58.5 mm L), cable: 10 feet (3.0 m)
Threads	1/8-27 NPT
Sensor	5 V(dc) ratiometric signal, +/-1% accuracy
Materials	304 stainless steel (sensor bulb); 3-conductor, 24 AWG with PVC cable jacket
Packaged Weight	0.40 lb. (180 g)

Limited Warranty and Product Return Procedure

Limited Warranty *The liability of tekmar under this warranty is limited. The Purchaser, by taking receipt of any tekmar product ("Product"), acknowledges the terms of the Limited Warranty in effect at the time of such Product sale and acknowledges that it has read and understands same.*

The tekmar Limited Warranty to the Purchaser on the Products sold hereunder is a manufacturer's pass-through warranty which the Purchaser is authorized to pass through to its customers. Under the Limited Warranty, each tekmar Product is warranted against defects in workmanship and materials if the Product is installed and used in compliance with tekmar's instructions, ordinary wear and tear excepted. The pass-through warranty period is for a period of twenty-four (24) months from the production date if the Product is not installed during that period, or twelve (12) months from the documented date of installation if installed within twenty-four (24) months from the production date.

The liability of tekmar under the Limited Warranty shall be limited to, at tekmar's sole discretion: the cost of parts and labor provided by tekmar to repair defects in materials and / or workmanship of the defective product; or to the exchange of the defective product for a warranty replacement product; or to the granting of credit limited to the original cost of the defective product, and such repair, exchange or credit shall be the sole remedy available from tekmar, and, without limiting the foregoing in any way, tekmar is not responsible, in contract, tort or strict product liability, for any other losses, costs, expenses, inconveniences, or damages, whether direct, indirect, special, secondary, incidental or consequential, arising from ownership or use of the product, or from defects in workmanship or materials, including any liability for fundamental breach of contract.

The pass-through Limited Warranty applies only to those defective Products returned to tekmar during the warranty period. This Limited Warranty does not cover the cost of the parts or labor to remove or transport the defective Product, or to reinstall the repaired or replacement Product, all such costs and expenses being subject to Purchaser's agreement and warranty with its customers.

Any representations or warranties about the Products made by Purchaser to its customers which are different from or in excess of the tekmar Limited Warranty are the Purchaser's sole responsibility and obligation. Purchaser shall indemnify and hold tekmar harmless from and against any and all claims, liabilities and damages of any kind or nature which arise out of or are related to any such representations or warranties by Purchaser to its customers.

The pass-through Limited Warranty does not apply if the returned Product has been damaged by negligence by persons other than tekmar, accident, fire, Act of God, abuse or misuse; or has been damaged by modifications, alterations or attachments made subsequent to purchase which have not been authorized by tekmar; or if the Product was not installed in compliance with tekmar's instructions and / or the local codes and ordinances; or if due to defective installation of the Product; or if the Product was not used in compliance with tekmar's instructions.

THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, WHICH THE GOVERNING LAW ALLOWS PARTIES TO CONTRACTUALLY EXCLUDE, INCLUDING, WITHOUT LIMITATION, IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, DURABILITY OR DESCRIPTION OF THE PRODUCT, ITS NON-INFRINGEMENT OF ANY RELEVANT PATENTS OR TRADEMARKS, AND ITS COMPLIANCE WITH OR NON-VIOLATION OF ANY APPLICABLE ENVIRONMENTAL, HEALTH OR SAFETY LEGISLATION; THE TERM OF ANY OTHER WARRANTY NOT HEREBY CONTRACTUALLY EXCLUDED IS LIMITED SUCH THAT IT SHALL NOT EXTEND BEYOND TWENTY-FOUR (24) MONTHS FROM THE PRODUCTION DATE, TO THE EXTENT THAT SUCH LIMITATION IS ALLOWED BY THE GOVERNING LAW.

Product Warranty Return Procedure All Products that are believed to have defects in workmanship or materials must be returned, together with a written description of the defect, to the tekmar Representative assigned to the territory in which such Product is located. If tekmar receives an inquiry from someone other than a tekmar Representative, including an inquiry from Purchaser (if not a tekmar Representative) or Purchaser's customers, regarding a potential warranty claim, tekmar's sole obligation shall be to provide the address and other contact information regarding the appropriate Representative.



A WATTS Brand

All specifications are subject to change without notice

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