

MODEL 1871 PULSE TRANSMITTER

Manual No. 252076, Rev. H, Sept. 2021

1. DESCRIPTION

A. GENERAL. These instructions are for installation of the Model 1871 Pulse Transmitter. Figure 1, designed and manufactured by Veeder-Root Company, 2709 Route 764, Duncansville, PA 16635 (USA), (814) 695-4476.

The series 1871 pulse transmitter has been designed for use with gasoline pump computers and miscellaneous electrical counters in remote indicating and data systems. It provides fast, accurate pulsing for counters, printers, and stepping motors used with remote indicating, totalizing, and data systems.

The pulse transmitter chops a fixed level input voltage to form a square wave pulse with minimum contact bounce for use with transistorized circuits.

The Series 1871 pulser consists of a rugged die cast explosion-proof housing with a screw type cover for easy access to the pulsing mechanism. The transmitter utilizes a dry-reed switch, magnet, and gear train, synchronized to provide 1 pulse per revolution. Long life is a feature of this unit.

2. SPECIFICATIONS

Specifications listed are standard unless otherwise noted. Optional features are available at additional cost.

Approvals:

- IECEx compliance per IEC 60079-0:2017 & IEC 60079-1: 2014
- ATEX compliance per EN IEC 60079-0:2018 & EN 60079-1: 2014
- UKCA compliance per EN IEC 60079-0:2018 & EN 60079-1:2014

Pulse Frequency: 1 cycle per revolution of input shaft.

Contact Rating: Maximum 50 VA resistive, not to exceed 250 V or 3 amperes.

Type Switch: Single pole, single throw.

Contact Resistance: 500 milliohms.

Actuating Time: 1 millisecond average.

Contact Bounce: 1 millisecond average.

Speed: 0 to 3000 pulses per minute. 300 rpm maximum input shaft speed.

Pulse Timing: 50%±10% on, the balance off.

Mounting Position: Operable in any position, clockwise or counterclockwise rotation.

Operating Temperature: -40° to +60° C (-40° to +140° F) at maximum ambient temperature of 60° C (140° F).

Torque: 3.0 oz-in. (216.2 g-cm) maximum.

Life Expectancy: Up to 200 million pulses, depending on electrical loads and input shaft speed.

Contact Protection: Arc suppression is required when used in inductive circuits. Type and value of suppression will vary with coil and coil voltages under consideration.

Housing: Explosion-proof

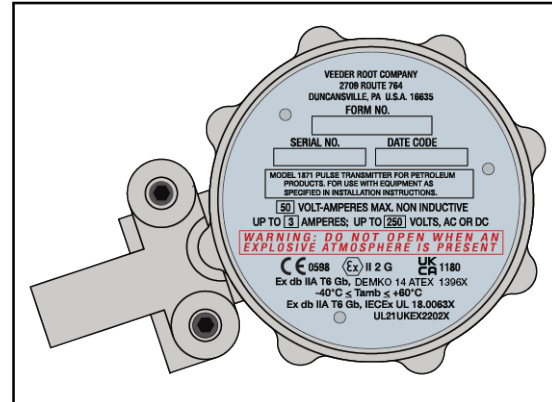
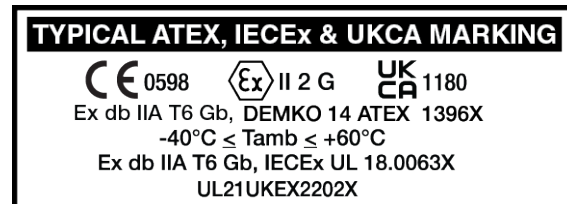


Figure 1. 1871 Pulse Transmitter



Cover Assembly: Corrosion Inhibiting Multi-Purpose Synthetic grease (Vischem 352 or equivalent) may be applied on pulse transmitter cover – threaded joint surface before assembly in accordance with the grease manufacturers specifications.

Mounting: Three ¼ -20 NC-2 blind tapped holes, spaced 120° apart on a 63.5 mm (2.5") diameter bolt circle are provided on the shaft end of the housing for mounting.

*Wiring Note:

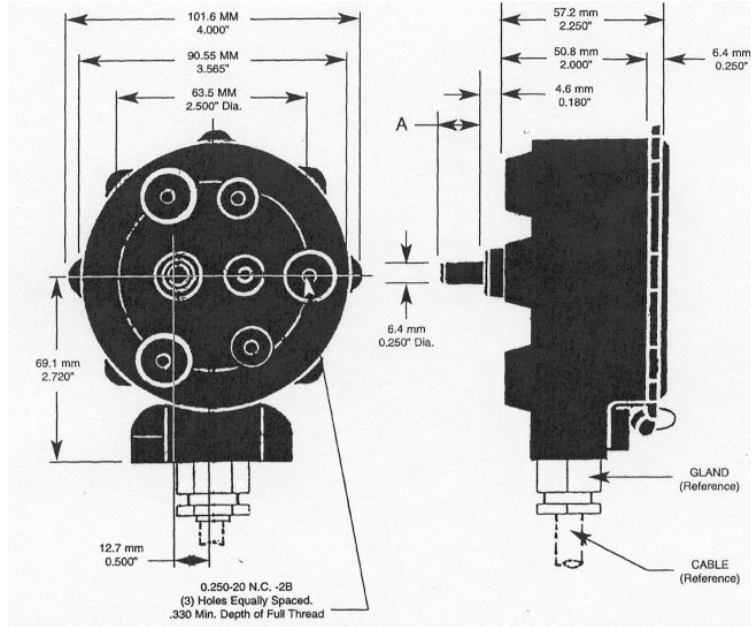
The internal earth point screw must not exceed 4 mm in length.

OPTIONS

Standard models of the 1871 have an output of 1 pulse per revolution of the input shaft and should be so specified when ordering. Other ratios may be most economically obtained via customer supplied external gearing. The simplest method to use two spur gears one mounted on the pulse transmitter input shaft, the mating gear mounted on the customer drive. Ratio pulses of 2, 5 & 10 per revolution can be obtained by special order from the factory. Also available are non-standard input shafts, contact Factory for details.

Approved – certified cable and cable gland to be supplied and installed by customer or end user for final installation

DIMENSIONS



Dimensions

<p>A. Shaft Length standard $.410 + 0.50 \text{ in. } (10.4 + 1.27 \text{ mm})$ $- 0.035 \text{ in. } (-0.88 \text{ mm})$</p>	<p>Approved- Certified Cable Gland for must be used for final installation. 2 or 3 Core – tinned copper conductors required with metallic shield. All enclosed in an outer insulating sheath.</p>
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Figure 2. Mounting Dimensions

Other lengths available upon request.

3. INSTALLATION

⚠ WARNING IN INSTALLATION AND USE OF THIS PRODUCT, COMPLY WITH THE ELECTRICAL CODE AND/OR ANY OTHER APPLICABLE SAFETY CODES. IN ADDITION, DISCONNECT POWER AND TAKE OTHER NECESSARY PRECAUTIONS TO PREVENT PERSONAL INJURY AND EQUIPMENT DAMAGE DURING INSTALLATION AND SERVICE.

A. GENERAL. Proper installation is necessary if this pulse transmitter is to provide satisfactory operation. Improper installation will result in damage from any of the following conditions:

1. Contact protection: Arc suppression is required when used in inductive circuits. Type and value of suppression will vary with coil and coil voltages under consideration.
2. Exceeding temperature range: -40° to 60° C (-40° to $+140^{\circ}$ F)
3. Operating the unit in excess of 300 rpm.

Excessive heat causes permanent damage whether or not the unit is in use. Excessive cold prevents the unit from functioning, but it will recover when normal temperature is restored.

B. MOUNTING

1. Installation may be made in almost any environment free from severe vibration and extreme temperature.
2. Cable Gland entry thread to be M20 x 1.5 (6H) in accordance with ISO 965-1 & 965-3

3. Three equally spaced holes, 0.250-20 NC-2B, on the back of the case are provided for mounting (see figure 2). Brackets and mounting arrangements must be sufficient to maintain alignment and minimize side load on shaft bearings.

Note: Mounting Screws must not bottom out. (Must not engage more than stated thread length).

4. Shaft coupling method shall be determined by the user. Drive shaft diameter is 0.25 inch (6.35mm).

- C. **WIRING.** See figure 3 for output and operating voltage connections.

D. OPERATING CHECK. After installation and before normal use, check pulse transmitter and related circuitry for proper installation and operation.

CAUTION: BE SURE ALL WIRES ARE INSTALLED CORRECTLY BEFORE TURNING ON THE POWER SINCE FAULTY INSTALLATION CAN DAMAGE THIS UNIT.

1. Inspect all leads, connections, and ground. Be sure all external circuits are wired correctly.
2. Check for correct pulse transmission:
 - Turn on power.
 - Rotate shaft a specific number of turns.
 - Related equipment must confirm the number of pulses transmitted.
 - Turn off power.
3. Reexamine the installation to be certain all safety measures have been met and adequate protection is provided against possible damage. The system may be operated normally only after all the preceding checks have been performed and all corrections made.

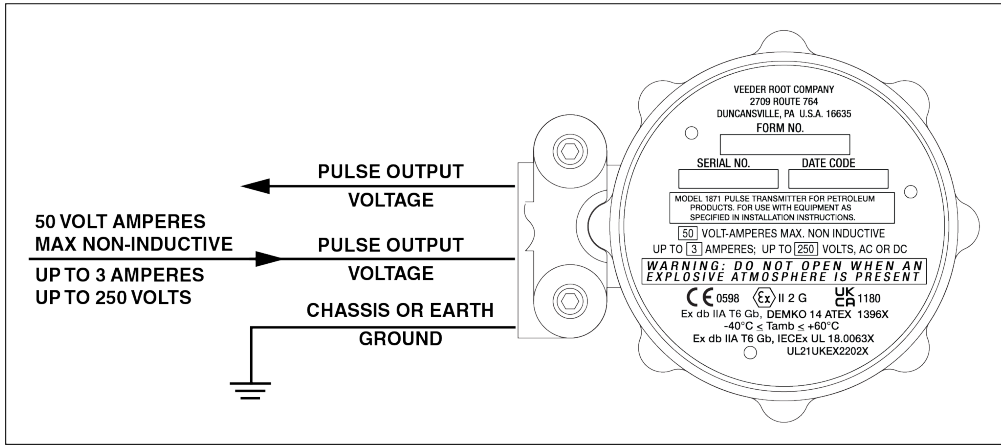


Figure 3. Typical Output / Voltage Connections

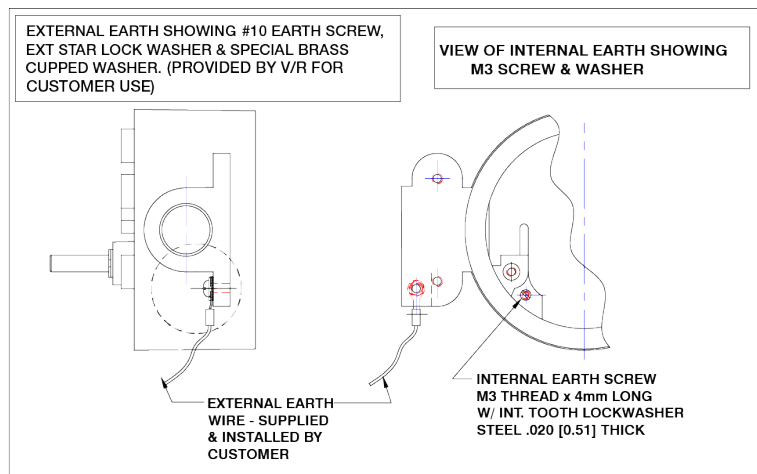


Figure 4. External & Internal Ground Connections

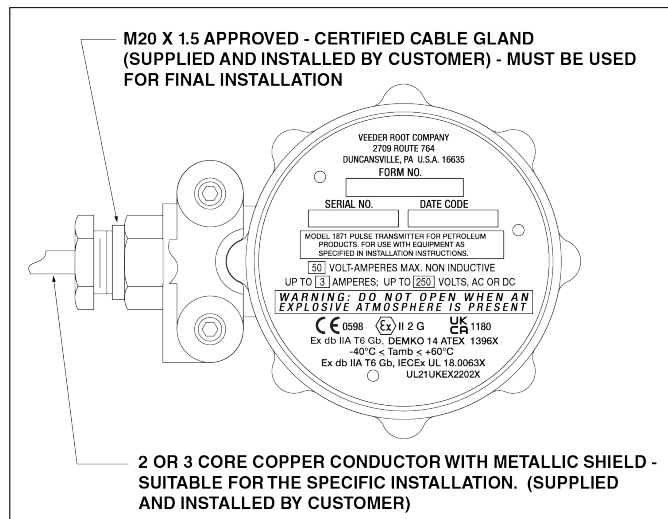


Figure 5. Cable and Gland Connections

4. EXTERNAL WIRING NOTES

1. Customer applied ground wire is shown in Figure 4.
2. Use only suitable Certified M20 X 1.5mm pitch Cable Gland for final installation.
3. 2 or 3 core – maximum recommended wire size to be 18awg or (1.00 mm²) tinned copper conductors recommended with metallic shield. All enclosed in an outer insulating sheath.
4. The maximum external conductor size is 16mm² (cross sectional area).
5. Should product be exposed within systems in areas where radiated fields are greater than 3 v/m, possible error in pulse count may occur.
6. The internal earth point screw must not exceed 4mm in length. The protective Earthing (PE) conductor must be of equal or be larger in size than those external conductors used to wire the device.
7. All conductor to switch soldered joints must be sleeved so that no bare conductor exists within enclosure and all soldered connections must be made prior to installation in hazardous area.

5. SPECIAL CONDITIONS OF USE – ATEX VERSIONS:

The flameproof joints are not intended to be repaired. Contact Veeder Root for more information.

The 4 mm X 12 mm hex socket screw for the lock cover has a tensile strength of 800 N/mm² and a yield strength of 640 N/mm².

The bushing between the operating shaft and enclosure is not end user replaceable. Contact Veeder Root for more information.

6. SERVICE NOTES

- A. REPAIR.** It is NOT recommended that attempts to repair the pulse transmitter be made by users or their agents. The compact design of the pulse transmitter, made possible by the use of solid state devices, makes special knowledge and unique test equipment essential if serious damage to the electronic circuits is to be avoided. We therefore recommend that the pulse transmitter be returned to Veeder-Root for repair or adjustment.
- B. SHIPMENT.** If the pulse transmitter must be returned to Veeder- Root for repair, perform the following steps:
1. Explain, in writing the nature of the malfunction as accurately as possible. List the persons to be contacted in the event communication is required.
 2. Place the letter along with the pulse transmitter and its packing material in its box.
 3. Place in an overwrap box. Address to:
Veeder-Root Co.
2709 Route 764
Duncansville, PA 16635 (USA)
 4. All shipments must be Prepaid.

7. CLAIMS AND WARRANTY

A. DAMAGE CLAIMS

1. Thoroughly examine all components and units as soon as received. If damaged, write on the face of the freight bill a complete and detailed description of the damage. Have the carrier's agent sign the description.

Note: Insist that the carrier's agent verify the inspection and sign the description.

2. Immediately notify the delivering carrier of damage or loss. This notification may be given in person or by telephone. Written confirmation must be mailed within 48 hours. Railroads and motor carriers are understandably reluctant to make adjustments for damaged merchandise unless inspected and reported promptly.

3. Risk of loss of, or damage to merchandise remains with the Buyer. It is the Buyer's responsibility to file a claim with the carrier involved.
4. Immediately advise your Veeder-Root representative, distributor, or the factory so that we may assist you.

B. WARRANTY AND CONDITIONS

1. **WARRANTY.** We warrant that our products shall be free from defects in material and workmanship for a period of one year from the date of shipment thereof or the product's total rated life, whichever first occurs. Within the warranty period we shall repair or replace such products which are returned to us with shipping charges prepaid and which are determined by us to be defective. This warranty will not apply to any product which has been subjected to misuse, negligence, or accident; or misapplied; or used in violation of product manuals, instructions, or warnings; or modified or repaired by unauthorized persons; or improperly installed.
2. **INSPECTION.** You shall inspect the product promptly after receipt and shall notify us at our Altoona office, in writing, of any claims, including claims of breach of warranty, within thirty days after you discover or should have discovered the facts upon which the claim is based. Your failure to give written notice of a claim within the time period shall be deemed to be a waiver of such **claim**.
3. **LIMITATION OF REMEDY AND WARRANTY.** The provisions of paragraph 1 are our sole obligation and exclude all other remedies or warranties, express or implied, including warranties of MERCHANTABILITY and FITNESS FOR A PARTICULAR PURPOSE, whether or not purposes or specifications are described herein. We further disclaim any responsibility whatsoever to you or to any other person for injury to person or damage to or loss of property or value caused by any product which has been subjected to misuse, negligence, or by accident; or misapplied; or used in violation of product manuals, instructions, or warnings; or modified or repaired by unauthorized persons; or improperly installed.
4. **LIMITATIONS OF DAMAGES.** Under no circumstances shall we be liable for any incidental, consequential or special damages, losses or expenses arising from this contract or its performance or in connection with the use of, or inability to use, our product for any purpose whatsoever.
5. **LIMITATIONS OF ACTIONS.** No action regardless of form arising out of this contract may be commenced more than one year after the cause of action has accrued, except an action for nonpayment.
6. **COLLATERAL PROMISES.** There are no representations, warranties, or conditions express or implied, statutory or otherwise except those herein contained, and no agreements or waivers collateral hereto shall be binding on either party unless in writing and signed by you and accepted by us at our Altoona office.
7. **INTERPRETATION.** Rights and liabilities arising out of any contract with us shall be determined under the Uniform Commercial Code as enacted in Connecticut.



2709 Route 764. Duncansville. PA 16635 (USA). Phone 814-695-4476. Fax 814-695-7605