



**Installation Data Manual**  
**Models 590, 591, 592, 593, 595, 596**  
**Detachable Level Transmitter Series**



**199 Fire Tower Drive**  
**Tonawanda, NY 14150**  
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**Toll Free: 1-800-688-0030**  
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**This manual contains important information on proper usage of these devices. Read this manual carefully before attempting to install or powering up any of these Detachable Level Transmitters.**

## COMPANY BACKGROUND

Viatran is an ISO 9001:2000 company certified company committed to providing high quality pressure transducers and transmitters. Established more than 50 years ago, Viatran has built its reputation on providing durable and accurate pressure sensing devices. Our products are often specifically specified by integrators and engineering firms for applications ranging from the offshore oil rigs to pump control to tank and well level measurement. Viatran is often called for custom modifications for applications where standard products are not available.

## TECHINCAL SUPPORT

Technical assistance is available Monday-Friday 8:00 AM to 5:00 PM (Eastern) from our knowledgeable factory personnel to answer any of your application or installation questions. Our toll free number is 1-800-688-0030. Questions or additional documentation can also be requested via e-mail at [solutions@viatran.com](mailto:solutions@viatran.com).

## CUSTOMER SERVICE

Orders for additional units or accessories may be placed by calling customer service at 1-800-688-0030 or by fax at 1-716-693-9162. Orders can also be placed by contacting a local representative in your area. To find the nearest representative visit our web site at [www.viatran.com](http://www.viatran.com).

## PRODUCT OVERVIEW

### Manual Scope:

All information contained in this document is representative of a standard Viatran DLT series for models 590, 591, 592, 593, 595 & 596. If the product you ordered has special requirements or modifications, refer to the permanently marked information on the product and your purchase order for possible alteration to the product's configuration. Failure to verify product configuration before installation may cause permanent product damage, and in many cases, void the product warranty. If you are unsure or have questions about your product, please contact our Application Engineers for assistance.

Remove and retain all instruction manuals and performance certificates that are shipped with the product. These documents provide important information on the product's calibration, operation, safety precautions, recommended maintenance, re-calibration requirements, repair service instructions and warranty information. These documents are updated from time to time as changes to the product occur and should be reviewed at receipt so that proper and safe installation can occur.

### Product Description and General Use:

Viatran's submersible detachable level transmitters have been designed for continuous use and utilize either a piezoresistive or ceramic sensor to isolate the sensing diaphragm from the media. The level is measured by hydrostatic pressure. The standard output for all these models is 4-20mA.

Viatran's submersible transmitters are designed to be lowered directly into the media being measured. Care should be given not to subject the sensing diaphragm to any sudden pressure shock from throwing the unit into the media. By lowering the unit slowly into the liquid, excessive pressure shocks can be avoided. The various models are constructed with a variety of wetted materials (stainless steel, PVC or polypropylene bodies, SS or ceramic diaphragms, FKM or EPDM o-rings, PUR, PVC, FEP or TPE cables). It is important that the proper materials of construction be selected to ensure the transmitters compatibility with the media it will be used in and exposed to. It is the user's responsibility to verify all wetted parts are suitable for the application. If there are any doubts, please contact our Application Engineers for assistance. Incompatibility will void the product warranty.

Technical data for each of these products can be found at [www.viatran.com](http://www.viatran.com).

### Basic Operation:

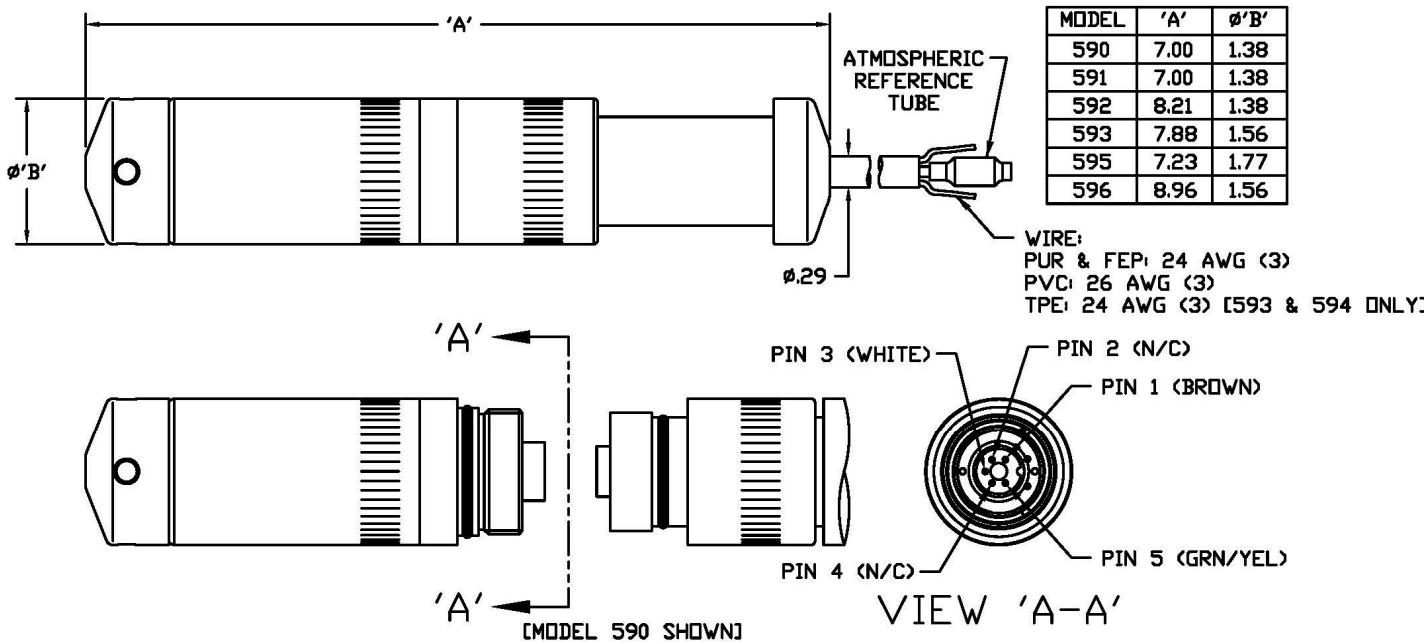
All of Viatran's submersible models are pre-set at the factory for the specified output and are referenced to atmospheric pressure (Zero PSIG). Once factory set, the product should perform as indicated per the performance certificate and product labeling. In most cases the zero and span cannot be externally adjusted, hence any deviation from the factory settings could indicate damage to the sensor, electronics, or both. Should the zero or span reading vary greatly from the performance certificate it may indicate sensor damage or some form of obstruction in the cable breather tube or the protective cap. Contact our Application Engineers for assistance if your readings seem inaccurate.

### **Handling Requirements and Cautions:**

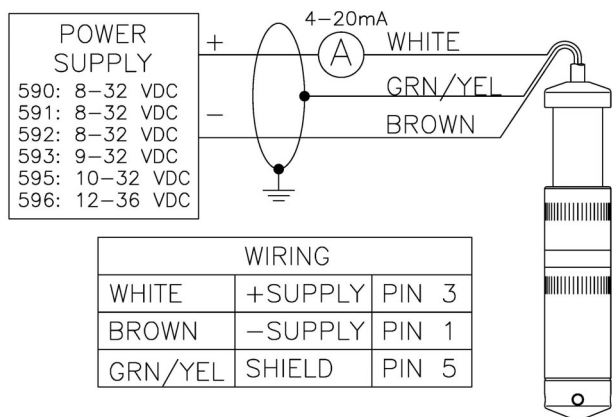
1. All electrical & pressure connections should be compatible with the model specifications as outlined above.
2. The product's internal electrical circuitry is DC isolated from case ground. It is recommended that the case ground wire be connected to earth ground at the cable termination as this is an integral part of the internal surge protection and noise immunity features. Proper grounding techniques should be used to avoid ground loops.
3. The DLT series are equipped with an integrated breather tube for atmospheric pressure reference and have a PTFE filter attached to the tube end for ingress protection while allowing for proper product function. Installation of the cable end should be in a control cabinet or suitable terminal box located in dry area which is free of aggressive gasses to avoid damage. At no time should the filter be removed while in service. If any mist, vapor or fluid is permitted to enter this breather without the filter, total unit failure will likely occur. Contact Viatran for replacement filters if needed.
4. Due to the internal breather tube, tight bends should not be applied to the transmitter's cable. For static measurements, a minimum bend radius of 10x the cable diameter should be used. For dynamic measurements, a minimum of 20x is recommended.
5. Some models are designed for use without a protective cap. They are packaged with a rubber cap to shield the sensor prior to installation. This rubber cap should be removed only moments before placing the transmitter into service. The cap should be replaced if the transmitter is removed from service.
6. At no time should an object be inserted into the pressure port or pressed against the sensing area to deflect the sensor (to test or simulate pressure), as on some models, permanent damage to the sensing diaphragm can occur and void any warranty.
7. When shipped in quantities, units should be packaged individually and securely to eliminate possible damage.

## DIMENSIONAL DRAWINGS - VIATRAN MODEL 590 thru 596

Note: The drawing below is for informational purposes only and is not to scale. All dimensions are nominal, in inches and for reference purposes only.



### Standard Wiring:



### Model 590 thru 596

**WARNING!** Electrically connect or disconnect the transmitter only when power is off (no current)!

### Outdoor installations:

If your transmitter will be located outside, it could be subject to lightning or voltage surges. It is suggested that a Voltage Surge Protector be installed between the cable termination and your other electronics. Additional protection of up to 10kA is available from Viatran in a DIN Rail mounted device that can be mounted in a panel box at the cable termination. See our accessories for surge protector offerings.

### Special features:

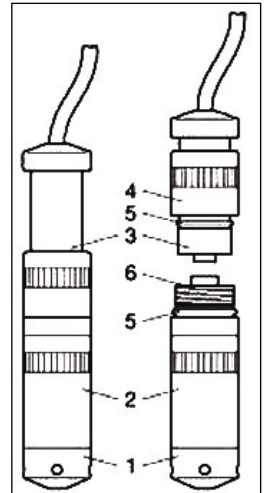
In order to facilitate ease of maintenance and reduced stocking costs, the DLT series transmitters have a detachable sensor section which is plugged to the cable assembly with a connector. This allows a much easier change out without removal of your fully installed cable.

#### Detaching sensor from cable (refer to figure next to text)

- Hold the DLT by the sensor head (2) with one hand and turn the cable nut (4) counter clockwise carefully with the other hand. **Avoid twisting of the cable where joins at the housing!**
- Once the cable nut is unscrewing and free, separate the sensor section (2) from the cable section (3) by lifting it straight out to prevent damage to the plugs.

#### Reattaching sensor to cable

- Check o-rings (5 & 6). They must be in excellent condition to make a liquid tight seal. Replace if damaged.
- Lubricate both radial o-rings (5) and axial o-ring (6) with Vaseline or o-ring grease.
- Remove any excessive Vaseline or grease residue from the axial o-ring (6).
- Plug the cable section (3) straight into the plug of the sensor section (2) while making sure the alignment grooves mate. Do not force the connection.
- While holding the cable and sensor sections together with one hand, screw on and tighten the nut (4) carefully with the other hand. Prevent twisting of the cable section (3) at the housing! **Do not twist the sensor head (2)!!**

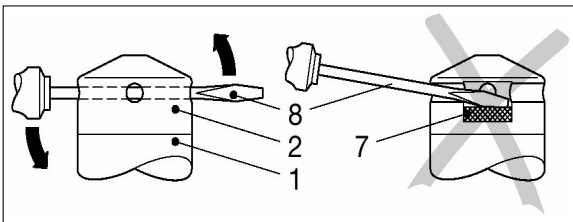


**NOTE: Do not twist the sensor head when attaching it to the cable section!**

**Doing so can damage the cable/connector assembly, cause failure, and void warranty.**

### Protective Cap Removal (model dependant):

For the protection of the sensor diaphragm, some DLT models have a plugged-on protection cap. This cap can be temporarily removed if cleaning of the cap is required. Once the cap is removed, it can be cleaned with a compatible cleaner. The cap is made of POM (Polyoxymethylene) plastic.



NOTE: If it is necessary to remove the protection cap, this has to be done with utmost care. To prevent damage of the diaphragm, please follow these instructions:

#### Removal with a tool (refer to figure below)

- Hold the probe in a way that the protection cap points upwards.
- Slide a small tool such as a screwdriver (8) straight through two opposite passage holes in the protective cap (2). Make sure the leading edge of your tool is level or points towards the cap during insertion. If the tool comes in contact with the sensor face, damage will likely occur. Even a slight crease of the diaphragm will cause permanent damage.
- Lever off the cap by moving up the handle of the tool.
- Make sure that the sensor (7) under the protection cap does not get damaged!

**Standard Wire Information:**

Cable Description	PUR	PVC	FEP	TPE
<b>Weight</b>	0.04 lbs/ft	0.04 lbs/ft	0.04 lbs/ft	0.03 lbs/ft
<b>OD</b>	0.29"	0.29"	0.29"	0.29"
<b>Max Pulling Tension</b>	220 lbs	45 lbs	220 lbs	220 lbs
<b>Conductors</b>	6-24 AWG	6-26 AWG	6-24 AWG	6-24 AWG
<b>Insulation: Conductors/Jacket</b>	PE / PUR	PE / PVC	PE / FEP	TPE (PELON Special-TPE)/ TPE (TPE-U)
<b>Drain/Shield</b>	24 AWG	26 AWG	24 AWG	24 AWG
<b>Vent Tube</b>	0.098" OD/Polyamid	0.098" OD/Polyamid	0.098" OD/Polyamid	0.098" OD/Polyamid
<b>Conductor Resistance</b>	0.026 Ohms/ft	0.041 Ohms/ft	0.026 Ohms/ft	0.026 Ohms/ft

**OPTIONAL APPROVALS**

59x\_FA\_



METROLOGY CERT:  
OC.C.30C001.A No 73774

**ACCESSORIES – OPTIONAL EQUIPMENT**

Please contact Viatran for these and other available accessories.

Digital Meter  
Breather Tube Filter

Replacement O-rings  
Desiccant Kit

Aneroid Bellows  
Cable Clamp

Terminal Box  
Voltage Surge Protector

Vent Compensator  
Shark Cage

## **MAINTENANCE AND REPAIR**

All Viatran transmitters have been designed to function free from routine or scheduled maintenance. Simple cleaning of the pressure cavity on an as needed basis will provide many years of satisfactory performance. Protecting the product from continued exposure to moisture or fluids at the electrical connection and breather area will eliminate premature internal failure of the product. Generally, any time the product is removed from service; the pressure cavity should be flushed with a compatible cleaner to prevent media buildup. During the cleaning process only a soft, lint-free cloth is recommended. Never use a coarse or stiff bristle brush to clean media from the diaphragm surface.

It is suggested that the calibration be verified on a usage dependent schedule. If the product is in continuous service 7 days a week, then calibration verification may be necessary every 6 to 8 months. If the product is in a lab test environment a more lenient verification schedule would be appropriate. In all instances, the performance of the product will depend on the individual application or process in which it is installed. More continued usage would require a shorter period between calibration verification and product maintenance.

If a product is perceived to be exhibiting problems, it can be returned to Viatran for analysis and/or repair. It is suggested that only Viatran personnel attempt repair of the product. Any damage resulting from customer disassembly would result in a loss of coverage under the warranty policy. Older products returned for repair are updated to current specifications unless the repair cost would outweigh the cost of a new replacement model. Products returned for repair should include information on the person to contact for repair quote approval, the individual to contact if Viatran's technical staff requires additional information during analysis, and a brief description of the problem associated with the product's failure.

## **REPAIR INSTRUCTIONS**

Viatran's Transmitters are designed to be easily repaired and recalibrated if necessary. If a failure occurs, the transmitter should be returned to the factory for inspection and testing. Please contact the Customer Support Department at 1-800-688-0030, for a return tracking number and/or a repair cost estimate. A nominal inspection fee is charged on all units returned to the factory which are not subsequently repaired.

## **WARRANTY**

Viatran Corporation warrants that its products shall be free from defective workmanship and/or material for a period of twelve (12) months from the date of shipment, provided that Viatran's obligation hereunder shall be limited to correcting any defective workmanship and/or replacing any defective material f.o.b. factory. No allowance will be made for any expense incurred for correcting any defective workmanship and/or material without written consent by Viatran. This warranty is in lieu of all other warranties expressed or implied.

The contents of this manual are correct, to the best of Viatran's knowledge at the time of publishing. Viatran is not liable for any incorrect statements and/or their effects. We reserve the right to change information at any time.

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