

# Sanitary Differential Level Transmitter (TDL)

## Introduction

The Anderson-Negele TDL transmitter combines all the benefits of a completely electronic DP level transmitter with features that improve performance and application breadth. By incorporating our proven SL Driftless Level transmitters as primary inputs, installation, calibration, and long-term stability are all greatly enhanced versus competitive solutions. Furthermore, we designed the new transmitter to operate on 24 Volt DC power, meet intrinsic safety requirements for hazardous locations, and provided a HART protocol option.

With its Stainless Steel enclosure and integral LCD Display, the transmitter can be mounted anywhere it's most convenient using standard electronic cabling for sensor and output wiring. Dual outputs are standard, with DP (level) as the primary output, with the secondary selectable for "top" (pressure and/or vacuum) or bottom (total tank pressure). In most applications this can save up to \$1800 by eliminating a secondary transmitter and process connection.

Finally, we've added additional sensor fittings for simple retrofitting to sanitary tank spuds and ANSI flanges. The new TDL is now ready for virtually any level application where pressure and/or vacuum conditions exist.

Complete specifications and ordering information are available on the reverse. For more information please visit our Web Site at [www.anderson-negele.com](http://www.anderson-negele.com), or contact your local Authorized Anderson-Negele Distributor.

## Authorizations



## Features

- Electronic sensors eliminate hard-to-install capillaries and solves temperature and position compensation issues
- Dual transmitter output eliminates one transmitter and its associated process penetration
- Smaller diaphragm size simplifies spud and sensor installation
- Meets intrinsic safety requirements, HART protocol optional
- Operates on 24 Vdc power
- Multifunction integral LCD display is standard
- Quick Disconnect Receptacles with optional Field Wireable Connectors



**Specifications****DIFFERENTIAL (LEVEL) OUTPUT**

Low Range:	0-50" w.c. min span 0-415" w.c. max span
Medium Range:	0-100" w.c. min span 0-830" w.c. max span
High Range:	0-170" w.c. min span 0-1385" w.c. max span

**SECONDARY OUTPUT (PRESSURE AND/OR VACUUM)**

Low Range (HD1):	
Min Span:	50" w.c.
Max Span:	775" w.c.
Min Low End:	-360" w.c. (=26.48" Hg)
Max Low End:	0" (zero-inches) w.c.

**Medium Range (HD2):**

Min Span:	100" w.c.
Max Span:	1,190" w.c.
Min Low End:	-360" w.c. (=26.48" Hg)
Max Low End:	0" w.c.

**High Range (HD3):**

Min Span:	170" w.c.
Max Span:	1,745" w.c.
Min Low End:	-360" w.c. (=26.48" Hg)
Max Low End:	0" w.c.

**PERFORMANCE SPECIFICATIONS**

Calibrated Accuracy:	± 0.25% of URL (1" w.c. for low range, 2" w.c. for medium range; 3.5" for high range)
Repeatability:	± 0.08% of URL
Calibration Stability:	Within ±0.2% of URL for one (1) year minimum
Resolution:	Less than 0.1% of URL
Hysteresis:	± 0.07% of URL
Linearity:	± 0.1% of URL (Best Fit Straight Line)
Over-Range Capacity:	60 psig - low/med range 100 - psig high range

**TEMPERATURE SPECIFICATIONS**

Process Temp. Limits:	0°- 300°F (-18°-149°C)
Ambient Temp. Limits (sensor only):	15°- 150°F (-9°C-65°C)
Compensated Temp. Range (sensor only):	(Process) 0°- 270°F (-18°C-132°C) (Ambient) 15°- 150°F (-9°C-65°C)
Ambient Temp. Limits (trans. enclosure):	15° to 120°F (-9°C-48°C)
Temperature Stability:	±0.2% of Upper Range Limit (URL) per 10°F (5.5°C)

**ELECTRICAL**

Signal Output:	4-20 mA DC for level output; 4-20 mA DC for pressure/vacuum/total output
Transmitter Enclosure Power:	External Source, 18-30 VDC, 92mA (spec where power supply utilized for Transmitter only)
Loop Power:	External Source, 12-30 VDC, 25mA (req'd for each loop) (spec where power supply utilized for Output Loops only)
Common Power Supply:	18-30 VDC, 150mA (spec where power supply utilized for both Loops and Transmitter)
Cable Recommended:	2 conductor, stranded, 18-24 AWG, shielded with ground. 0.17 - 0.26" Cable Sheath OD for use with field wiring connector. Anderson molded cord set recommended for best EMI and waterprotection.
Receptacle:	5-pin M12 Quick Disconnect Receptacle

**MATERIAL AND CONSTRUCTION**

Transmitter Housing:	304 Stainless Steel
Dimensions:	7.87" W x 9.84" H x 5.91" D
Integral LCD:	Liquid Crystal, 0.625" high digit
Window Material:	Polycarbonate
Sensor Material:	304 and 316 SS finished to maximum Ra = 32 microinches
Wetted Parts:	316L SS, electropolished to maximum Ra = 15 microinches
Wetted Parts-Special:	Hastelloy "C" diaphragm optional

**AGENCY APPROVALS**

Hazardous Locations:	Intrinsically safe for use in Class1, Div. 1, Groups A-D (UL Listed)
Standards:	3-A compliant; Third party verified Designed and manufactured to sound engineering practices in accordance with Article 3.3 of the PED 97/23/EC CSA B51-03 CRN# CSA0F9754.5C

Order Information

TRANSMITTER

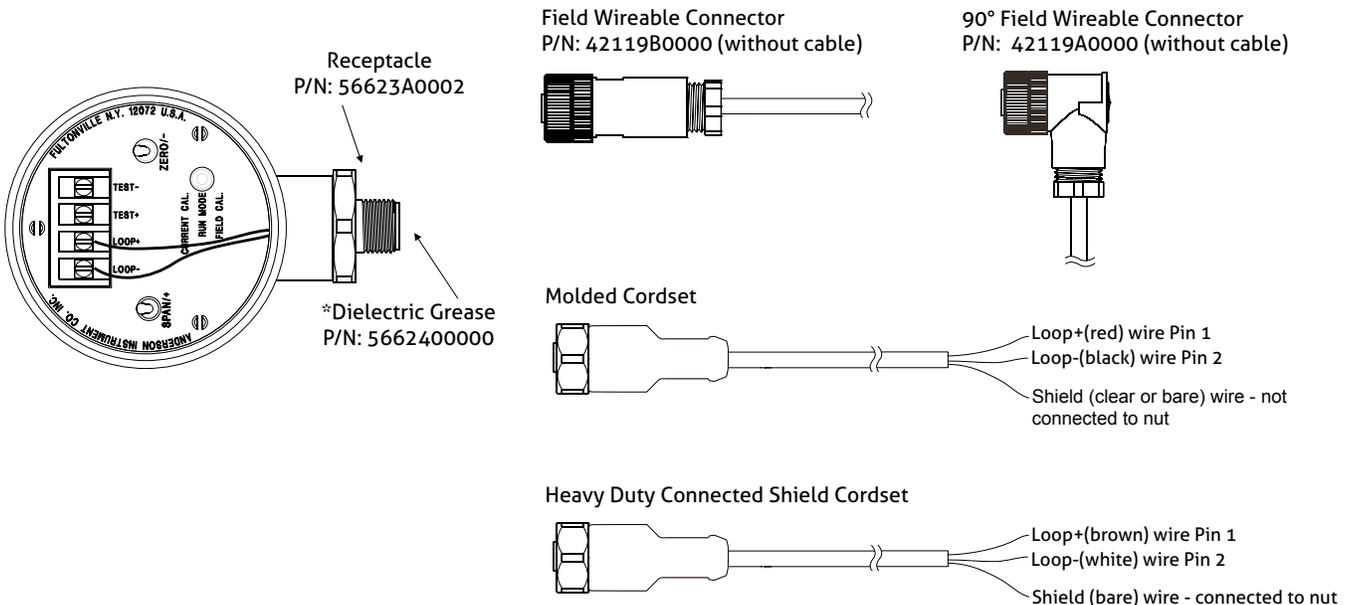
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- OUTPUT**
    - 1 Analog Only (4-20mA)
    - 2 4-20 mA with HART Communication
    - 3 Analog Only (4-20mA) w/Life Sciences Documentation
    - 4 4-20 mA with HART Communication w/ Life Sciences Documentation
  - SECONDARY OUTPUT**
    - 1 S.O. on top (pressure/vacuum)
    - 2 S.O. on total system pressure (bottom sensor)
  - OUTPUT #2 ZERO CALIBRATION (LRV)**
    - #### Value in inches w.c. to nearest tenth (0.1)
  - OUTPUT #2 FULL SCALE CALIBRATION (URV)**
    - ##### Value in inches w.c. to nearest tenth (0.1)
  - DIFFERENTIAL OUTPUT SPAN CALIBRATION (URV)**
    - ##### Value in inches w.c. to nearest tenth (0.1)

SENSOR

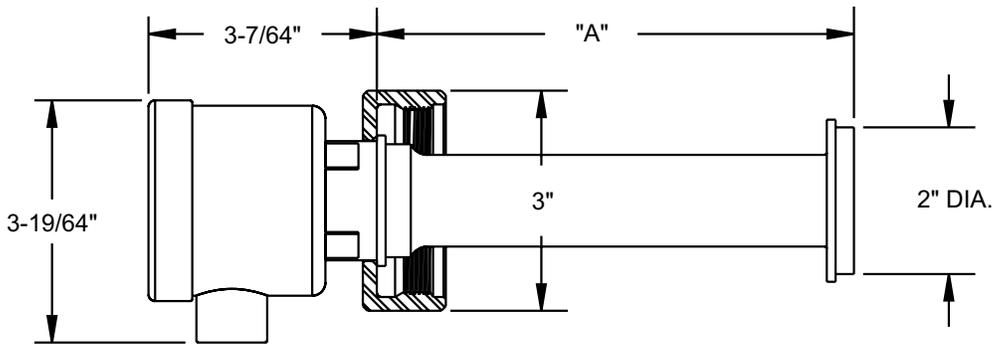
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- UPPER RANGE LIMIT (URL)**
    - 1 Low Range - 15 psi (415" w.c.) max.
    - 2 Medium Range - 30 psi (830" w.c.) max.
    - 3 High Range - 50 psi (1385" w.c.) max.

*Note: Top and bottom sensors must be specified same URL.*
  - SENSOR LOCATION/TYPE**
    - 1 Bottom (Total Pressure)
    - 2 Top (Pressure and or Vacuum)
  - FITTING**
    - 089 Anderson Flush Mount Long (71060-A3, A5, A7, A9)
    - 088 Anderson Flush Mount Short (71060-A4, A6, A8)
    - 004 1 1/2" Tri-Clamp®
    - 005 2" Tri-Clamp®
    - 007 3" Tri-Clamp®
    - 141 Rosemount / Foxboro Sanitary Spud - Short
    - 142 Rosemount / Foxboro Sanitary Spud - Long
    - 150 3" ANSI 150 Flange (4-hole) - Flush <sup>1</sup>
    - 151 3" ANSI 150 Flange (4-hole) - 2" extension <sup>1</sup>
    - 152 3" ANSI 150 Flange (4-hole) - 4" extension <sup>1</sup>
    - 153 3" ANSI 150 Flange (4-hole) - 6" extension <sup>1</sup>
  - DIAPHRAGM**
    - 1 SS 316L Electropolished (Std.)
    - 2 Hastelloy "C" (Optional)
  - SENSOR WIRING**
    - 02 Quick Disconnect Receptacle (QDR) w/10ft Standard Molded Cordset
    - R0 QDR & 90° FWC w/No Cable
    - 00 QDR w/No Cable, no FWC
    - 05 QDR w/25 ft Standard Molded Cordset
    - 10 QDR w/50 ft Standard Molded Cordset
    - 20 QDR w/100 ft Standard Molded Cordset
    - 99 1/2" NPT No QDR, no FWC and no Cable (No sensor warranty for water damage)
  - MOUNTING**
    - 0 Horizontal
    - 1 Vertical (diaphragm up)
    - 2 Other (specify angle from horizontal)
    - 3 Inverted (diaphragm down)
- <sup>1</sup> Not 3-A compliant

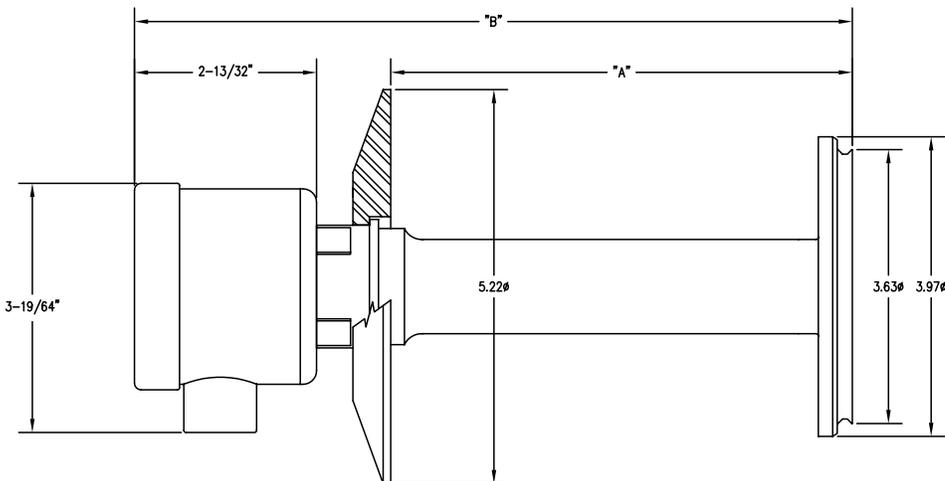
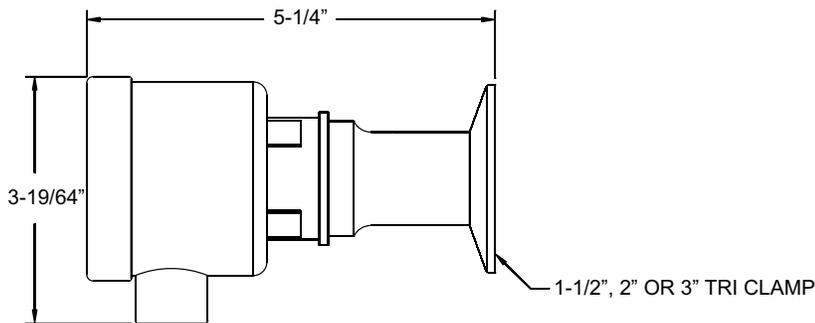
0.17-0.26" Cable Sheath Diameter



Sensor Fittings and Dimensions



ANDERSON SHELL TYPE	"A"
NON INSULATED	2-3/16
INSULATED	6-1/2



FITTING	"A" DIM.	"B" DIM.
ROSEMOUNT SHORT	2.11"	5-1/2"
ROSEMOUNT LONG	6.11"	9-1/2"