

# AGW Life Sciences Series Guided Wave Radar

## Application/intended use

- Continuous level monitoring in vessels up to 10 ft (3 m) in height
- Level measurement in virtually all media in the Life Sciences industry
- Level measurement of foaming media
- Minimum product dielectric of  $\epsilon_{K2}$ , suitable to all water based media including WFI

## Application examples

- Bioreactor level monitoring
- WFI storage and production level monitoring
- CIP tank level monitorings

## Hygienic design/process connection

- Designed in compliance with ASME BPE 2016
- Product contact materials are 316L and USP class VI PEEK
- Options for common tri-clamp sizes
- Housing made of stainless steel (protection class NEMA 4X)
- Continuous process up to 290 F (143 C)

## Special features/advantages

- 2-Wire sensor with 4...20mA and Hart 5.0 output
- Factory bent probes available to accommodate unique tank geometries
- Programming and set-up including strapping table can be configured via Anderson-Negele E-Scope software
- Transmitter head removable without breaking sterile boundary allowing dry calibration with optional dry-verification kit.
- Fixed 316L electropolished probe standard
- Material and calibration certificates included in standard scope of supply
- Optional PC Hart modem available for use with Anderson-Negele E-Scope software

## Options/accessories

- USB Hart modem with BlueTooth
- Pre-assembled cable for M12 plug
- Dry bench calibration kit

## Functional principle

The AGW Guided Wave Radar uses the TDR (Time Domain Reflectometry) principle. The instrument sends low power nanosecond wide pulses along an electronically conductive rod with a known propagation speed (the speed of light). When a pulse reaches the surface of the medium that has a higher dielectric than the air/vapor in which it is traveling, the pulse is reflected. The reflected pulse is detected as an electrical voltage signal and processed by the electronics. The level measurement is directly proportional to the time of flight of the pulse. The measured level is converted into 4-20 mA current and HART signals which is displayed on the LCD display. The level data measuring values can be calculated into volume.

## Authorizations

**AMSE BPE  
2019**  
Compliant

## AGW - Guided Wave Radar



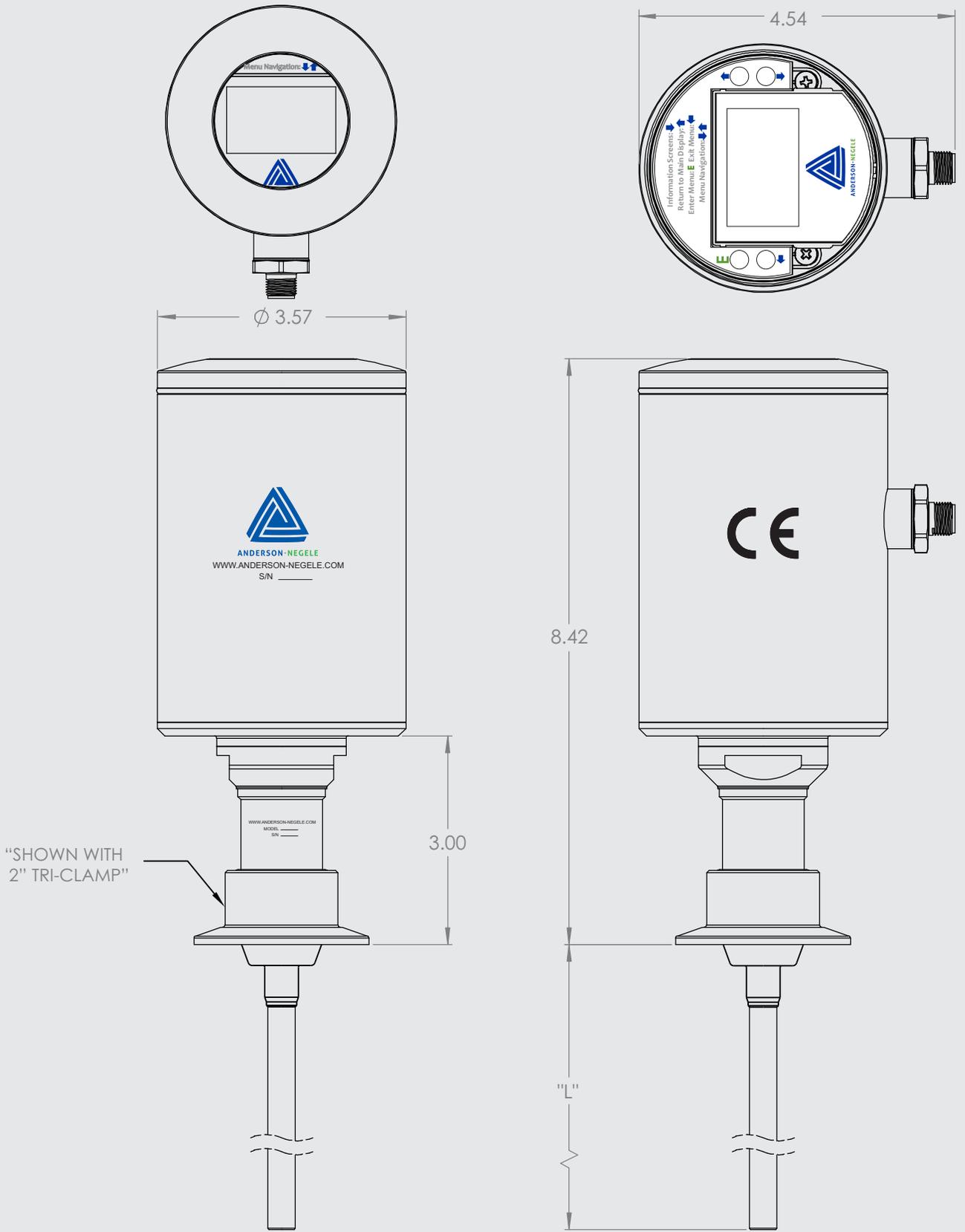
Specification		
<b>Rod length</b>	Product contacting	120 in max. 24 in min 36 in max after bend
<b>Deadband</b>	length beyond process connection	10 in max
<b>Process connection</b>	Tri-Clamp	1...1½", 2", 2½", 3"
<b>Process pressure</b>		230 psi (16 bar) max.
<b>Materials</b>	Connecting head Plastic cap/viewing window Threaded connector Insulating part  Process connection and rod	304 SS Polycarbonate 304 SS USP class VI PEEK (FDA approval number: 21 CFR 177 2415; 3A-20) 316L SS, Ra<20 microinch with EP
<b>Temperature range</b>	Process CIP/SIP cleaning	14...284 °F (-10...140 °C) 290 °F (143 °C) max 120 minutes
<b>Repeatability</b>		+/- .08" (2mm)
<b>Accuracy</b>		+/-0.2" (5mm)
<b>Linearity</b>		< 1.0 % of the upper range value (= rod length)
<b>Temperature drift</b>	At 25 °C	≤ 0.1 %
<b>Response time</b>		< 500 ms
<b>Electrical connection</b>	Supply Protection class Output signal  Ohmic resistance	18...36 V DC NEMA 4X Analog 4...20 mA, galvanically separated from housing, 2-wire loop 0...750 Ω

#### Conventional usage



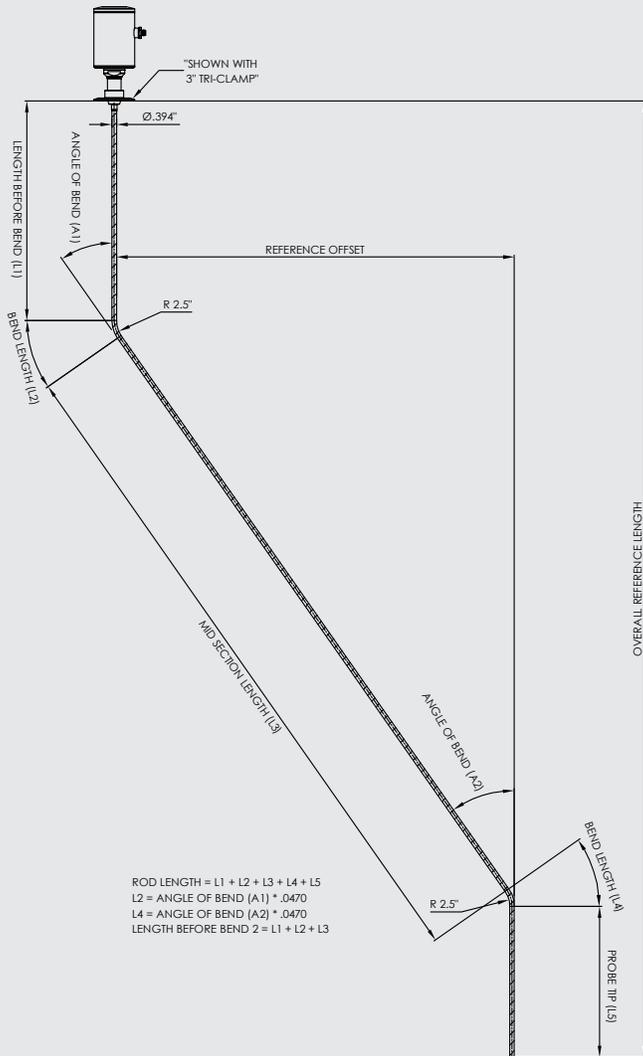
- Not suitable for applications in explosive areas.
- Not suitable for applications in security-relevant equipment (SIL).

AGW



Dual Bend Probe

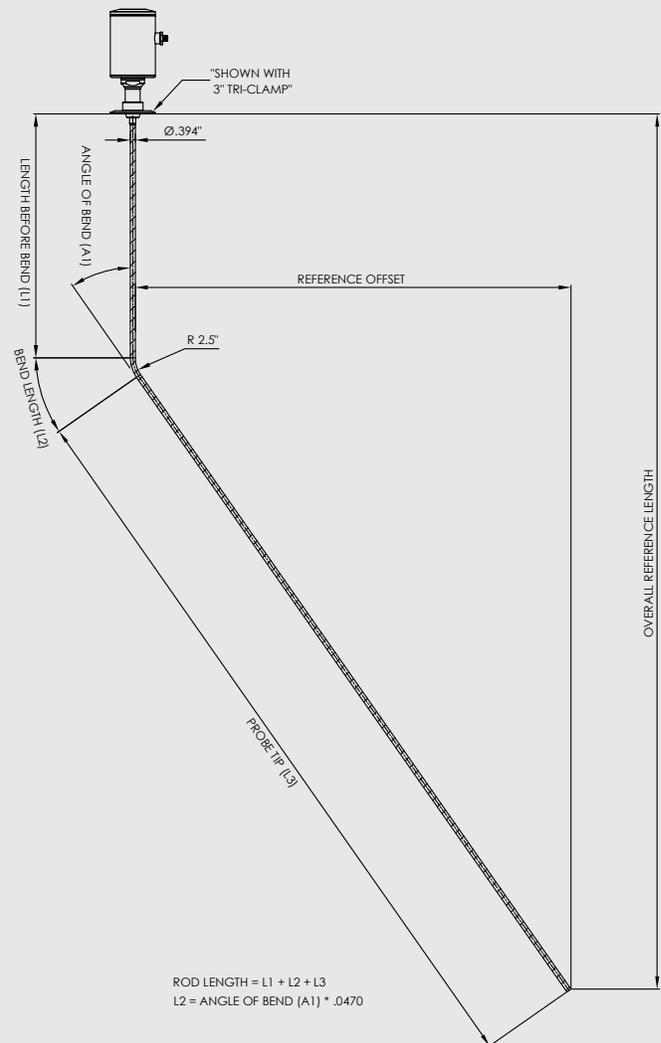
DUAL BEND PROBE



Rod Length = L1 + L2 + L3 + L4 + L5  
 L2 = Angle of Bend (A1) \* .0429  
 L4 = Angle of Bend (A2) \* .0429  
 Length Before Bend 2 = L1 + L2 + L3

Single Bend Probe

SINGLE BEND PROBE



Rod Length = L1 + L2 + L3  
 L2 = Angle of Bend (A1) \* .0429

**Order code**

**AGW-A** (Life Sciences Series Guided Wave Radar)

**Rod Length**, Enter length desired in whole inches 024in...120in (e.g. 36in = 036)

**024...120**

**Rod Length 1/4's**, Enter number of 1/4 inch additions

**0** No addition  
**1** 1/4in  
**2** 1/2in  
**3** 3/4in

**Fitting**

**004** 1-1/2" Tri-Clamp®  
**005** 2" Tri-Clamp®  
**007** 3" Tri-Clamp®  
**008** 4" Tri-Clamp®

**Rod Material**

**A** 316L 20 Ra EP  
**B** 316L 25 Ra Mech

**Cap**

**B** Blind  
**C** Clear

**Electrical connector**

**A** M12  
**M** Minifast  
**C** Cord Grip  
**N** NPT

**Length Before Bend**

**XXX** No Bend  
**018-110** Whole inches before bend

**Length Before Bend 1/4's**

**0** No addition  
**1** 1/4in  
**2** 1/2in  
**3** 3/4in

**Angle of Bend**

**00-45** In degrees up to 45

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**AGW-A/ 036/ 0/ 004/ A/ C/ A/ XXX/ 0/ 00/**

**Order code**

**AGW-P** (AGW- Replacement Probe)

**Rod Length**, Enter length desired in whole inches 024in...120in (e.g. 36in = 036)  
**024...120**

**Rod Length 1/4's**, Enter number of 1/4 inch additions  
**0 - 3**

**Fitting**  
 004 1-1/2" Tri-Clamp®  
 005 2" Tri-Clamp®  
 007 3" Tri-Clamp®  
 008 4" Tri-Clamp

**Rod Material**  
**A** 316L 20 Ra EP  
**B** 316L 25 Ra Mech

**Fixed Characters**  
**XX**

**Length Before Bend**  
**XXX** No Bend  
**018-110** Whole inches before bend

**Length Before Bend 1/4's**  
**0-3**

**Angle of Bend**  
**00-45** In degrees up to 45

AGW-P/ 036/ 0/ 004/ A/ XX/ XXX/ 0/ 00/

**Order code**

**AGW-E** (AGW - Transmitter only)

**Rod Length**, Enter length desired in whole inches 024in...120in (e.g. 36in = 036)  
**024...120**

**Rod Length 1/4's**, Enter number of 1/4 inch additions  
**0 - 3**

**Fixed Characters**  
**XXXX**

**Cap**  
**B** Blind  
**C** Clear

**Electrical connector**  
**A** M12  
**M** Minifast  
**C** Cord Grip  
**N** NPT

**Fixed Characters**  
**XXXXXX**

AGW-E/ 036/ 0/ XXXX/ C/ A/ XXXXXX/