

ZEUS™ **SMART DIGITAL pH SENSORS WITH ULTRA-RUGGED CONSTRUCTION FOR TOUGH PROCESS MEASUREMENT APPLICATIONS**

Description of Most Important Common Core Features:

- Industrial pH Sensors for Severe Service Inline, Immersion & Submersible Installs**
- Waterproofing seal for complete cable isolation for submersion and field washdowns
 - Solid-state reference nearly impervious to ammonia, chlorine, sulfides & most solvents
 - ACCU-TEMP Fast Response Pt1000 Temperature Compensation "TC" element
 - Rugged thick 3.0mm (0.12") protective tines guard configuration, 4 each 90° apart
 - Thick 5.6mm (0.22") sensor body for 1.66" O.D. to endure tough mechanical wear
 - Standard 6 meters (20 feet) of integral cable with thick PVC jacket for aggressive use

Smart Digital Configuration of ZEUS™ pH Sensors:

Short lead times for urgent commissioning of new systems or replacement of existing installs with very robust & advanced digital pH measurement technology

FEATURES SPECIFIC TO SMART DIGITAL ZEUS™ CONFIGURATION

- * Integral smart digital board stores calibrations & transmitter configuration in sensor
- * Waterproof NEMA 6P quick disconnect HiQ4M Snap Corrosion Resistant Connector
- * Up to 610 meters (2,000 feet) noise insensitive digital cable with HiQ4F extensions
- * True plug and play sensor with automatic loading of calibration values for hot-swap
- * Calibrate conveniently in lab or shop and install quick-disconnect sensor in the field
- * Advanced autoread algorithm for reproducible & operator independent calibrations
- * Automatic recognition of 4.00, 6.86, 7.00, 9.18 & 10.00 NIST traceable pH buffers with built-in correction for temperature induced changes to pH buffer value
- * Reliable readings in acidic or alkaline range with 1-point, 2-point or 3-point calibrations
- * Calibrate with sophisticated HiQ Windows software or any 3TX-HiQ-pH transmitter
- * Entire transmitter configuration can be downloaded to sensor or uploaded from sensor to intelligent 3TX-HiQ-pH transmitter for advanced management of field installations
- * Stores last five offset (1-point), slope (2-point & 3-point) and temperature calibrations
- * See 3TX-HiQ documentation for complete set of smart digital features & functionality

Process Connections:

- 1" MNPT Threads on Front for Inline Screw-in Installations
- 1.25" MNPT Threads on Back for Immersion & Submersible Installations

General Sensor Specifications:

Operating Temperature Range:

-15 to +150°C for Inline/Immersion Use (Max +85°C for fully submersible installations)

Operating Pressure Range:

1 to **200 psig** (6.9 to 1379 kPa)

Sensor Body Material:

RADEL® R-5000 NT (Poly-Phenyl-Sulfone, PPSU)

Junction Support Matrix Material:

KYNAR® (Poly-Vinylidene-Fluoride, PVDF)

External Dimensional Drawing:

See ZEUS™ Digital pH Sensor 1"-1.25" MNPT Inline / Immersion / Submersible

pH Measurement Specifications:

Measurement pH Range:

-0.5 to +14.5

Measuring Glass Type:

Low-Profile Parabolic, Thick-Wall Break-Resistant

pH Glass Dimensions:

0.315" (8.0 mm) DIA

Initial Impedance:

< 1,500 MΩ @ 25 °C

Sodium Ion Error:

Less than 0.15 pH in sodium (Na⁺) solutions at pH 14.00

Acidic Error:

Less than 0.05 pH in hydrochloric acid (HCl) solutions at 0.00 pH

Reference System Specifications:

Type:

Triple Junction Standard

Reference Half Cell:

Ag/AgCl, Saturated KCl

Triple Junction:

- Solid-State Non-Porous Cross-Linked Polymer embedded in Kynar Support Matrix holds excess KCl assuring saturation at all temps for stability & long sensor service life
- Porous Ceramic, Saturated KCl in crosslinked polymer, Interfaced to Triple Junction

Primary & Secondary Junctions:

Some Selected Examples of Recommended Applications:

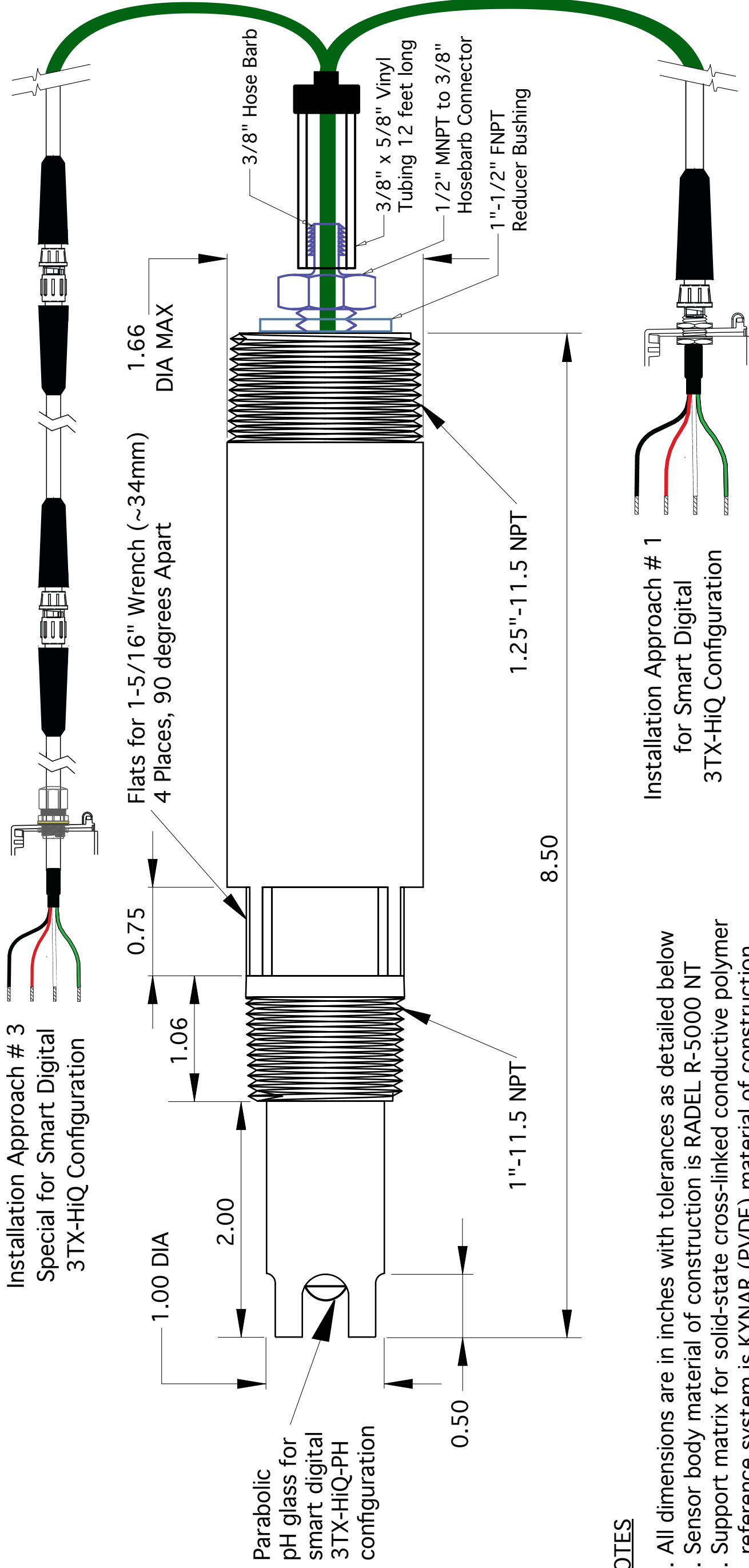
Industrial & mining autoclaves, abrasive slurry & high viscosity solutions, sulfide service. Any measurement where aggressive chemical cleaning is needed to remove fouling or low-maintenance operation is required with minimal cleaning and re-calibration.

Not for use in low conductivity, steam sterilization or steam type processes.

Storage and Shelf Life:

One (1) year from date of dispatch from ASTI factory when stored at indoor ambient room temperature with proper orientation & protector cap.

Installation Approach # 3
Special for Smart Digital
3TX-HiQ Configuration



NOTES

- All dimensions are in inches with tolerances as detailed below
- Sensor body material of construction is RADEL R-5000 NT
- Support matrix for solid-state cross-linked conductive polymer reference system is KYNAR (PVDF) material of construction
- Protective tines 4 places, 90 degrees apart, 0.12 inches (3.0mm) thick
- Smart digital 3TX-HiQ-pH configuration uses HiQ4M quick disconnect snap connector with 20 feet cable. Use HiQ4F snap cable extensions to achieve desired total cable length for field install.
- See hook-up schematic to interface tinned leads to mating 3TX-HiQ-pH intelligent pH transmitter.
- Do not use any sensor beyond the factory defined maximum temperature or pressure rating.

Installation Approach # 1
for Smart Digital
3TX-HiQ Configuration



Advanced Sensor Technologies U.S.A.
Website: <http://www.astisensor.com>

DRAWN BY TADP		CHECKED BY TADP		APPROVED BY MJP	
TOLERANCES		1 Place: ± .1	3 Places: ± .005		
		2 Places: ± .01	4 Places: ± .0005	Angular: ± 0.25°	
TITLE 1"-1.25" MNPT Inline / Immersion / Submersible					
SIZE B	PROJECT ULTRA RUGGED	DRAWING NO. ZEUS™	Digital pH Sensor /		
SCALE Not to Scale	MODEL Smart Digital 3TX-HiQ-pH	SHEET 1	OF 1		