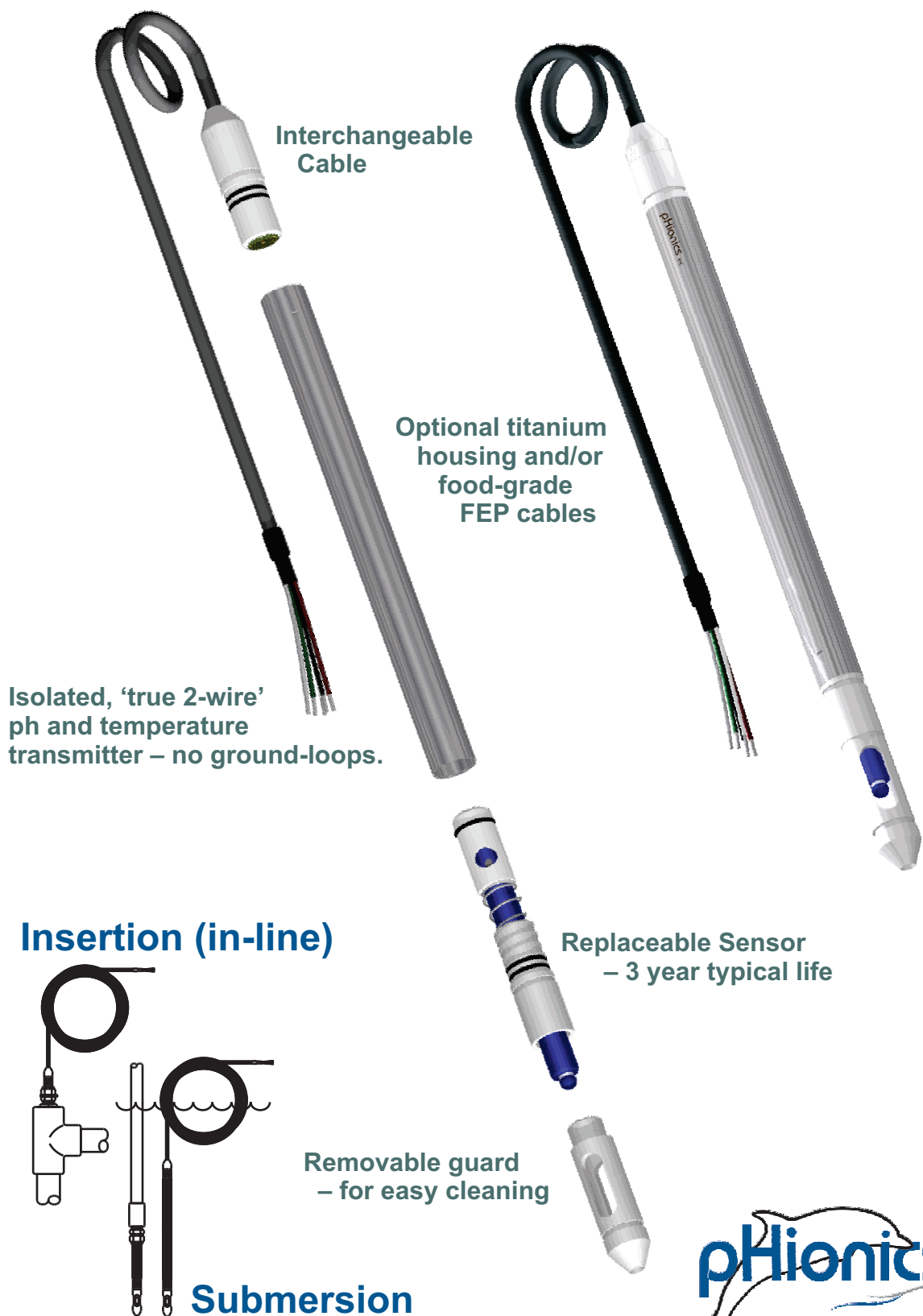


# Isolated STs Series, 4-20 ma **pH and Temperature** transmitter for in-line or submersible applications



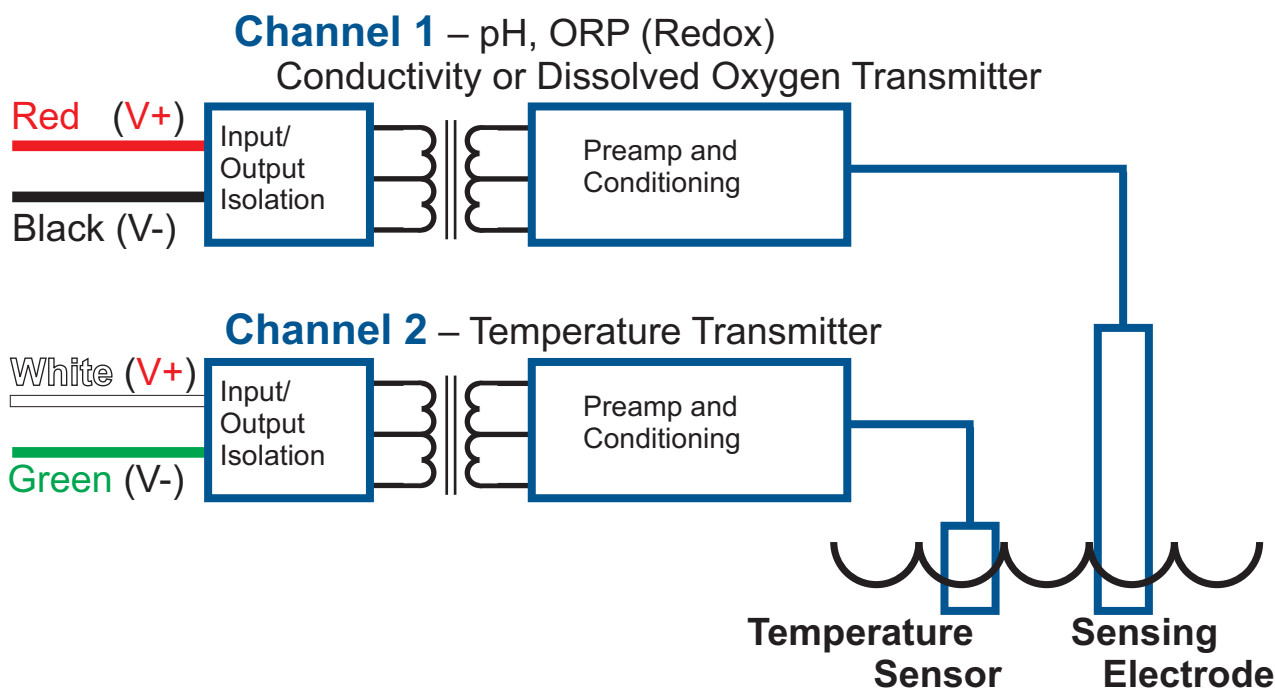
## Product Description

The STs series of submersible water quality transmitters have an integrated preamp and an isolated 'true 2-wire', 4-20 ma transmitter. Two independent channels simultaneously transmit a pH and temperature signal -- two wires for pH and two wires for temperature. The compact design afforded by the patented pHiConn (TM) keyless connection system -- and the 316SS (titanium optional) and Delrin construction -- make the rugged sensor/transmitter ideal for applications such as process control, data acquisition, wastewater treatment, and, groundwater monitoring. The units can be submersed to 200 feet (approximately 100 psi). Individual units can be combined to make redundant or multiparameter modules using the pHionics' patented pHiKlip (TM) array system. The pHiKlip (TM) system also allows for the units to be used in in-line (insertion) applications without fear of blow-out. As with all pHionics' designs, the sensor/transmitters are designed with 'ease of service' as a primary goal.

The 'true 2-wire', 4-20 ma STs series sensor/transmitters send a current proportional to the parameter being measured on the same two wires that provide the power (7 to 40 volts dc). Current transmission allows for long runs of inexpensive cable or wire (up to three miles) that is virtually noise-free without any signal loss that is common to voltage (IR drop) or digital (capacitance affecting 'rise/fall' timing). The seven volt operation allows the units to be powered by 12 volt battery systems with 5 volts of compliance, making them compatible with RTU's and solar powered applications. The units are intended for calibration via software supplied with the datalogger, PLC, or through the DCS.

The pH signal on Channel 1 is automatically temperature compensated -- providing a Nernstian correction to yield the true pH output regardless of temperature changes. This is not to be confused with the temperature channel of the transmitter, which provides an independent, isolated, 4-20 ma output proportional to the 0 to 50 C range on Channel 2. The auto-polarity correction feature directs the applied supply voltage to allow for proper operation regardless of wire hookup. The Red and Black wires are for channel 1 -- pH, and the White and Green wires are for channel 2 -- temperature.

The sensor cartridge has a fast, glass electrode, that is easily cleaned, and a double-junction, gel-filled reference system that combines for accurate and long life in tough process applications -- as well as simple groundwater monitoring applications. The cartridge can be replaced in 15 seconds -- further reducing costs.



cbs025p

hsgrs

sbd100

scs1010

grd100

7.62 meters (25 feet)  
standard cable length

362 mm (14.25")

19 mm (0.750") DIA

## Specifications:

### Series STs Channel 1, pH transmitter

pH sensing range	0-14 pH, <b>custom ranges available</b>
Output Current	4 to 20 ma, true 2-wire
Power supply voltage	7 to 36 vdc
Isolation	600 vdc, >70 db at 50/60 hz
Linearity	± 0.004 pH
Accuracy	± 0.014 pH (after calibration)
Sensitivity	± 0.01 pH
Stability	± 0.03 pH
Repeatability	± 0.01 pH
Electrode type	glass, Teflon double junction
Response time (including electrodes)	95% < 5 seconds
Temperature compensation	automatic, 0-50 °C
Pressure	0-100 psi
Humidity	0-100%
Wetted materials	316 ss, PVDF or Delrin, Viton, glass, titanium optional
Length	362 mm (14.25 in.)
Diameter	19 mm (0.750 in.) maximum
Weight (excluding cable)	< 0.22 kg (0.5 lb.)
Cable type	Removeable, shielded polyurethane, water-blocked Kevlar reinforced, 1.36 kg/100 feet
Cable length ( <b>standard</b> )	7.6 meters (25 feet)
Cable from transmitter to power supply	4 conductor, twisted pair, 3 mile maximum
pH channel wire colors	<b>Red (+), Black (-)</b>

### Channel 2, temperature transmitter

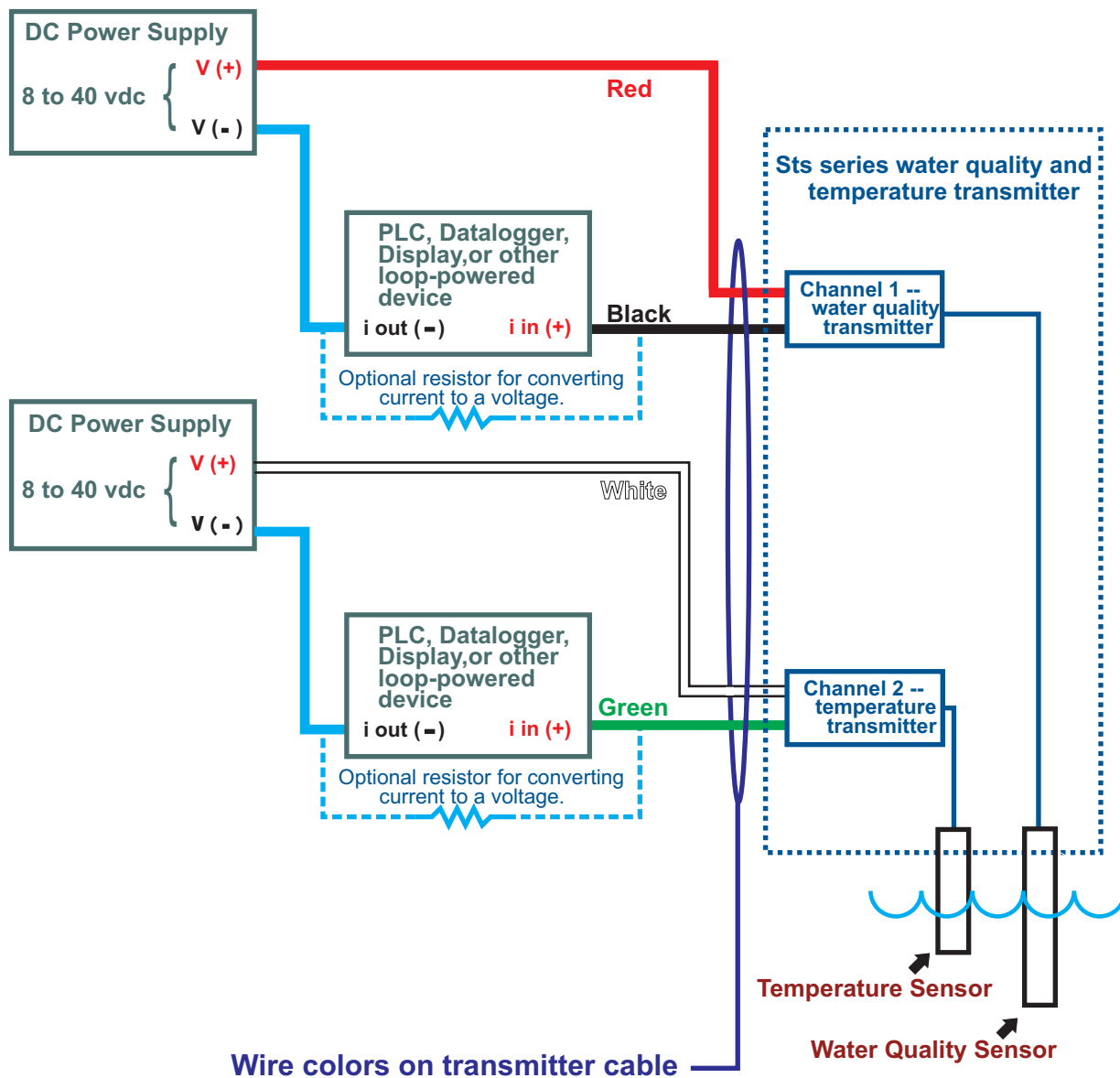
Range	0-50 °C
Output Current	4 to 20 ma, true 2-wire
Linearity	± 0.5 °C
Accuracy	± 1 °C
Power supply voltage	7 to 36 vdc
Isolation	600 vdc, >70 db at 50/60 hz
Cable from transmitter to power supply	4 conductor, twisted pair, 3 mile maximum
Temperature channel wire colors	<b>White (+), Green (-)</b>

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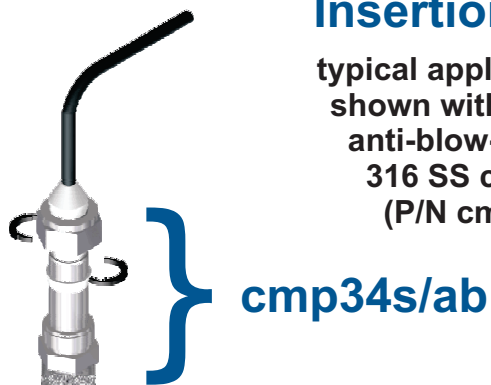
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# Wiring diagram for 4-20 ma current output water quality transmitters



## Insertion (in-line)

typical application  
shown with  
anti-blow-out  
316 SS compression fitting  
(P/N cmp34s/ab)



## Mounting

1-1/2 inch PVC  
or equivalent



## Submersion

Simply lower the transmitter and cable into the tank, lake, well, etc.. For applications that require more stability and/or protection of the cable and transmitter from mixers, chemical injection points, etc. -- reverse the cmp34s compression fitting and mount at the end of a standpipe or equivalent, as shown. (Conductivity transmitter shown in example at right)



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## Ordering Code for STs series 4-20 ma pH and Temperature Transmitter

Includes sensor, transmitters, and housing – cable must be ordered separately.



### Transmitter, Sensor, and Housing (for compatible cable -- see below)

STs			
	Range		
014p	0 to 14 pH -- typ. stocked		
212p	2 to 12 pH		
410p	4 to 10 pH		
	Output		
	4_20	4 to 20 ma output	n/c
	Housing Material		
	s	316 Stainless Steel	
	t	Titanium	
STs	----	4_20	-
Series	Range	Output	Housing
			Price

The second channel Temperature transmitter is 0 to 50 Celsius with a 4 to 20 ma output. N/C



### Submersible Cable for STs Series Transmitters (1 required per transmitter)

The 25 foot **CBs025p** is the standard stocked cable for

The CBs025p is a shielded, water-blocked, polyurethane-jacketed cable with Kevlar reinforcement

### Custom cable lengths and Jacket Materials can be ordered as follows:

CBs		
	Length (feet)	
xxx	Specify xxx in feet, such as 010, 045, 425, etc.	
	Jacket Material (Polyurethane or FEP)	
p	Poly	
f	FEP	
CBs	---	-
Series	Length	Jacket Material