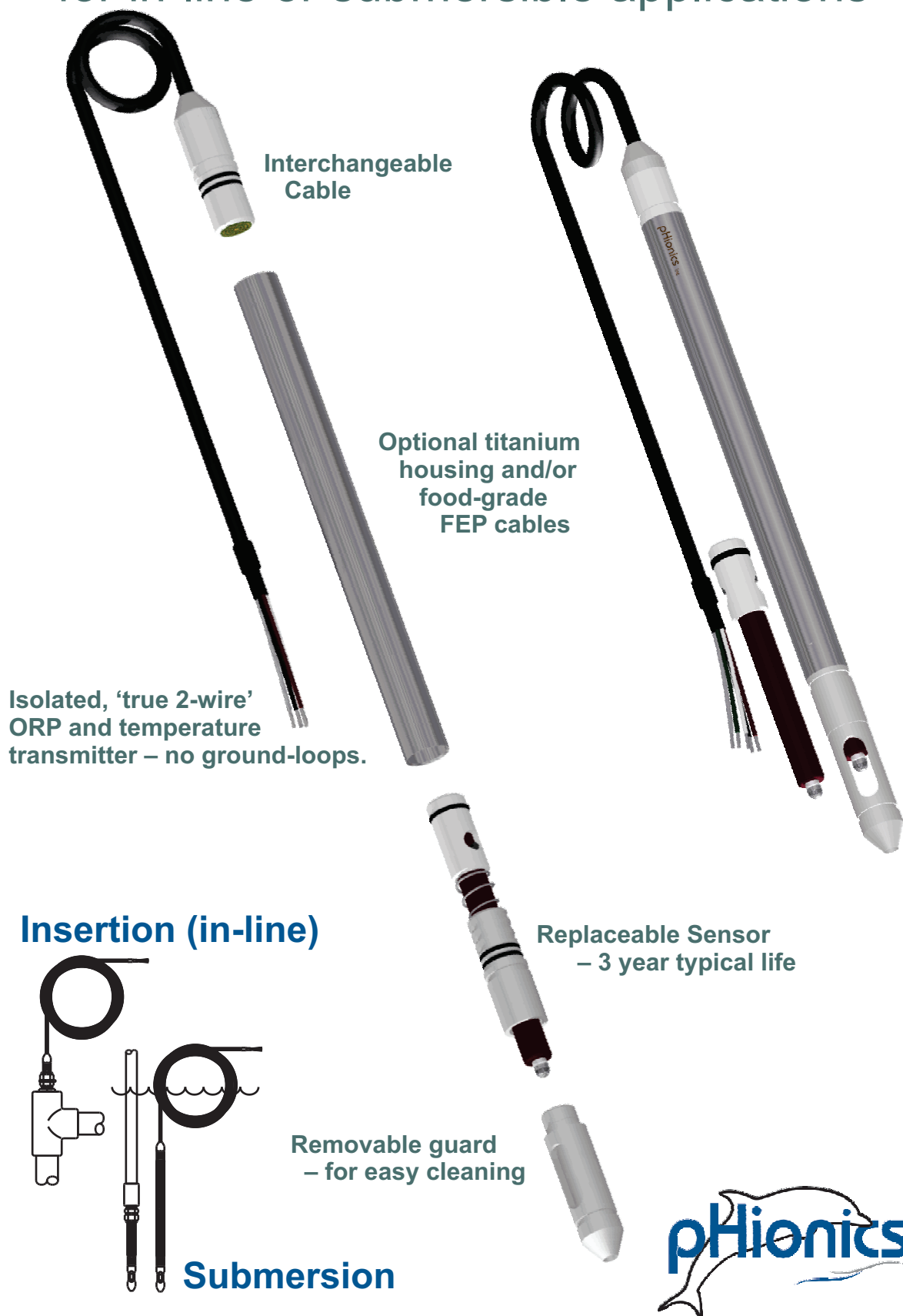


# Isolated STs Series, 4-20 ma **ORP (redox) and Temperature** transmitter for in-line or submersible applications



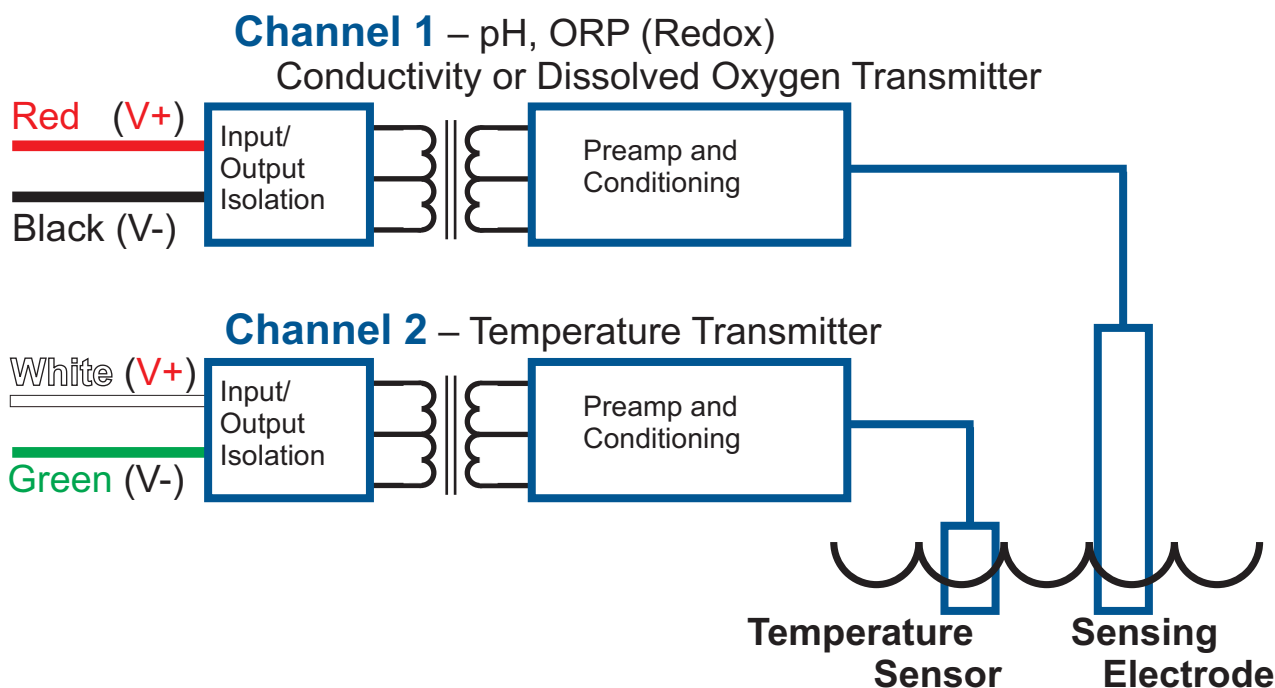
## Product Description

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 an ORP (oxidation-reduction potential -- redox) and temperature signal -- two wires for ORP (redox) 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 ORP (redox) signal is on Channel 1. Channel 2 is the temperature channel of the transmitter, which provides an independent, isolated, 4-20 ma output proportional to a 0 to 50 Celsius range. 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 -- ORP (redox), and the White and Green wires are for channel 2 -- temperature.

The sensor cartridge has a large platinum band, 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

hsgs

sbd100

scs2010

grd100

7.62 meters (25 feet)  
standard cable length

362 mm (14.25")

19 mm (0.750") DIA

## Specifications:

### Series STs Channel 1, ORP (redox) transmitter

ORP sensing range	0 to +1000 mv (custom ranges available 0 to -1000mv, -500 to +500 mv, -1000 to +1000 mv, etc.)
Output Current	4 to 20 ma, true 2-wire
Power supply voltage	7 to 40 vdc
Isolation	600 vdc, >70 db at 50/60 hz
Linearity (of electronics)	± 4 mv
Accuracy	± 4 mv
Sensitivity	± 1 mv
Stability	± 2 mv
Repeatability	± 10 mv
Electrode type	Platinum, double junction
Response time (including electrodes)	95% < 20 seconds
Temperature compensation	none
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 (standard)	7.6 meters (25 feet)
Cable from transmitter to power supply	4 conductor, twisted pair, 3 mile maximum
ORP channel wire colors	Red (+), Black (-)

### 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	White (+), Green (-)

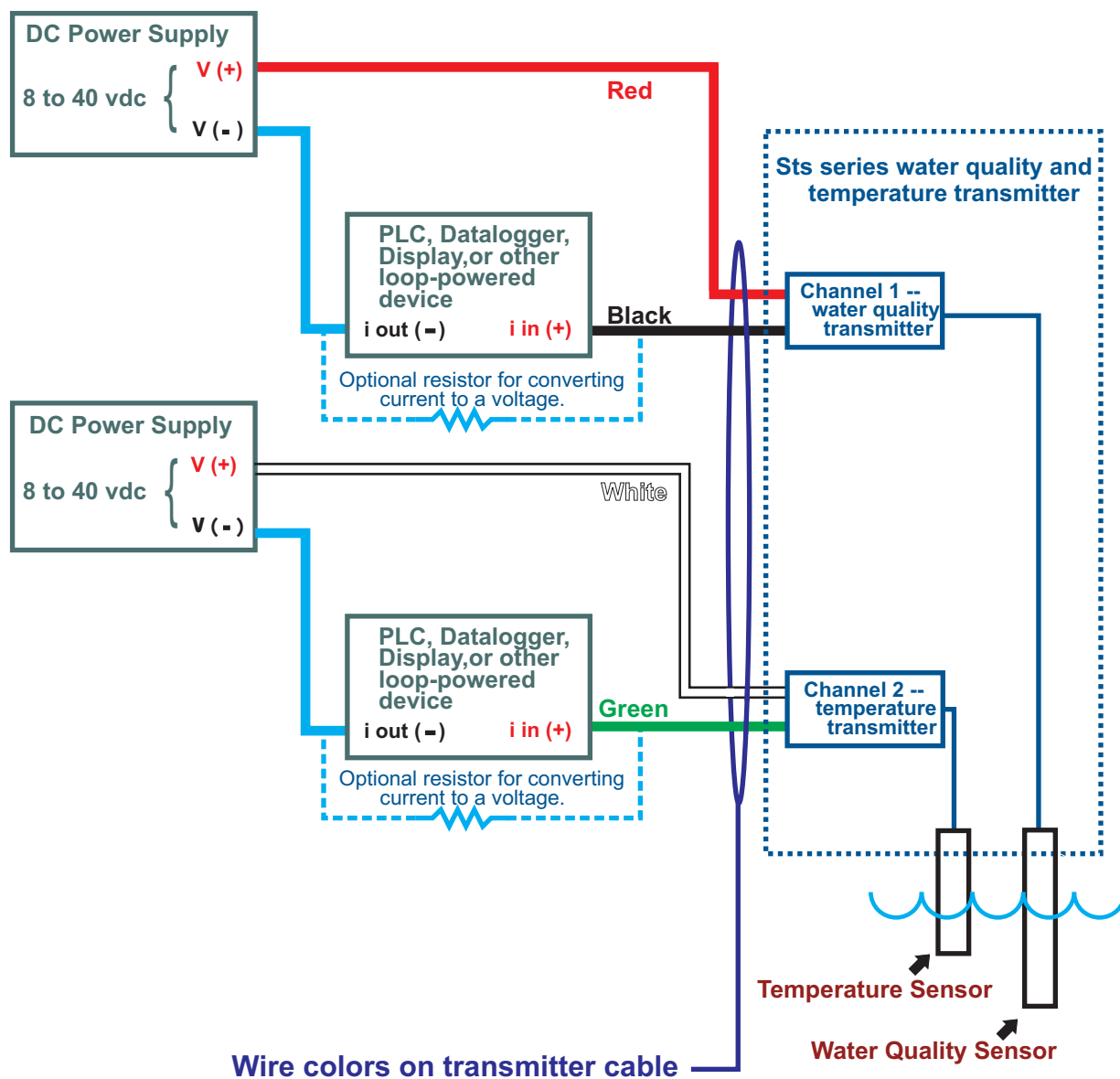
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# Wiring diagram for 4-20 ma current output water quality transmitters





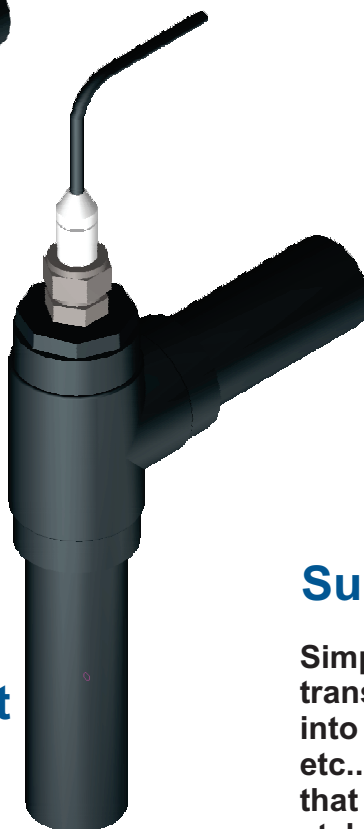
cmp34s/ab

## 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)



## Order Code for STs series

### 4-20 ma ORP (redox) and Temperature transmitter

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



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

STs			
	<b>Range</b>		
<b>001r</b>	0 to (+)1000 mv -- <b>typ. stocked</b>		
<b>_11r</b>	(-)1000 to (+)1000 mv		
<b>_55r</b>	(-)500 to (+)500 mv		
<b>0_1r</b>	0 to (-)1000 mv		
	<b>Output</b>		
	<b>4_20</b> 4 to 20 ma output		
	<b>Housing Material</b>		
	<b>s</b> 316 Stainless Steel		
	<b>t</b> Titanium		
<b>S T s</b>	<b>---</b>	<b>4 _ 2 0</b>	<b>-</b>
Series	Range	Output	Housing

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		
	<b>Length (feet)</b>	
<b>xxx</b>	Specify xxx in feet, such as 010, 045, 425, etc.	
	<b>Jacket Material (Polyurethane or FEP)</b>	
	<b>p</b> Poly	
	<b>f</b> FEP	
<b>C B s</b>	<b>---</b>	<b>-</b>
Series	Length	Jacket Material

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