ProCon® — P14G with NEXUS® pH Sensor Transmitter

Industrial Analytical Equipment

ICON PROCESS CONTROLS
Corrosion-Free Instrumentation Equipment

Direct D500 Controller with SimplCal® Auto Calibration

Direct 4-Wire

2 ceramic reference diaphragms for rapid response

Teflon® Reference

Double Crack Resistant Blue Glass Membrane

M12 Quick Connection

¾" NPT

- ✓ **4-20mA Output**
- ✓ **Temperature Compensated**
- ✓ **Double Salt Bridge**
- ✓ **No Preamp Required**
- ✓ **High Accuracy**
- ✓ **Quick Response Time**
- ✓ **¾" NPT Connection**
- ✓ **PP or PPS Body Materials**
- ✓ **RS 485 Modbus Communication**

Engineered for accuracy, ruggedness and longevity in general process applications

The robust sensor design of the versatile ProCon® P14G confidently offers long-term reliability with fast response times and high accuracy in a wide range of general process applications.

These sensor transmitters are have been specifically engineered with a double ceramic reference diaphragms that provide highly responsive pH indication.

The double salt bridge junction coupled with the PTFE reference technology is the foundation for all P14G series electrodes. The inner reference chamber is charged with potassium chloride (KCl) gel.

All measurement functions are combined in one compact body — measuring electrode, temperature sensor and an inner reference chamber.

The 2-wire 4-20mA, 4-wire or 4-20mA + RS485 output options simplify calibration and communication with remote displays and controllers.

The P14G Series pH sensors have a 4-20mA + RS485 direct outputs, thus eliminating the need for costly preamps or smart sensor interfaces.

- ✓ Double junction reference extends sensor life and protects against poisoning ions
- ✓ Durable crack resistant glass enhances performance and increased reliability
- ✓ Maximum chemical resistance provided by a rugged PP or PPS body materials
- ✓ Operates in sub-zero temperatures down to 14°F (-10°C).
- ✓ Advanced electronic diagnostics
- ✓ Superior glass electrode technology result in an industrial sensor with unequalled durability and reliability

M12 Quick Connection
(No Internal Wiring Required)

Keyed

Optional Junction Box

¾" NPT
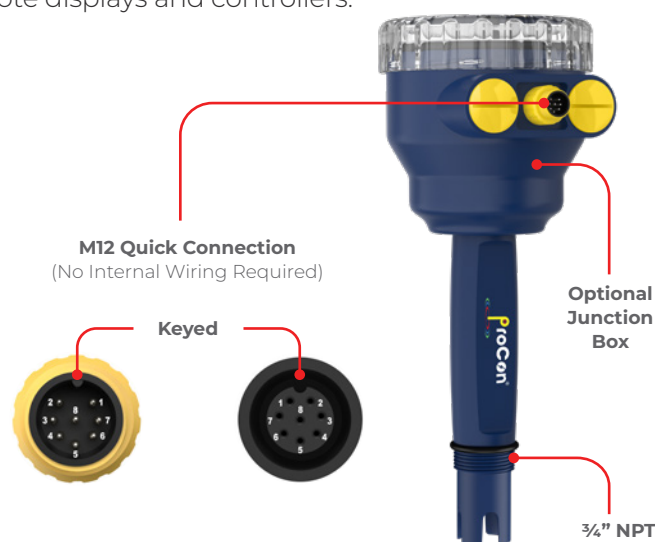
Smart Sensor Technology

Advanced electronic circuity stores pH data for automatic sensor recognition and trouble-free calibration when connected to the ProCon® Controller.

Outputs

1. 4-20mA 2-Wire
2. 4-20mA + RS485

Both the measuring and reference electrodes are encapsulated within the non-porous advanced KCl infused polymer known as Nexus®.

Faster Response-Longer Lasting

The P14G series has a double-junction which provides a barrier that allows H+ ions to pass freely between the reference and sensing membrane. This completes the electrical circuit. The double-junction protects the sensor from premature reference contamination, also referred to as poisoning, thus increasing the sensor life.

- ⊘ No Costly Preamps Required
- ⊘ Direct 4-20mA & RS485 Outputs

RS-485
Modbus RTU

4-20mA+RS485
Direct Sensor Output

Advanced electronic circuity stores pH data for automatic sensor recognition and trouble-free calibration when connected to the ProCon® Controller

PVC Jacket

Aluminum Shield

4-20mA+

4-20mA-

Braided Shield

Pin Connectors
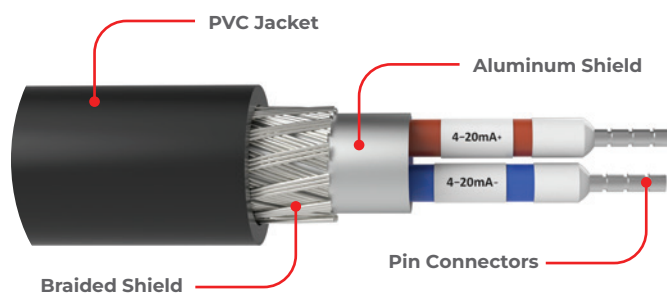
Enhanced chip technology allows for remote calibration as well as diagnostic data

Data analysis and direct 4-20mA signal or RS485 Digital outputs

Integral Preamp

2-wire 4-20mA + RS485 Modbus direct sensor to controller connection eliminates the requirement for a preamp.

Teflon® Reference Junction

Digital output removes the need for high impedance cable — longer distances without compromising accuracy.

Double Ceramic Junction

Blind Display

SimplConnect™
Cable Grip Connectors

M12 Quick Connection

Nexus® technology

- Solid KCl infused reference electrode protection
- Minimizes reference poisoning/leaching
- Extended life expectancy
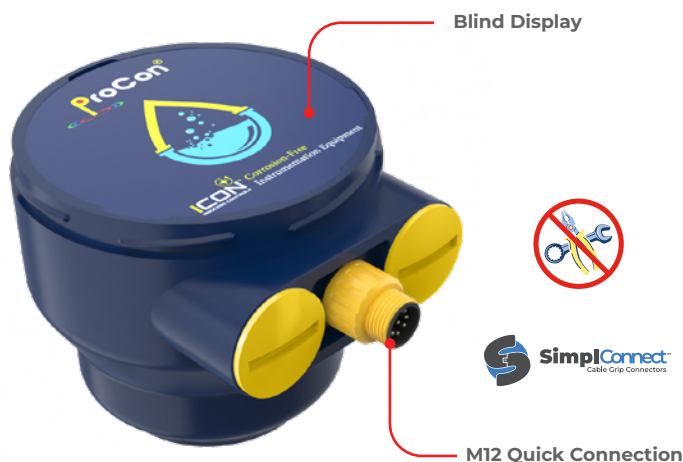
Specifications

Measurement Range	
pH	0 – 14
Output Signal — No Preamp Required	
2 Wire Loop Powered	4-20mA + RS 485 Direct Sensor Output	
Accuracy	
7.00 ± 0.25	
Operating Temperature	
14 to 176°F	-10 to 80°C	Automatic Temperature Compensation	
Maximum Pressure	
150 Psi at 140°F (60°C) — See Pressure vs. Temp Graph	
Design	
Sensor body	PP Polypropylene (std)	Ryton®	PPS
Reference System	Ag / AgCl / KCl Double Salt Bridge
pH electrode	Blue Glass	Flat	Bulb
Reference	Porous Ceramic + PTFE Teflon®
Connection	3/4" NPT
Measuring Electrode Resistance	< 600 MΩ
Impedance Range	102 – 675 MΩ
Temperature Compensation/Output- 4-20 + RS485 Model	
Pt-1000 (Std)	
Pt-100	

Temperature Control

pH error
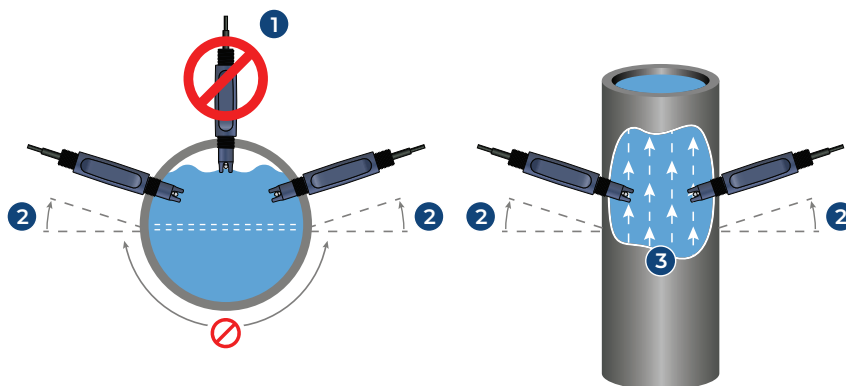
Temperature change (°C) from 25°C
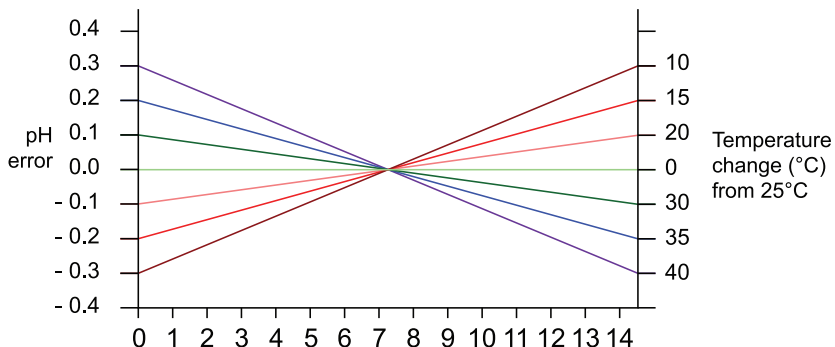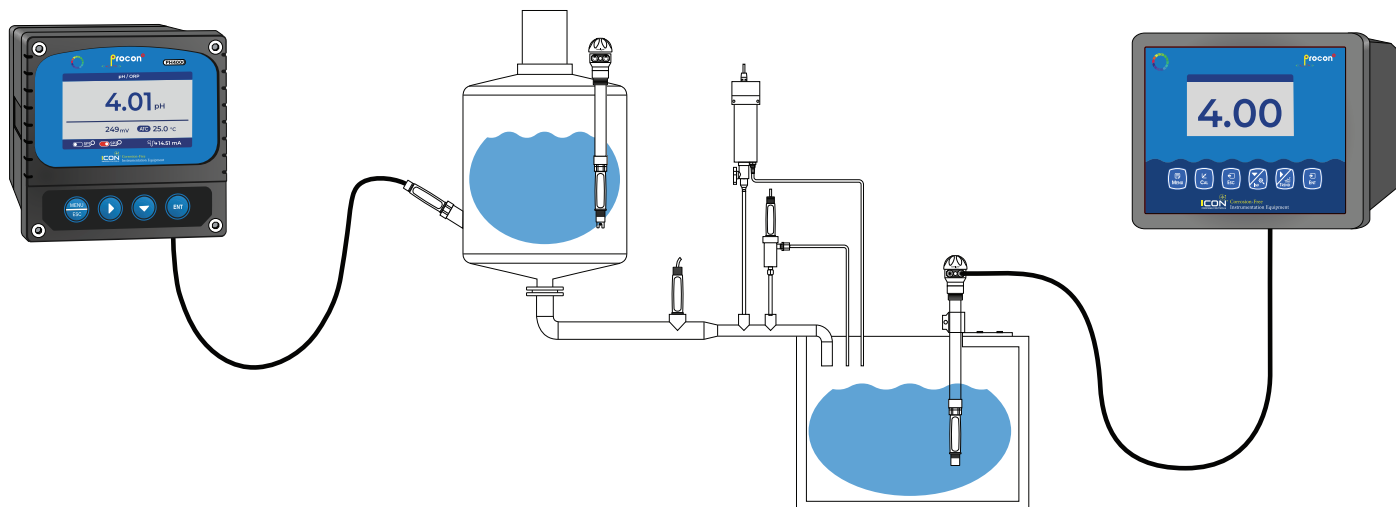
Temperature vs. Pressure

(psi) (bar)
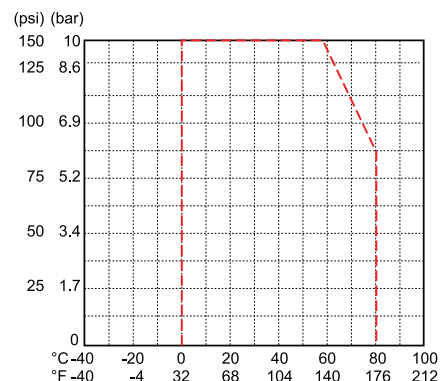
In-line Mounting

1. Avoid vertical installation. (air may be present)
2. Optimum installation 15° above horizontal.
3. Process liquid should flow upward. (for downward flow ensure backpressure is present in order to avoid air within pipe)

Typical Application

Cable Options

The ProCon® series offer complete flexibility of cabling options throughout the range. All cables are shielded against spurious EMF and are potted inside the sensor ensuring environmental protection.

The standard cable length for most sensors is 5m (15 ft). However, cables can be supplied as any continuous size up to 20m (66 ft).

Standard accessories include junction boxes and submersion couplers, typically used with extension cables for direct connection to the ProCon® Controllers.

Extension cables also permit distances between sensor and instrument of up to 30 m (100 ft.) without external preamplifier.

Pin leads
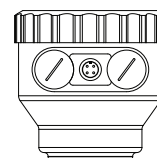
J-Box
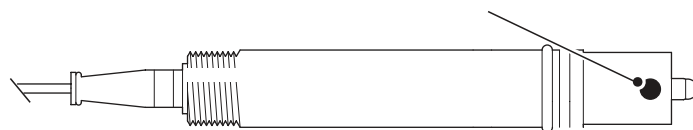
Temperature compensation

The temperature compensator enables sensor to adjust for temperature effects on the glass pH electrode output.

The sensor can also use this measurement to compensate for solution pH temperature effects.
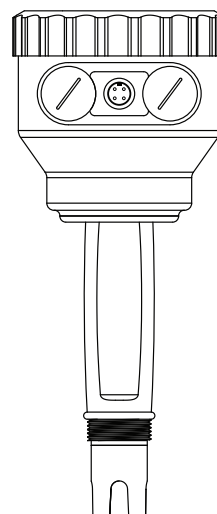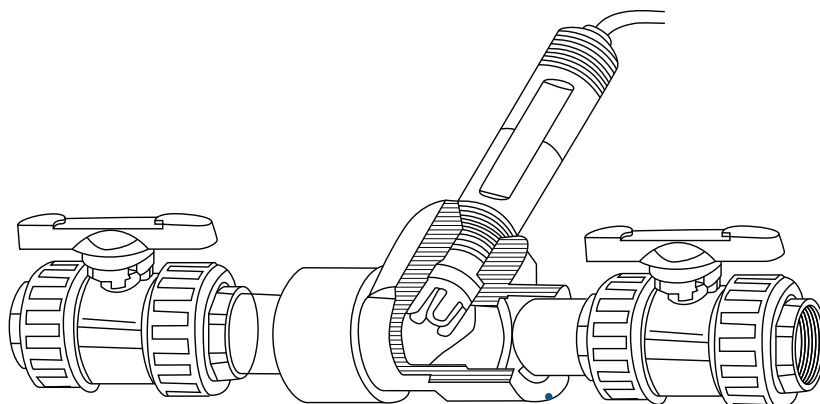
Sensors can be ordered with integral temperature sensors. The integral temperature compensator is available in two outputs — Pt 1000 (std) and Pt 100.

Temperature outputs on 4 and 6 wire versions only.

Temperature compensator

Typical Installations

Sample Inlet

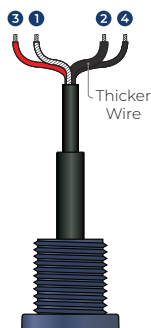Sample Outlet

¾"Tee
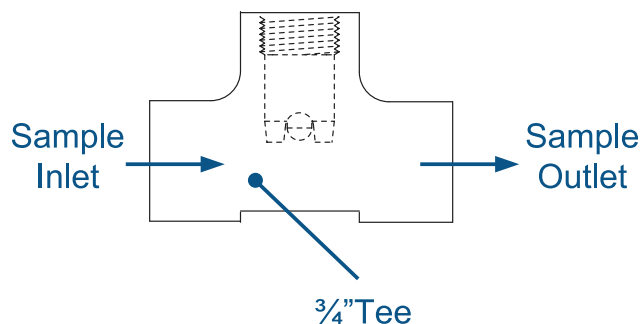
Wiring — Flying Lead

4-20mA 2-wire
❶ Blue: mA-
❷ Brown: mA+

4-20mA 4-wire
❶ Transparent: 4-20mA
❷ Black (thick): Ref
❸ Red: Temperature
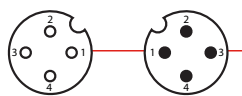❹ Black: Temperature

Connects directly to ProCon® controller

Thicker Wire

4-20mA + RS485 Output
❶ Red: 9-24VDC +
❷ Black: 9-24VDC -
❸ Transparent: 4-20mA
❹ Black (thick): Ref
❺ Green: RS 485 A
❻ White : RS 485 B

Thicker Wire

Wiring — M12

4 Pin M12 Connection

M12 - Male   M12 - Female

8 Pin M12 Connection

M12 - Female

4-20mA | 4 Pin

Color	Description
Pin 1 – Brown	4-20mA +
Pin 2 – Blue	4-20mA -

4-20mA + Controller | 4 Pin

Color	Description
Red	Temperature
Black	Temperature
Black (Thick)	Reference
Transparent	4-20mA

4-20mA + RS485 | 8 Pin

Color	Description
Red	9-24 VDC +
Black	9-24 VDC -
Transparent	4-20mA
Black (Thick)	Reference
Green	RS485 A
White	RS485 B

4 Pin IO - Link Connection

IO-Link

I-O Link | 4 Pin

Pin	Description
Pin 1	24 VDC +
Pin 2	
Pin 3	GND
Pin 4	4-20mA

Dimension

26
31.2
16
23.5
92.8
29.4
20
1.81
26

A
A

18
160
105

(dimensions are in mm)

Flat

Bulb
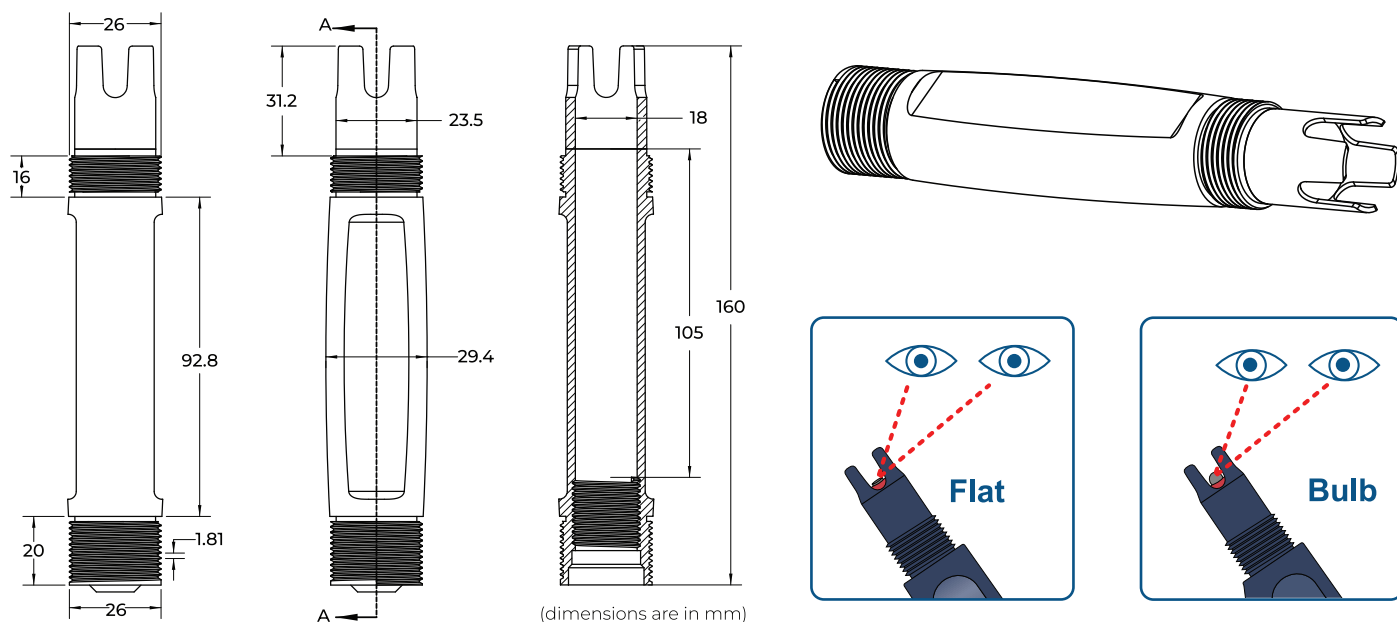
Model Selection

P14G – P – M – 1 – F – J

Material	Output	Electrode	Sensor Type	Connection
P: PP (std) **R:** Ryton®	**M:** 4-20mA (2-wire) **D:** 4-wire (for ProCon® display) **S:** RS485 + 4-20mA	**1:** PT1000 (std) **2:** PT100	**F:** Flat (std) **B:** Bulb	**M:** M12 **J :** J-Box (with M12) **F :** Flying Lead

Fittings

Easy Install Clamp On Pipe Saddles					
Part Number	Material	Size	Seal	Thread	Connection
PSA-2	PVC	2"	FPM	¾" NPT	PVC
PSA-3	PVC	3"	FPM	¾" NPT	PVC
PSA-4	PVC	4"	FPM	¾" NPT	PVC
PSA-6	PVC	6"	FPM	¾" NPT	PVC
PSA-8	PVC	8"	FPM	¾" NPT	PVC
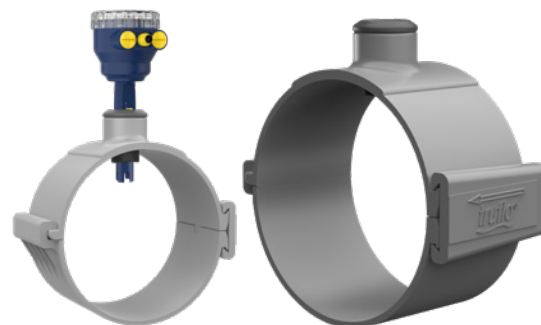
True Union Tee Fitting					
Part Number	Material	Size	Seal	Thread	Connection
TUPA-PV-5	PVC	1/2"	FPM (std)	EPDM	¾" NPT	Socket	NPT
TUPA-PP-5	PP	1/2"	FPM (std)	EPDM	¾" NPT	Butt	NPT
TUPA-PF-5	PVDF	1/2"	FPM (std)	EPDM	¾" NPT	Butt	NPT
TUPA-PV-7	PVC	3/4"	FPM (std)	EPDM	¾" NPT	Socket	NPT
TUPA-PP-7	PP	3/4"	FPM (std)	EPDM	¾" NPT	Butt	NPT
TUPA-PF-7	PVDF	3/4"	FPM (std)	EPDM	¾" NPT	Butt	NPT
TUPA-PV-1	PVC	1"	FPM (std)	EPDM	¾" NPT	Socket	NPT
TUPA-PP-1	PP	1"	FPM (std)	EPDM	¾" NPT	Butt	NPT
TUPA-PF-1	PVDF	1"	FPM (std)	EPDM	¾" NPT	Butt	NPT
TUPA-PV-15	PVC	1 1/2"	FPM (std)	EPDM	¾" NPT	Socket	NPT
TUPA-PP-15	PP	1 1/2"	FPM (std)	EPDM	¾" NPT	Butt	NPT
TUPA-PF-15	PVDF	1 1/2"	FPM (std)	EPDM	¾" NPT	Butt	NPT
TUPA-PV-2	PVC	2"	FPM (std)	EPDM	¾" NPT	Socket	NPT
TUPA-PP-2	PP	2"	FPM (std)	EPDM	¾" NPT	Butt	NPT
TUPA-PF-2	PVDF	2"	FPM (std)	EPDM	¾" NPT	Butt	NPT

ProCon®
Sensing Tomorrow's Innovations Today

by

ICON PROCESS CONTROLS™ Corrosion-Free Instrumentation Equipment

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