

Quick Start Manual

NEXUS®



Read the user's manual carefully before starting to use the unit.
Producer reserves the right to implement changes without prior notice.

Preface

Please read this manual carefully before use.

Only properly skilled authorized personnel should carry out installation, setup and operation. Ensure that the power cable is physically separated from the power supply during the initial wiring connection or repair.

For example,

1. Apparent damage to the sensor
2. The sensor does not work properly or provides specified measurements
3. The sensor has been stored for a long time in an environment where the temperature exceeds 70°C

Safety Information



- De-pressurize and vent system prior to installation or removal
- Confirm chemical compatibility before use
- **DO NOT** exceed maximum temperature or pressure specifications
- **DO NOT** alter product construction
- **ALWAYS** wear safety goggles or face-shield during installation and/or service

Preparation Before Measurement



Be sure to calibrate your sensor prior to use.

Please refer to the operating instructions of your ProCon® Controller for calibration details.

Connect the wires from the sensor to the appropriate ProCon® controller. All ProCon® pH sensors come with an internal PT1000 temperature electrode. Refer to sensor wiring diagram of controller.

Prepare electrode maintenance before measurement. When using the electrode, the protective bottle at the top shall be screwed off and placed at a place where it is not easy to touch. Then, the protective bottle cap shall be removed and the electrode bulb and liquid interface shall be immersed in the measured liquid.

PH Sensor Calibration SimplCal®

1. Select two – three pH buffers, with values that are consistent with the pH value to be measured.
USA (7.00, 4.01, 10.01) · NIST(6.86, 4.01, 9.18)
2. Unscrew the sensor protection cap and wash the sensing electrode with distilled water
3. Select the calibration mode in the controller (See manual for ProCon® SimplCal® for step by step simple instruction)
4. Insert the sensor into the first reference solution ensure the sensor tip is covered.
5. Stir & Wait for the reading to stabilize (60 seconds)
6. Press the Enter button on the ProCon® Controller
7. Wait until the DONE is display on screen
8. Insert sensor into 2nd, 3rd reference solutions and follow the above procedure
9. Once the sensor has been calibrated rinse with distilled water.

In order to ensure a fast response time, the electrode glass should always be kept wet. After the calibration is completed and the electrode is properly cleaned, store the sensor in a 3mol KCl Potassium Chloride solution.

NOTE: After use it is important to inspect the sensor glass membrane to ensure there are no deposits and the glass is transparent and not translucent. If deposits or the glass is hazy the sensor can be washed with a dilute HCL acid wash.

It is not recommended to store the sensor in distilled , or deionized water.



Warning | Caution | Danger

Indicates a potential hazard. Failure to follow all warnings may lead to equipment damage, injury, or death.



Note | Technical Notes

Highlights additional information or detailed procedure.



Hand Tighten Only

Over tightening may permanently damage product threads and lead to failure of the retaining nut.



Do Not Use Tools

Use of tool(s) may damage product beyond repair and potentially void product warranty.



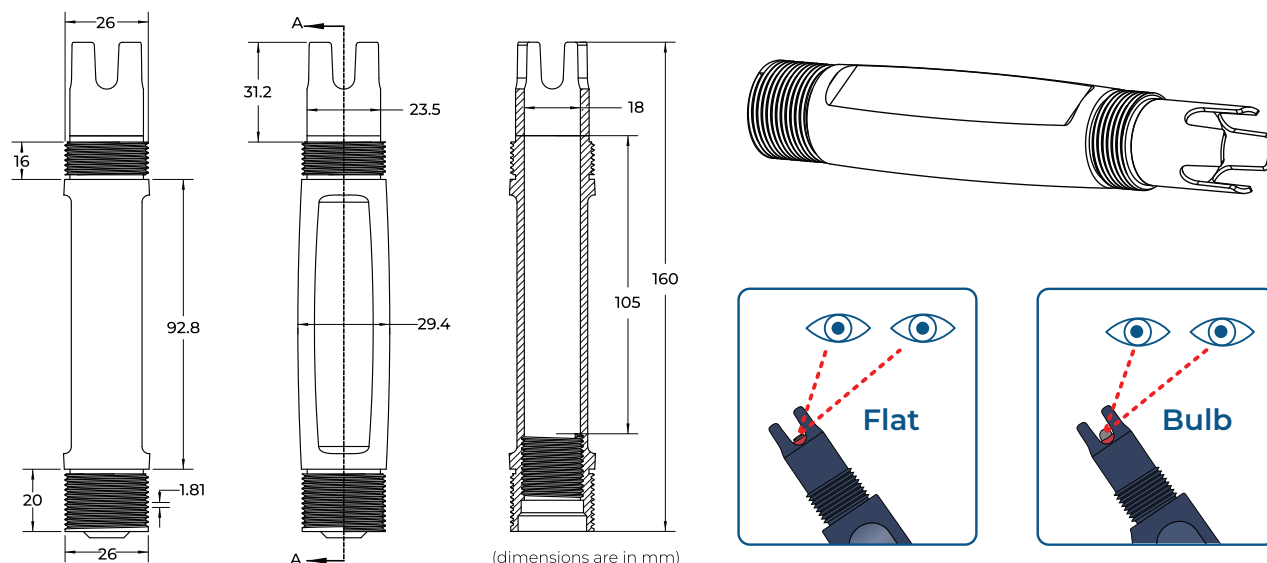
Personal Protective Equipment (PPE)

Always utilize the most appropriate PPE during installation and service of Trufluo products.

Technical Specifications

Design	
Sensor body	PP Polypropylene (std) Ryton® PPS
Reference System	3.3 Mol Ag / AgCl / KCl Double Junction
pH electrode	Blue Glass Bulb Flat
Reference	Solid Nexus® Porous Ceramic (P14G)
Connection	3/4" NPT
Measuring Electrode Resistance	< 500 MΩ < 600 MΩ < 800 MΩ
Impedance Range	102 – 675 MΩ
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	
Temperature Compensation/Output 4-20mA + RS485 Model	
Pt-1000 (Std)	
Pt-100	

Dimensions



Other Considerations

Smart Sensor Technology

Advanced electronic circuitry 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®.

Less Calibration and Maintenance

Most sensors require on-going recalibration and are prone to premature failure due to what is known as gradient drift, or sensor drift.

The Nexus® series is a solid reference material. Poisoning or leaching of the reference electrolyte that occurs in standard sensor is greatly reduced.

The Nexus® reference helps to eliminate the need for ongoing maintenance or cleaning requirement due to fouling or film build up removal which occurs with many process applications with traditional pH sensors.

Faster Response-Longer Lasting

With no requirement for a junction, the solid Nexus® reference provides for a faster response time to changing pH values.

Electrode Preservation:

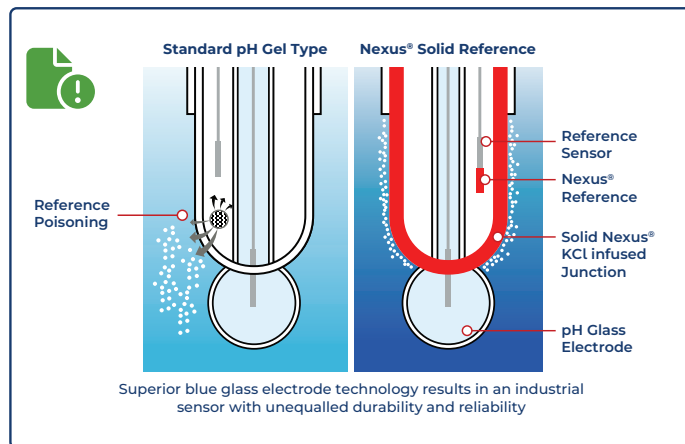


1. Clean the electrode correctly after use
2. Place the electrode in the electrode storage bottle for storage
3. The solution in the protective bottle is 3 mol/L KCl solution

pH/ORP Process Sensor

P14S	Seawater Environment
P14C	Strong Acid, Strong Base, Chemical Process
P14D	Flue Gas Desulfurization
P14P	Pure Water Low Ion Concentration
P14F	Hydrofluoric Acid Environmental Applicable Concentration < 1000 ppm
P14H	Hydrofluoric Acid Environmental Applicable Concentration > 1000 ppm
P14G	General Application, Industrial Wastewater
P14E	Light Duty Applications

- ✓ Double junction reference extends sensor life and protects against poisoning ions
- ✓ Durable crack resistant low ionic glass enhances performance and increased reliability
- ✓ Operates in sub-zero temperatures down to 14°F (-10°C)
- ✓ Advanced electronic diagnostics provides excellent repeatability and reliability



Direct D500 Controller with SimpliCal® Auto Calibration



Direct 4-Wire

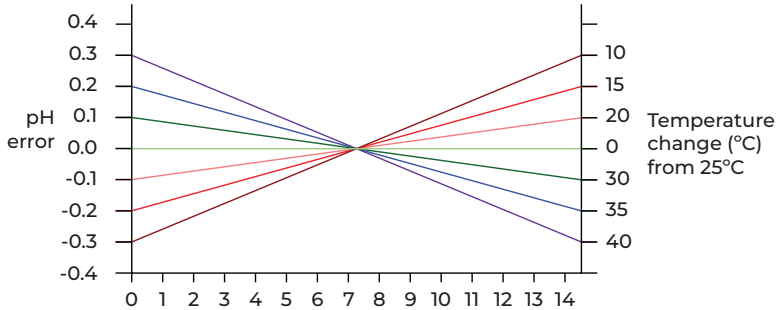
Blue Glass Electrode

Nexus® Solid Reference

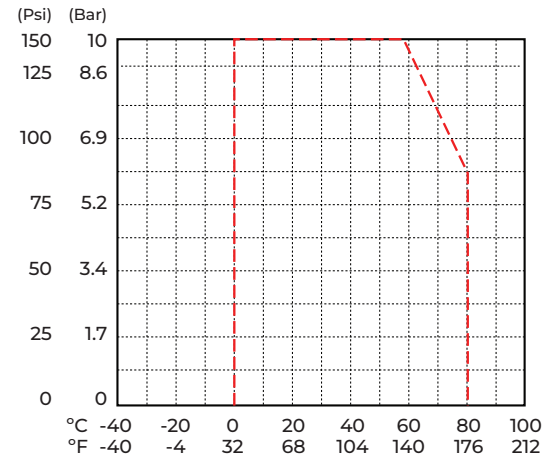
M12 Quick Connection

3/4" NPT

Temperature Control

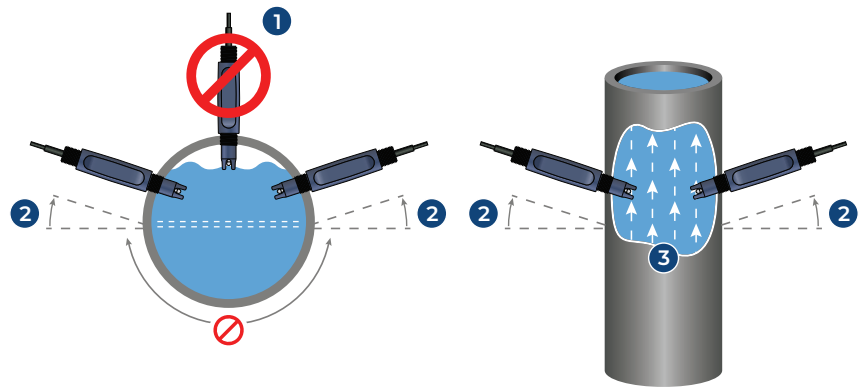


Temperature vs. Pressure

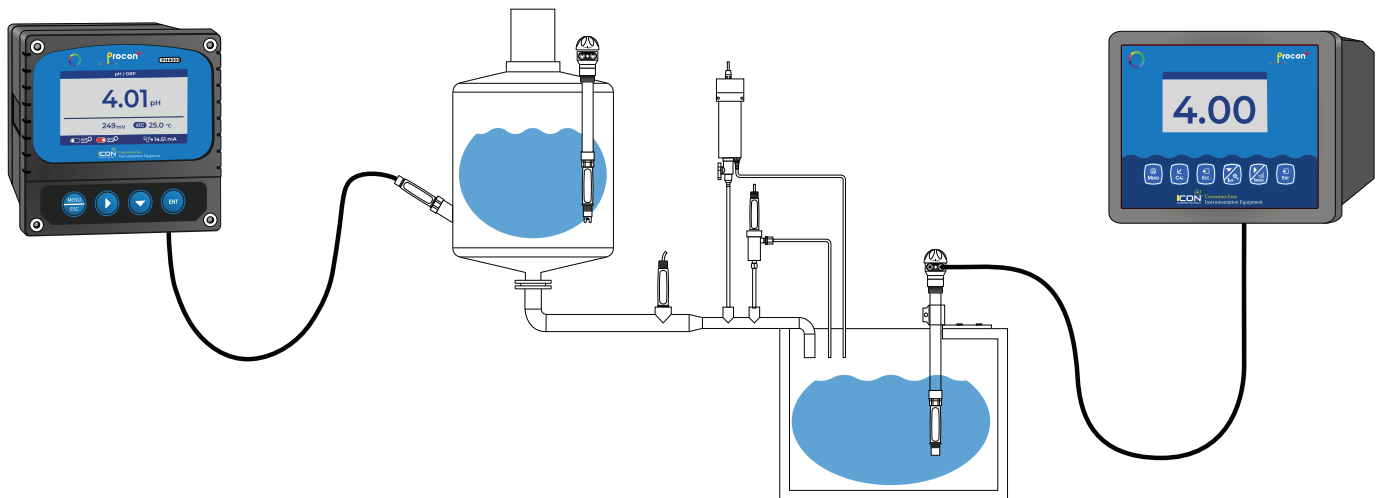


In-line Mounting

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



Wiring — Flying Lead

4-20mA 2-wire

- ① Blue: mA-
- ② Brown: mA+



4-20mA 4-wire

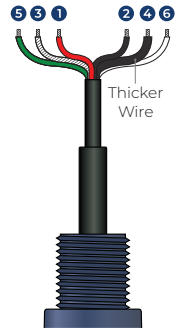
- ① Transparent: 4-20mA
- ② Black (thick): Ref
- ③ Red: Temperature
- ④ Black: Temperature

Connects directly to ProCon® controller



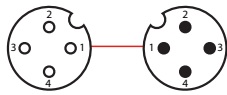
4-20mA + RS485 Output

- ① Red: 9-24VDC +
- ② Black: 9-24VDC -
- ③ Transparent: 4-20mA
- ④ Black (thick): Ref
- ⑤ Green: RS 485 A
- ⑥ White : RS 485 B



Wiring — M12

4 Pin M12 Connection



M12 - Male 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

8 Pin M12 Connection



M12 - Female



■ 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



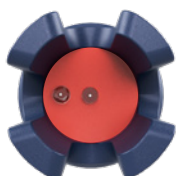
■ I-O Link | 4 Pin

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



P14G — General pH Sensor				
Part Number	Material	Output	Type	Connection
P14G-P-D-1-F-M	PP	4-wire (for ProCon® display)	Flat	M12
P14G-P-D-1-B-M	PP	4-wire (for ProCon® display)	Bulb	M12
P14G-P-M-1-F-M	PP	4-20mA (2-wire, std)	Flat	M12
P14G-P-M-1-B-M	PP	4-20mA (2-wire, std)	Bulb	M12
P14G-P-S-1-F-M	PP	RS485 + 4-20mA	Flat	M12
P14G-P-S-1-B-M	PP	RS485 + 4-20mA	Bulb	M12

Last digit:
“M” for M12 Connection (std)
“B” Blind (J-Box)
“F” Flying Lead



P14C — Complex pH Sensor				
Part Number	Material	Output	Type	Connection
P14C-P-D-1-F-M	PP	4-wire (for ProCon® display)	Flat	M12
P14C-P-D-1-B-M	PP	4-wire (for ProCon® display)	Bulb	M12
P14C-P-M-1-F-M	PP	4-20mA (2-wire, std)	Flat	M12
P14C-P-M-1-B-M	PP	4-20mA (2-wire, std)	Bulb	M12
P14C-P-S-1-F-M	PP	RS485 + 4-20mA	Flat	M12
P14C-P-S-1-B-M	PP	RS485 + 4-20mA	Bulb	M12

Last digit:
“M” for M12 Connection (std)
“B” Blind (J-Box)
“F” Flying Lead



P14H — HF < 1000ppm pH Sensor				
Part Number	Material	Output	Type	Connection
P14H-P-D-1-F-M	PP	4-wire (for ProCon® display)	Flat	M12
P14H-P-D-1-B-M	PP	4-wire (for ProCon® display)	Bulb	M12
P14H-P-M-1-F-M	PP	4-20mA (2-wire, std)	Flat	M12
P14H-P-M-1-B-M	PP	4-20mA (2-wire, std)	Bulb	M12
P14H-P-S-1-F-M	PP	RS485 + 4-20mA	Flat	M12
P14H-P-S-1-B-M	PP	RS485 + 4-20mA	Bulb	M12

Last digit:
“M” for M12 Connection (std)
“B” Blind (J-Box)
“F” Flying Lead



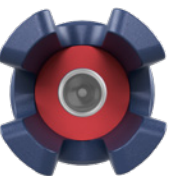
P14F — HF > 1000ppm pH Sensor				
Part Number	Material	Output	Type	Connection
P14F-P-D-1-F-M	PP	4-wire (for ProCon® display)	Flat	M12
P14F-P-D-1-B-M	PP	4-wire (for ProCon® display)	Bulb	M12
P14F-P-M-1-F-M	PP	4-20mA (2-wire, std)	Flat	M12
P14F-P-M-1-B-M	PP	4-20mA (2-wire, std)	Bulb	M12
P14F-P-S-1-F-M	PP	RS485 + 4-20mA	Flat	M12
P14F-P-S-1-B-M	PP	RS485 + 4-20mA	Bulb	M12

Last digit:
“M” for M12 Connection (std)
“B” Blind (J-Box)
“F” Flying Lead



P14S — Seawater pH Sensor				
Part Number	Material	Output	Type	Connection
P14S-P-D-1-F-M	PP	4-wire (for ProCon® display)	Flat	M12
P14S-P-D-1-B-M	PP	4-wire (for ProCon® display)	Bulb	M12
P14S-P-M-1-F-M	PP	4-20mA (2-wire, std)	Flat	M12
P14S-P-M-1-B-M	PP	4-20mA (2-wire, std)	Bulb	M12
P14S-P-S-1-F-M	PP	RS485 + 4-20mA	Flat	M12
P14S-P-S-1-B-M	PP	RS485 + 4-20mA	Bulb	M12

Last digit:
“M” for M12 Connection (std)
“B” Blind (J-Box)
“F” Flying Lead



P14D — Desulfurization pH Sensor				
Part Number	Material	Output	Type	Connection
P14D-P-D-1-F-M	PP	4-wire (for ProCon® display)	Flat	M12
P14D-P-D-1-B-M	PP	4-wire (for ProCon® display)	Bulb	M12
P14D-P-M-1-F-M	PP	4-20mA (2-wire, std)	Flat	M12
P14D-P-M-1-B-M	PP	4-20mA (2-wire, std)	Bulb	M12
P14D-P-S-1-F-M	PP	RS485 + 4-20mA	Flat	M12
P14D-P-S-1-B-M	PP	RS485 + 4-20mA	Bulb	M12

Last digit:
“M” for M12 Connection (std)
“B” Blind (J-Box)
“F” Flying Lead



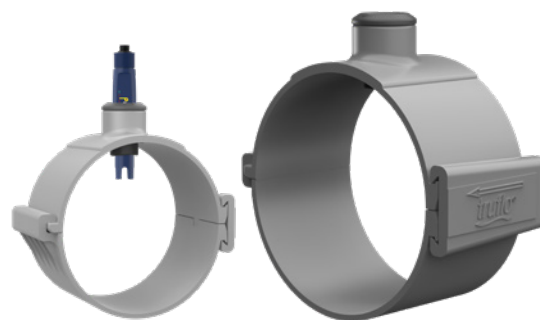
P14P — Ultra-pure H ₂ O pH Sensor				
Part Number	Material	Output	Type	Connection
P14P-P-D-1-B-M	PP	4-wire (for ProCon® display)	Bulb	M12
P14P-P-M-1-B-M	PP	4-20mA (2-wire, std)	Bulb	M12
P14P-P-S-1-B-M	PP	RS485 + 4-20mA	Bulb	M12

Last digit:
“M” for M12 Connection (std)
“B” Blind (J-Box)
“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



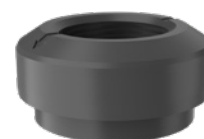
Cast Iron Saddle Fitting

Part Number	Material	Size	Seal
CISSP020	Cast Iron / SS / PVC	2"	FKM O-Rings
CISSP030	Cast Iron / SS / PVC	3"	FKM O-Rings
CISSP040	Cast Iron / SS / PVC	4"	FKM O-Rings
CISSP060	Cast Iron / SS / PVC	6"	FKM O-Rings
CISSP080	Cast Iron / SS / PVC	8"	FKM O-Rings
CISSP100	Cast Iron / SS / PVC	10"	FKM O-Rings
CISSP120	Cast Iron / SS / PVC	12"	FKM O-Rings
CISSP140	Cast Iron / SS / PVC	14"	FKM O-Rings
CISSP160	Cast Iron / SS / PVC	16"	FKM O-Rings
CISSF020	Cast Iron / SS / PVDF	2"	FKM O-Rings
CISSF030	Cast Iron / SS / PVDF	3"	FKM O-Rings
CISSF040	Cast Iron / SS / PVDF	4"	FKM O-Rings
CISSF060	Cast Iron / SS / PVDF	6"	FKM O-Rings
CISSF080	Cast Iron / SS / PVDF	8"	FKM O-Rings
CISSF100	Cast Iron / SS / PVDF	10"	FKM O-Rings
CISSF120	Cast Iron / SS / PVDF	12"	FKM O-Rings
CISSF140	Cast Iron / SS / PVDF	14"	FKM O-Rings
CISSF160	Cast Iron / SS / PVDF	16"	FKM O-Rings



Weldolet® Pipe Adaptor

Part Number	Material	Size	Connection
WAS-2	PVC	2"-4"	¾" NPT
WAS-6	PVC	6"-24"	¾" NPT
WPF-SS-2	SS	2"-4"	¾" NPT
WPF-SS-6	SS	6"-24"	¾" NPT



Warranty, Returns and Limitations

Warranty

Icon Process Controls Ltd warrants to the original purchaser of its products that such products will be free from defects in material and workmanship under normal use and service in accordance with instructions furnished by **Icon Process Controls Ltd** for a period of one year from the date of sale of such products. **Icon Process Controls Ltd** obligation under this warranty is solely and exclusively limited to the repair or replacement, at Icon Process Controls Ltd option, of the products or components, which **Icon Process Controls Ltd** examination determines to its satisfaction to be defective in material or workmanship within the warranty period. **Icon Process Controls Ltd** must be notified pursuant to the instructions below of any claim under this warranty within thirty (30) days of any claimed lack of conformity of the product. Any product repaired under this warranty will be warranted only for the remainder of the original warranty period. Any product provided as a replacement under this warranty will be warranted for the one year from the date of replacement.

Returns

Products cannot be returned to **Icon Process Controls Ltd** without prior authorization. To return a product that is thought to be defective, go to www.iconprocon.com, and submit a customer return (MRA) request form and follow the instructions therein. All warranty and non-warranty product returns to **Icon Process Controls Ltd** must be shipped prepaid and insured. **Icon Process Controls Ltd** will not be responsible for any products lost or damaged in shipment.

Limitations

This warranty does not apply to products which: 1) are beyond the warranty period or are products for which the original purchaser does not follow the warranty procedures outlined above; 2) have been subjected to electrical, mechanical or chemical damage due to improper, accidental or negligent use; 3) have been modified or altered; 4) anyone other than service personnel authorized by **Icon Process Controls Ltd** have attempted to repair; 5) have been involved in accidents or natural disasters; or 6) are damaged during return shipment to **Icon Process Controls Ltd** reserves the right to unilaterally waive this warranty and dispose of any product returned to **Icon Process Controls Ltd** where: 1) there is evidence of a potentially hazardous material present with the product; or 2) the product has remained unclaimed at **Icon Process Controls Ltd** for more than 30 days after **Icon Process Controls Ltd** has dutifully requested disposition. This warranty contains the sole express warranty made by **Icon Process Controls Ltd** in connection with its products. **ALL IMPLIED WARRANTIES, INCLUDING WITHOUT LIMITATION, THE WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, ARE EXPRESSLY DISCLAIMED.** The remedies of repair or replacement as stated above are the exclusive remedies for the breach of this warranty. **IN NO EVENT SHALL Icon Process Controls Ltd BE LIABLE FOR ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES OF ANY KIND INCLUDING PERSONAL OR REAL PROPERTY OR FOR INJURY TO ANY PERSON. THIS WARRANTY CONSTITUTES THE FINAL, COMPLETE AND EXCLUSIVE STATEMENT OF WARRANTY TERMS AND NO PERSON IS AUTHORIZED TO MAKE ANY OTHER WARRANTIES OR REPRESENTATIONS ON BEHALF OF Icon Process Controls Ltd.** This warranty will be interpreted pursuant to the laws of the province of Ontario, Canada.

If any portion of this warranty is held to be invalid or unenforceable for any reason, such finding will not invalidate any other provision of this warranty.

For additional product documentation and technical support visit:

www.iconprocon.com | e-mail: sales@iconprocon.com or support@iconprocon.com | Ph: 905.469.9283



by



Phone: 905.469.9283 · Sales: sales@iconprocon.com · Support: support@iconprocon.com

Use with any of the following controllers — **NO PREAMP REQUIRED**



SINGLE INPUT



DUAL INPUT



FIVE INPUT



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