

UltraFlo® 500 SERIES

Clamp-On Ultrasonic Flow Meter

Operating Manual

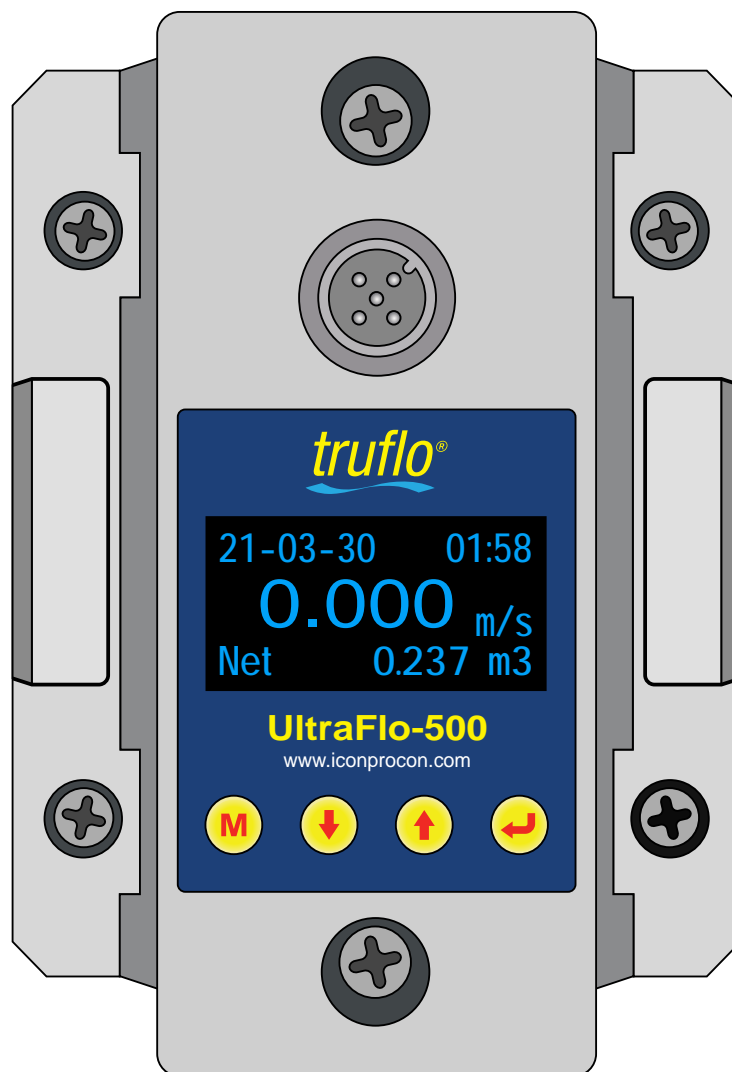


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Corrosion-Free
Instrumentation Equipment

Safety Information

Please always observe the following safety instructions!

Please pay attention to the safety instructions with the following pictograms and signal words in these operating instructions :



Warning | Caution | Danger

indicates general hazardous situations or cases which, if not avoided, could result in serious injury or death.



IMPORTANT!

indicates situations or cases which, if not avoided, could result in damage or failure of the **UltraFlo®** equipment.

Notice : Is used to lead users to helpful information not related to personal injury.

Intended Use

- ❑ The flow meter **UltraFlo®** should only be used for measuring the flow of pure, homogeneous liquids.
- ❑ The **UltraFlo®** is not intended for use in medical applications.
- ❑ The volume flow meter **UltraFlo®** is built in accordance with industry standard EN 61010 regulations (corresponds to VDE 0411 "Safety specifications for electrical measurement, control and laboratory devices").
- ❑ The manufacturer is not liable for any injury, damage or harm due to inappropriate or unintended use or modifications of the flow meter. Conversions and/or changes to the flow meter may only be made, if they are expressly performed in accordance with the operating instructions in this operating manual.

Personnel for Installation, Commissioning and Operation



- ❑ Assembly, electrical installation, commissioning and maintenance of the flow meter must be carried out by qualified, trained personnel. The qualified personnel must have read and understood the operating instructions in this operating manual and must follow the operating instructions in this manual.
- ❑ The installer has to ensure that the flow meter is correctly connected according to the electrical connection diagrams in this operating manual.
- ❑ Serious injury or death from electric shock may occur if wiring, installation, disassembly or removal of wires is performed while electrical power is energized

Technological Progress

The manufacturer reserves the right to revise, alter, or modify the flow meter to the most current technology without special prior notice. Further information about the latest updates and potential additions to these operating instructions are available from Truflo.

Product Description

Convenience, Accuracy and Value in an Ultrasonic Flow Meter

The **Truflo® UF-500** Series clamp-on ultrasonic flow meters are easy to install with exceptional long life performance and they require no alteration to current piping configurations.

The sensor sends over 50 pulses/sec in order to provide accurate measurement of liquid flow rates in full pipes and can be used in low pressure systems.

- ❑ **Wide Dynamic Flow Range 0.3 to 15 ft/s | 0.1 to 5 m/s**
- ❑ **Light weight**
- ❑ **Excellent External Corrosion Resistance**

Features

- ❑ Bright LCD Display No Pipe Cutting
- ❑ Flow Rate + Totalizer | Resettable
- ❑ Eprom Memory | Totalizer Value Will Not Be Lost
- ❑ Works on PVC | PP | PVDF | PE | SS | Copper
- ❑ Simple Programming

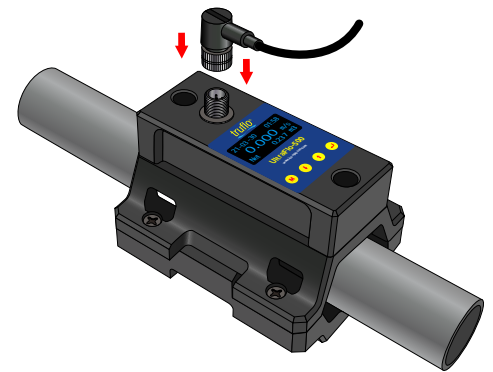
Clamp-On Design

- ❑ No Pipe Cutting
- ❑ No Contact with Liquid
- ❑ Simple Installation Process
- ❑ Works on PVC | PP | PVDF | PE | SS | Copper

M12 Quick Disconnect

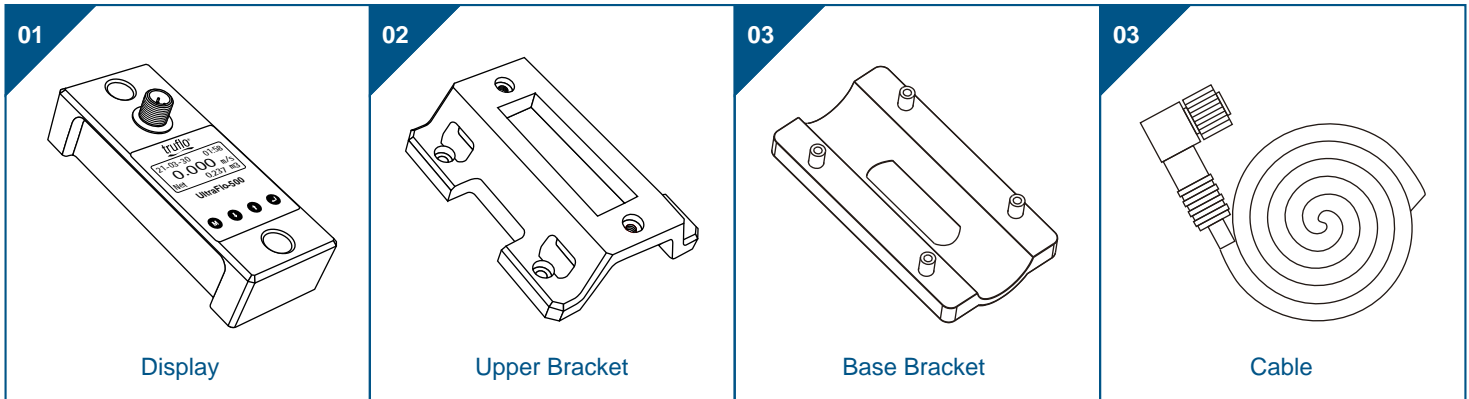
- ❑ Replaces Flying Lead Connections
- ❑ Reduces Setup Time
- ❑ Watertight Design
- ❑ Moisture and Dust Sealed

Technical Specifications

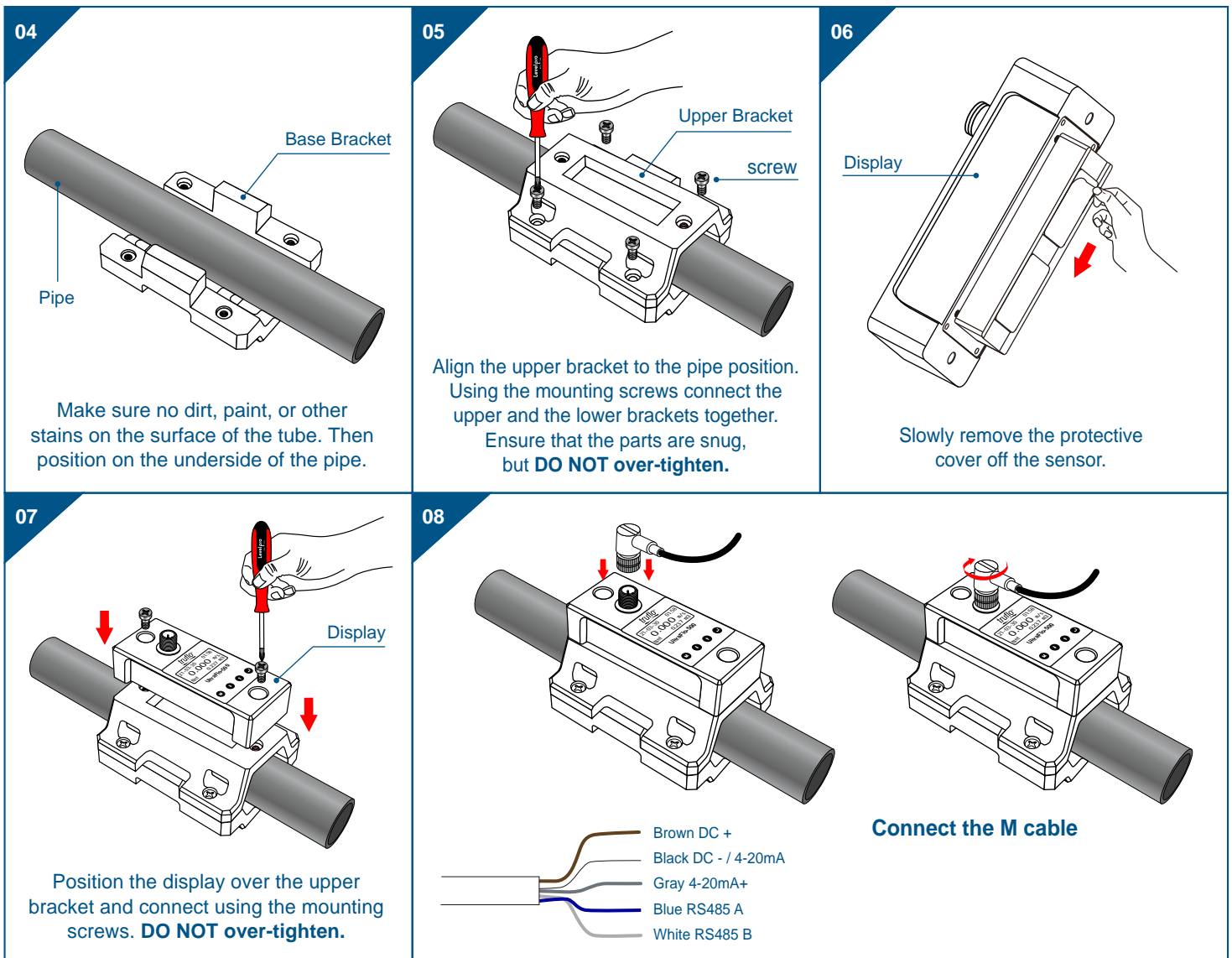


General		
Operating Range	0.3 to 33 ft/s	0.1 to 5 m/s
Pipe Size Range	½ - 2"	DN15 to DN50
Linearity	±2.0% of max. range @ 25 °C (77 °F)	
Repeatability	±0.8% of max. range @ 25 °C (77 °F)	
Materials		
Sensor Body	ABS Aluminum	
Electrical		
Power Supply	24 VDC	
Connection	M12	
Display		
LCD Display	128 * 64 Dot Matrix	
Units		
Totalizer Units	6-Digit Accumulator	
Standards and Approvals		
CE FCC RoHS Compliant		

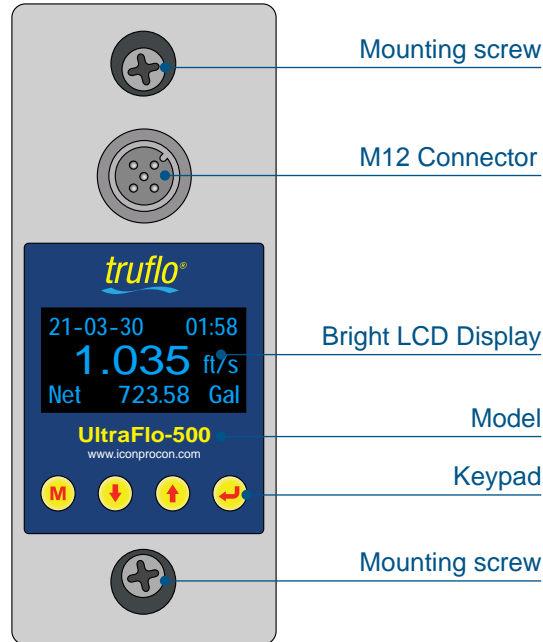
Components



Installation and Connection



Panel Function



Keypad Functions

Follow these guide lines when using the Flow meter keypad:

Press **M** to enter the Programming Mode or to return to the previous menu during programming.

Press **↓** **↑** to scroll up or down

Press **↓** to move to the next digit

Press **↑** to select digits (0-9)

Press **→** to confirm selection.

Powering ON

When connected to a VDC Power Supply the Ultrapro 500 will begin to run self-diagnosis program

Signal Quality (SQ value)

SQ value Signal Quality. The Q indicates the strength level of the signal detected. The Q value is indicated by numbers from 0-99.

0 represents that no Signal is being detected while 99 represents the maximum signal strength

The LCD display shows the following information: SQ 88, 01:58, 1.035 ft/s, and Net 723.58 Gal.

Display Description

STEPS	DISPLAY	OPERATION
<p>Main Display Flow Velocity / Flow Total</p>	<pre>21-03-30 01:58 1.035 ft/s Net 723.58 Gal</pre>	Power on Display shows <u>Flow Velocity</u> and <u>Flow Total</u>
<p>Press Key</p> <p>Flow Rate / Net Total</p>	<pre>SQ 88 12:30:29 3.325 GPM Net 723.58 Gal</pre>	<p>Press to Display <u>Flow Rate / Net Total</u>.</p> <p>Press to return to previous menu.</p>
<p>Press Key</p> <p>Flow Rate / Velocity / Net Total</p>	<pre>SQ 88 12:30:29 Vel 1.035 ft/s Flow 3.325 GPM Net 723.58 Gal</pre>	<p>Press to Display <u>Flow Rate / Velocity / Net Total</u>.</p> <p>Press to return to previous menu.</p>
<p>Press Key</p> <p>Run time / Daily Total / Monthly Total / Yearly Total</p>	<pre>Run Time 216h Day 79.632 Gal Mth. 2382.3 Gal Year 28984 Gal</pre>	<p>Press to Display <u>Run time / Daily Total / Monthly Total / Yearly Total</u></p> <p>Press to return to previous menu.</p>

Setup Menu

STEPS	DISPLAY	OPERATION
<p>Main Display</p>	<pre>21-03-30 01:58 1.035 ft/s Net 723.58 Gal</pre>	Power on Display shows Flow Velocity and Flow Total
<p>Press Key</p> <p>Setup menu</p>	<pre>Setup manu 0. Pipe parameter 1. System setting 2. Calibration 3. Output setting</pre>	<p>Press to display Setup menu.</p> <p>The following options are available (using the or buttons)</p> <p>0. Pipe parameter 1. System setting 2. Calibration 3. Output setting</p>

Pipe Parameter Setup Menu

STEPS	DISPLAY	OPERATION
	<p>Setup manu</p> <ul style="list-style-type: none"> 0. Pipe parameter 1. System setting 2. Calibration 3. Output setting 	<p>Press M to display Setup menu.</p> <p>The following options are available (using the ↓ or ↑ buttons)</p> <ul style="list-style-type: none"> 0. Pipe parameter 1. System setting 2. Calibration 3. Output setting
	<p>Pipe Parameter</p> <ul style="list-style-type: none"> 0. Outer diameter 1. Wall thickness 2. Material 3. Fluid type 	<p>Press ↓ , Select 0.Pipe parameter, then → to display:</p> <p>The following options are available (using the ↓ or ↑ buttons)</p> <ul style="list-style-type: none"> 0. Outer diameter 1. Wall thickness 2. Material : Press ↓ or ↑ to choose between PVC, Carbon steel, Steel, Copper pipe. 3. Fluid type: Press ↓ or ↑ to choose between Water, Sea Water, Oil...etc.

System Setting Setup Menu

STEPS	DISPLAY	OPERATION
	<p>Setup manu</p> <ul style="list-style-type: none"> 0. Pipe parameter 1. System setting 2. Calibration 3. Output setting 	<p>Press M to display Setup menu.</p> <p>The following options are available (using the ↓ or ↑ buttons)</p> <ul style="list-style-type: none"> 0. Pipe parameter 1. System setting 2. Calibration 3. Output setting
	<p>System setting</p> <ul style="list-style-type: none"> 0. System Unit 1. Flow Rate Unit 2. Total Unit 3.Totalizer Reset 4. Time Set 5. System Lock 6. System INFO 	<p>Press ↓ , Select 1.System setting then → to display:</p> <p>The following options are available (using the ↓ or ↑ buttons)</p> <ul style="list-style-type: none"> 0. System Unit : Press ↓ or ↑ to choose between Metric, English. 1. Flow Rate Unit : Press ↓ or ↑ to choose between m3/h, LPM, GPM. 2. Total Unit : Press ↓ or ↑ to choose between m3, L, GAL. 3.Totalizer Reset : Press → then press the ↓ or ↑ arrow to select 'YES' or 'NO'. If 'YES' is selected, parameters will be reset . 4. Time Set : <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p>yy-mm-dd hh:mm 19-06-20 12:30</p> </div> <p>Generally, it is unnecessary to modify date time as the system is provided with a highly reliable perpetual calendar chip.</p>

Next Page

STEPS	DISPLAY	OPERATION												
<p>Previous Page</p> <p>System setting</p>	<p>System setting</p> <ul style="list-style-type: none"> 0. System Unit 1. Flow Rate Unit 2. Total Unit 3. Totalizer Reset 4. Time Set 5. System Lock 6. System INFO 	<p>5. System lock</p> <table border="1" data-bbox="760 346 1513 441"> <tr> <td>System lock System Unlocked</td> <td>System lock ENT to lock</td> <td>ENT key word 0000</td> <td>System lock System locked OK</td> </tr> </table> <table border="1" data-bbox="760 462 1513 556"> <tr> <td>System lock System locked</td> <td>System lock ENT to unlock</td> <td>ENT key word 0000</td> <td>System lock System Unlocked OK</td> </tr> </table> <p>Once the system is locked, any modifications to the system are prohibited, but the parameter is readable. "Unlock" using your designated password. The password is composed of 1to4 numbers.</p> <hr/> <p>6. System INFO</p> <table border="1" data-bbox="760 766 1513 861"> <tr> <td>System lock System Unlocked</td> <td>System lock ENT to lock</td> <td>ENT key word 0000</td> <td>System lock System locked OK</td> </tr> </table> <p>Display serial number (SN) of the meter. This SN is the only one assigned to each flow meter.</p> <p>Set zero: Press ; reset "Zero Point" which was set by the user.</p> <p>Manual Totalizer: The manual totalizer is a separate totalizer.</p> <p>Press to start, and press to stop. It is used for isolated flow measurement and calculation.</p>	System lock System Unlocked	System lock ENT to lock	ENT key word 0000	System lock System locked OK	System lock System locked	System lock ENT to unlock	ENT key word 0000	System lock System Unlocked OK	System lock System Unlocked	System lock ENT to lock	ENT key word 0000	System lock System locked OK
System lock System Unlocked	System lock ENT to lock	ENT key word 0000	System lock System locked OK											
System lock System locked	System lock ENT to unlock	ENT key word 0000	System lock System Unlocked OK											
System lock System Unlocked	System lock ENT to lock	ENT key word 0000	System lock System locked OK											

Calibration Setup Menu

STEPS	DISPLAY	OPERATION
<p>Setup menu</p> <p>Press to Key</p> <p>Calibration</p> <p>Next Page</p>	<p>Setup manu</p> <ul style="list-style-type: none"> 0. Pipe parameter 1. System setting 2. Calibration 3. Output setting <hr/> <p>Calibration</p> <ul style="list-style-type: none"> 0. Scale factor 1. 4 & 20mA CAL 2. Set Zero 3. Low flow Cut 	<p>Press to display Setup menu.</p> <p>The following options are available (using the or buttons)</p> <ul style="list-style-type: none"> 0. Pipe parameter 1. System setting 2. Calibration 3. Output setting <p>Press , Select 2. Calibration, then to display:</p> <p>The following options are available (using the or buttons)</p> <hr/> <p>0. Scale factor</p> <p>Refers to the ratio between the "actual value" and "reading value". For example, when the measurement is 2.00, and it is indicated at 1.98 on the instrument, the scale factor reading is 2/1.98. This means that the best scale factor constant is 1.01.</p>

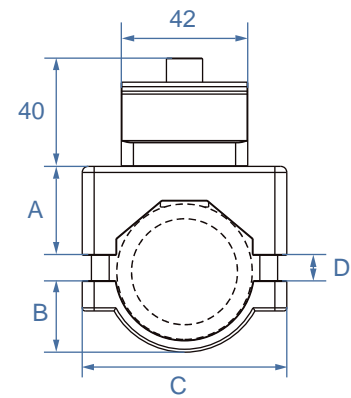
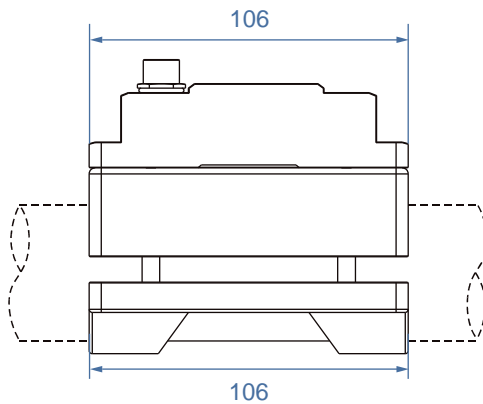
STEPS	DISPLAY	OPERATION
<p>Previous Page</p> <p>Calibration</p>	<p>Calibration</p> <p>0. Scale factor 1. 4 & 20mA CAL 2. Set Zero 3. Low flow Cut</p>	<p>1. 4 & 20mA CAL</p> <p>Press and to display 4mA set point.</p> <p>Use and to set 4mA.</p> <p>After 4mA is set, press to move to your 20mA set point.</p> <p>Once 20mA is set, press to move to next screen.</p> <div style="display: flex; justify-content: space-around;"> <div style="border: 1px solid black; padding: 5px; width: 45%;"> <p>4mA Calibrate 4200</p> </div> <div style="border: 1px solid black; padding: 5px; width: 45%;"> <p>20mA Calibrate 25800</p> </div> </div> <hr/> <p>1. Set Zero: Press ; reset "Zero Point" which was set by the user.</p> <div style="display: flex; justify-content: space-around;"> <div style="border: 1px solid black; padding: 5px; width: 45%;"> <p>Set zero Ent to set zero Reset zero</p> </div> <div style="border: 1px solid black; padding: 5px; width: 45%;"> <p>Set zero Waiting... SQ 88 Vel 0.035 m/s</p> </div> </div> <hr/> <p>2. Lowflow cut: Flow rate falls below the low flow cutoff value.</p> <div style="border: 1px solid black; padding: 5px; width: 100%;"> <p>Low flow cut 0.030 m/s</p> </div> <p>The flow indication is driven to zero. This function can prevent the flow meter from reading flow after a pump is shut down but there is still liquid movement in the pipe, which will result in totalization error. Generally, 0.03m/s is recommended to enter as the low flow cut off point. The low flow cutoff value has no relation to the results once the velocity increases over the low flow cutoff value.</p>

Output Setting Setup Menu

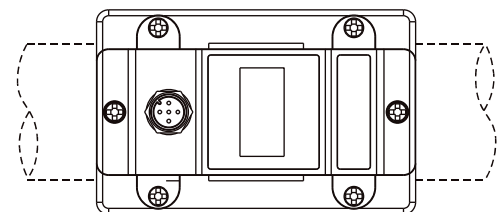
STEPS	DISPLAY	OPERATION
<p>Setup menu</p> <p>Press to Key</p> <p>Output Setting</p> <p>Next Page</p>	<p>Setup manu</p> <p>0. Pipe parameter 1. System setting 2. Calibration 3. Output setting</p> <hr/> <p>Output setting</p> <p>0. RS485 Setup 1. 4-20mA range 2. Alarm value</p>	<p>Press to display Setup menu.</p> <p>The following options are available (using the or buttons)</p> <p>0. Pipe parameter 1. System setting 2. Calibration 3. Output setting</p> <hr/> <p>Press , Select 3.Output setting, then to display:</p> <p>The following options are available (using the or buttons)</p> <hr/> <p>0. RS 485 setup</p> <p>This window is used to set RS 485 serial port . It must match the equipment's connected parameters .</p> <p>First select baud rate: 2400,4800,9600,19200 are selectable</p> <p>Then select : None. Data length : 8 Stop bit is fixed length.</p> <p>Factory default value for serial port parameter is "9600, 8, None,1"</p>

STEPS	DISPLAY	OPERATION		
<p>Previous Page</p> <p>Output Setting</p>	<p>Output setting</p> <p>0. RS485 Setup</p> <p>1. 4-20mA range</p> <p>2. Alarm value</p>	<p>1. 4-20mA Range</p> <table border="1"> <tr> <td>4mA Calibrate 4200</td> <td>20mA Calibrate 25800</td> </tr> </table> <p>Set the Current Loop output value according to the flow value 4mA , and 20mA . The flow unit is GPM</p> <hr/> <p>2. Alarm Value (Optional)</p> <p>Alarm value</p> <p>0. Low value</p> <p>1. High value</p> <p>Enter the low alarm value; (if the measured flow is lower than the low alarm value), the alarm relay will be activated.</p> <p>Enter the high alarm value; (if the measured flow is higher that the high alarm value), the alarm relay will be activated.</p>	4mA Calibrate 4200	20mA Calibrate 25800
4mA Calibrate 4200	20mA Calibrate 25800			

Dimensions



Model	A (mm)	B (mm)	B (mm)	D (mm)	
				min	max
UF-20	25	8	58	1.5 Ø20	8 Ø23
UF-25	25	15	58	1.5 Ø25	4.5 Ø28
UF-32	28.5	18.5	58	1.5 Ø32	4.5 Ø35
UF-40	29.5	24	68	1.5 Ø38	8.5 Ø45
UF-50	36	27	78	1.5 Ø48	8.5 Ø54
UF-63	41	32	91	1.5 Ø58	8.5 Ø64



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.

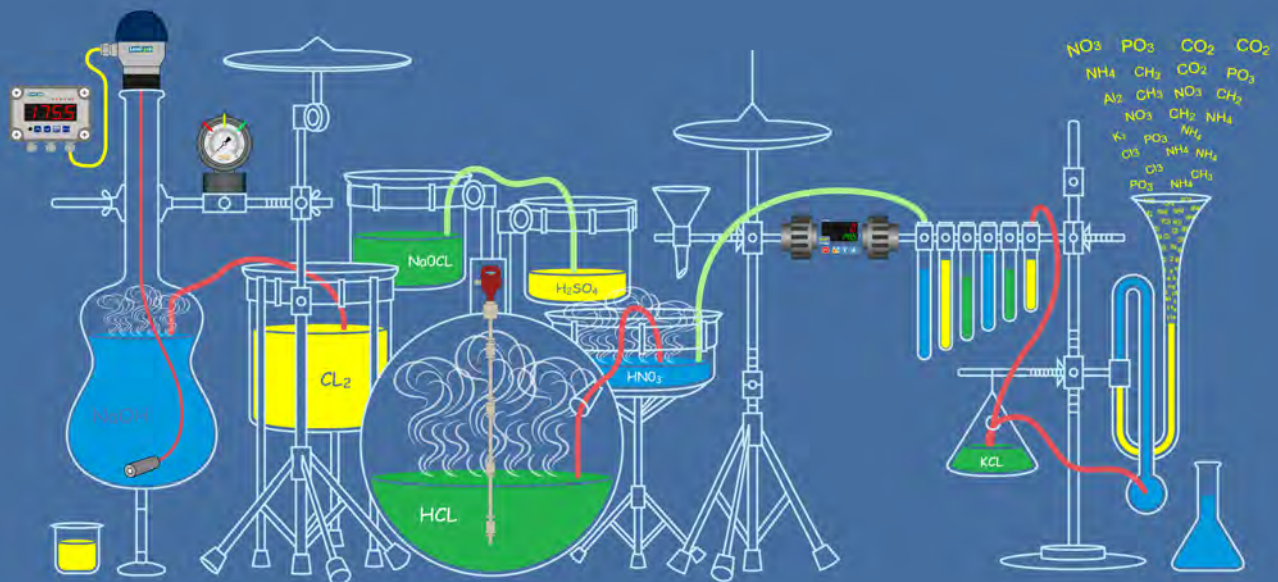
If any portion of this warranty is held to be invalid or unenforceable for any reason, such finding will not invalidate any other provision of this warranty

For additional product documentation and technical support visit www.iconprocon.com | e-mail: sales@iconprocon.com support@iconprocon.com | Ph: 905.469.9283



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