ICON Process Controls TVF Flow Display And Batcher User Guide

Contents

ICON™ PROCESS CONTROLS Corrosion-Free Instrumentation Equipment

ICON Process Controls TVF Flow Display And Batcher

Product Usage Instructions

Basic Requirements | User Safety

- Do not use the unit in areas threatened with excessive shocks, vibrations, dust, humidity, corrosive gasses, and oils.
- Do not use the unit in areas where there is a risk of explosions.
- Do not use the unit in areas with significant temperature variations, exposure to condensation, or ice.
- If there is a unit malfunction with a risk to safety, use additional independent systems to prevent threats.
- The unit uses dangerous voltage; switch off and disconnect from power before troubleshooting.
- Do not disassemble, repair, or modify the unit yourself; defective units should be submitted for repairs at an authorized service center.

Front Panel Description

- Easy access to documentation.
- Relay 1 & 2 LED Indicator.
- Super ‘SunBright’ LED Display with 8 levels of brightness.
- Flow | Batching Mode LED Indicator.
- Push button programming with functions for ENTER, PAUSE, and RESET.

FAQ

- **Q:** What should I do if the unit malfunctions?
  - **A:** In case of a malfunction, switch off the unit, disconnect it from the power supply, and contact an authorized service center for repairs.

- **Q:** Can I modify or repair the unit myself?
  - **A:** No, do not attempt to disassemble, repair, or modify the unit yourself as it has no user serviceable parts. Defective units should be handled by professionals at authorized service centers.

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

Safety Information

Symbol Explanation

This symbol denotes especially important guidelines concerning the installation and operation of the device. Not complying with the guidelines denoted by this symbol may cause an accident, damage or equipment destruction.

Basic Requirements | User Safety

- Do not use the unit in areas threatened with excessive shocks, vibrations, dust, humidity, corrosive gasses and oils.
- Do not use the unit in areas where there is risk of explosions.
- Do not use the unit in areas with significant temperature variations, exposure to condensation or ice.
- The manufacturer is not responsible for any damages caused by inappropriate installation, not maintaining the proper environmental conditions and using the unit contrary to its assignment.
- If in the case of a unit malfunction there is a risk of a serious threat to the safety of people or property additional, independent systems and solutions to prevent such a threat must be used.
- The unit uses dangerous voltage that can cause a lethal accident. The unit must be switched off and disconnected from the power supply prior to starting installation of troubleshooting (in the case of malfunction).
- Do not attempt to disassemble, repair or modify the unit yourself. The unit has no user serviceable parts.
- Defective units must be disconnected and submitted for repairs at an authorized service center.

Specifications

General	
Display	LED | 6 Digit | 13mm High | Red | Adjustable Brightness
Displayed Values	0 ~ 999999
RS485 Transmission	1200…115200 bit/s, 8N1 / 8N2
Housing Material	ABS | Polycarbonate
Protection Class	NEMA 4X | IP67
Input Signal | Supply	
Standard	Current: 4-20mA | 0-20mA | 0-5V* | 0-10V*
Voltage	85 – 260V AC/DC | 16 – 35V AC, 19 – 50V DC*
Output Signal | Supply	
Standard	2 x Relays (5A) | 1 x Relay (5A) + 4-20mA
Communication	RS485
Voltage	24VDC
Passive current output *	4-20mA | (Operating Range Max. 2.8 – 24mA)
Performance	
Accuracy	0.1% @ 25°C One Digit
Temperatures	
Operating Temperature	-40 – 158°F | -40 – 70°C

Front Panel Description

Function of Push Buttons

Symbol used in the manual : [ESC/MENU]

Functions:

- Enter to main menu (press and hold for at least 3 sec.)
- Exit the current Screen and Enter to previous menu (or measure mode)
- Cancel the changes made in parameter being edited

Symbol used in the manual : [ENTER/PAUSE]

Functions:

- Start to edit the parameter
- Enter into the sub-menu
- Confirmation of changes made in parameter being edited
- While batcher mode : Pause / Start Batching

Symbol used in the manual : [∑ /RESET]

Functions:

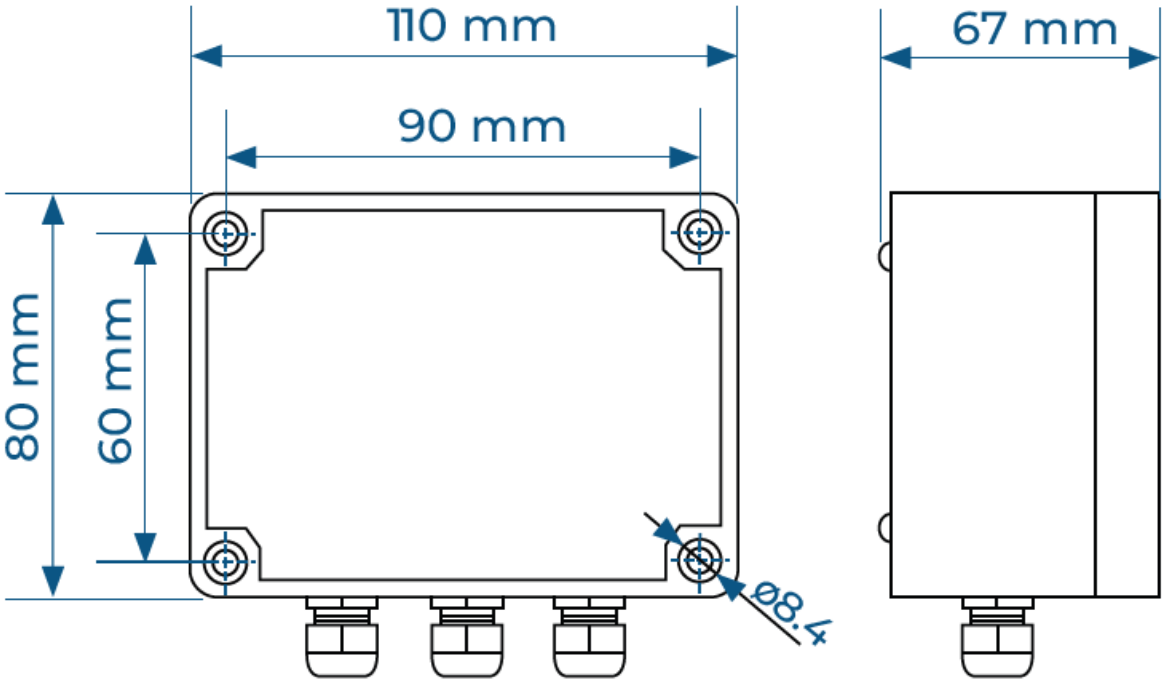
- Switching of the display between total and instantaneous measurements or batcher counter (while batcher mode only)
- Zeroing the currently displayed counter (Press & Hold for at least 2 Sec), the zeroing must be confirmed by **[ENTER]** button

Symbol used in the manual : [^] [v]

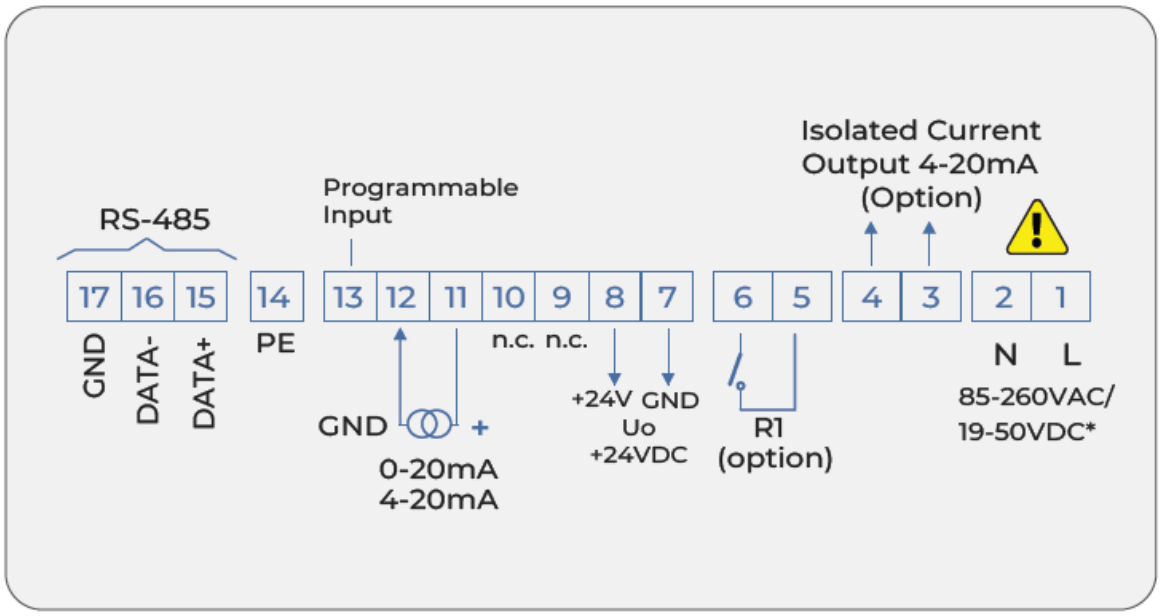
Functions:

- Change of the present menu
- Modification of the parameter value
- Switching of the display between relay thresholds and number of batches counter.

Dimensions



Wiring Diagram



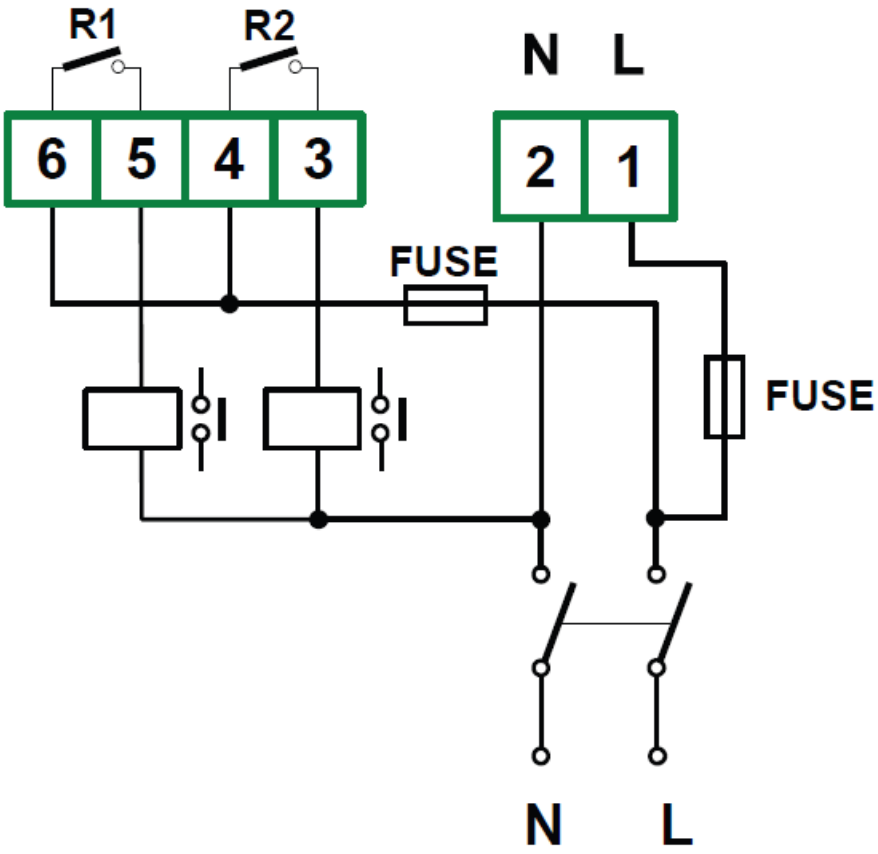
WIRE INSTALLATION

- Insert screwdriver and push wire locking mechanism open
- Insert wire
- Remove screwdriver

WARNING: Due to possible significant interference in industrial installations, appropriate measures assuring correct operation of the unit must be applied.

The unit is not equipped with an internal fuse or power supply circuit breaker.
For this reason, an external time-delay cut-out fuse with a small nominal current value must be used (recommended bipolar, max. 2A) and a power supply circuit breaker located near the unit.

Power Supply & Relay Connection



Depending on Version

- 85/230/260V AC/DC ; 50 – 60 Hz
- 19/24 – 50V DC ; 16/24/35V AC

Warning: Contacts of relay outputs are not equipped with spark suppressors. When using the relay outputs for switching of inductive loads (coils, contactors, power relays, electromagnets, motors etc.) it is required to use additional suppression circuit (typically capacitor 47nF/ min. 250VAC in series with 100R/5W resistor), connected in parallel to relay terminals or (better) directly on the load.

Suppression Circuit Connection

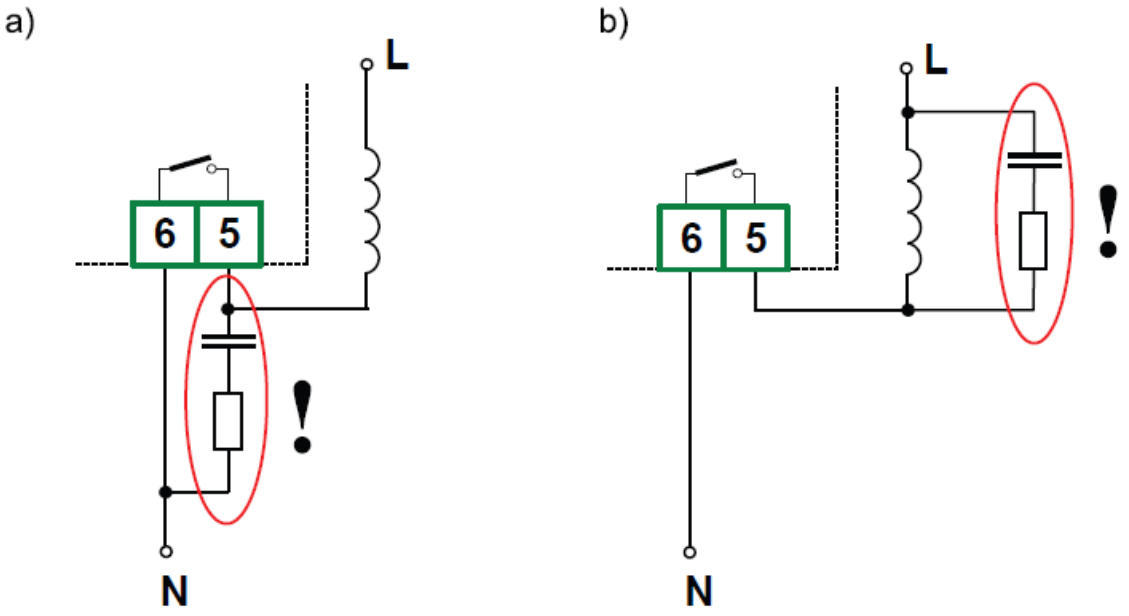


Figure: Examples of Suppression Circuit Connection

- **a)** To Stepper Relay Terminals
- **b)** To the Inductive Load (Motor)

OC-Type Output Connection

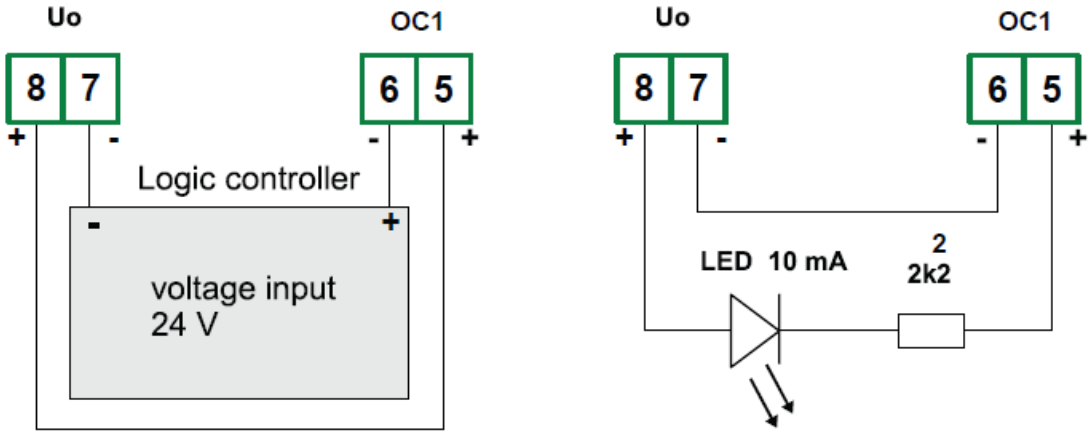


Figure: Examples of OC-type output connection

Current Output Connection Using Internal Power Supply

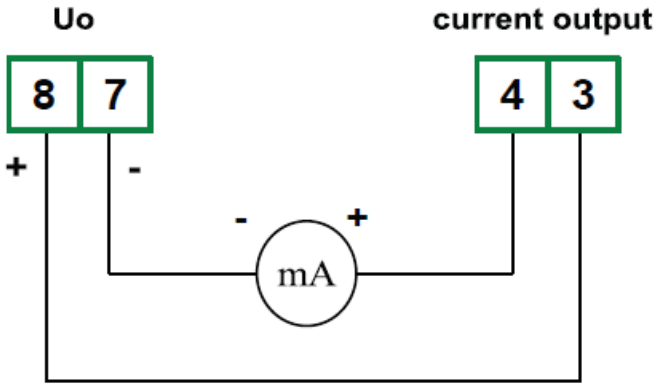


Figure: Example of current output connection using internal power supply

Current Output Connection Using External Power Supply

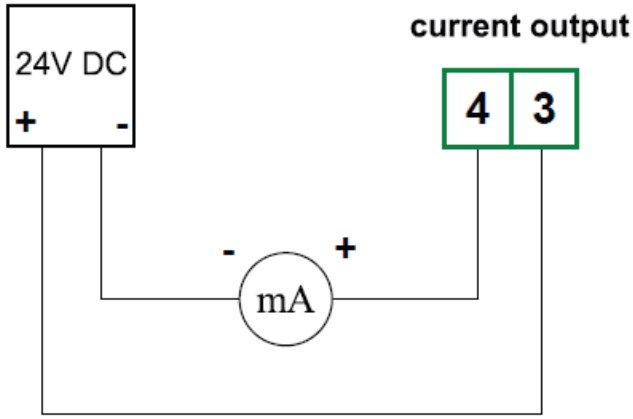
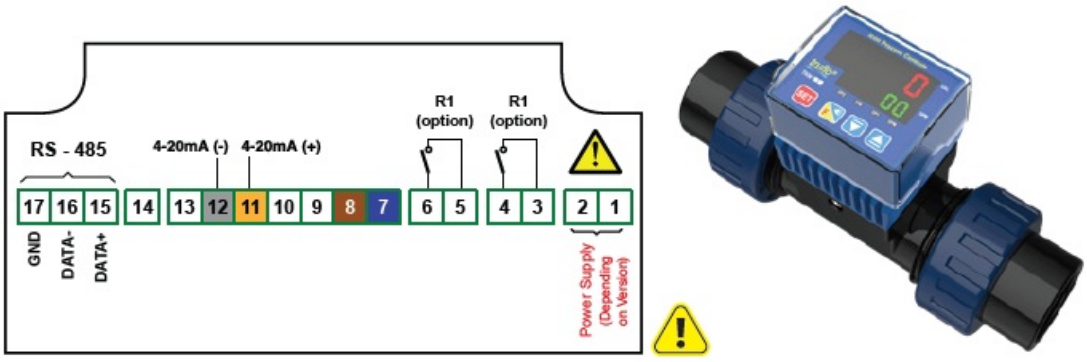
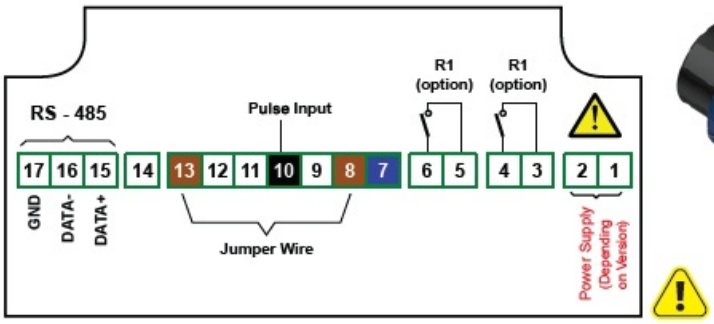


Figure: Example of current output connection using external power supply

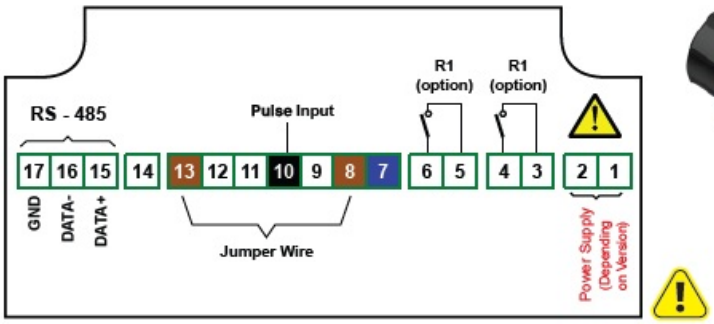
Flow Meter Connections (Relay Type)



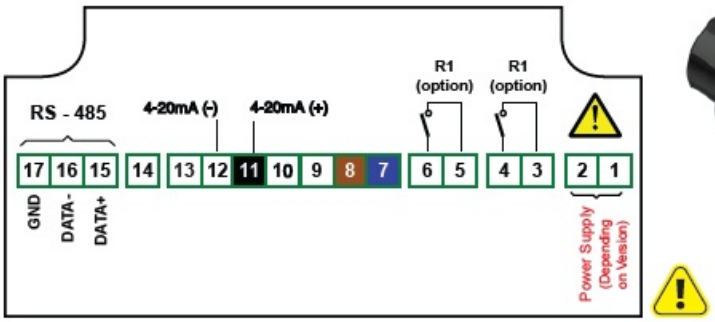
TKM Series : 4-20mA Output		
TVF Terminal	Wire Color	Description
7	Blue	-VDC
8	Brown	+VDC
11	Yellow	mA+
12	Grey	mA-



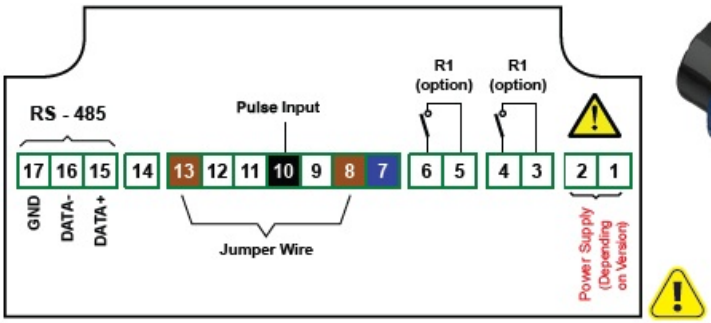
TKS Series : Pulse Output		
GPM/Pulse = K factor		
TVF Terminal	Wire Color	Description
7	Blue	-VDC
8	Brown	+VDC
10	Black	NPN Pulse
Jump 13 & 8		



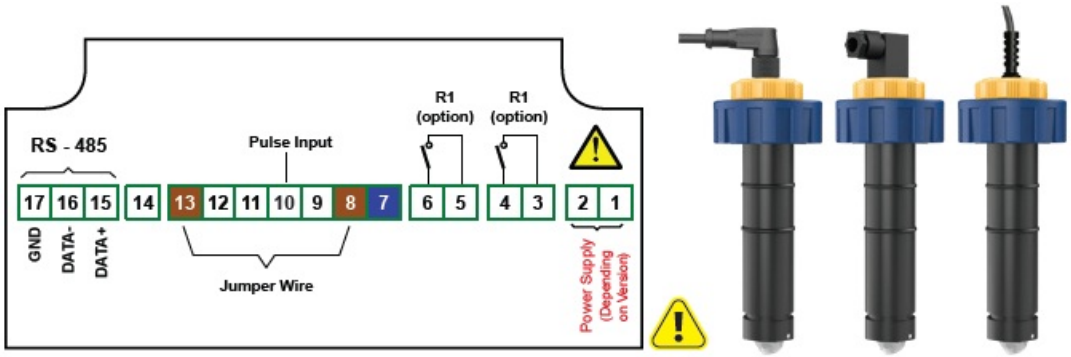
TKW Series : Pulse Output		
GPM/Pulse = K factor		
TVF Terminal	Wire Color	Description
7	Blue	-VDC
8	Brown	+VDC
10	Black	Pulse
Jump 13 & 8		



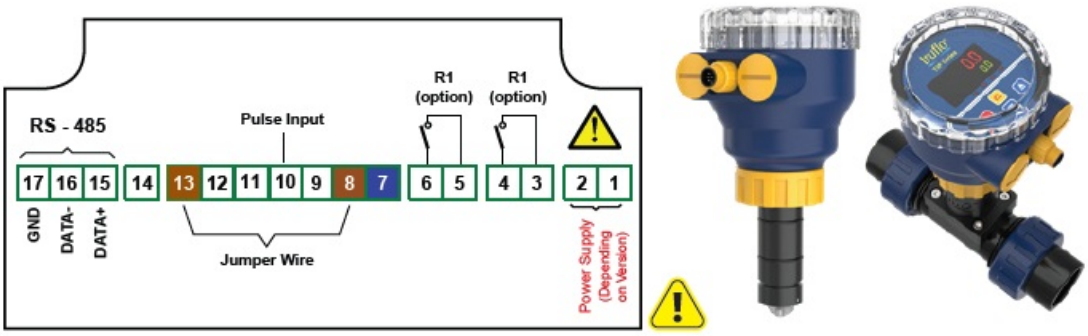
TKW Series : 4-20mA Output		
TVF Terminal	Wire Color	Description
7	Blue	-VDC
8	Brown	+VDC
11	Black	mA+
12	White	mA-



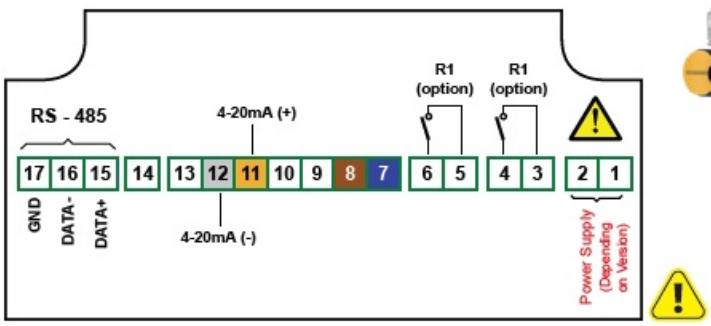
TKP Series : Pulse Output		
GPM/Pulse = K factor		
TVF Terminal	Wire Color	Description
7	Blue	-VDC
8	Brown	+VDC
10	Black	Pulse
Jump 13 & 8		



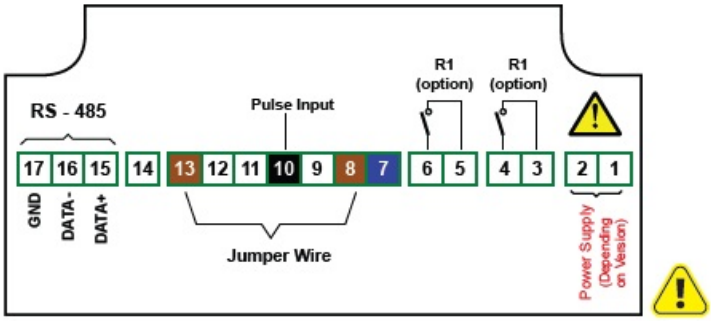
TIW Series : Pulse Output		
GPM/Pulse = K factor		
TVF Terminal	Wire Color	Description
7	Blue	-VDC
8	Brown	+VDC
10	White	Pulse
Jump 13 & 8		



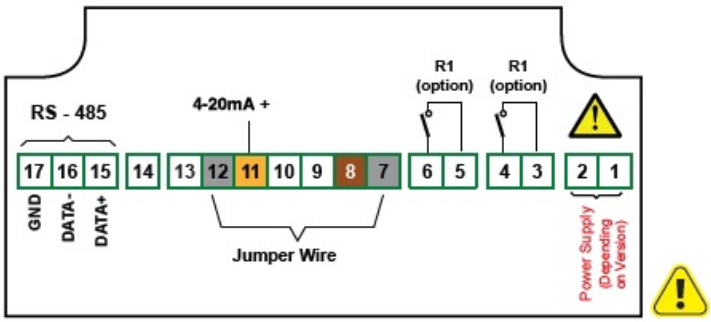
TIM | TIP Series : Pulse Output		
GPM/Pulse = K factor		
TVF Terminal	Wire Color	Description
7	Blue	-VDC
8	Brown	+VDC
10	White	Pulse
Jump 13 & 8		



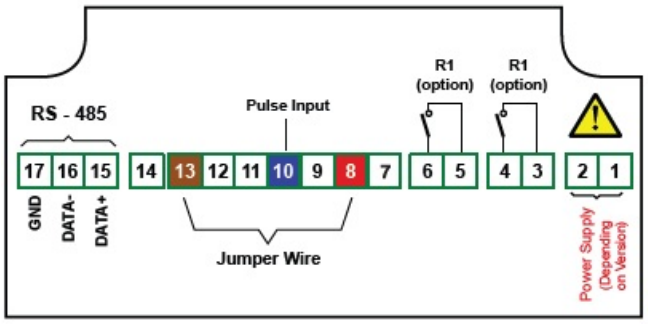
TIM Series : 4-20mA Output		
TVF Terminal	Wire Color	Description
7	Blue	-VDC
8	Brown	+VDC
11	Yellow	mA+
12	Grey	mA-



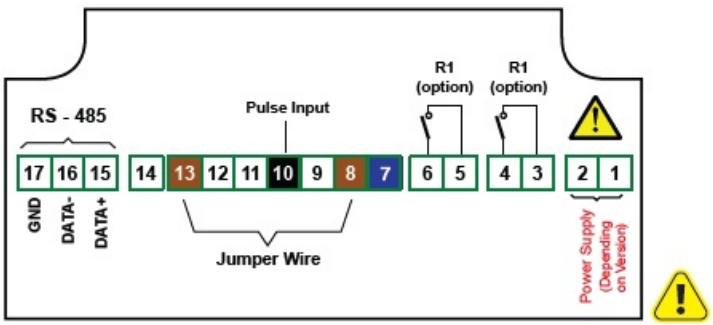
UF 1000 | 4000 | 5000 – Pulse Output		
GPM/Pulse = K factor		
TVF Terminal	Pin	Description
8	1	+VDC
10	2	Pulse
7	3	-VDC
Jump 13 & 8		



UF 1000 | 4000 | 5000 – 4-20mA Output		
TVF Terminal	Pin	Description
8	1	+VDC
11	2	+mA
7	3	-VDC
Jump 12 & 7		



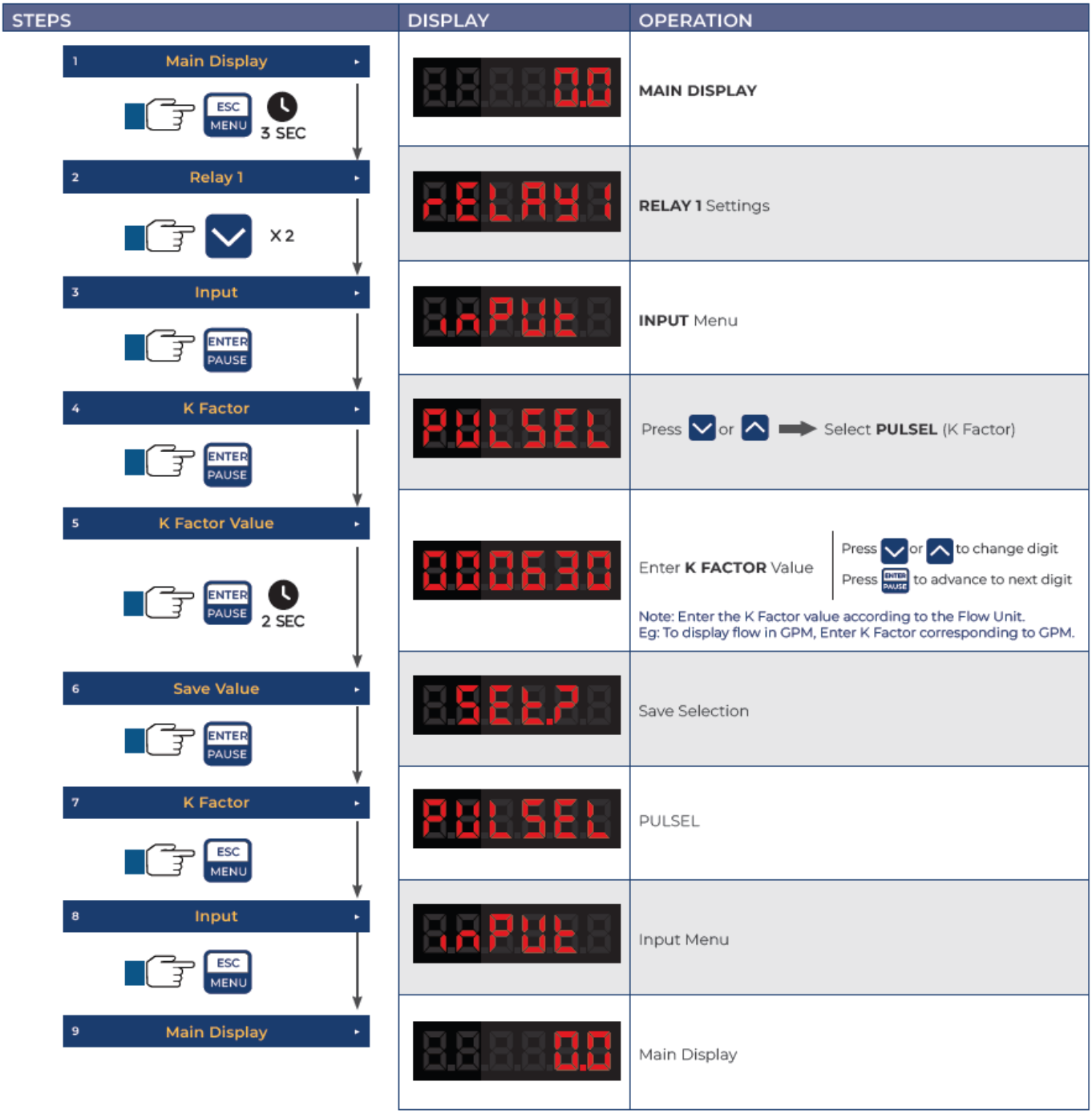
ProPulse (Flying Lead) – Pulse Output		
GPM/Pulse = K factor		
TVF Terminal	Wire Color	Description
7	Shield	-VDC
8	Red	+VDC
10	Blue	Pulse
Jump 13 & 8		



ProPulse®2 – Pulse Output		
TVF Terminal	Wire Color	Description
7	Blue	-VDC
8	Brown	+VDC
10	Black	Pulse
Jump 13 & 8		

Programmings

Programming K Factor



Programming Relays

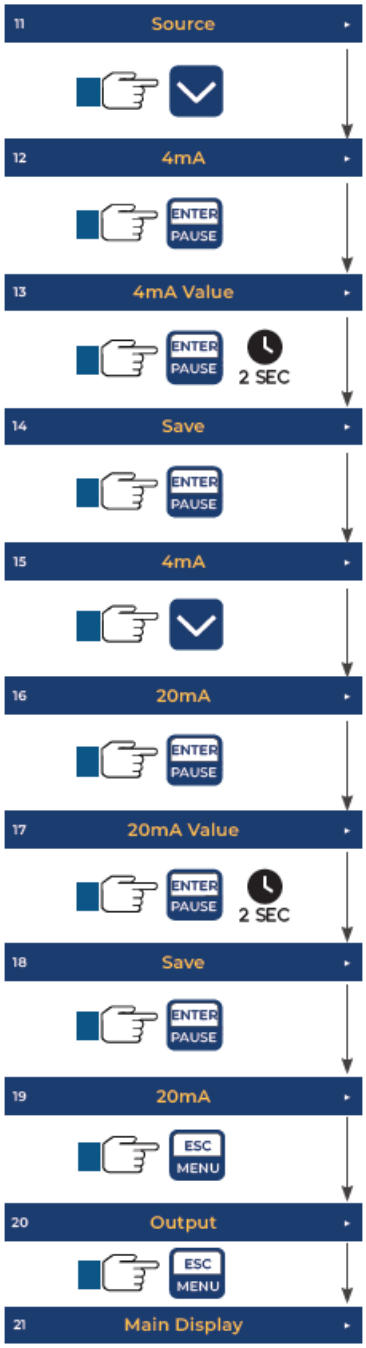
STEPS	DISPLAY	OPERATION
1 Main Display ▸ ESC MENU 3 SEC		**MAIN DISPLAY**
2 Relay 1 ▸ ENTER PAUSE		**RELAY 1** Settings
3 Source ▸ ENTER PAUSE		**SOURCE** Menu
4 FLo | bAt | tot ▸ ENTER PAUSE		Press ⌄ or ⌃ → Select **FLo** (Flow)
5 Save ▸ ENTER PAUSE		Save Selection
6 Source ▸ ⌄		Source
7 Set Point 1 ▸ ENTER PAUSE		**SET POINT 1**
8 Set Point 1 Value ▸ ENTER PAUSE 2 SEC		Enter **SET POINT 1** Value Press ⌄ or ⌃ to change digit Press ENTER PAUSE to advance to next digit
9 Save ▸ ENTER PAUSE		Save Value
10 Set Point 1 ▸ ⌄		**SET POINT 1**

11 Set Point 2 ▸ ENTER PAUSE		**SET POINT 2*** * Option available only when the MODE is set to In/Out
12 Set Point 2 Value ▸ ENTER PAUSE 2 SEC		Enter **SET POINT 2** Value Press ⌄ or ⌃ to change digit Press ENTER PAUSE to advance to next digit
13 Save ▸ ENTER PAUSE		Save Value
14 Set Point 2 ▸ ⌄		Set Point 2
15 Hysterisis ▸ ENTER PAUSE		**HYSTERISIS** Menu
16 Hysterisis Value ▸ ENTER PAUSE 2 SEC		Enter **HYSTERISIS** Value Press ⌄ or ⌃ to change digit Press ENTER PAUSE to advance to next digit
17 Save ▸ ENTER PAUSE		Save Value
18 Hysterisis ▸ ⌄		Hysterisis Menu
19 Mode ▸ ENTER PAUSE		**MODE** Menu
20 On | Off | In | Out ▸ ENTER PAUSE		Press ⌄ or ⌃ ➡ Select **On | OFF | In | Out**
21 Save ▸ ENTER PAUSE		Save Selection
22 Mode ▸ ESC MENU		Mode Menu
23 Relay 1 ▸ ESC MENU		Relay 1 Menu
24 Main Display ▸		Main Display

Programming Batching

Programming Output (For 4-20mA Output Models)

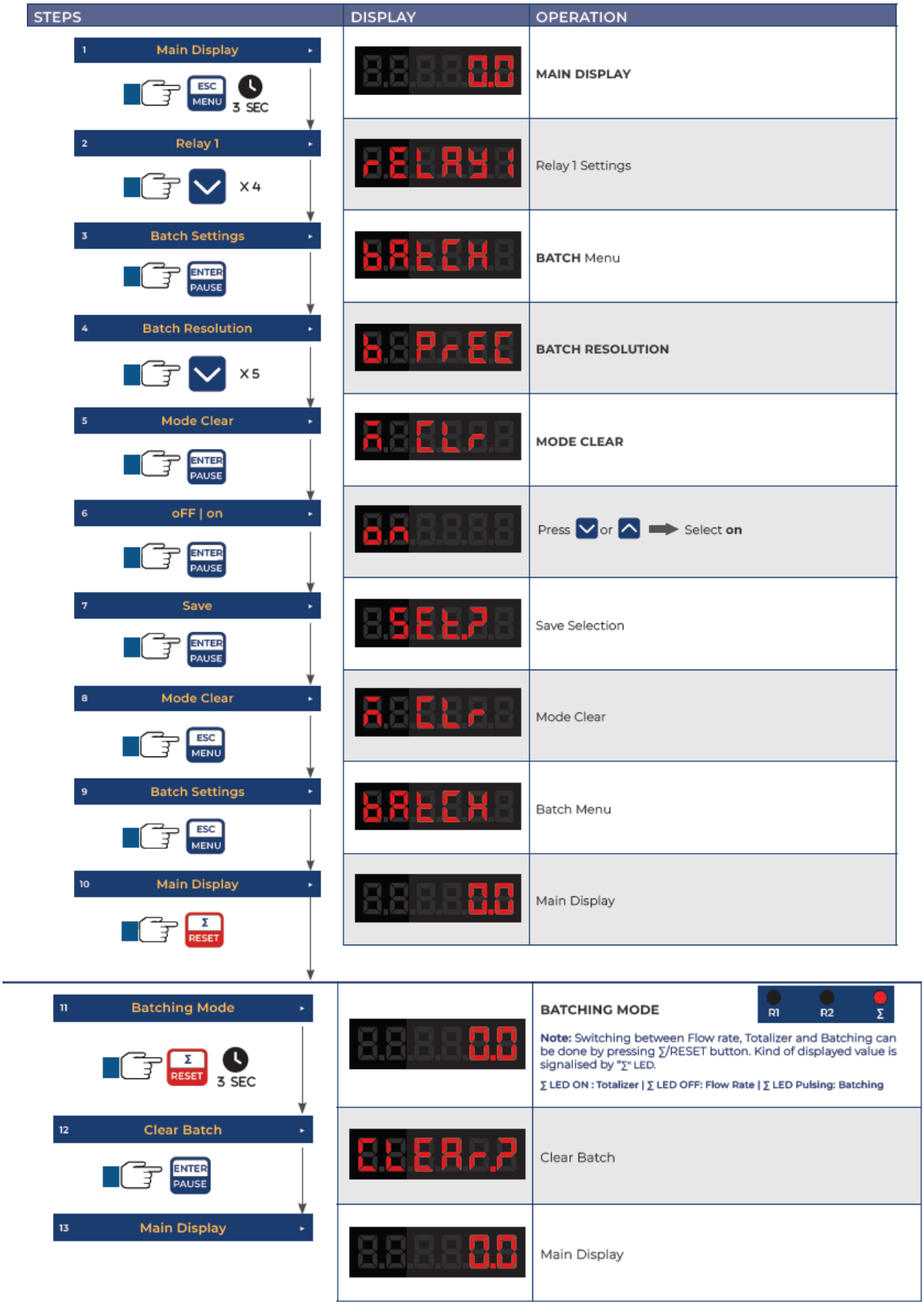
STEPS	DISPLAY	OPERATION
1 Main Display ▸ 		**MAIN DISPLAY**
2 Relay 1 ▸ 		Relay 1 Settings
3 Output ▸ 		**OUTPUT** Menu
4 Output Mode ▸ 		**OUTPUT MODE**
5 4-20mA ▸ 		Press or Select **4-20**
6 Save ▸ 		Save Selection
7 Output Mode ▸ 		Select **OUTPUT MODE**
8 Source ▸ 		**SOURCE** Menu
9 FLo | bAt | tot ▸ 		Press or Select **FLo** (Flow)
10 Save ▸ 		Save Selection



	Source Menu
	Setting **4mA (LOW VALUE)**
	Enter **4mA** Value Press ⌄ or ⌃ to change digit Press ENTER PAUSE to advance to next digit
	Save Value
	4mA (Low Value)
	Setting **20mA (HIGH VALUE)**
	Enter **20mA** Value Press ⌄ or ⌃ to change digit Press ENTER PAUSE to advance to next digit
	Save Value
	20mA (High value)
	Output Menu
	Main Display

Resettings

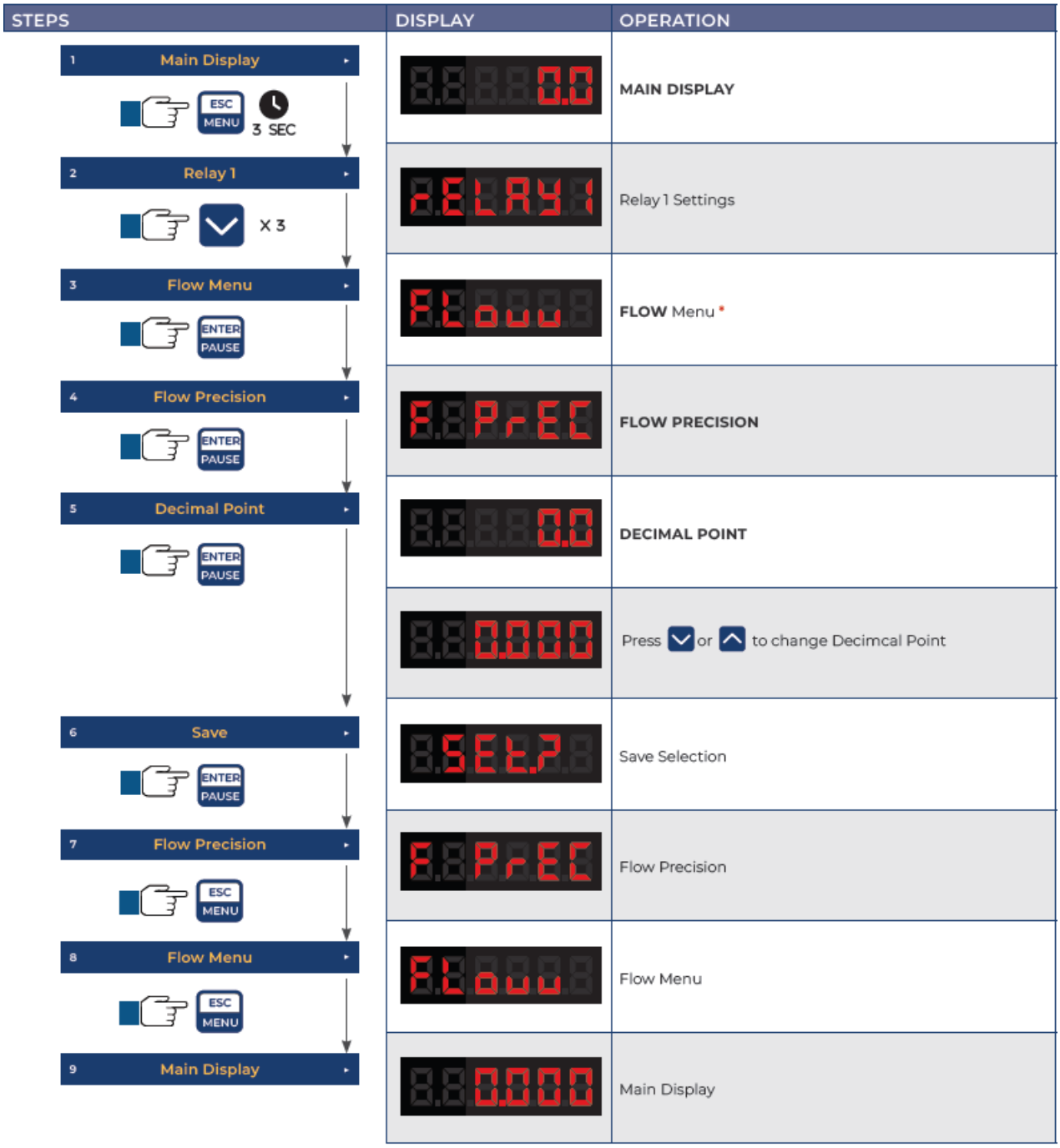
Resetting Batch



Resetting Totalizer

STEPS	DISPLAY	OPERATION
1 Main Display → ESC MENU 3 SEC		**MAIN DISPLAY**
2 Relay 1 → X5		Relay 1 Settings
3 Totalizer Menu → ENTER PAUSE		**TOTALIZER** Menu
4 Totalizer Resolution → X5		**BATCH RESOLUTION**
5 Mode Clear → ENTER PAUSE		**MODE CLEAR**
6 oFF | on → ENTER PAUSE		Press ∨ or ∧ → Select **on**
7 Save → ENTER PAUSE		Save Selection
8 Mode Clear → ESC MENU		Mode Clear
9 Totalizer Menu → ESC MENU		Totalizer Menu
10 Main Display → Σ RESET X2		Main Display
11 Totalizer Mode → Σ RESET 3 SEC		**TOTALIZER MODE** R1 R2 Σ **Note:** Switching between Flow rate, Totalizer and Batching can be done by pressing ∑/RESET button. Kind of displayed value is signalised by "∑" LED. ∑ LED ON : Totalizer | ∑ LED OFF: Flow Rate | ∑ LED Pulsing: Batching
12 Clear → ENTER PAUSE		Clear Totalizer
13 Main Display		Main Display

Setting Decimal Point



Warranty

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

Documents / Resources

	ICON Process Controls TVF Flow Display And Batcher [pdf] User Guide TVF Flow Display And Batcher, TVF Flow Display And Batcher, Flow Display And Batcher, Display And Batcher, And Batcher, Batcher

References

- **User Manual**