Intech INSTRUMENTS LTD

IN-RT

Flow Rate Indicator + Totaliser

Z1363

Installation Guide.

IN-RT Installation Guide Index.

IN-RT (Was IN-RT4)

Flow Rate Indicator + Totaliser with relay output options

Description.

The IN-RT Flow Rate Indicator + Totaliser is the ideal solution for a variety of flow rate application requirements. This device has been designed for ease of use, with intuitive, scrolling text prompts that guide you step-by-step through the setup process. The IN-RT has a 6-digit LED display and five front-panel buttons, for easy setup and simple operator interface. Up to four relay outputs, an analogue output and/or an RS485 / RS232 serial port can also be added.

Z1363

Ordering Information.

ITEMS	*CODE*						*DESCRIPTION*
SERIES	**IN-RT-**						Flow Rate Indicator + Totaliser
RELAY OUTPUTS		N-					None
		R2-					2x 5A relay outputs
		R4-					4x 5A relay outputs
ANALOGUE OUTPUT			N-				None
			A-				1x 4~20mA / 0~10V Analogue Output
SERIAL PORT				N-			None
				WS232			1x serial port isolated RS232 (RJ11 terminal)
				WS485			1x serial port isolated RS485 (screw terminal)
POWER SUPPLY						HV	85~265Vac / 95~370Vdc
						LV	15~48Vac / 10~72Vdc

Ordering Example: **IN-RT-R4-A-WS485-LV** Flow Rate Indicator + Totaliser; 4x 5A relay outputs, 1x 4~20mA / 0~10V Analogue output, 1 x Serial Port RS485, 15~48Vac / 10~72Vdc.

Specifications.

Input	0~24Vdc, 0~30Vac
Sensor types	NPN, PNP, Mag (20mV to 30V), TTL, digital, closed contact or NAMUR
K factor ranges	3 ranges for K factors, from 0.1 to 99.9999, 999.999 or 9999.99
Frequency	2Hz to 10KHz
Power supply	HV: 85~265Vac / 95~370Vdc or LV: 15~48Vac / 10~72Vdc
Excitation	24Vdc (50mA max)
Accuracy	0.005%
Temp drift	Typically 2ppm/°C
Flow rate	L/sec, L/min or L/hour
Flow resolution	1ml, 10ml, 0.1L or 1L
Totaliser resolution	x0.1, x1, x10, x100 or cubic meters
Totaliser reset	Reset totalisers via front panel (see 7.2) or rear pins (see 5.6)
Totaliser volumetric pulse	Volumetric pulse on Total 2, with adjustable pulse width from 0.1 to 10.0 seconds (see 7.3H)
Totaliser features	Both totalisers can be individually programmed for low flow cutoff and rollover. See 6.4C-D (Total 1) and 6.5C-D (Total 2)
Security	Setup PIN code protected for security
Case	48mm x 96mm x 119.5mm (H x W x D) / 45.5mm x 92.5mm panel cutout
OPTIONAL	
Relay outputs	2 or 4 x 5A Form A relays
Analogue output	Isolated 16-bit 4~20mA / 0~10V output (fully scaleable). Window programmable over any range within the full-scale range of the indicator
Serial port	Isolated RS485 / RS232. Modes: ASCII, Modbus RTU slave, Ranger A. Data rates: 300-38400 baud. Parity: Odd, even or none.

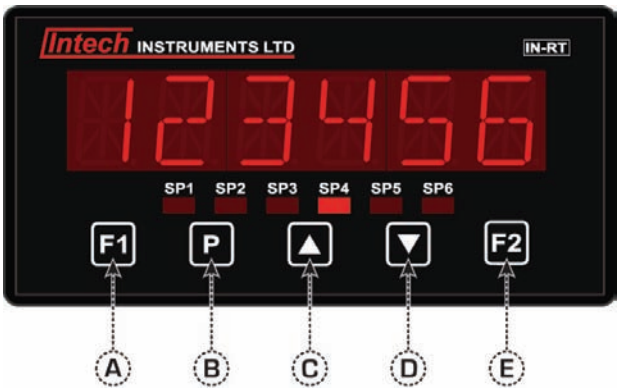
JUMPER SELECTABLE OPTIONS	
Input noise filter jumper	20kHz, 2kHz, 200Hz, Filter OFF
Input signal jumper	Logic (DC), Magnetic pickup (AC)
Load jumper	Sink/Source (digital transistor or switch interface), Namur (2-wire proximity detector), Tacho (AC magnetic pickup)
FLOW	
Flow rate	L/sec, L/min or L/hour
Flow resolution	1ml, 10ml, 0.1L or 1L
TOTALISERS (x2)	
Resolution	x0.1, x1, x10, x100 or cubic meters
Reset	Reset totalisers via front panel (see 7.2) or rear pins (see 5.6)
Volumetric pulse	Volumetric pulse on Total 2, with adjustable pulse width from 0.1 to 10.0 secs (see 7.3H)
Features	Both totalisers can be individually programmed for low flow cutoff and rollover. See 6.4C-D (Total 1) and 6.5C-D (Total 2)

Product Liability. This information describes our products. It does not constitute guaranteed properties and is not intended to affirm the suitability of a product for a particular application. Due to ongoing research and development, designs, specifications, and documentation are subject to change without notification. Regrettably, omissions and exceptions cannot be completely ruled out. No liability will be accepted for errors, omissions or amendments to this specification. Technical data are always specified by their average values and are based on Standard Calibration Units at 25C, unless otherwise specified. Each product is subject to the 'Conditions of Sale'.
Warning: These products are not designed for use in, and should not be used for patient connected applications. In any critical installation an independant fail-safe back-up system must always be implemented.

SECTION 3. – Case Schematics.

The IN-RT has a 6-digit, 14-segment alphanumeric LED display, five front-panel buttons and six setpoint annunciator LED's.

3.1 – Fig 1 - Front view



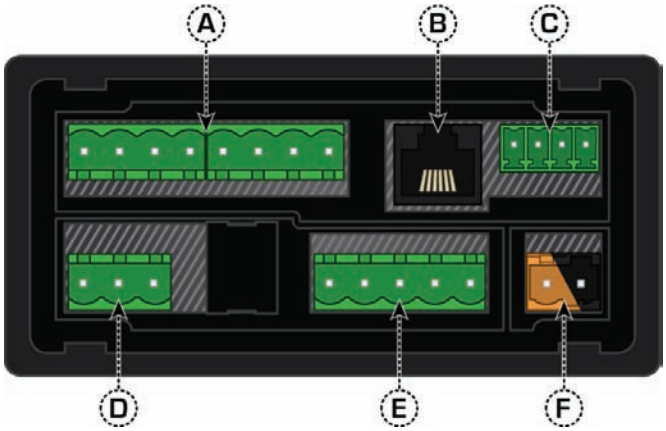
BUTTON PRESS FUNCTIONS

A - Function 1: This button is used to access the input set-up and calibration menu. See Section 6.
B - Program: This button is typically used to save your settings and advance to the next step in the setup process. It can also be configured to reset the batch value to zero after a long press (> 2secs) from the main display. See Section 6.4E to enable.
C - Up: This button is typically used to scroll through options or increase values in the setup menu. Pressing this button from the main display will show the current values for **FLOW** and **TOTAL1**, excluding either value if it is set as your display source. (See Section 6.6.)

D - Down This button is typically used to scroll through options or decrease values in the setup menu. Pressing this button from the main display will show the current value for **TOTAL2**, unless your display source is set to **TOTAL2**. (See Section 6.6.)

E - Function 2 This button is used to access the totaliser reset and setpoint setup menu (see Section 7) and the setpoint direct access menu (see Appendix A, p46).

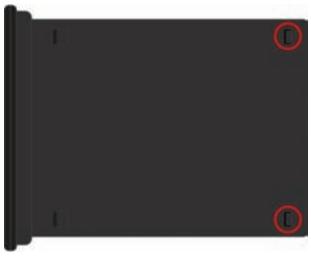
3.2 – Fig 2 - Rear view



CONNECTOR PINS

A - 4 x relays Wiring: Section 5.3
B - Serial port Wiring: Section 5.5
C - Analogue output Wiring: Section 5.4
D - IF11 input module Jumper setup: Section 4. Wiring: Section 5.2
E - Function pins Wiring: Section 5.6
F - Power supply (HV/LV) Wiring: Section 5.1

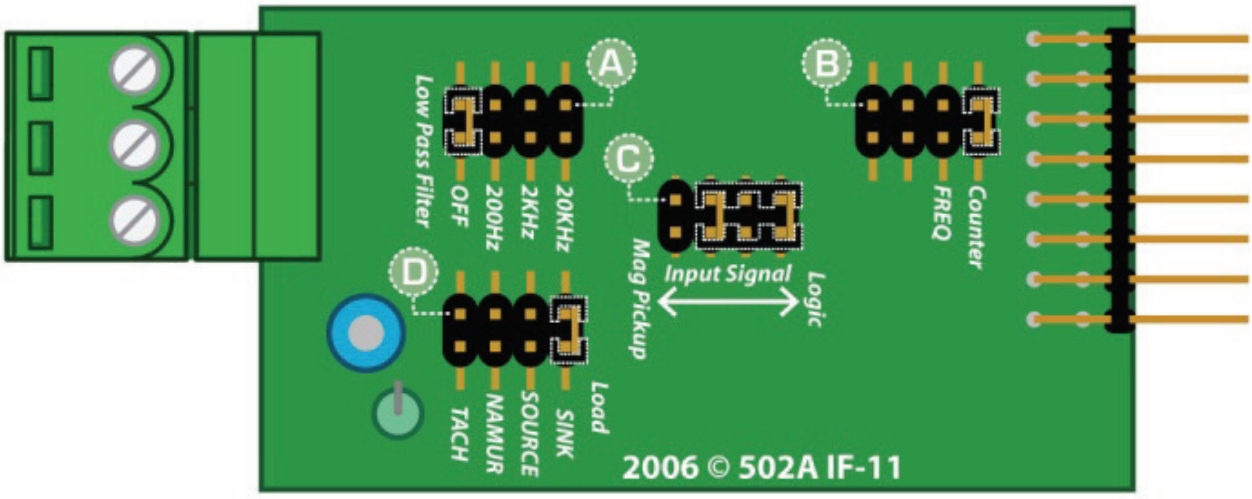
SECTION 4. – Input Jumper Configuration.



Before you begin:
Before you can begin wiring, the IF11 input module must be removed from the meter case so that the jumpers can be positioned for your input type. Remove the plastic backing plate from the rear of the meter by inserting a screwdriver into the indents circled on the image. Once the backing plate has been removed, gently slide the input module from the case (see Section 3.2D to identify the input module

4.1 – Position your input jumpers

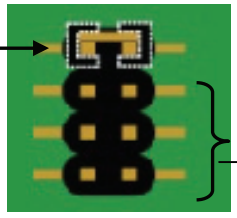
The IF11 input module has four jumpers, some of which may need to be repositioned to suit your application. Please consult the table below for more information on positioning the jumpers to suit your requirements. **Jumper B should always be set to COUNTER.** When you have finished, slide the input module back into the case and replace the plastic backing plate.



JUMPER POSITIONING

A - Input noise filtering	OFF: Ideal for high-speed counting 2kHz: Suitable for a noisy signal 200Hz: Ideal for mechanical contacts 20kHz: Suitable for a noisy signal	**C - Input signal**	Logic: NPN, PNP, namur, TTL & Pushbuttons, Mag Pickup: Tacho
		D - Load	Sink: NPN, TTL & pushbuttons Source: PNP Namur: Namur Tach: Tacho
B - Mode	Counter: ALWAYS use this setting Frequency: Not used for IN-RT.		

Example showing a Jumper In & Jumper Out: Jumper In →



→ Jumper Out
(e.g. Jumper not fitted).

SECTION 5. – Wiring.

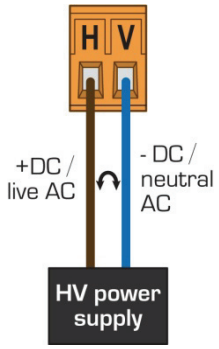
Before you begin:
Determine whether your indicator is configured for low or high voltage power supply. Make sure to check the label on the unit against the colour of the power connector:
Orange = High voltage
Black = Low voltage

5.1 – Connect your indicator to the power supply
Refer to 3.2F.

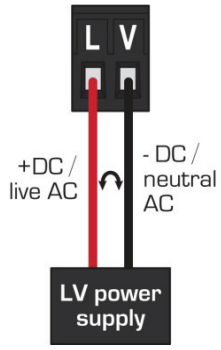
Wire your indicator to your power supply as per the appropriate diagram.

Remember to switch your power supply off before you begin wiring, and NEVER connect your low voltage indicator to mains power.

High voltage (HV) -
85~265Vac / 95~370Vdc

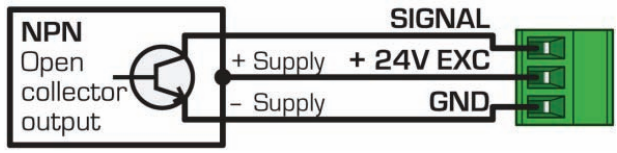
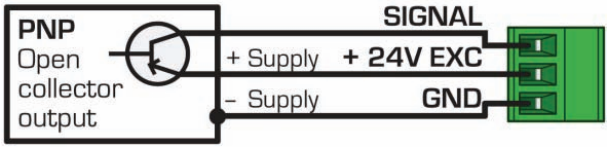
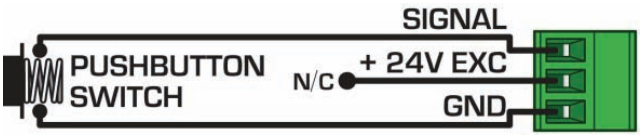
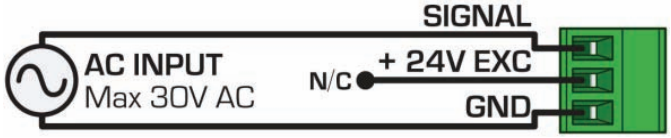
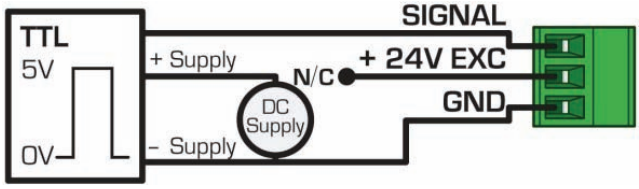
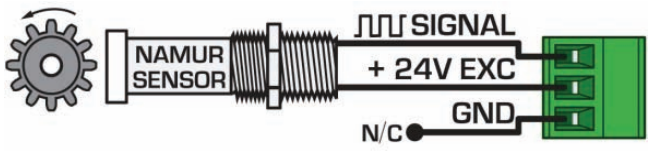


Low voltage (LV) -
15~48Vac / 10~72Vdc

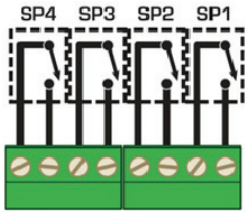


5.2 – Wire your IF11 analogue input module
Refer to 3.2D

Make sure that you have completed Section 4 before you begin wiring your input module. Once you have adjusted your jumper settings as needed (see Section 4) and replaced the plastic backing plate, wire your input module as shown in the appropriate diagram as follows:

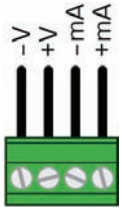
<table>
<tr>
<td>NPN open collector output with proximity switch
Active sensor signal: 0V Inactive sensor signal: +24V
 
</td>
<td>Jumper
A Input noise filtering:
See table in section 4.1
B Mode: Counter
C Input Signal: Logic
D Load: Sink</td>
</tr>
<tr>
<td>PNP open collector output with proximity switch
Active sensor signal: +24V Inactive sensor signal: 0V
 
</td>
<td>Jumper
A Input noise filtering:
See table in section 4.1
B Mode: Counter
C Input Signal: Logic
D Load: Source</td>
</tr>
<tr>
<td>Pushbutton switch
Open signal: +24V Closed signal: 0V
 
</td>
<td>Jumper
A Input noise filtering: 200Hz
B Mode: Counter
C Input Signal: Logic
D Load: Sink</td>
</tr>
<tr>
<td>Tacho generator sensor
 
</td>
<td>Jumper
A Input noise filtering:
See table in section 4.1
B Mode: Counter
C Input Signal: Mag Pickup
D Load: Tach</td>
</tr>
<tr>
<td>TTL input
In this example the TTL logic has a separate +5V power supply
 
</td>
<td>Jumper
A Input noise filtering:
See table in section 4.1
B Mode: Counter
C Input Signal: Logic
D Load: Sink</td>
</tr>
<tr>
<td>Namur sensor
Active sensor signal: 0.3~1.0mA. Inactive sensor signal: 1.7~3.0mA
 
</td>
<td>Jumper
A Input noise filtering:
See table in section 4.1
B Mode: Counter
C Input Signal: Logic
D Load: Source</td>
</tr>
</table>

5.3 – Wire your relays (if fitted)
Refer to 3.2A



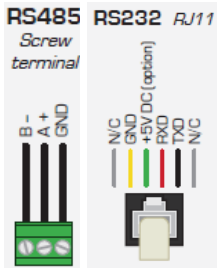
Wire your relays as per the diagram. IN-RT relays can be programmed to operate within the total span range of the controller. If you do not have any relays fitted, step 5.3 is skipped.

5.4 – Wire your analogue output (if fitted)
Refer to 3.2C



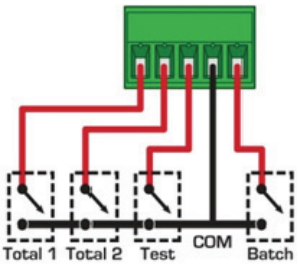
If your IN-RT has an analogue output fitted, wire it as shown. If you do not have an analogue output, step 5.3 is skipped.

5.5 – Wire your serial port (if fitted)
Refer to 3.2B



If your IN-RT has a serial port fitted, wire it as per the diagram. If you do not have a serial port fitted then step 5.5 is skipped.

5.6 – Wire your function pins (if required)
Refer to 3.2E



Connect external switches (as shown on the following page) to enable a function to be executed when its switch is activated.

Total 1	Reset Total 1 to zero
Total 2	Reset Total 2 to zero
Test	Reset the meter
Batch	Reset Batch to zero

5.7 – Power up your indicator
Once you have completed the wiring process it is safe to switch on your power supply. Ensure that your display is functioning before you proceed.

SECTION 6. – Setup & Calibration.

Enter the setup and calibration mode by pressing **F1**.

6.1 – Enter PIN

A _ _ _ **ENTER CAL PIN NUMBER** scrolls across the display and toggles with **0**. Use the ▲ and ▼ buttons to enter your security code (factory default 1). Then press **P**. If the correct PIN is entered then the setup is start-

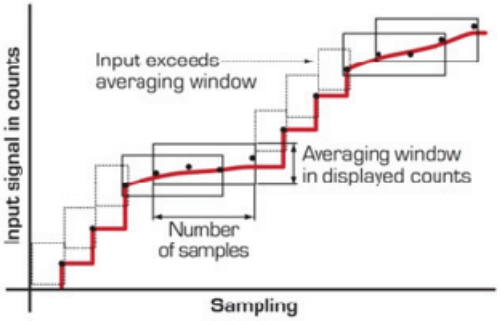
You will be given the opportunity to change your PIN number at the end of this section (6.9). If you have forgotten your PIN number, see Appendix B.

ed at 6.2.
If an incorrect PIN number is entered, _ _ _ **INCORRECT PIN NUMBER - ACCESS DENIED** scrolls across the display and it returns to the normal operating mode.

6.2 – Input setup

A _ _ _ **FLOW RATE SETUP** scrolls across the display and toggles with **SKIP**. Press **P** to skip to 6.3, or the ▲ button and then **P** to **ENTER** flow rate setup.
B _ _ _ **TIME UNITS FOR FLOW RATE** scrolls across the display and toggles with the currently selected time units. Use the ▲ and ▼ buttons to select: /**SEC**, /**MIN** or /**HOUR**. Then press **P**.
C _ _ _ **RESOLUTION FOR FLOW RATE** scrolls across the display and toggles with the current decimal point position. Use the ▲ and ▼ buttons to select: **1**, **0.1**, **0.01** or **0.001**. Then press **P**.
D _ _ _ **K FACTOR RANGE** scrolls across the display and toggles with the current selection. Use the ▲ and ▼ buttons to choose the most suitable K factor range for your application: **99.9999**, **999.999** or **9999.99**. Then press **P**.
E _ _ _ **K FACTOR** scrolls across the display and toggles with the most recent K factor value. Use the ▲ and ▼ buttons to enter the K factor from your flow transducer manufacturer's specifications, and then press **P**.
*If _ _ _ **ERROR - REDUCE INPUT RESOLUTION OR TIME** scrolls across the display, then the selection of K factor, time units or flow rate resolution has resulted in internal scale factors which exceed the limitations of the indicator.*
To fix this, the setup returns to 6.2A, allowing you to select a lower display resolution or reduce the time units.

6.3 – Averaging setup



The IN-RT has input signal averaging, which guarantees stable measurement. If the input exceeds the averaging window value it will not average, ensuring fast response.

A _ _ _ **AVERAGING SETUP** scrolls across the display and toggles with **SKIP**. Press **P** to skip to 6.4, or the ▲ button and then **P** to **ENTER** averaging setup.

B _ _ _ **AVE SAMPLES** scrolls across the display and toggles with the currently selected averaging. Use the ▲ and ▼ buttons to alter the signal averaging and then press **P**.
Increasing the number of samples will stabilise measurement, but it will also slow down response rates.

C _ _ _ **AVE WINDOW** scrolls across the display and toggles with the currently selected averaging window value. Use the ▲ and ▼ buttons to alter the signal averaging window, and then press **P**.

If your input signal contains large noise spikes then you can increase the size of averaging window to ensure that these pulses are still averaged. However, increasing the averaging window too far will reduce the ability of the indicator to respond quickly to real changes in input signal. Setting the averaging window to zero will turn off the window mode and give continuous averaging as per the selected averaging samples.

6.4 – Total 1 setup

Total 1 can be reset from the security protected **F2** button (see Section 7.2) or from a switch connected across the rear Total 1 and Common function pins (see Section 5.6).

A _ _ _ **TOTAL 1 SETUP** scrolls across the display and toggles with **SKIP**. Press **P** to skip to 6.5, or the ▲ button and then **P** to **ENTER** totaliser 1 setup.

B _ _ _ **RESOLUTION OF TOTAL 1 IN LITERS** scrolls across the display and toggles with the currently selected totaliser 1 resolution. Use the ▲ and ▼ buttons to select: **x0.1**, **x1**, **x10**, **x100** or **CUB/M** (cubic meters). Then press **P**.

C _ _ _ **LOW FLOW LIMIT FOR TOTAL 1** scrolls across the display and toggles with the most recent value. Use the ▲ and ▼ buttons to enter your totaliser 1 low flow cut-off value, and then press **P**.

D _ _ _ **ROLL OVER-TOTAL 1** scrolls across the display and toggles with the current selection. Use the ▲ and ▼ buttons to choose between: **OFF** and **ON**, and then press **P**.
This parameter controls the behavior of the totaliser when it exceeds its maximum display value (999999 display counts). **ON** - The display will roll over to 0 once it passes its limit. **OFF** - The display will show **OVER** once it passes its limit, and will not roll over to 0.

E _ _ _ **BATCHING FROM PROG BUTTON** scrolls across the display and toggles with the current selection. Use the ▲ and ▼ buttons to choose between: **OFF** and **ON**, and then press **P**.
ON - When the **P** button is long-pressed (held for 2 seconds) from the main display, the batch value will be reset to zero. (Total 1 value will not be reset). See Appendix D for more information on batching functions.

6.5 – Total 2 setup

Total 2 can be reset from the security protected button (see Section 7.2) or from a switch connected across the rear Total 2 and Common function pins (see Section 5.6).

A _ _ _ **TOTAL 2 SETUP** scrolls across the display and toggles with **SKIP**. Press **P** to skip to 6.6, or the ▲ button and then **P** to **ENTER** totaliser 2 setup.

B _ _ _ **RESOLUTION OF TOTAL 2 IN LITERS** scrolls across the display and toggles with the currently selected totaliser 2 resolution. Use the ▲ and ▼ buttons to select: **x0.1**, **x1**, **x10**, **x100** or **CUB/M** (cubic meters). Then press **P**.

C _ _ _ **LOW FLOW LIMIT FOR TOTAL 2** scrolls across the display and toggles with the most recent value. Use the ▲ and ▼ buttons to enter your totaliser 2 low flow cut-off value, and then press **P**.

D _ _ _ **ROLL OVER-TOTAL 2** scrolls across the display and toggles with the current selection. Use the ▲ and ▼ buttons to choose between: **OFF** and **ON**, and then press **P**.
This parameter controls the behavior of the totaliser when it exceeds its maximum display value (999999 display counts). **ON** - The display will roll over to 0 once it passes its limit. **OFF** - The display will show **OVER** once it passes its limit, and will not roll over to 0.

6.6 – Display setup

A _ _ _ **DISPLAY SETUP** scrolls across the display and toggles with **SKIP**. Press **P** to skip to 6.7, or the ▲ button and then **P** to **ENTER** display setup.

B _ _ _ **LINE 1 DISPLAY SOURCE** scrolls across the display and toggles with the currently selected display source. Use the ▲ and ▼ buttons to select: **FLOW**, **TOTAL1**, **TOTAL2** or **BATCH**. Then press **P**.

See Appendix D for more information on batching functions.

6.7 – Analogue output setup

Please note that I/R4/R4S models do not have this option installed - these instructions are only relevant to R4A/ R4AS users.

A _ _ _ **ANALOG OUTPUT SETUP** scrolls across display and toggles with **SKIP**. Press **P** to skip to 6.8, or the ▲ button and then **P** to **ENTER** analogue output setup.

B _ _ _ **DATA SOURCE FOR ANALOG OUTPUT** scrolls across the display and toggles with the current selection. Use the ▲ and ▼ buttons to select: **FLOW**, **TOTAL1**, **TOTAL2** or **BATCH**. Then press **P**.
See Appendix D (p49) for more information on batching functions.

C _ _ _ **LOW SCALE VALUE FOR ANALOG OUTPUT** scrolls across the display and toggles with the current selection. Use the ▲ and ▼ buttons to enter your cal low position, and then press **P**.
This sets the display value for cal low (as at 6.7F).

D _ _ _ **HIGH SCALE VALUE FOR ANALOG OUTPUT** scrolls across the display and toggles with the current selection. Use the ▲ and ▼ buttons to enter your cal high position, and then press **P**.
This sets the display value for cal high (as at 6.7F).

E _ _ _ **CALIBRATE ANALOG OUTPUT?** scrolls across the display and toggles with **SKIP**. If you do not wish to calibrate your analogue output, press **P** now.
If you would like to calibrate your analogue output:
Set the analogue output board jumper in the correct position (see Section 4) and connect a mA or volt meter across the analogue output connector (see 5.3). Press the ▲ button to select **ENTER** and then **P** to enter calibration mode.

If you selected SKIP in 6.7E:
F Skip the rest of this section and continue to 6.8.

If you selected ENTER in 6.7E:
F _ _ _ **CAL LOW ANALOG OUTPUT** scrolls across the display and toggles with a calibration number. Using the ▲ and ▼ buttons, calibrate your low analogue output as required. Then press **P**. The display value is shown in internal units (mA). _ _ _ **CAL HIGH ANALOG OUTPUT** scrolls across the display and toggles with a calibration number. Using the ▲ and ▼ buttons, calibrate your high analogue output as required. Then press **P**. The display value is shown in internal units (mA).

6.8 – Serial setup

Configuring the serial port on your IN-RT (as specified below) will allow you to connect your indicator to a PC or another device.

A _ _ _ **SERIAL SETUP** scrolls across the display and toggles with **SKIP**. Press **P** to skip to 6.9, or the ▲ button and then **P** to **ENTER** serial port setup.

B _ _ _ **SERIAL MODE** scrolls across the display and toggles with the currently selected serial mode. Using the ▲ and ▼ buttons, select: **ASCII**, **MODBUS** (RTU) or **RNGR A** (Ranger A). Then press **P**.

ASCII is a simple protocol that allows connection to various PC configuration tools. **MODBUS** is an industry standard RTU slave mode that allows connection to a wide range of devices, such as PC's or PLC's. **RNGR A** is a continuous output, used to drive remote displays and other instruments in the Rinstrum™ range. (Ranger is a trade name belonging to Rinstrum Pty Ltd.)

If you selected ASCII or MODBUS in 6.8B:
C Skip this step and continue to 6.8D now.

If you selected RNGR A in 6.8B:
C _ _ _ **SERIAL DATA SOURCE** scrolls across the display and toggles with the current Ranger A serial data source. Use the ▲ and ▼ buttons to select: **FLOW**, **TOTAL1**, **TOTAL2** or **BATCH**. Press **P**. See Appendix D for more information on batching functions.

D _ _ _ **BAUD RATE** scrolls across the display and toggles with the current selection. Use the ▲ and ▼ buttons to select: **300**, **600**, **1200**, **2400**, **4800**, **9600**, **19200** or **38400**. Then press **P**.

E _ _ _ **PARITY** scrolls across the display and toggles with the current selection. Use the ▲ and ▼ buttons to select: **NONE**, **ODD** or **EVEN**. Then press **P**.

F _ _ _ **SERIAL ADDRESS** scrolls across the display and toggles with the current selection. Use the ▲ and ▼ buttons to set the serial address, and then press **P**.

.

The serial address parameter is used to identify a particular device when it is used with other devices in a system. (It applies particularly to Modbus mode when used on a RS485 network.) The serial address of the indicator must be set to match the serial address defined in the master device.

RANGER A - This allows the indicator to drive a remote display from the Rinstrum range. The following shows the output string format when Ranger A output is selected: **<Start> <Sign> <Output Value> <Status> <End>**

STRING CHARACTER(S)	
<Start>	STX character (ASCII 02)
<Sign>	Output value sign (space for + and dash for **–**)
<Output Value>	Seven character ASCII string containing the current output value and decimal point. (If there is no decimal point, then the first character is a space. Leading zero blanking applies.)
<Status>	Single character output value status: U=Under, 0=Over, E=Error
<End>	ETX character (ASCII 03)

MODBUS REGISTERS - These are all holding registers and should be accessed via function codes 3 and 6. Register addresses are displayed in the Modicon™ addressing format. i.e. Register 65=40065 (subtract 1 for direct addressing).

16-BIT	
40001	Alarm status (Bit 0=SP1, Bit1 =SP2, Bit 2=SP3, Bit 3=SP4)
40065	SP 1 hysteresis
40071	SP 1 make delay
40066	SP 2 hysteresis
40072	SP 2 make delay
40067	SP 3 hysteresis
40073	SP 3 make delay
40068	SP 4 hysteresis
40074	SP 4 make delay
32-BIT SIGNED (2x16-bit)	
40513	Process display
40515	Batch result
40517	Flow rate
40525	Peak
40540	Setpoint 4
40587	D/A scale low value
40591	D/A scale high value
40527	Valley
40529	Total 1
40531	Total 2
40535	Setpoint 1
40537	Setpoint 2
40539	Setpoint 3

6.9 – Edit calibration PIN

A _ _ _ **EDIT CAL PIN NUMBER?** Scrolls across the display and toggles with **SKIP**. Press **P** to skip and return to the operational display, or the ▲ button and then **P** to **ENTER**.

B _ _ _ **ENTER NEW CAL PIN NUMBER** scrolls across the display and toggles with the current PIN (default 1). Using the ▲ and ▼ buttons, enter your new calibration PIN number. Then press **P** to exit and return to the operational display.

SECTION 7. – Totaliser Reset & Setpoint Setup.

Enter the totaliser reset and setpoint setup mode by pressing and holding the **F2** button for 3 seconds.

7.1 – Enter setpoint PIN

A _ _ _ **ENTER SP PIN NUMBER** scrolls across the display and toggles with **0**. Use the ▲ and ▼ buttons to enter your security code (factory default 1). Then press **P**. If the correct PIN is entered then the setup is started at 7.2.
If an incorrect PIN number is entered, _ _ _ **INCORRECT PIN NUMBER - ACCESS DENIED** scrolls across the display and it returns to the normal operating mode.

You will be given the opportunity to change your PIN number at the end of this section (7.4). If you have forgotten your PIN number, see Appendix B.

7.2 – Reset totalisers

A _ _ _ **RESET TOTALISERS?** scrolls across the display and toggles with **SKIP**. Press **P** to skip to 7.3, or the ▲ button and then **P** to **ENTER** totaliser reset.

B _ _ _ **RESET TOTAL 1** scrolls across the display and toggles with the current reset selection. Use the ▲ and ▼ buttons to select **YES** or **NO**, and press **P**. Selecting **YES** will reset Total 1 to zero.

C _ _ _ **RESET TOTAL 2** scrolls across the display and toggles with the current reset selection. Use the ▲ and ▼ buttons to select **YES** or **NO**, and press **P**. Selecting **YES** will reset Total 2 to zero.

7.3 – Edit setpoints.

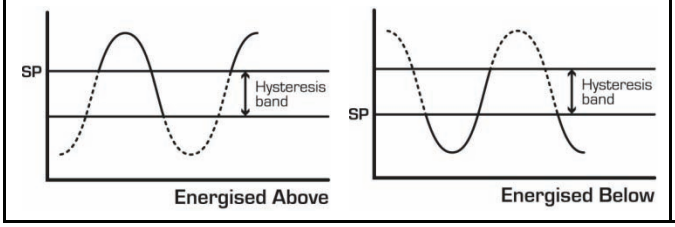
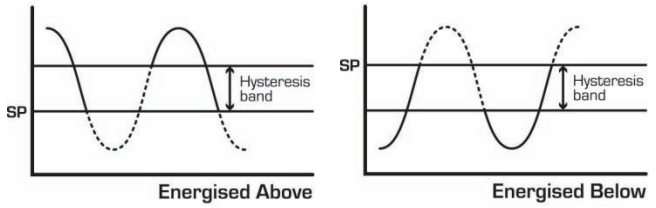
A _ _ _ **EDIT SETPOINT** scrolls across the display and toggles with **SKIP**. Press **P** to skip to 7.4, or use the ▲ and ▼ buttons to select a setpoint to edit: **SP 1**, **SP 2**, **SP 3** or **SP 4**. Then press **P**.

B _ _ _ **SP SOURCE** scrolls across the display and toggles with the current setpoint activation source. Use the ▲ and ▼ buttons to select: **FLOW**, **TOTAL1**, **TOTAL2** or **BATCH**. Then press **P**.
See Appendix D for more information on batching functions.

C _ _ _ **SP VALUE** scrolls across the display and toggles with the last setpoint value entered. Using the ▲ and ▼ buttons, adjust the display value at which the setpoint will activate. Then press **P**.

D _ _ _ **SP ACTIVATION** scrolls across the display and toggles with the last selected setpoint activation. Use the ▲ and ▼ buttons to select **ABOVE** or **BELOW** and then press **P**.
ABOVE - relay turns on above the setpoint value and off below it.
BELOW - relay turns on below the setpoint value and off above it.

E _ _ _ **HYSTERESIS TYPE** scrolls across the display and toggles with the last selected hysteresis type. Using the ▲ and ▼ buttons, select either **ALARM** or **CNTRL** (Control). Then press **P**.

ALARM	**CNTRL (Control)**
The **setpoint value** determines setpoint activation, and the **hysteresis value** determines setpoint deactivation.	The **setpoint value** determines setpoint deactivation, and the **hysteresis value** determines setpoint reactivation.
	

F _ _ _ **HYSTERESIS VALUE** scrolls across the display and toggles with the current selection. Use the ▲ and ▼ buttons to adjust this value if required. Press **P**.
The hysteresis value defines the separation band between setpoint activation and deactivation. Hysteresis will operate as per the specified type setting (see 7.3E).

G _ _ _ **MAKE DELAY** scrolls across the display and toggles with the current selection. Use the the ▲ and ▼ buttons to adjust this value if required. Press **P**. This value is displayed in seconds with a 0.1 second resolution, and is the time delay before the relay energises.

If you selected FLOW, TOTAL1 or BATCH in 7.3B:

H Skip this step and continue to 7.3I now.

If you selected TOTAL2 in 7.3B:

H _ _ _ **VOLUMETRIC PULSE** scrolls across the display and toggles with the selection. Use the ▲ and ▼ buttons to select **OFF** or **ON**. Press **P**.
When the selected setpoint is activated in volumetric pulse mode, Total 2 will reset to 0 and then resume totalizing. The selected relay will activate for the pulse time specified below.

If you selected OFF, skip the rest of this step.

_ _ _ **PULSE TIME** scrolls across the display and toggles with the currently selected pulse time. Use the ▲ and ▼ buttons to select your pulse time (from 0.1 to 10.0 seconds), and then press **P**.
Pulse reset requires a minimum of 0.1 seconds. A combination of high input rates and low setpoint values may exceed this limitation, resulting in missed output pulses.

I _ _ _ **OPEN ACCESS TO SP VALUE** scrolls across the display and toggles with the last selected direct access setting. Use the ▲ and ▼ buttons to select either **YES** or **NO**, and then press **P**.
When enabled, this option allows the setpoint value to be edited directly after pressing the button, without needing to enter a PIN number or go through all of the other options. Each setpoint can individually have this option enabled or disabled.

If you selected SP 1 in 7.3A:

J Skip this step and continue to 7.3K now.

If you selected SP 2 - 4 in 7.3A:

J _ _ _ **TRAIL SP1** scrolls across the display and toggles with the current selection. Using the ▲ and ▼ buttons, select **OFF** or **ON**, and press **P**.
If you choose **ON**, the selected setpoint will trail the setpoint value of SP 1, with the setpoint value of the trailing setpoint becoming an offset value.

K _ _ _ **EDIT SETPOINT** scrolls across the display and toggles with **SKIP**. You are now back at 7.3A. To edit another setpoint, follow the instructions from 7.3A-K. If you do not wish to edit another setpoint, press **P** now to proceed to 7.4.

7.4 – Edit setpoint PIN

A _ _ _ **EDIT SP PIN NUMBER?** scrolls across the display and toggles with **SKIP**. Press **P** to skip and return to the operational display, or the ▲ button and then **P** to **ENTER**.
B _ _ _ **ENTER NEW SP PIN NUMBER** scrolls across the display and toggles with the current PIN (default 1). Using the ▲ and ▼ buttons, enter your new totaliser reset and setpoint entry PIN number. Then press **P** to **EXIT** and return to the operational display.

Appendix A. – Setpoint direct access.

If neither of the setpoints have their direct access option enabled then this feature will be disabled and the **F2** button will not respond to a short button press. (See 7.3I.)

A Begin by pressing the **F2** button for less than 3 seconds. The setpoint name (**SP 1**, **SP 2**, **SP 3** or **SP 4**) will appear on the display and toggle with the current setpoint value. Using the ▲ and ▼ buttons, adjust the selected value. Then press **P** to accept the new setpoint value.
B If any other setpoints have the direct access option enabled then the same process is repeated for the next setpoint. Pressing **P** for the last enabled setpoint will exit and return to the operational display.

Appendix B. – Reset PIN numbers.

If you have forgotten either of your PIN numbers, follow the procedure below to reset both the calibration and setpoint entry PIN's to their factory default of 1.

A Press ▲, ▼ and **P** at the same time. (This key combination can be difficult to execute and you may need several tries to get it right.)
B When successful, a factory identification text will scroll across the display, followed by: _ _ _ **ALL PIN NUMBERS RESET TO 1**.
C Reset the PIN numbers individually as required by following the instructions in Sections 6.9 and 7.4, entering '1' whenever you are prompted for your current PIN.

Appendix C. – Adjust display brightness.

To adjust the brightness of the LED display:

A Press the **P** and ▲ buttons together from the operational display. **BRI** appears on the screen and toggles with the current brightness setting.
B Use the ▲ and ▼ buttons to adjust the brightness of the LED backlight as required, and then press **P**. The display returns to normal operating mode.

Appendix D. – Batching functions.

Batching - This function is often used in batching applications to display the difference in volume between the current total and the last batch operation. This allows the user to maintain the total in the background to keep track of the total amount of product which has been worked, while still allowing set batch amounts to be measured.

Batch Value = Total1 - Batch Tare

Each time the batch function is activated from the **P** button (see 6.4E) or the **Batch** function pin (see Section 5.6), the current value of **Total1** is loaded into the **Batch Tare** register so that the **Batch Value** equals zero.

Intech INSTRUMENTS LTD
www.intech.co.nz
Christchurch Ph: +64 3 343 0646
Auckland Ph: 09 827 1930
Email: sales@intech.co.nz

IN-RT 080311