Universal Mount Series

RT FLOW RATE TOTALISER

INSTRUCTION MANUAL

TRIMEC INDUSTRIES Pty, Ltd.
1 / 19 Northumberland Road,
Caringbah NSW 2229, Sydney
AUSTRALIA *(factory)*
tel : +61 2 9540 4433
fax : +61 2 9525 9411
email : sales@trimecind.com.au
website : www.trimecind.com

TRIMEC Inc.
916 Belcher Drive
Pelham, AL 35124
USA
tel : +1 205 378 1050
fax : +1 205 685 3001
email : customerservice@trimecus.com
website : www.trimecind.com

TRIMEC Europe Ltd
Floor 3, 5A Boltro Road
Haywards Heath West Sussex,
UNITED KINGDOM RH16 1BP
tel : +44 144 441 7880
fax : +44 144 441 7668
email : europe@trimecind.com
website : www.trimecind.com

Distributed by:

IMRTVDC-3506

Software version	
V 3.2	16.12.04

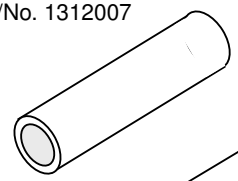
PROG

Press & hold Program key to show instrument model & software version

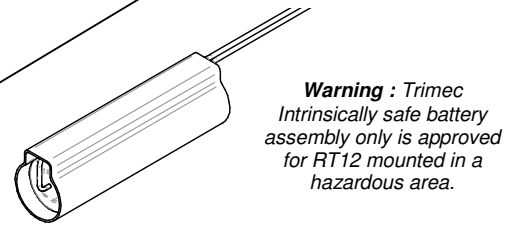
Replacement Batteries:

Trimec supplied batteries :

Non I.S. battery
Trimec P/No. 1312007



I.S. battery
Trimec P/No. 1412028



Warning : *Trimec Intrinsically safe battery assembly only is approved for RT12 mounted in a hazardous area.*

Suitable non I.S. batteries also available from :

R S Components	***Farnell Components***
Stock No. 596-602	Order code 206-532

3.6V x 2.4Ah AA
Lithium Thionyl Chloride
non - rechargeable cell
– **+**

TABLE OF CONTENTS

1.1 Model number designation

Model	Function *(all instruments have program PIN protection)*
RT12	Rate totaliser with pulse, analog & alarm outputs, dual flow inputs & 10 point NLC

Electrical access

1	3 x M20 x 1.5mm female threaded conduit entry ports with knock-outs
2	3 x 1/2" NPT female threaded conduit entry ports with knock-outs

Flow input type

D	Digital *(pulse or frequency)*

Power supply

0	Self powered *(battery)* or regulated 8~24Vdc

Housing type

FM	Universal field mount *(can be field or panel mounted)*
MM	Integral meter mount

Options

i	Certified Intrinsically safe to IECEX or ATEX

model No. example

RT12 1 D 0 FM i

Accessories

AWM	stainless steel wall mount kit *(see page 6)*
APM	stainless steel 2" pipe mount kit *(see page 7)*
ACF	MP series cooling fin kit for 120ºC [250ºF] flowmeters with integral registers
ADM	DP & turbine stem adaptor - metric *(M16 to M20)*
ADN	DP & turbine stem adaptor - USA *(M16 to 1/2" NPT)*
ASS	DP490 stem *(100mm [4"] effective height, threaded M16 male)*
ASL	DP525 stem *(350mm [14"] effective height, threaded M16 male)*
ATM	universal stem for Turbine meters *(3/4" BSPF to M16)*
AUS	universal swivel stem for Turbine meters *(1" NPTF to M16)*

1.2 Specifications

Display :	8 digit alpha numeric LCD characters 9mm (0.35 ") high with second line sub script text, 8 digits totalising, 5 digits rate. Programmable 0~3 decimal places for all displays.
Signal Input :	Universal pulse/frequency input compatible with Reed switch, Hall effect, Namur proximity detectors, Pulse wire, voltage, current & Coil *(15mV P-P min).* Max. input frequency 10Khz. Minimum input frequency for rate display is 0.1hz with low frequency cut off feature enabled, 0.3hz when disabled & 0.7hz if the non-linearity feature is enabled. Totals have no minimum.
Battery power : *(reverse polarity protected)*	Battery life expectancy can be up to 5~10 years when programmed with the unique "Ultra Power Save" sleep cycle. Battery life reduces when connected with a coil input from turbine flowmeters. Rate display defaults to total display 4 minutes after pressing the rate key in order to conserve battery power.
External power :	Regulated 8~24Vdc x 150mA or 4~20mA loop powered. Rate or total display will remain visible at all times when selected.
Pulse output :	NPN-PNP transistor, scaleable (50hz max.) or non-scaleable (5000hz max.), 1A maximum drive capability.
Analog output :	Two wire loop powered, 12~28Vdc into 100~900Ω loop load, accuracy +/-0.25% FS, key entry programming of Zero & Span.
Alarm outputs :	Two NPN-PNP selectable FET *(transistors)* programmable low & high flow alarms with adjustable deadband *(reset differential).* Maximum drive 100mA resistive load. 24Vdc max.
Physical :	A) IP66 / 67 high impact glass reinforced nylon enclosure. B) 3 x M20 or ½" NPT female conduit entries. C) 125mm diameter (5") x 61mm deep (2.5") x 400g (0.9lb). D) Temperature range from -20ºC to +80ºC (-4ºF to +176ºF).
Configuring :	PIN protected data entry with scrolling English text prompts.
K-factor range :	Eg. Pulses/litre, gallon, lb etc. Programmable range is 0.001~ 9999999.999 with a floating decimal point during K-factor entry.
Engineering units :	Selectable Ltr, gal, m3, kgs, lbs (total). /sec,min,hr or day *(rate).*
Rate conversion :	Enables the rate to be displayed in different engineering units to that of the totals **eg**: totals in barrels *(oil)* & rate in US gallons.
Battery modes :	Ultra power save, standby or continuous display selectable.
Dual Input option :	Programmable for computations of A+B, A-B, or A÷B *(ratio).*

1.3 Overview

The RT is specifically designed for computing, displaying and transmitting totals and flowrate from flowmeters with pulse or frequency outputs.

The instrument will display Flow Rate, Resettable Total and an Accumulated Total in engineering units as programmed by the user. Simple flow chart programming with scrolling English prompts guide you through the programming routine greatly reducing the need to refer to the instruction manual. All user program data is retained if the battery is removed.

Environments

The RT is weatherproof to IP66/67 (Nema 4X) standards, UV resistant glass reinforced nylon with stainless screws & viton O-ring seals.The instrument suits harsh indoor and outdoor environments & conforms to EMC directive 89/336/EEC Electro Magnetic Compatibility.

Features

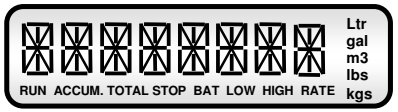
10 point Linearisation, PIN Protection, NPN/PNP selectable autoranging pulse outputs *(scaled or un-scaled),* Low frequency cut-off, Battery conservation mode, 4~20mA output, High / Low flow alarms with adjustable deadbands, Dual inputs. Optional I.S. certification to IECex and ATEX directive, for conforming standards refer to I.S. supplement.

Conforming standards include: EN 61326 *(immunity in industrial locations)*
EN 62326 *(emissions in industrial locations)*
EN 60529 *(degrees of protection [IP])*

Installation

Specifically engineered to be directly mounted on a variety of flowmeters, wall or surface mounted, pipe or panel mounted. Various mounting kits are available. The instrument can be self powered or may be powered by an external dc supply or two wire loop powered.

1.4 LCD displays



Full LCD display test feature illuminates all display segments and script text displays for 5 seconds when entering the program mode.

Rate display has flashing SEC, MIN, HR or DAY followed by up to 5 digits of rate programmable for up to 3 “floating” decimal places.

The 8 digit **Total** display is push button or remote resettable and can be programmed for up to 3 decimal places.

The 8 digit **Accumulative Total** display can be programmed for up to 3 decimal places. Reset is only possible when in the program mode which can be PIN protected for security.

2. OPERATION

2.1 Accumulative Total

Accumulative total can be reset at L2 in the program mode. The accumulative total can be displayed momentarily or continuously through use of the front panel ACCUM TOTAL key.

Momentary display : Accumulative total is displayed only whilst the key is held pressed.

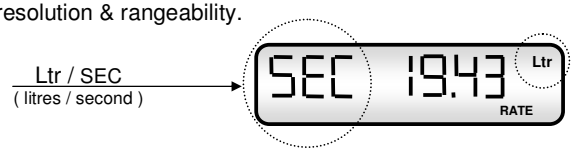
Latching display : To have the accum. total display latch when key is pressed simply press & hold the ACCUM TOTAL key for 10 seconds, the display will then latch each time the key is pressed. Holding the accumulative total key again for 10 seconds will revert this key function back to a momentary action.

2.2 Resettable Total *(also see page 18 for remote reset feature)*

The display toggles between Rate & Total when the RATE-TOTAL key is pressed. Pressing the RESET key whilst displaying total will cause the total to reset to zero.

2.3 Rate display

When rate is displayed the leading three alpha characters on the left of the display “flash ” the time base for rate **eg**. rate /SEC. rate /MIN. rate /HR. or rate /DAY. Decimal points float to provide good resolution & rangeability.



The minimum input frequency for rate display is 0.3hz reducing to 0.1hz If the low frequency cut-off is set to 0.1Hz *(see below) & 0.7Hz with NLC enabled.*

2.4 Low frequency cut-off

The low frequency cut-off is most commonly set to 0.0Hz *(disabled)* other than to:

1) To display rate for input frequencies below 0.3hz, for example setting the cut-off at 0.1Hz the rate will continue to display for input frequencies as low as 0.1Hz *(one pulse every 10 seconds)*, such conditions often apply to flowmeters with low resolution pulse outputs (low frequency) or flowmeters with a high operational turndown *(maximum to minimum flow rate)*.

2) Inhibit the integration & registration of “apparent flow” which at times may be encountered on mobile installations where the movement of the vehicle or dead heading a pulsating pump may cause spurious flow signals which are not attributed to actual flow.

3) Inhibit the integration & registration of flow at input frequencies below what is considered the minimum accurate flow rate of the primary flow element *(flowmeter)*.

Caution: If the low frequency cut-off is set to any value other than 0.0Hz then the integration of rate and total will cease at frequencies on or below the set value (HERTZ).

2.5 Inhibit total *(see wiring schematic page 18)*

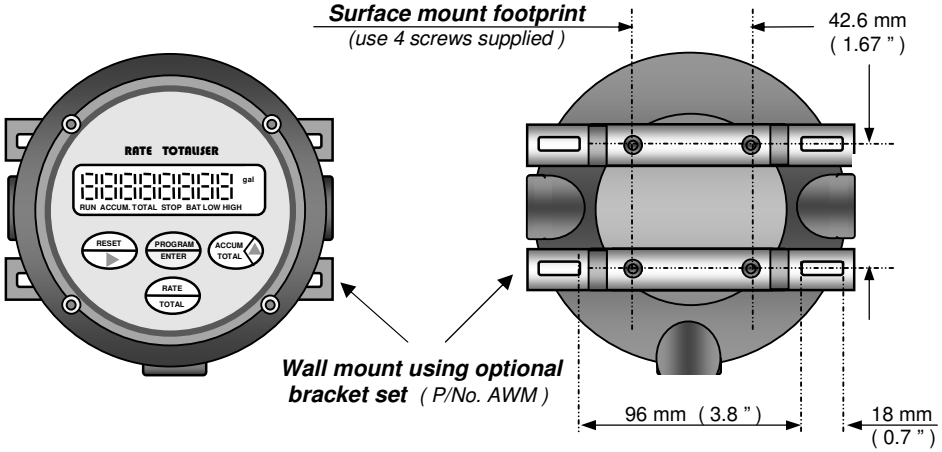
With the remote “inhibit total” switch closed the RT with display flow rate but at the same time will inhibit the resettable & accumulative totalising functions.

2.6 Keypad function matrix

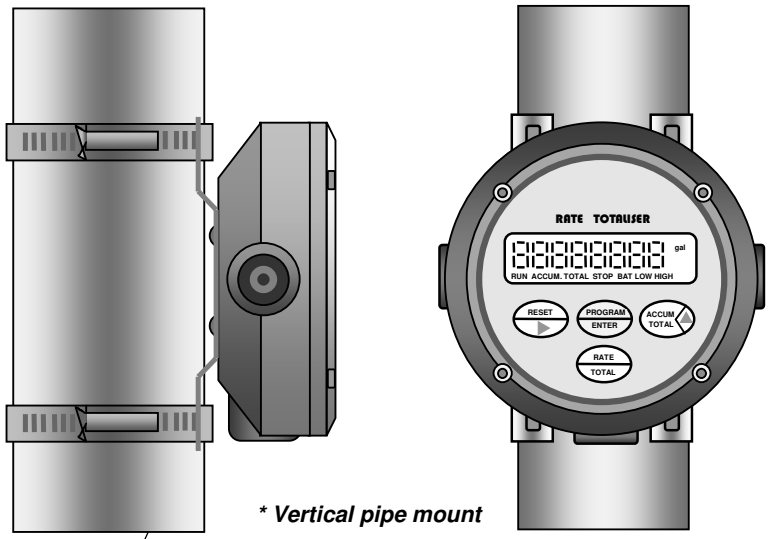
KEY	FUNCTION IN OPERATING MODE	FUNCTION IN PROGRAM MODE
ACCUM TOTAL	Displays Accumulative Total when pressed. *(refer clause 2.1 for options)*	No function
RATE TOTAL	Toggles between Rate & resettable Total displays.	No function
RESET	Resets the resettable total display to zero when it is being displayed.	No function
PROGRAM ENTER	1) Pressing the Prog. & Rate/Total keys for 5 seconds enters you into the program mode. 2) Displays model & software revision No.	1) Each press steps you through each level of the program chart. 2) Holding for 3 seconds fast tracks to the end of the program from any program level.
▶	No function	Selects the digit to be set, the selected digit will be "flashing " indicating that it can be incremented.
▲	No function	Increments the selected digit each time that it is pressed.

3. INSTALLATION

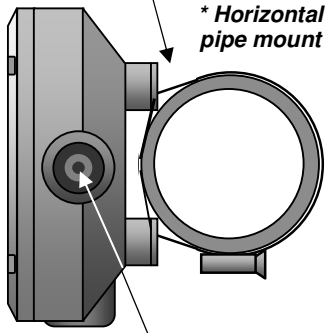
3.1 Remote Mounting

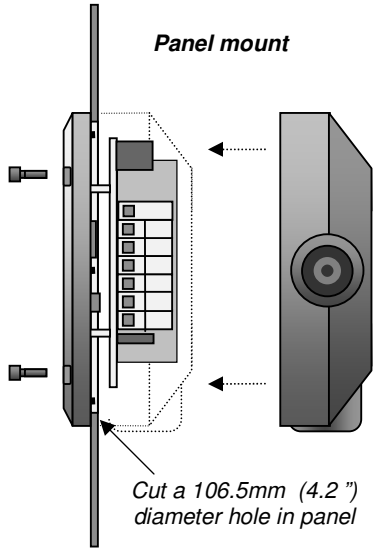


3.1 Remote Mounting *(continued)*



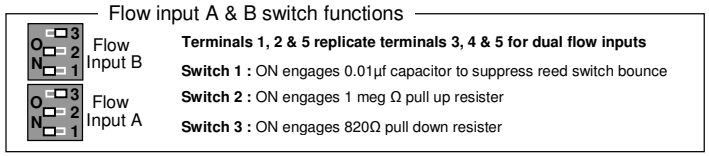
** order Pipe mount kit P/No. APM comprising two brackets, screws and worm drive clamps.*



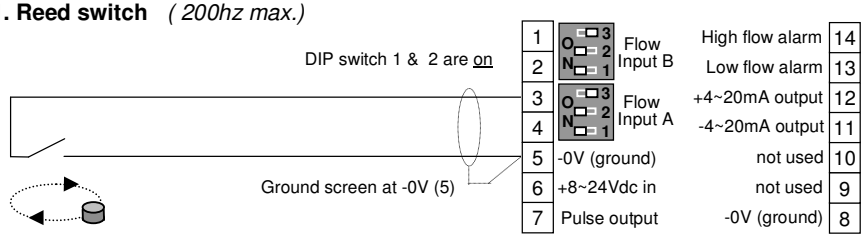


3.2 Flowmeter connections - unpowered sensors

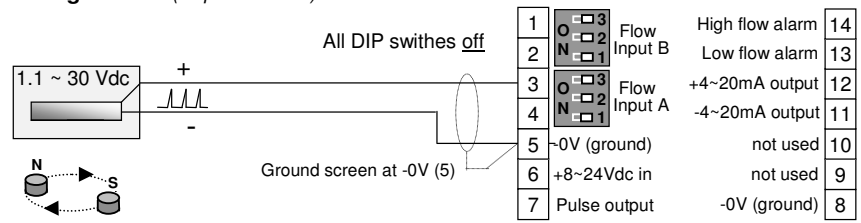
(for I.S. installations refer to I.S. supplement)



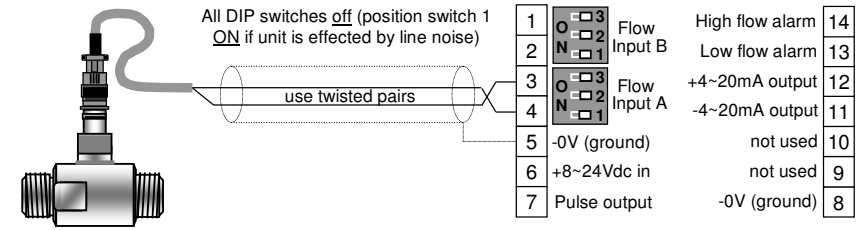
1. Reed switch *(200hz max.)*



2. Voltage Pulse *(& pulse wires)*



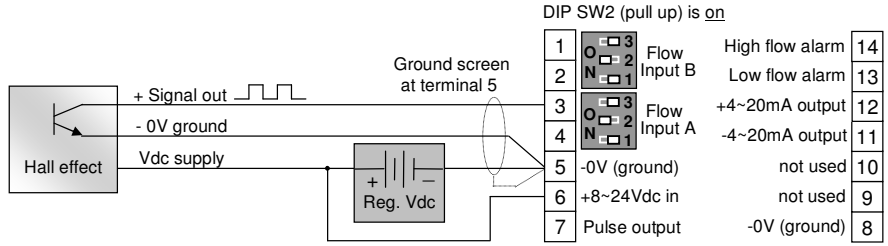
3. Coil *(Turbine & paddle style flowmeters – minimum 15mV p-p)*



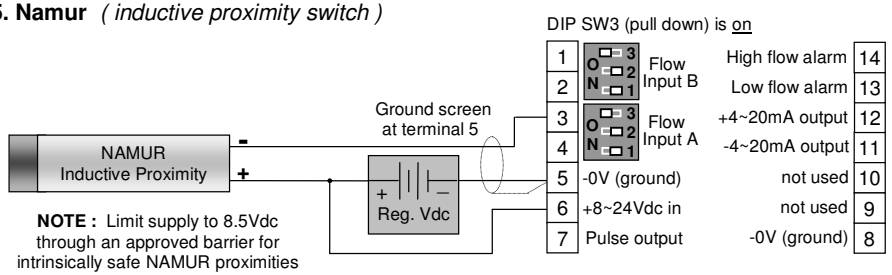
3.2 Flowmeter connections - powered sensors

(for I.S. installations refer to I.S. supplement)

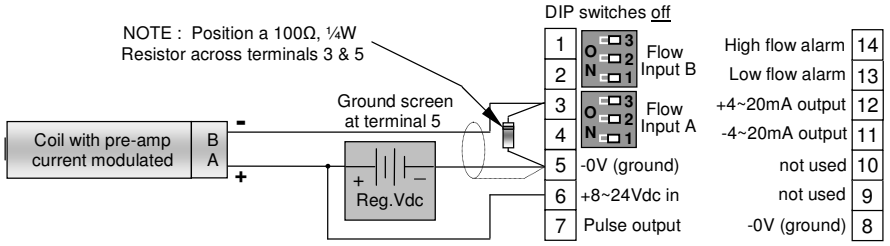
4. Hall effect *(5~24Vdc open collector)*



5. Namur *(inductive proximity switch)*

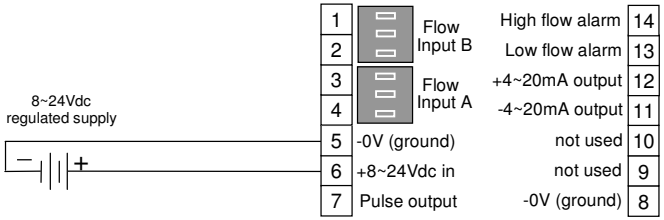


6. Current modulated pulse *(4mA to 20mA pulse amplitude)*



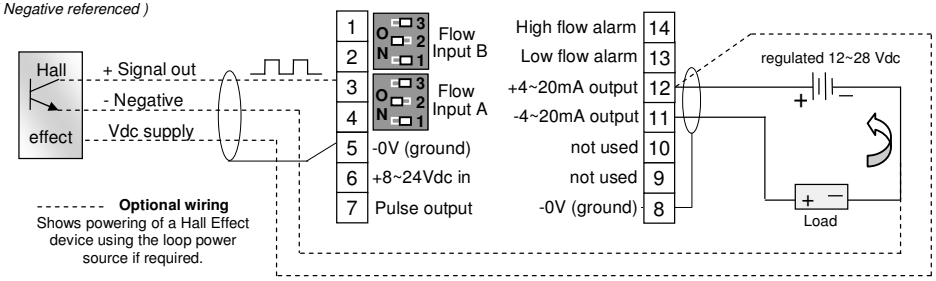
3.3 Wiring connections *(for I.S. installations refer to I.S. supplement)*

External DC powering – required for powered flow sensors, flow alarms or pulse outputs & dual flow inputs.



CAUTION :
Avoid using low cost digital switch mode power packs

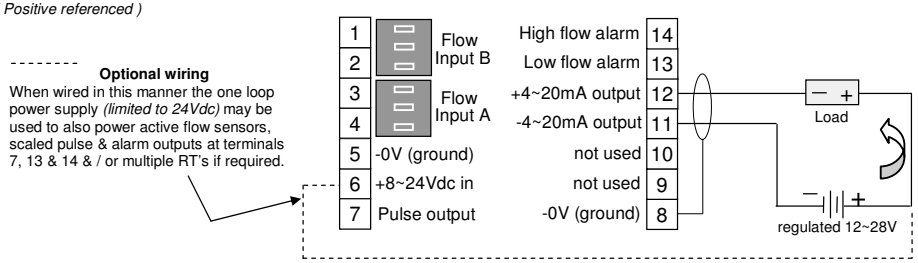
Powering via 4~20mA loop
(Negative referenced)



Optional wiring
Shows powering of a Hall Effect device using the loop power source if required.

Loop load specification : **R = (V – 10) / 0.02**
where : **V** = loop voltage, **R** = max. load **Ω**

Powering via 4~20mA loop
(Positive referenced)



Optional wiring
When wired in this manner the one loop power supply *(limited to 24Vdc)* may be used to also power active flow sensors, scaled pulse & alarm outputs at terminals 7, 13 & 14 & / or multiple RT's if required.

Wiring requirements : Use multi-core screened twisted pair instrument cable (0.25 – 0.5mm^2) for electrical connection between the RT and any remote flowmeter or receiving instrument. The screen needs to be earthed to the signal ground of the receiving instrument only to protect the transmitted signal from mutual inductive interference.

Instrument cabling should not be run in a common conduit or parallel with power and high inductive load carrying cables, power surges & power line frequencies may induce erroneous noise transients onto the signal. Run instrument cables in a separate conduit or with other instrument cables.

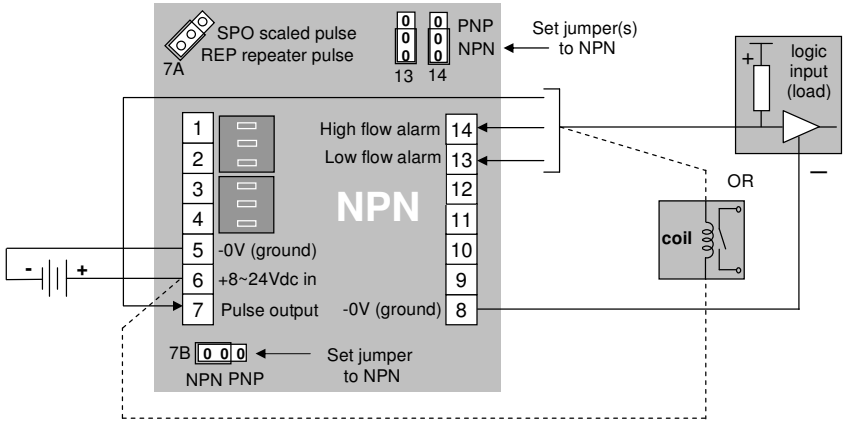
Pulse & Alarm Outputs

Current Sinking outputs (NPN)

Current sinking derives its name from the fact that it "sinks current from a load". When activated the current flows from the load into the appropriate output (7,13 & 14).

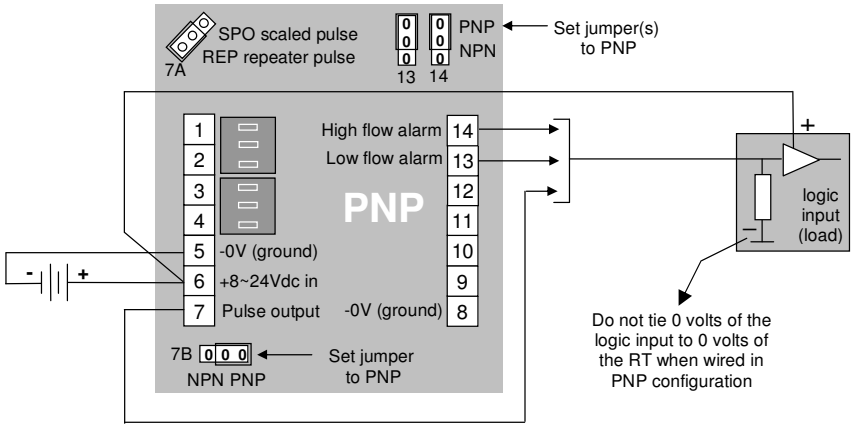
Driving a logic input ——— The output voltage pulse is typically the internal voltage of the load. The load would normally have an internal pull up resistor on its input as shown.

Driving a coil - - - - - - - The NPN style of output is to be used when diving a coil. The coil load is obtained by dividing the coil voltage by coil impediance (Ω), is expressed in amps & is not to exceed 0.1A. The coil voltage is connected across & must match the RT supply voltage & the output (7,13 & 14).



Current Sourcing outputs (PNP)

Current sourcing gets its name from the fact that it "sources current to a load". When activated the current flows from the output (7,13 & 14) into the load. When wired as below the output voltage pulse is the supply voltage of the load. The load would normally have an internal pull down resistor on its input as shown.



4. PROGRAM PARAMETERS

4.1 PIN No. Program Protection
Any user defined PIN number other than 0000 will engage the program protection feature, failure to input the correct PIN number will deny the ability to change any of the program parameters but will allow the user to step through and view the existing program parameters.

Only one PIN number may be set but this can be changed at any time after gaining access through PIN entry. A second back up PIN number is installed at the factory should the programmed PIN be lost or forgotten. *(refer bottom of page 17 for the back up PIN No.)*

4.2 Resetting Accumulated Total
Resetting the accumulated total can only be done at level 2 (L2) in the program mode.

4.3 Engineering Units *(refer clause 1.4)*
Select from available Engineering units to right of the display. For other engineering units set display to show no engineering units & program a suitable K-factor.

4.4 K-factor (scale factor)
Enter K-factor starting with the most significant number, up to 7 whole numbers & 3 decimal numbers can be entered. Trailing decimal numbers move into view as digits to the right are progressively selected, any significant digits which may move from view remain functional.

4.5 Rate conversion factor
A rate conversion feature is available & is explained at level 6 in the program chart *(page 14).*

4.6 Rate dampening
Dampening is available to smooth out fluctuating flow input signals in order to provide a stable rate display & analog output. Most input signal are reasonably stable and need only a low setting value of 40 to 70 *(see response graph on page 19).*

4.7 Low frequency cut-off This feature is explained in clause 2.4 *(page 5).*

4.8 Pulse Outputs *(for this feature the RT must be externally powered as per page 10)*
The pulse output is link selectable as a scaleable pulse or non-scaled repeater pulse & NPN *(current sinking)* or PNP *(current sourcing)* style pulse capable of switching up to 1 amp. Pulse scaling, when selected, is set as the number of litres / gallons etc. per output pulse *Eg.* 0.1 litres/pulse, 10 litres/pulse, 100 gallons/pulse. Range is 0.1 - 9999.9 Eng.unit/pulse.

The pulse width *(pulse duration 1:1)* automatically adjusts to the output frequency defaulting to a maximum pulse width of 300 milliseconds at frequencies below 1.66hz. To calculate pulse width at higher frequencies use: 1000 ÷ (hz x 2) = pulse width in milliseconds.

4.9 Non Linearity Correction (NLC) - *Linearisation*
Linearisation enables the instrument to correct for known inaccuracies in a flowmeter thereby improving the overall accuracy and in many cases increasing the effective flow range *(turndown)* of the flowmeter. Refer to program level L12, page 15 for setting NLC points. NLC can be used without external power however, battery life is reduced according to usage.

Note: *The RT defaults out of the program mode if no programming entries are made after 4 minutes.*

4.10 Presetting battery power levels
When the instrument is operated under battery power only a special “Power Mode” program option will appear at level 13 within the programming routine. A choice of three battery power modes enable maximisation of the battery life according to operational requirements:

Ultra Power Save: Typically selected if reading the register infrequently. The display scrolls a Prompt “PRESS ANY KEY”, when a key is pressed display wakes up for 4 minutes then returns to sleep mode* greatly extending the battery life.

Standby : Display becomes active whenever a key is pressed or product flows through the flowmeter. Display returns to sleep mode* after 4 minutes of no flow input or key actions, prompt then returns to “PRESS ANY KEY”.

Continuous: Display is active at all times resulting in reduced battery life. Display reverts from Rate to Total after 4 minutes to reduce battery draw.

* In sleep mode *(and programming mode)* flow is always continually totalised.

When the battery voltage is low a battery low indicator will appear on the display.

5. ADDITIONAL PROGRAM PARAMETERS

5.1 Analog Output *(loop powered)*
The loop powered 4~20mA output can be spanned anywhere within the flow meter range. Testing the current loop is available during programming when 4mA will output at programming level L15 and 20mA will output at level L16 *(page 16).*

5.2 ***Flow Alarms*** *(The RT must be externally powered as per page 10)*
Two flow alarm FET *(transistor)* outputs may be programmed for Low & High flow alarms.

5.3 Flow Alarm Deadband
Alarms are NPN/PNP link selectable. An adjustable deadband *(reset differential)* provides a trip buffer zone about the set point in order to overcome alarm “chattering” when the flow rate is fluctuating close to the alarm set point.
Deadband is entered as % of each set point value *(refer to page 16 for an example).*

5.4 Dual Flow Inputs *(see also page 20 for complete description)*
When externally powered the RT12 accepts inputs from two flowmeters (input **A** & input **B**), a separate scaling factor is entered for the second flow input, the instrument is then programmed for one of the dual input functions of A+B, A-B or A÷B *(ratio).*

A+B Both inputs are added and displayed as one for Rate & Totals.

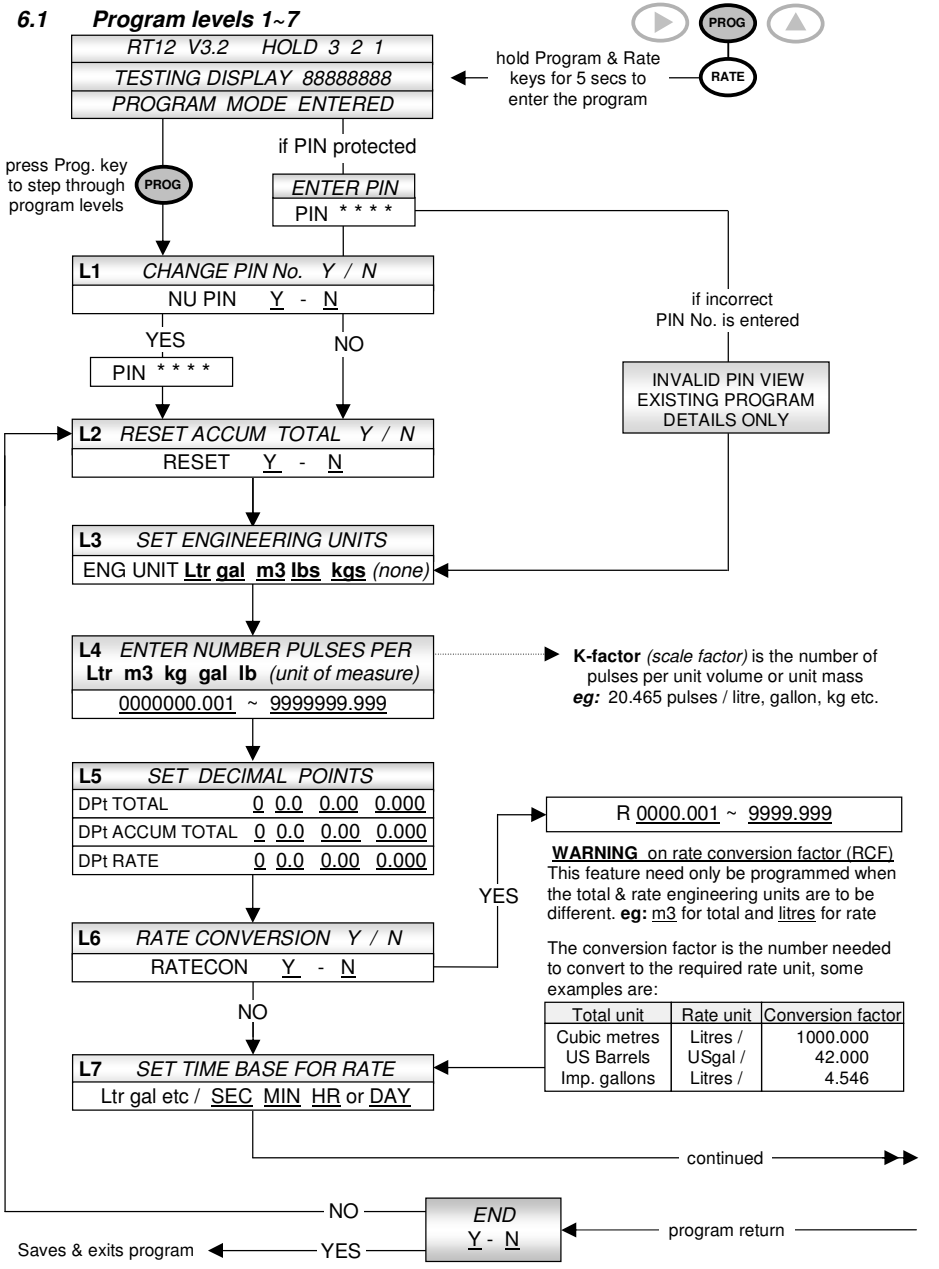
A-B Input B is subtracted from input A & the difference is displayed for both Rate & Totals.

A÷B Totalises A & B separately & Rate is a function of A÷B to give instantaneous ratio.

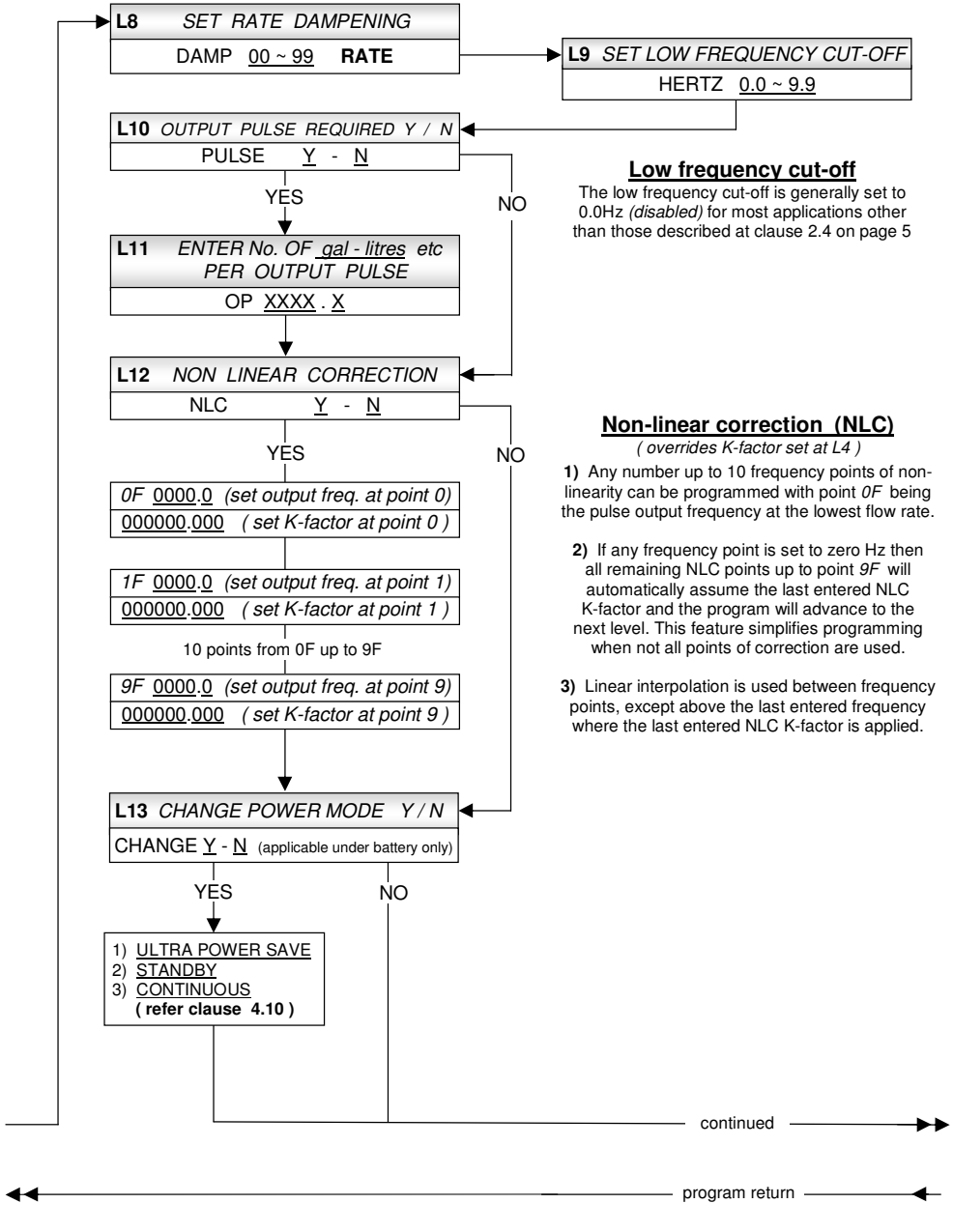
Note : - When using A & B inputs the functions of Scaled Pulse output, Alarm set points and the Analog output are relevant to resultant computation between A & B.
- The analog output of function A÷B can be used as an input for ratio control.

6. PROGRAMMING FLOW CHART

6.1 Program levels 1~7



6.1 Program levels 8 ~ 13



Low frequency cut-off

The low frequency cut-off is generally set to 0.0Hz *(disabled)* for most applications other than those described at clause 2.4 on page 5

Non-linear correction (NLC)

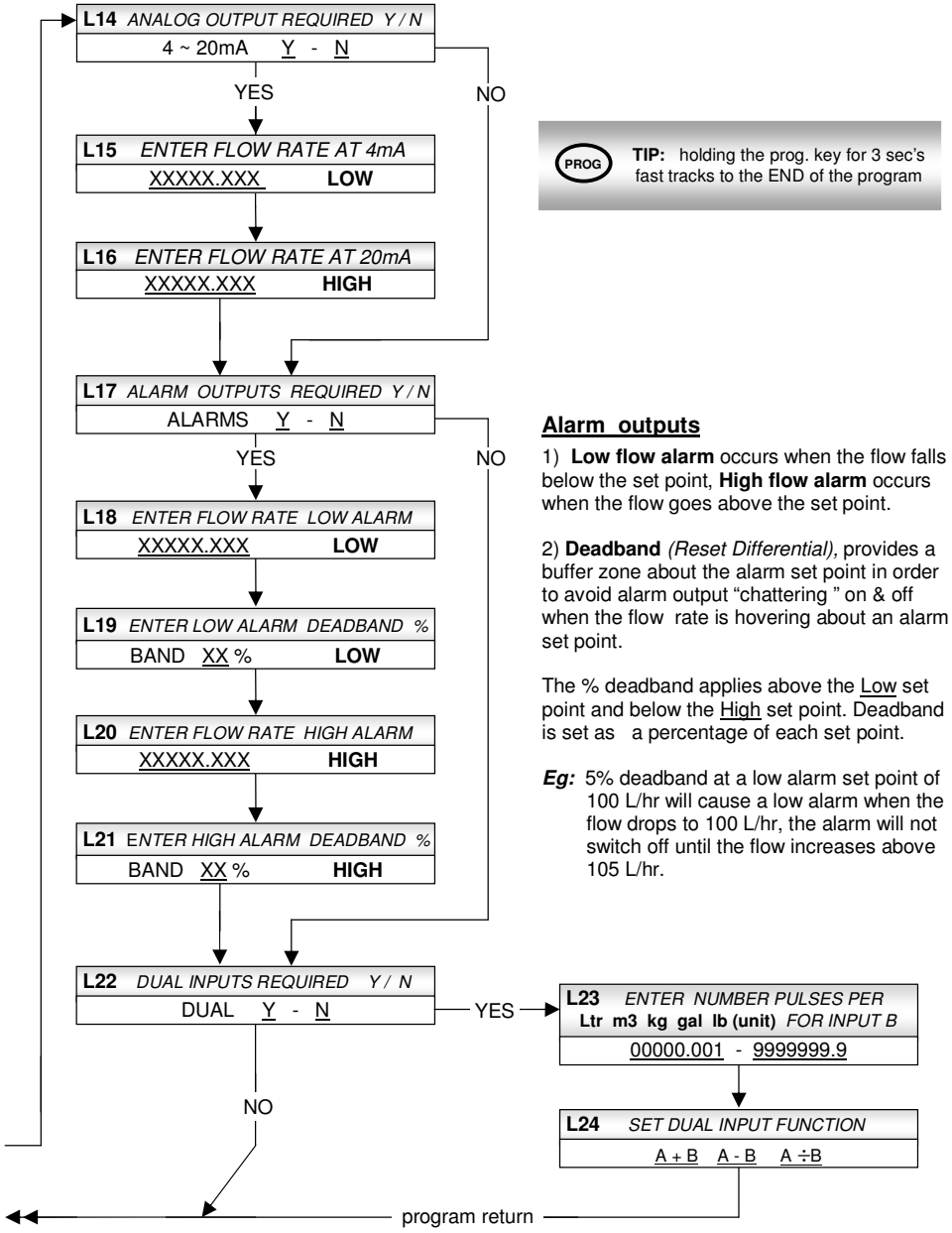
(overrides K-factor set at L4)

1) Any number up to 10 frequency points of non-linearity can be programmed with point *0F* being the pulse output frequency at the lowest flow rate.

2) If any frequency point is set to zero Hz then all remaining NLC points up to point *9F* will automatically assume the last entered NLC K-factor and the program will advance to the next level. This feature simplifies programming when not all points of correction are used.

3) Linear interpolation is used between frequency points, except above the last entered frequency where the last entered NLC K-factor is applied.

6.2 Program levels 14~24



PROG **TIP:** holding the prog. key for 3 sec's fast tracks to the END of the program

Alarm outputs

1) **Low flow alarm** occurs when the flow falls below the set point, **High flow alarm** occurs when the flow goes above the set point.

2) **Deadband** *(Reset Differential),* provides a buffer zone about the alarm set point in order to avoid alarm output "chattering " on & off when the flow rate is hovering about an alarm set point.

The % deadband applies above the Low set point and below the High set point. Deadband is set as a percentage of each set point.

Eg: 5% deadband at a low alarm set point of 100 L/hr will cause a low alarm when the flow drops to 100 L/hr, the alarm will not switch off until the flow increases above 105 L/hr.

6.4 Program detail record

Pencil your program details here

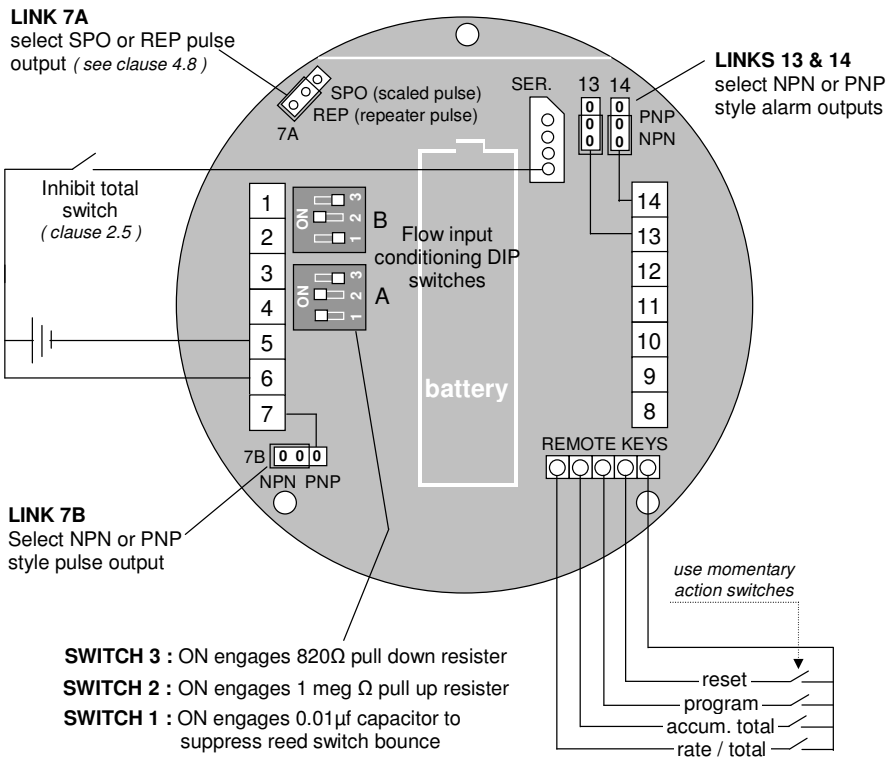
L1	User selected PIN No.	
L3	Engineering units	
L4	K-factor *(scale factor)*	K =
L5	Decimal for reset Total	☐ 0 ☐ 0.0 ☐ 0.00 ☐ 0.000
	Decimal for Accum. total	☐ 0 ☐ 0.0 ☐ 0.00 ☐ 0.000
	Decimal for Rate	☐ 0 ☐ 0.0 ☐ 0.00 ☐ 0.000
L6	Rate conversion factor	☐ yes ☐ no RCF=
L7	Time base for Rate	Units / ☐ Sec ☐ Min ☐ Hr ☐ Day
L8	Rate dampening	
L9	Low frequency cut-off	Hertz =
L10	Pulse output	☐ yes ☐ no L11 pulse value =
L12	Non linear correction	☐ yes ☐ no
	- frequency 0	0F Hz K-factor =
	- frequency 1	1F Hz K-factor =
	- frequency 2	2F Hz K-factor =
	- frequency 3	3F Hz K-factor =
	- frequency 4	4F Hz K-factor =
	- frequency 5	5F Hz K-factor =
	- frequency 6	6F Hz K-factor =
	- frequency 7	7F Hz K-factor =
	- frequency 8	8F Hz K-factor =
	- frequency 9	9F Hz K-factor =
L13	Power mode	☐ Ultra save ☐ Standby ☐ Continuous
L14	Analog output	☐ yes ☐ no
L15	- zero set point	4mA @
L16	- span set point	20mA @
L17	Alarm outputs	☐ yes ☐ no
L18	- low set point	@
L19	- low deadband	percentage %
L20	- high set point	@
L21	- high deadband	percentage %
L22	Dual flow inputs	☐ yes ☐ no
L23	- K-factor for B input	K =
L24	- dual input function	☐ A+B ☐ A-B ☐ A÷B

Your back up 4 digit PIN number is 1820
To remember consider the model No. RT - "R" is the 18th & "T" the 20th letter of the alphabet.

7. TERMINAL DESIGNATION

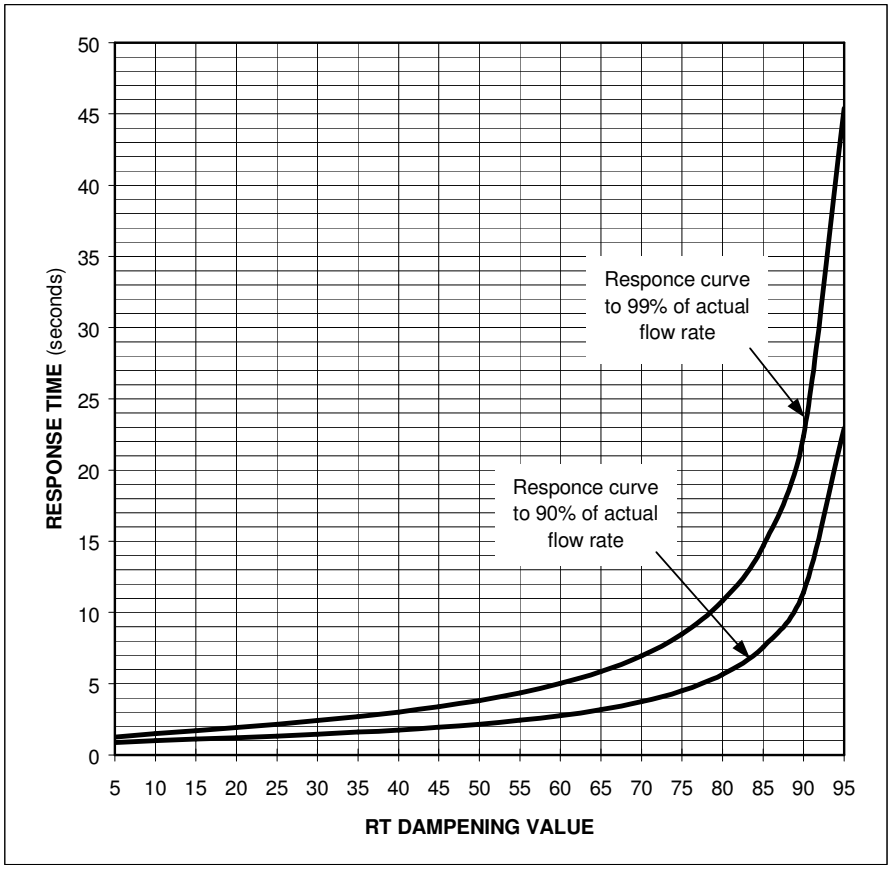
	Terminal		Terminal	
Terminals 1, 2 & 5 replicate terminals 3, 4 & 5 for dual flow inputs	1	Flow input B	High flow alarm	14
	2		Low flow alarm	13
	3	Flow input A	+4~20mA output	12
	4		-4~20mA output	11
	5	-**0**V (ground)	not used	10
	6	+8~24Vdc in	not used	9
	7	Pulse output	-**0**V (ground)	8

Terminal layout - links & remote switch inputs



Rate dampening :

Rate dampening value verses time to reach new reading *(for an instantaneous change in actual flow rate)*



Dual flow inputs

When externally or loop powered the RT provides a dual flow input feature which can be configured for one of three available functions of A+B, A-B or A÷B (ratio).

The dual flow inputs are referred to as “INPUT A” at terminals 3 & 4 and ”INPUT B” at terminals 1 & 2.

Function A+B

Both inputs are added together and displayed as one for Rate, Resettable & Accumulative Totals.

Displays	**Rate**	**:** The total of A+B flow rates displayed as one rate.
	Reset Total	**:** The total of A+B totals displayed as one total.
	Accum. Total	**:** The total of A+B accum.totals displayed as one total.
Outputs	**Scaled Pulse**	**:** Scaled pulse value is relative to the totalised values.
	Alarms	**:** Alarms are taken relative to the displayed rate.
	Analog Output	**:** 4~20mA output is proportional to the displayed rate.

Function A-B

Input B is subtracted from input A, the resultant is displayed as one for Rate, Resettable & Accumulative Totals.

Displays	**Rate**	**:** The difference of A-B flow rates displayed as one rate
	Reset Total	**:** The difference of A-B totals displayed as one total.
	Accum. Total	**:** The difference of A-B accum.tot. displayed as one total.
Outputs	**Scaled Pulse**	**:** Scaled pulse value is relative to the totalised values.
	Alarms	**:** Alarms are taken relative to the displayed rate.
	Analog Output	**:** 4~20mA output is proportional to the displayed rate.

Function A÷B

Input A is divided by input B, the resultant is displayed as an instantaneous Ratio, Resettable & Accumulative Totals are independently displayed for both A & B inputs.

Displays	**Rate**	**:** The resultant Ratio between A÷B flow rates displayed as an instantaneous Ratio.
	Reset Total input A	**:** The total of input A.
	Reset Total input B	**:** The total of input B.
	Accum. Total input A	**:** The Accumulative total of input A.
	Accum. Total input B	**:** The Accumulative total of input B.
Outputs	**Scaled Pulse**	**:** The scaled pulse output relates to input A .
	* **Alarms**	**:** Alarms are taken relative to the displayed ratio.
	* **Analog Output**	**:** 4~20mA output is proportional to the displayed ratio.

*** Note:** The alarm and analog outputs for the A÷B function are set in the initial stages of programming in relation to rate units eg: setting the analog output range to 4mA = 00.000 litres/min and 20mA = 10.000 litres/min, the analog output will be proportional to the ratio rate display of 0.000~10.000 (eg. 4mA @ 0.000 and 20mA @ 10.000).
The same set up analogy applies to the alarm settings.

8. ALPHABETICAL INDEX