PULSITE LINK

tlan

Part number: 370-008

Document ID: PulsiteLink_Instruction_Manual_0722

These instructions are intended for use with the Pulsite Link installed with App Version 1.0.2 or higher; and the Interface Software Version 4.2.0 or higher.

To view the version number, click the  button

Intended use:

The Pulsite Link pulse convertor is intended for use with pulse output devices, such as:

- *NPN*
- *PNP*
- *Reed Switch*

The Pulsite Link pulse convertor can provide linearized outputs of

- *4-20mA (active)*
- *0-5V*
- *0-10V*
- *NPN and PNP*

The Pulsite Link pulse convertor can also provide

- *Flow alarm switches via NPN and PNP output terminals*

Disclaimer:

This information has been reviewed and believed to be correct at the time of publication. Titan Enterprises holds no responsibility for any inaccuracies. The material in this document is for information purposes only.

Storage:

The equipment should be stored in its original packaging in a non-hazardous area. Care must be taken to ensure it is not subjected to extremes of temperature or humidity. Store away from solvents.

General Safety:

Installation should be done by competent personnel who understand the electrical and mechanical requirements of electronic flow metering devices.

Equipment must be protected from electric shock, fire and solvents.

ATTENTION:

Please read this instruction manual carefully before installation and operation of this device by competent personnel.

Failure to follow these guidelines may result in damage to the equipment or personal injury.

Manufacture Information:

The Pulsite Link pulse convertor is designed and manufactured by:

Titan Enterprises Ltd, Unit 2, 5A Coldharbour Business Park, Sherborne, Dorset, United Kingdom. DT9 4JW.

And conforms to:

CE

- *EMC Directives (2004/108/EC) EU Directive (2014/30/EU)*

UKCA

- *Electromagnetic Compatibility Regulations 2016*

1 General

The Pulsite Link pulse convertor is intended for use pulse output devices, such as:

- *NPN*
- *PNP*
- *Reed Switch*

The Pulsite Link pulse convertor will provide linearized outputs of

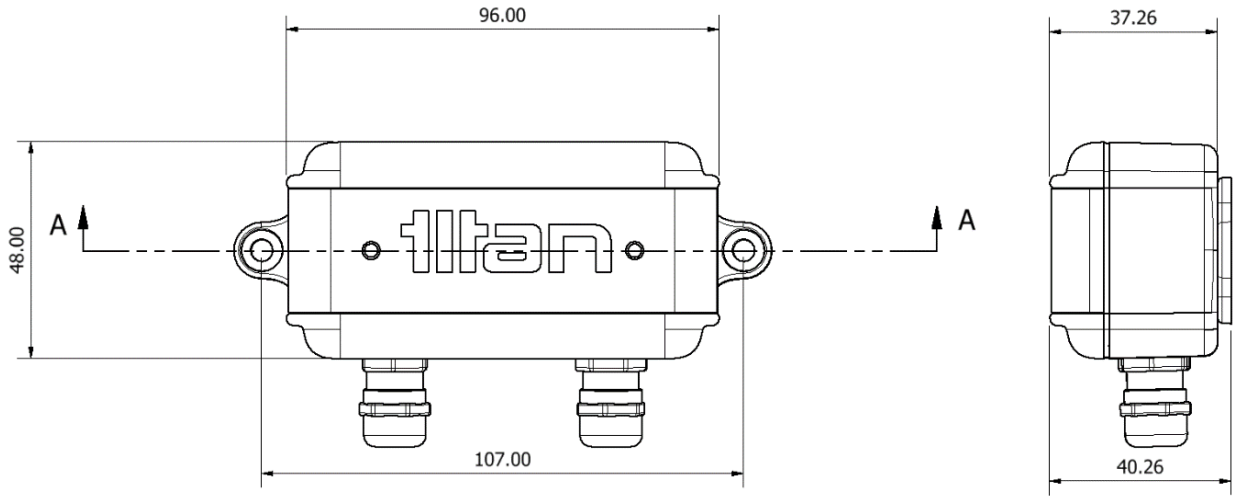
- *4-20mA (active)*
- *0-5V*
- *0-10V*

The Pulsite Link pulse convertor can also provide

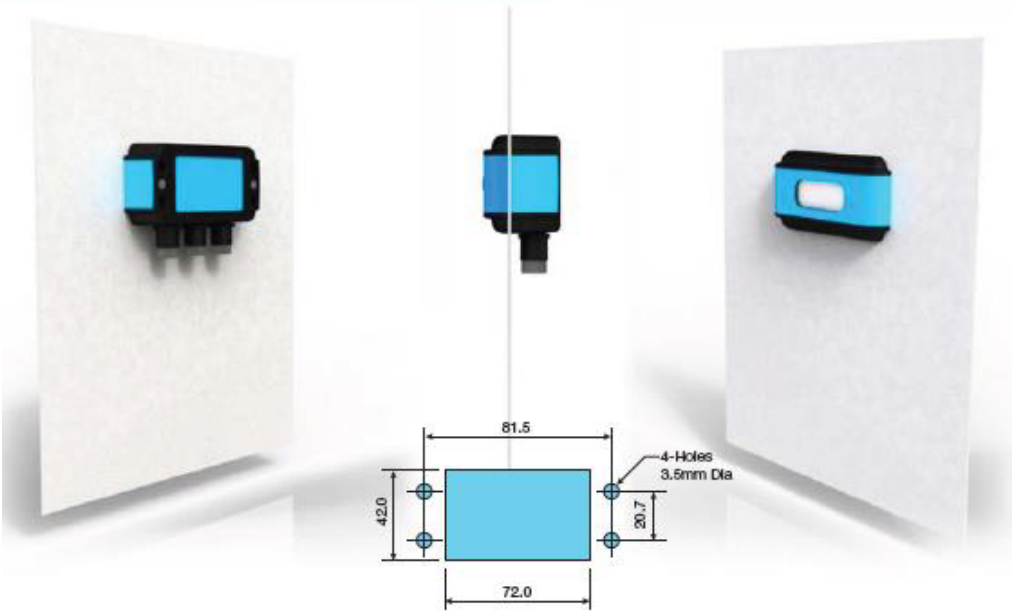
- *Flow alarm switches via NPN and PNP output terminals*

2 Installation

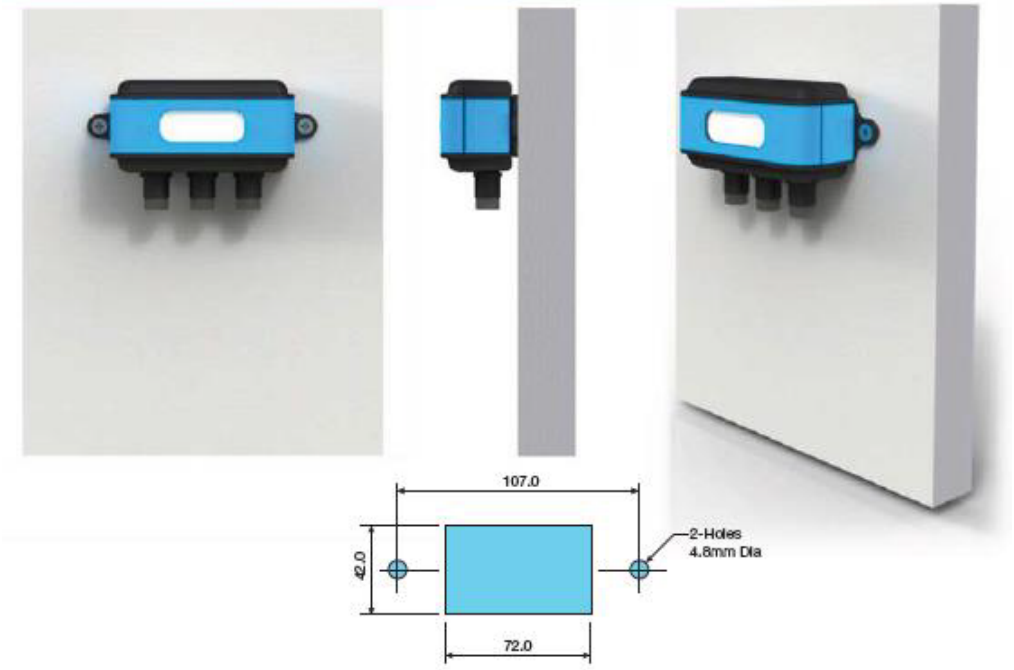
The electronics are held in an IP54 polymer case which can be mounted into a panel or using the brackets provided.



Pulsite Panel Mounting



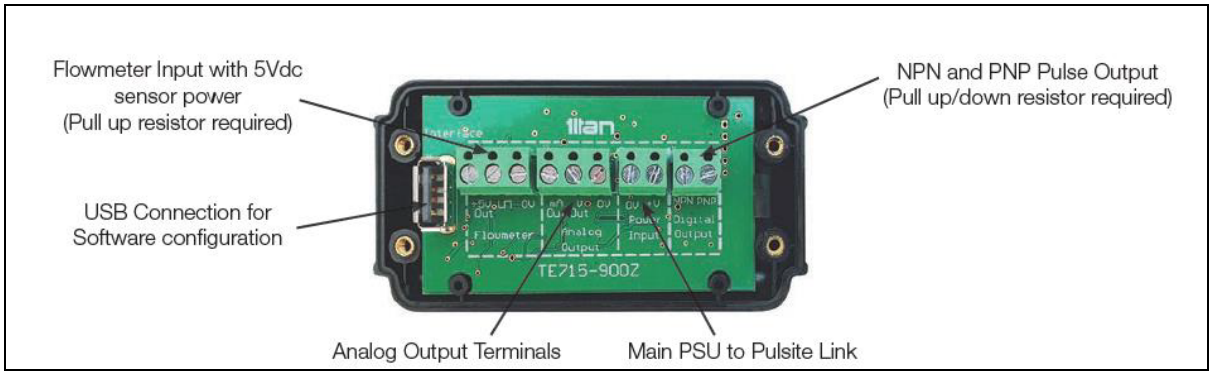
Pulsite Wall Mounting



3 Electrical

Electrical and instrument connections are wired internally via 2 x PG7 Cable glands and 5mm pitch terminal block connectors.

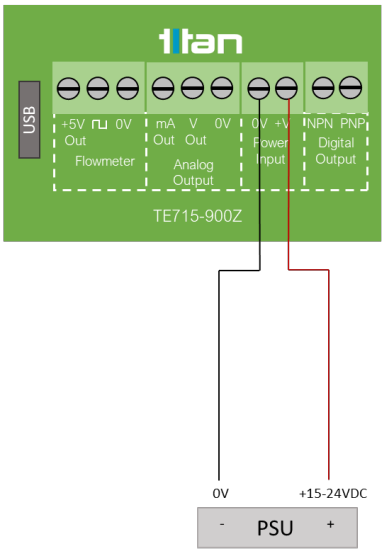
To access these connectors, simply undo the 4 rear screws and carefully remove the front cover.



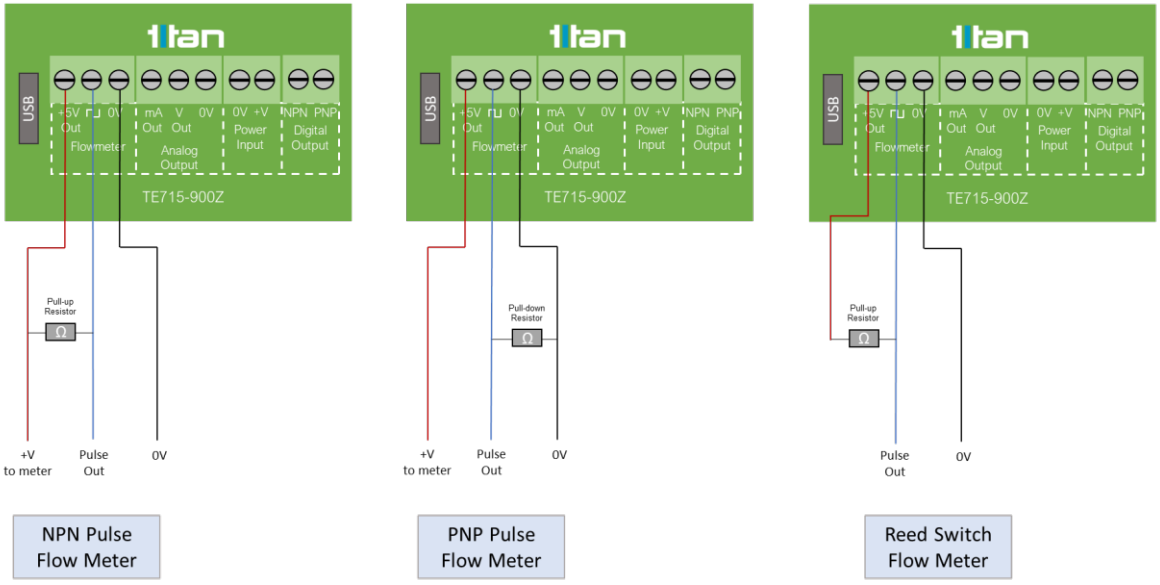
Description	Specification	Terminal Connection
Power Supply	15-24Vdc Regulated 0.1 amp	+24VDC → *Power Input +V* 0VDC → *Power Input 0V*
Flowmeter Input	Pulse (max. 5kHz) Reed Switch (max. 400Hz)	+VDC Supply to meter → *Flowmeter +5V Out* 0VDC Supply to Flowmeter → *Flowmeter 0V* Pulse from flowmeter → *Flowmeter* ⎍
	Sensor Supply 5Vdc 50mA max room temperature. (25mA at high temperature)	*Pull up/down resistor required for NPN/PNP – see wiring diagrams*
Output Pulse	NPN/PNP 2.5kHz 24V@20mA max. Scalable pulse per litre	Pulse Output to PLC/display →*Digital Output NPN or PNP*
		Pull up/down resistor required for NPN/PNP – see wiring diagrams
Output Analog	0-5Vdc / 0-10Vdc 16 bit Adjustable flow range	+VDC to PLC/Display → *Analog Output V Out* 0VDC of circuit → *Analog Output 0V*
	4-20mA ACTIVE 16 bit Adjustable flow range	+mA to PLC/Display → *Analog Output mA Out* 0VDC of circuit → *Analog Output 0V*

3.1.1 Wiring Diagrams

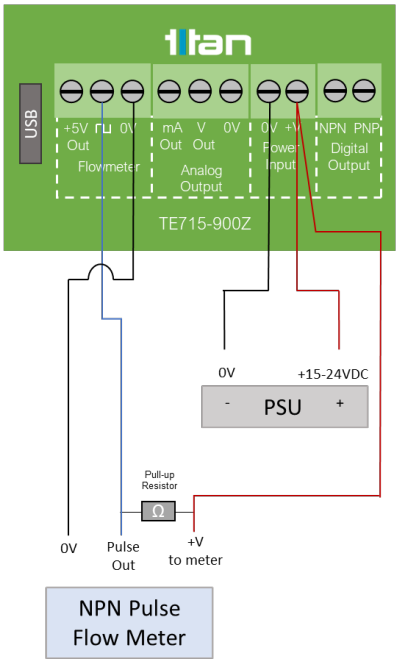
Connecting Pulsite Link Pulse Convertor **Power Input**



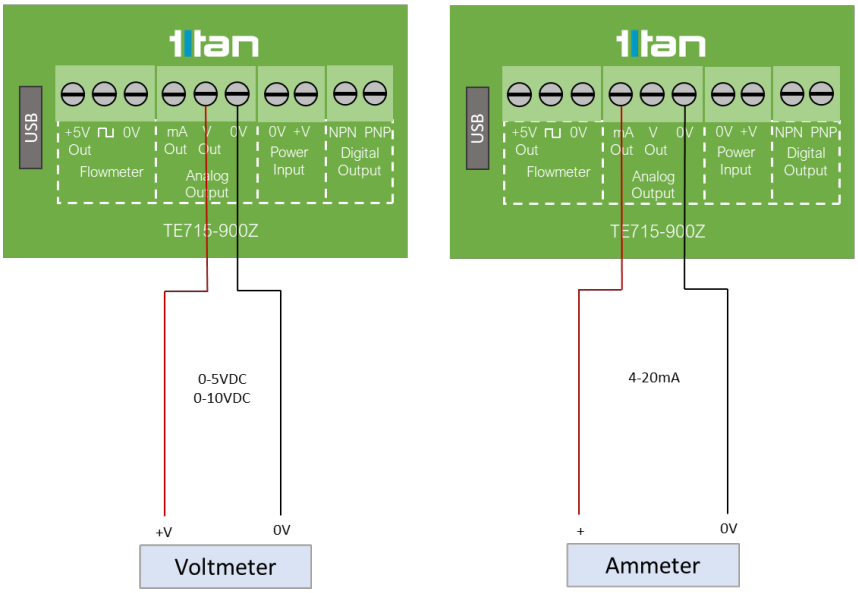
Connecting **Input** Flow Meter to Titan Pulse Convertor



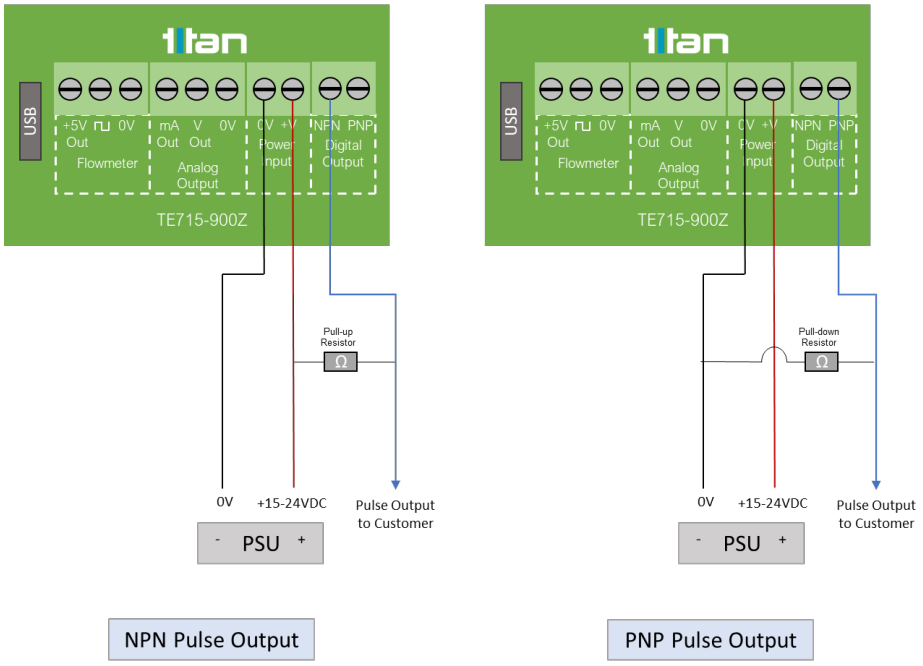
Connecting **Input Flow Meter** with >5VDC to Pulsite Link Pulse Convertor



Connecting Titan Pulse Convertor Analog **Output**



Connecting Pulsite Link Pulse Convertor to **Pulse Output**



NOTE: Best practice is to place Pull up/ down Resistor near target device

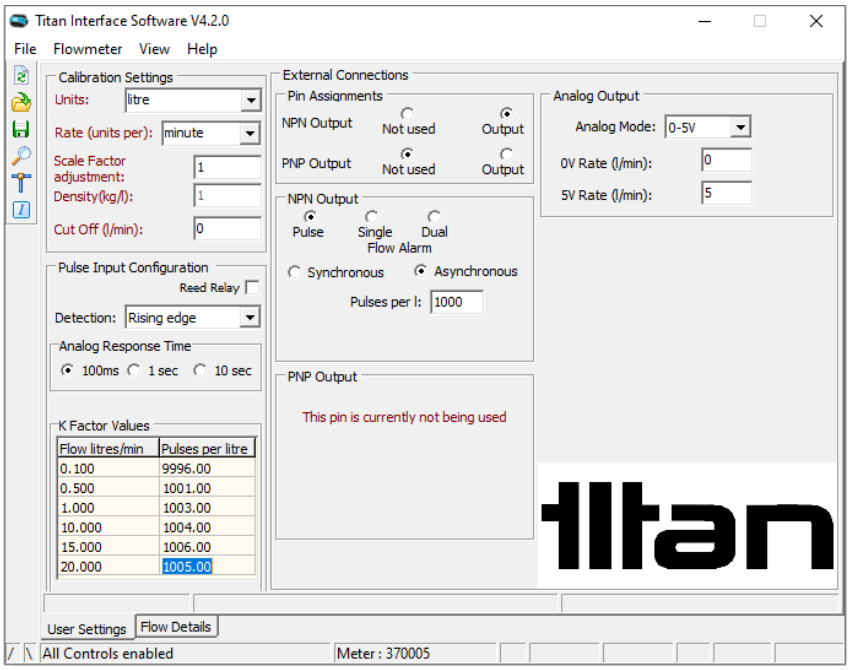
4 Interface Setup

4.1 Connecting Meter to PC

Before use, download and install the **Titan Interface Software** from memory stick or the www.Flowmeters.co.uk website

The Pulsite Link should be set up using the USB interface and a suitable windows-based computer.

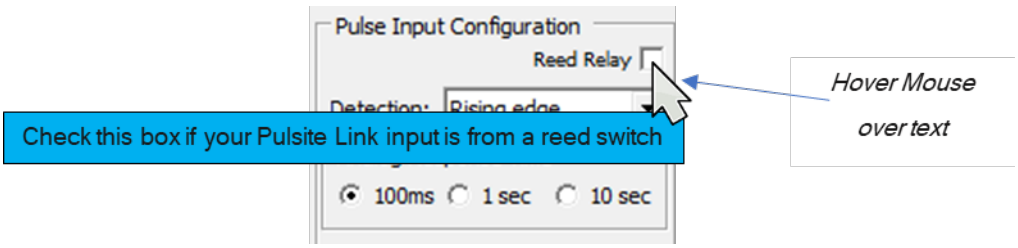
Below is a screen shot of the opening Software screen:



NOTE: *When correctly connected the bars will rotate in the bottom left had corner and you should see "All Controls enabled"*

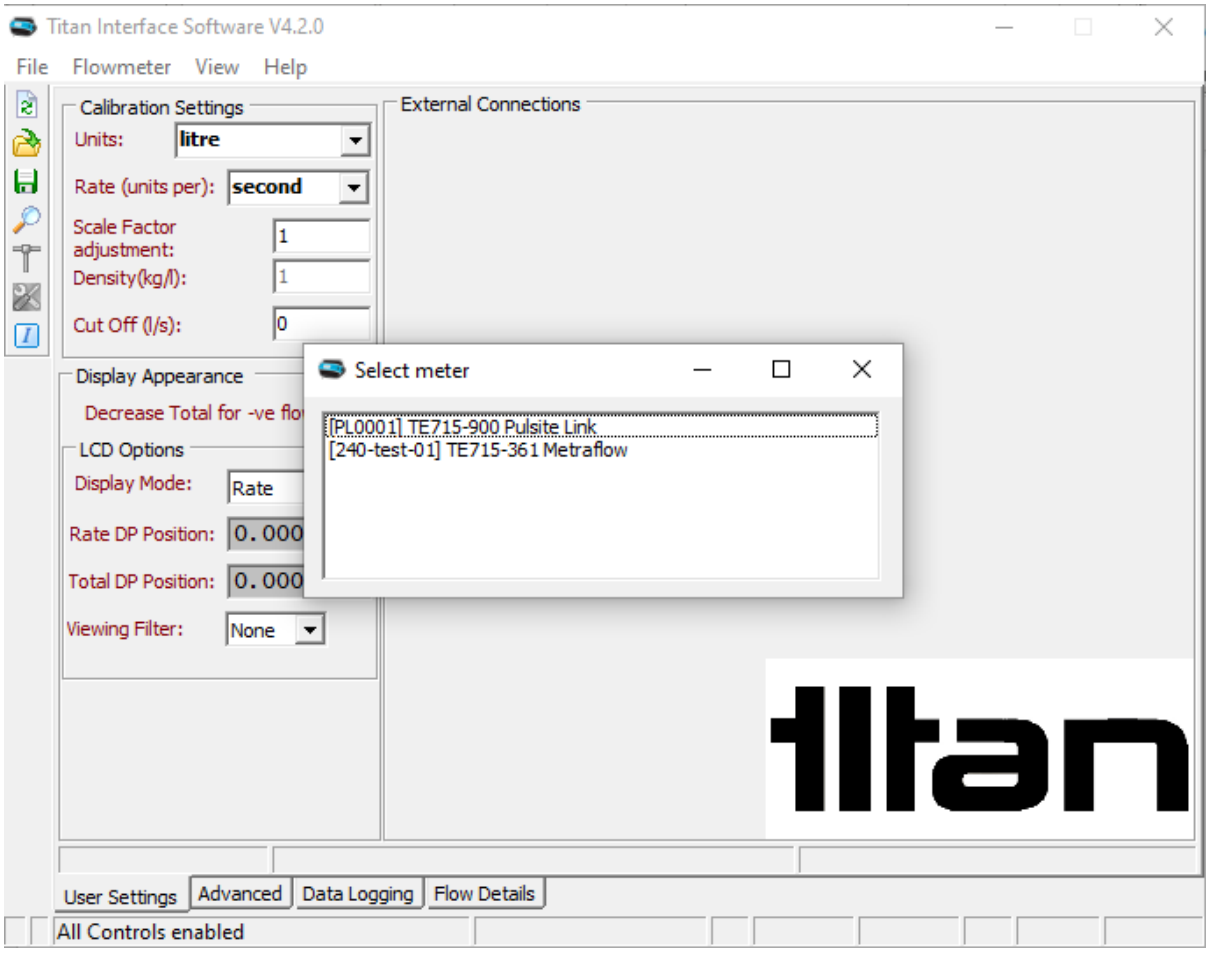
On connecting Pulsite Link the Software will normally automatically load the settings currently saved in the memory of the connected meter. The user can use the spy glass icon to automatically pull the meter saved settings at any time.

From this software the user is able to configure all options of the meter. Detailed descriptions follow, but if the user hovers the mouse over a menu item, a brief description will be displayed to help.



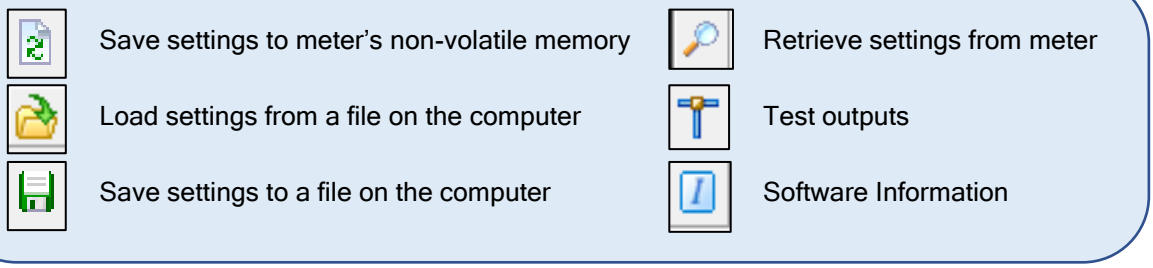
4.1.1 Connecting Multiple Titan Devices

If more than one meter is connected to the same PC, when starting, the Interface Software will open the window to choose which you wish to connect:



By opening another copy of the Titan Interface Software you can connect and modify multiple meters from the same computer.

The panel below shows the main menu function icons of the Interface as seen on the top left-hand bar of the screen.



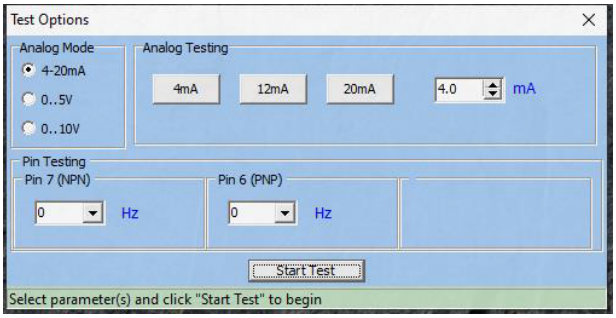
4.1.2 Retrieve Settings from Meter

When connected the settings will normally be automatically retrieved from the meter. If this is not the case, or the user wishes to check the meter saved settings against those shown in the software, they can be retrieved from the nonvolatile memory of the flow meter by pressing the looking glass icon.

4.1.3 Test Outputs

This tab enables the user to manually set outputs on the Pins for testing to the target device.

Once the required output is selected click the “Start Test” button and all pins will give the selected output rate for 23 seconds.



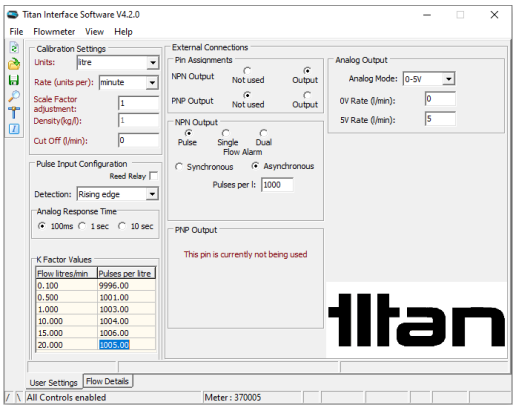
4.1.4 Software Information

This displays the current software version of the Interface software and the flow meter connected.

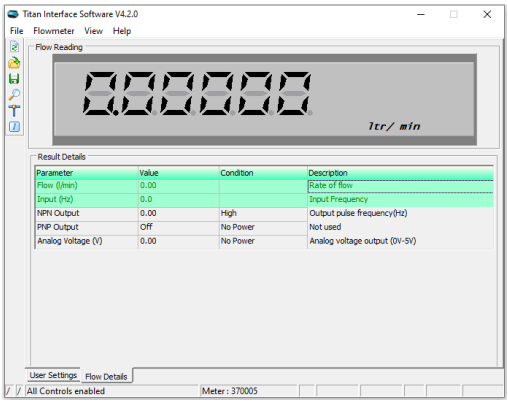
4.2 Window Tab Descriptions

On connection with the Titan Interface Software a window will open with two tabs of settings and information:

User Settings: Here you can configure how you wish the meter to present the flow and outputs.



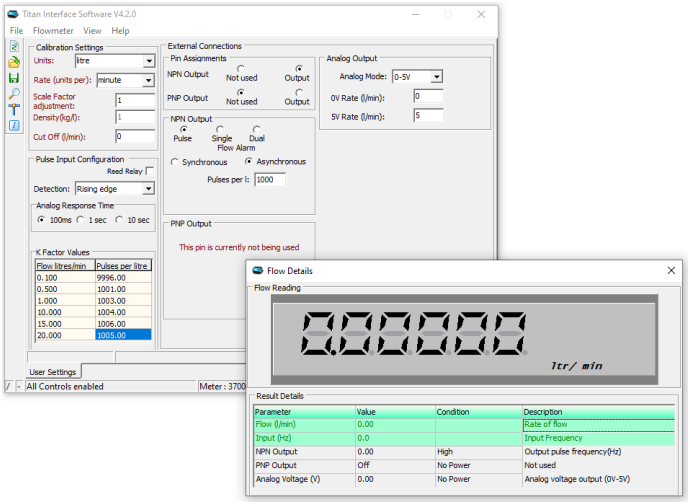
Flow Details: Shows the user real time data from the meter including flow and outputs.



Multiple Window Display

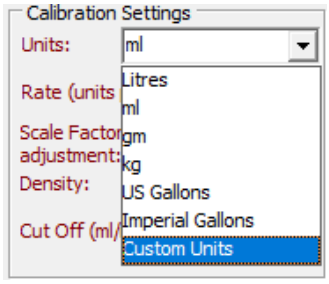
To aid set up whilst operating the meter it is possible to detach the Flow Details and Advanced windows by dragging and dropping the bottom tabs away from the main window. This allows the user to view those tabs whilst adjusting the User Settings.

To return all windows to docked Mode use the View drop down menu, Restore Defaults



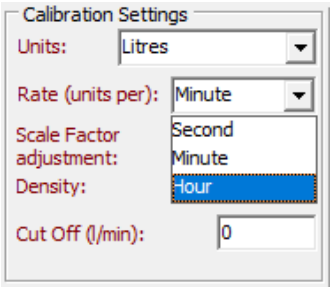
4.3 User Settings Tab

4.3.1 Calibration Settings

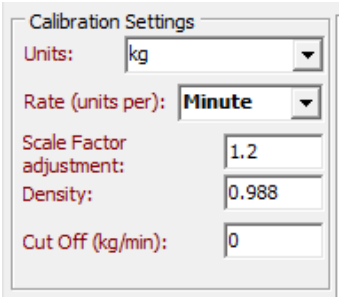


Units: A drop down menu offers the choice of - Litres, ml, gms, kg, US gallon, Imperial gallon or Custom units i.e. blank.

Note that the Custom Units setting will be equivalent to Litres if no modifications are made to scale factor.



Rate (units per): This is the time base for the flow rate and has the option of Second, Minute or Hour.

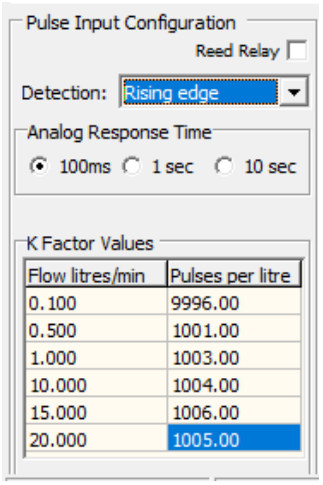


Scale Factor Adjustment: This allows the user to adjust or tune the calibration flow value if required.

Density: The flowmeter is fundamentally a volumetric device, but a density figure can be entered here if one of the mass units is selected. Caution must be used however, as there is no temperature/density correction.

Cut Off: Flow values below this level will be set to zero.

4.3.2 Pulse Input Configuration

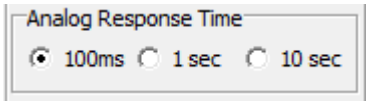


Reed Relay: Use when connecting a Reed relay flow meter.

When ticked this provides an additional extended filter in which a logic high signal must be high for at least 560µs before it is propagated; whereas a logic zero is propagated immediately. This is intended for a circuit in which the reed relay switches to ground with a pull-up resistor.

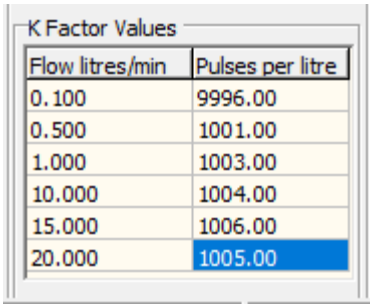
Detection: Pulse detection can be chosen for Rising edge; Falling edge or Both edges.

"Both edge" detection measures both the rising and falling edges



Analog Response Time: This selects the rate that the analog output and asynchronous pulse outputs are updated.

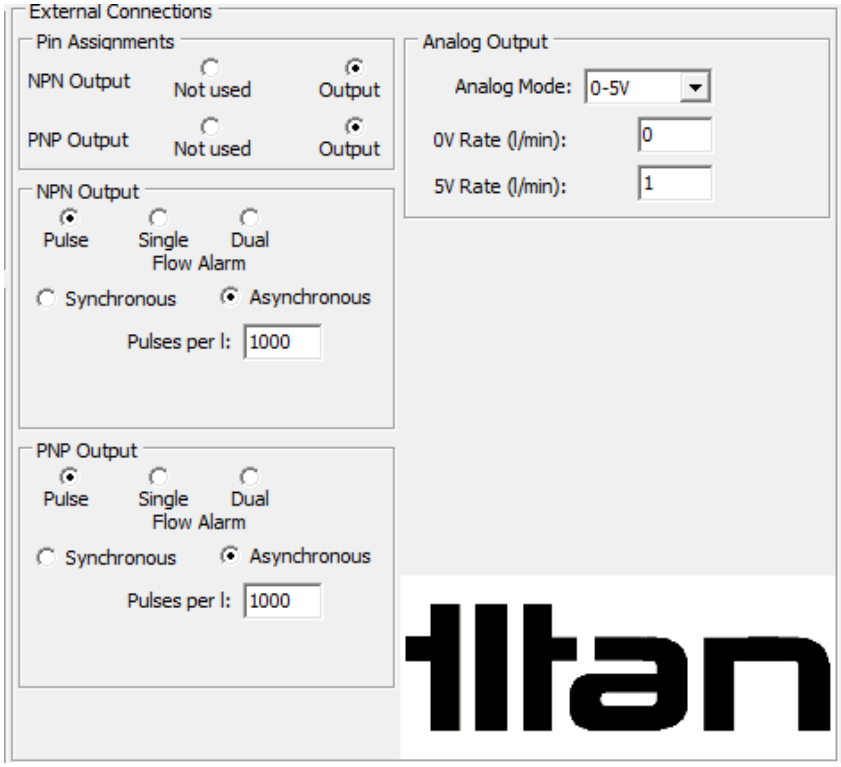
Chose the slowest required for the lowest frequency of input pulses expected to be seen. Hovering your mouse over the Cut Off value will give a recommended lowest flow for the input calibration k factor and the chosen **Analog Response Time.**. Setting the cut-off value below the recommended level means when the flow is between the set value and the recommended value, the display will occasionally read zero.



K Factor Values: Enter the values of flow and pulses per litre (K factor) as found in the calibration certificate supplied with your flow meter.

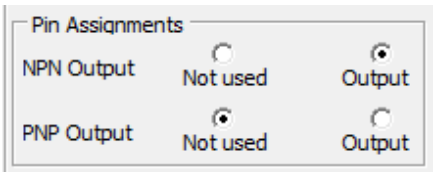
4.3.3 External Connections:

Within this section the user can configure pulse, analog and alarm outputs.



4.3.3.1.1 Pin Assignments:

The options for each PIN are: ⊙ Not Used ⊙ Input or ⊙ Output



Each of the PIN Assignments can be configured as an output function or not used

The operation to modify NPN Output and PNP Output is identical within the software, with the exception of the type of transistor pulse output.

The options for each PIN, are:

⊙ Not Used or ⊙ Output

NOTE: These instructions are the same for NPN and PNP with the exception of the transistor wiring and operation.

For example: For NPN the idle state is switch 'open' which will be a high Volt output if there is a pull-up in the circuit. PNP would be the opposite, at zero Volt.

4.3.3.2 NPN Output / PNP Output

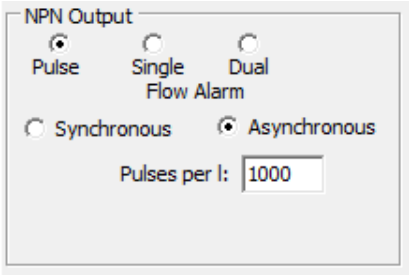
If Output is selected in Pin assignments, the output options are:

Pulse
Single or Dual flow alarm

4.3.3.2.1 Pulse:

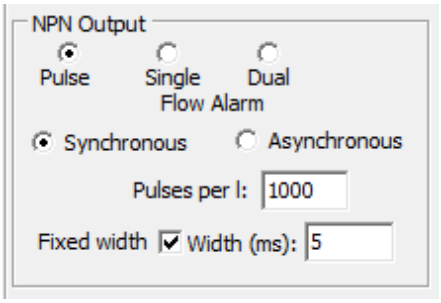
Enter the number of pulses per unit volume required. This figure can be adjusted to suit the application and the flow range required from the meter.

The maximum output frequency is 5000 Hz so care must be taken to ensure that this pulse rate is not exceeded.



NOTE: *Details of how to connect the outputs can be found in Section 3.1.1*

There are two options for the Pulse Output:



Asynchronous

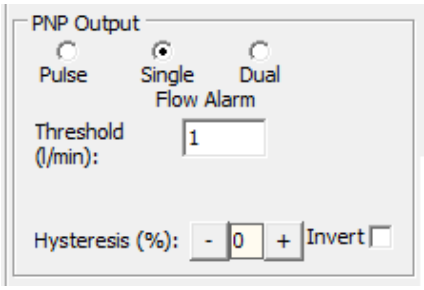
In this mode the meter measures according to the analog response time and sends pulse (NPN/PNP) output after that period at 50:50 ratio.

Synchronous

In this mode the Pulse output (NPN/PNP) is sent directly on receipt of the second pulse edge received.

The pulse output is direct 50:50 ratio or can be set to a specific pulse width(ms).

4.3.3.2.2 Single Flow Alarm:



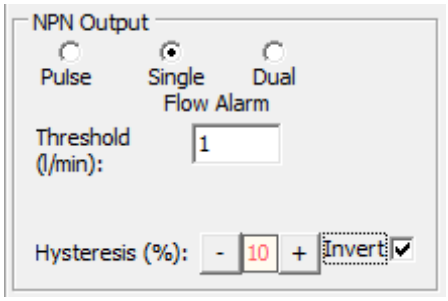
Checking this option opens up input boxes for Threshold, *Hysteresis* and *Invert.*

Set the ***Threshold*** to the flow value you require the transistor to operate.
The logic of operation can be adjusted with the ***Invert*** check box.

Hysteresis (%): This is used to prevent "fluttering" of the alarm signal when flow is around the threshold level.

The % value is set around the Threshold value.

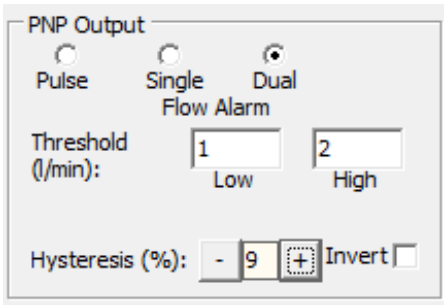
For example: Threshold Set at 1.0 and Hysteresis at 20%. The Pin will turn ON at 1.1 and off at 0.9.



NOTE: The INVERT checkbox will reverse the action of the alarm output.

For details for each PIN see the or hover mouse over the set point to see the action of the output with the chosen settings.

4.3.3.2.3 Dual Flow Alarm:



Checking this will enable a range of flow to be entered. When the flow is outside/inside of this range the alarm will be triggered.

The remaining settings in the input box are the same as for Single Flow alarms.

- The alarm will automatically activate and reset in proportion to the user set Hysteresis of the Threshold levels.
- The INVERT checkbox will reverse the action of the alarm output. (See the Alarm Logic Table).

For details for each PIN see the Alarm logic table or hover mouse over the set point to see the action of the output with the chosen settings.

4.3.3.3 Alarm Logic Table

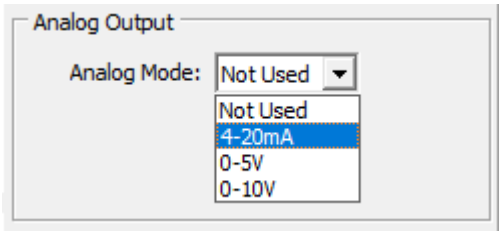
Flow Alarm	Invert	Alarm Action	
		Below Threshold	Above Threshold
Single	Unticked	OFF	ON
Single	Ticked	ON	OFF
		In Range	Outside Range
Dual	Unticked	ON	OFF
Dual	Ticked	OFF	ON

NOTE: The NPN and PNP have different outputs when used due to their wiring.

Using the NPN: OFF =Powered +VDC and ON = Unpowered 0VDC
Using the PNP: OFF=Unpowered 0VDC and ON = Powered +VDC

4.3.3.4 Analog Outputs

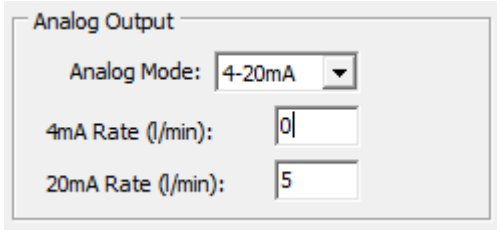
NOTE: FOR FULL ANALOG OUTPUT FUNCTION EXTERNAL POWER OF >15VDC IS REQUIRED



Analog Output: there are four options on the drop-down menu:

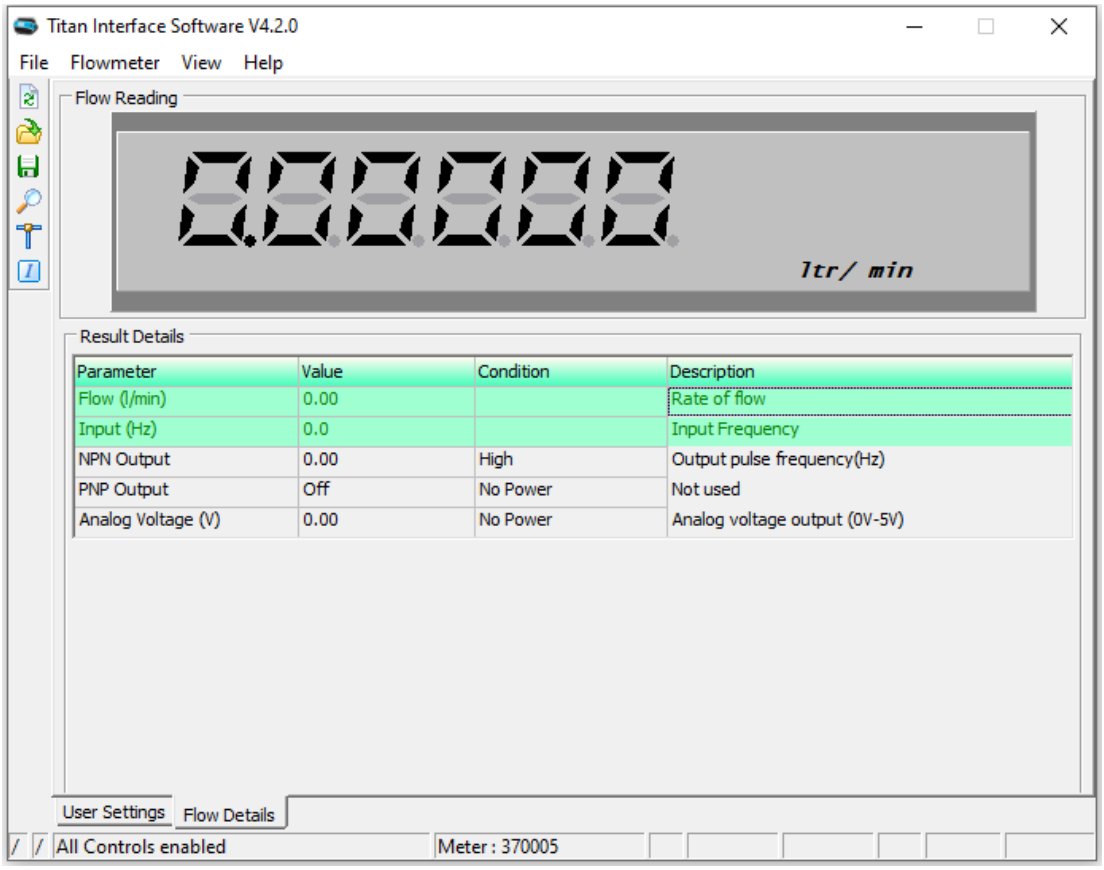
Not Used
4-20mA (active)
0-5 Volt
0-10 Volt.

NOTE: The 4-20mA is **ACTIVE** (Not loop powered).
Incorrect wiring may damage this device



Once the Analog Mode selection has been made you can enter the low and high flows for the analog outputs as required. These are numeric entries in the units and time base selected in calibration settings.

4.4 Flow Details Tab



The Flow Details tab displays the performance of the meter in real time.

The main large display reflects the meter readings showing on the Atrato LCD Display, if fitted, and will mimic that display. The buttons either side have the functions selected on the 'Configuration' screen and work in parallel with the buttons on the Atrato flowmeter display unit itself.

The **Results Details** indow below the rate and total display shows various relevant operational parameters whilst the unit is operating, e.g., relay status and frequency output if these options are selected.

Parameters:

Flow: This is the instantaneous flow rate and is updated approximately every 100 milliseconds.

Input: The measured frequency of pulses from the connected flowmeter/device.

NPN Output & PNP Output: If no selection is made "Not used" will be in the Description column. See following text and chart for the display legends.

- OR: When NPN or PNP is set to "Output" and set to "Pulse" this will display the frequency of the running output and the number of pulses per litre selected.
- OR: If it is selected to "Output" and set to "Flow switch" the Value column will show the transistor status either "low" or "high" and the notes will show the selected switch points.

Analog: Displays the chosen analog output and value.

The chart below shows the various display messages for the operating functions. During operation only one message will be shown for each parameter.

Parameter	Value	Condition	Description	Additional Comments
Flow	12.54		Rate of Flow	*Raw Flow Reading (without viewing filter)*
Input (Hz)	647.97		Input Frequency	*Frequency measure from connected flowmeter*
NPN Output	Off	High	Not Used	*NOTE: Will Read +VDC if pull up connected*
	237	No Power		
	237	Active	Output Pulse Frequency (Hz)	
	Off	High	Output Alarm State	*No Alarm* *+VDC*
	On	Low	Output Alarm State	*Alarm Triggered* *0VDC*
	On	Low	Output Alarm State	*Invert Selected* *No Alarm* *0VDC*
	Off	High	Output Alarm State	*Invert Selected* *Alarm Triggered* *+VDC*
PNP Output	Off	Low	Not Used	*NOTE: Will Read +VDC if pull up connected*
	237	No Power	Output Pulse Frequency (Hz)	*No +VDC. The PNP will not work on USB power alone*
	237	Active	Output Pulse Frequency (Hz)	
	Off	Low	Output Alarm State	*No Alarm* *0VDC*
	On	High	Output Alarm State	*Alarm Triggered* *+VDC*
	On	High	Output Alarm State	*Invert Selected* *No Alarm* *0V*
	Off	Low	Output Alarm State	*Invert Selected* *Alarm Triggered* *0VDC*
Analog Current	12.54	OK	Analog Current output (4mA-20mA)	

	12.54	No Power	Analog Current output (4mA-20mA)	*Wiring disconnected* *No external power to meter*
Analog Voltage	3.22	OK	Analog Voltage output (0V-5V/10V)	
	3.22	No Power	Analog Voltage output (0V-5V/10V)	*No external power to meter*

5 LED Indicators

The Pulsite Link has two LED indicators.

Left Hand Side		Right Hand side	
GREEN	Power >6VDC	GREEN flashing	Pulse Output (only)
YELLOW/GREEN	Power <6VDC Analog output: VDC or Not Selected	BLUE flashing	Analog output (only)
RED	4-20mA Output selected but not connected	TURQUOISE flashing	Pulse and Analog out
BLUE	Communication/ settings sent		

6 Technical Specification

Power Requirement	15-24Vdc 0.1 amps	Regulated
Input Types	Pulse Reed Switch	max 5kHz max 400Hz
Pulse Output (Scalable)	NPN and PNP Options: Asynchronous 50:50 Synchronous 50:50 Fixed width	max 2.5kHz pull up/down resistor required 24V@20mA max. Scalable pulse per litre
Analog Output (Scalable)	4-20mA (Active)	250 Ω maximum
	0-5Vdc / 0-10Vdc	14VDC minimum supply
Flow Set Points	NPN/PNP FET transistors	20mA@24Vdc max
Sensor Supply	5Vdc	50mA max 20°C 25mA max 65°C
Response Time (User Configurable)	100ms, 1s or 10s	Option in software
Accuracy		
4 - 20mA output	±0.012% linearity ±0.15% maximum total output error	16-Bit resolution and monotonicity
0 - 10 Volt output	±0.1% linearity ±0.5% maximum total output error	16-Bit resolution and monotonicity
0 - 5 Volt output	±0.1% linearity ±0.5% maximum total output error	16-Bit resolution and monotonicity
Pulse output (synchronous)	±1µs instantaneous pulse edge accuracy All pulses	32-Bit conversion ratio better than ±300 parts per trillion
Pulse output (asynchronous)	±100µs instantaneous pulse edge accuracy ±0.01% synthesized frequency error	32-Bit conversion ratio better than ±300 parts per trillion
Housing	IP64	ABS/PC polymer
Connections	1 x USB Type A 9 x 5mm Pitch Terminal connections 2 x PG9 Cable Glands	Internal

7 Troubleshooting

Symptom	Cause	Solution
LED light not seen	Power supply issue	Check wiring and supply is 15-24VDC
LED does not pulse with Flow	No output configured	Configure analog or pulse output using Titan interface Software
No Flow Reading from input	Incorrect Wiring	Check Pull Up or Pull Down resistor are wired correctly according to the diagrams in the manual
	No Pulse from meter	Check wiring and pulse output from the flow meter
Flow Readings show zero values	Sample speed too high for Hz received	Change Analog response time using Titan Interface Software
No Pulse Output on Wire but output showing on Interface Software	Incorrect Wiring	Check Pull Up or Pull Down resistor are wired correctly according to the diagrams in the manual
No Pulse Output on wire or showing on Titan Interface Software	Incorrect settings	Check Settings installation
No analog output	Incorrect Configuration	Check that the correct configuration and wiring is used. Ensure Values in the range boxes are adequate for the flow being measured
	Indicated in “No Power” in Value column of Flow Details Tab of Interface Software.	4-20mA circuit broken. Check wiring Check power wiring to meter To function correctly >15VDC
	Component Failure on PCB Note: +V into the V analog output can cause it to fail	Return to Titan Enterprises for repair
Analog output incorrect	Voltage too low	Increase power to meter to >15VDC
	Settings incorrect for Range	Use Titan Interface software to range the analog output flow min and max points
Titan Interface Software Opens but shows not connected to meter (no spinning bars in bottom left of screen)	Two windows of the Interface Software are open	Either drag window out of the way or close second window using task bar

	and second window is masking connected window	
	Damage to USB Connection	Return to Titan Enterprises for repair
Titan Interface Software is not showing all Tabs (User Settings; Flow Details; Advanced; Datalogging)	Software is placing the tab window outside the monitor area	Go to View on the top bar menu and click Restore Defaults. This restores the Viewing defaults and re docks all tabs to the main window