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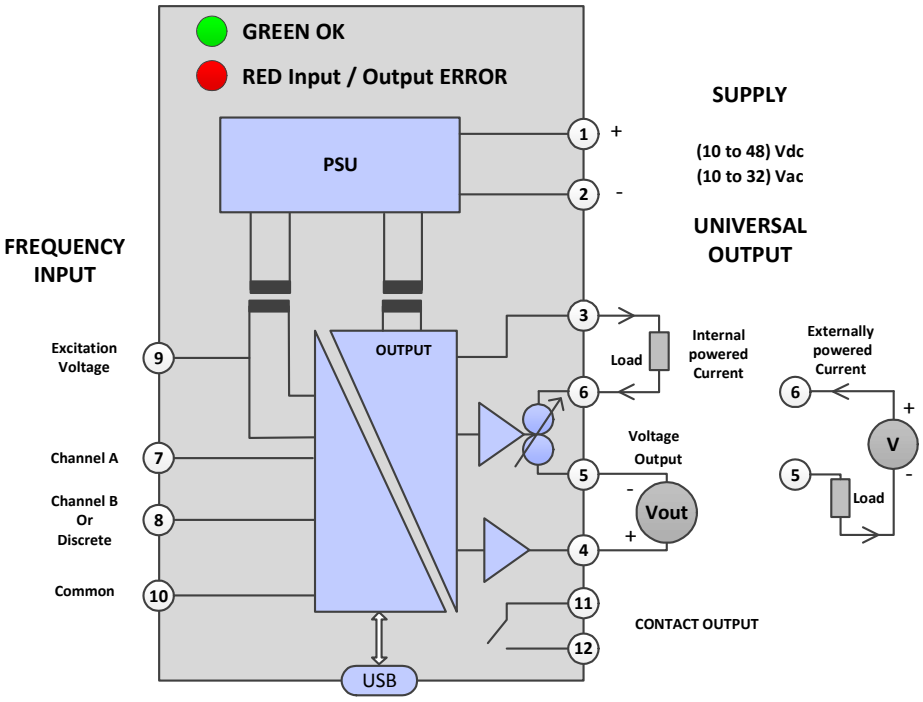
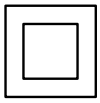
Tel : +34 933 394 758 Technical Support: support@ditel.es

KOS1600F PULSE/FREQUENCY/CONDITIONER USER GUIDE





Important Safety Information

1. FOR FURTHER INFORMATION CONTACT SUPPLIER - REFER TO THE PRODUCT LABEL FOR MANUFACTURERS CONTACT DETAILS.
2. The safety of the system incorporating this device is the responsibility of the assembler of the system.
3. This product is suitable for environment Installation category II pollution degree. The product is classed as "PERMANENTLY CONNECTED EQUIPMENT", and must be DIN rail mounted, inside a suitable enclosure providing environmental protection to IP65 or greater.
4. Dc/Ac supply must be derived from a local supply and not a distribution system.
5. To maintain CE EMC requirements, input and supply wires must be less than 30 metres. The unit provides isolation between input output and supply. To maintain CE compliance the output and supply ports must be connected to a circuit which is grounded (earthed) at one point. We also recommend if possible, that the input port is also earthed at one point.
6. Please be aware the USB port primary use is for configuration use only with the device not connected. It is possible to use this port for diagnostic, but the user must be aware the port shares the same common as the input port, therefore we recommend the use of a battery powered computer when interfacing with a live device.
7. The product contains no serviceable parts, or internal adjustments. No attempt must be made to repair this product. Faulty units must be returned to supplier for repair.
8. This product must be installed by a qualified person. All electrical wiring must be carried out in accordance with the appropriate regulations for the place of installation. Before attempting any electrical connection work, please ensure all supplies are switched off.
9. Every effort has been taken to ensure the accuracy of this document, however we do not accept responsibility for damage, injury, loss or expense resulting from errors and omissions, and we reserve the right of amendment without notice.

ABSOLUTE MAXIMUM CONDITIONS (To exceed may cause damage to the unit):-

Supply Voltage	± 50 V dc, ±32 V ac (Protected for over voltage and reverse connection)
Current with over voltage	± 200 mA
Input Voltage	± 50 VDC, 35 V rms between any terminals
Input Current	± 100 mA between terminals
Ambient	Temperature (-30 to 70) °C Humidity (10 to 95) % RH (Non condensing)

RECEIVE AND UNPACKING

Please inspect the packaging and instrument thoroughly for any signs of transit damage. If the instrument has been damaged, please notify your supplier immediately.

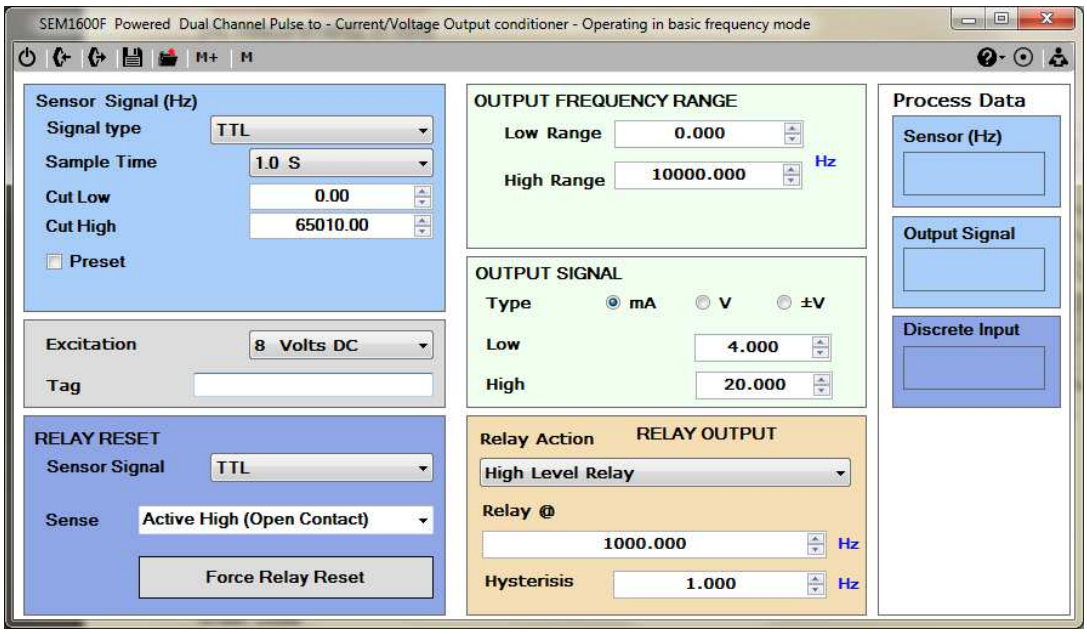
OPERATION MODES

This device has three different modes of operation. The required mode is selected by the user during configuration via the device USB port using USBSpeedLink software. The three modes are as follows:-

Basic Frequency

Operation

- Basic frequency mode offers a single channel frequency to output signal isolated converter with relay or pulse output.
- The second input can be used to reset the relay.
- No process scaling provided, all ranges are set in Hz.
- Three output signal options are provided, mA, Volts and ±Volts. A typical configuration screen is shown below.



Advanced Frequency Mode

Operation

- Dual channel input with rate totalise maths functions relay and process signal.
- Single channel with rate totalise maths functions relay and process signal. Multi function discrete input.

Functions

Frequency Input(s)

- Frequency -Range (0 to 65000) Hz.
- Signal - TTL, mV, NPN, PNP, Contact, mA, preset. Sensor Excitation voltage 8V or 15 V.
- Functions - Cut low, cut high, preset.

Discrete Input (Single channel Mode only)

- Signal - TTL, mV, NPN, PNP, Contact, mA, preset.
- Sense - Active low or active high
- Reset Actions - total A, Batch, Relay.
- Count Actions - Off, Count Up/halt, Count Down/halt, Count up/Count Down.

Rate

- Two point scaling
- K factor scaling with optional meter factor correction (2 to 15) points.
- Rate units.

Total

- Up Down and halt modes are software or discrete input controlled.
- Scaling - user set time base, divisor and factor variable. Units
- Reset - user set up reset count, down reset count, reset to count.

Functions (Dual channel only) rate

- Rate - Four maths functions acting on rate A and rate B , A+B, A-B, Highest (A or B), lowest (A or B).
- Total - Four maths functions acting on Total A and Total B , A+B, A-B, Highest (A or B), lowest (A or B).

Relay (Dual channel mode)

- Relay Actions - High Level, Low Level, Latched High Level, Latched Low Level,
- Relay Source - Rate A, Rate B, Total A, Total B, Rate Function, Total Function.
- Settings - User configured set point and hysteresis .

Relay (Single channel mode)

- **Relay Actions – High Level, Low Level, Latched High Level, Latched Low Level,**
- **Relay Source – Rate A, Total A.**
- **Settings – User configured set point and hysteresis .**

Pulse Output (Dual channel mode)

- **Pulse Actions - Pulse (Total A), Pulse (Total B).**
- **Settings – User configured Set point and pulse duration.**

Pulse Output (Single channel mode)

- **Pulse Actions - Pulse (Total A).**
- **Settings – User configured Set point and pulse duration.**

Process Output (Dual channel mode)

- **Source – Rate A, Rate B, Total A, Total B, Rate Function, Total Function.**
- **Settings – User configured range.**

Process Output (Single channel mode)

- **Source – Rate A, Total A.**
- **Settings – User configured range.**

Output Signal

- **Action – mA full range (0 to 20) mA, Volts full range (0 to 10) V, Bipolar volts full range ± 10 V.**
- **Settings – User configured range. example (4 to 20) mA, (1 to 5) V, (-5 to 5) V.**

Tag Number

- **User set 6 character tag number.**

Batch counter

- **Batch counter for diagnostics use. The batch counter will record the number of times the pulse relay has activated**

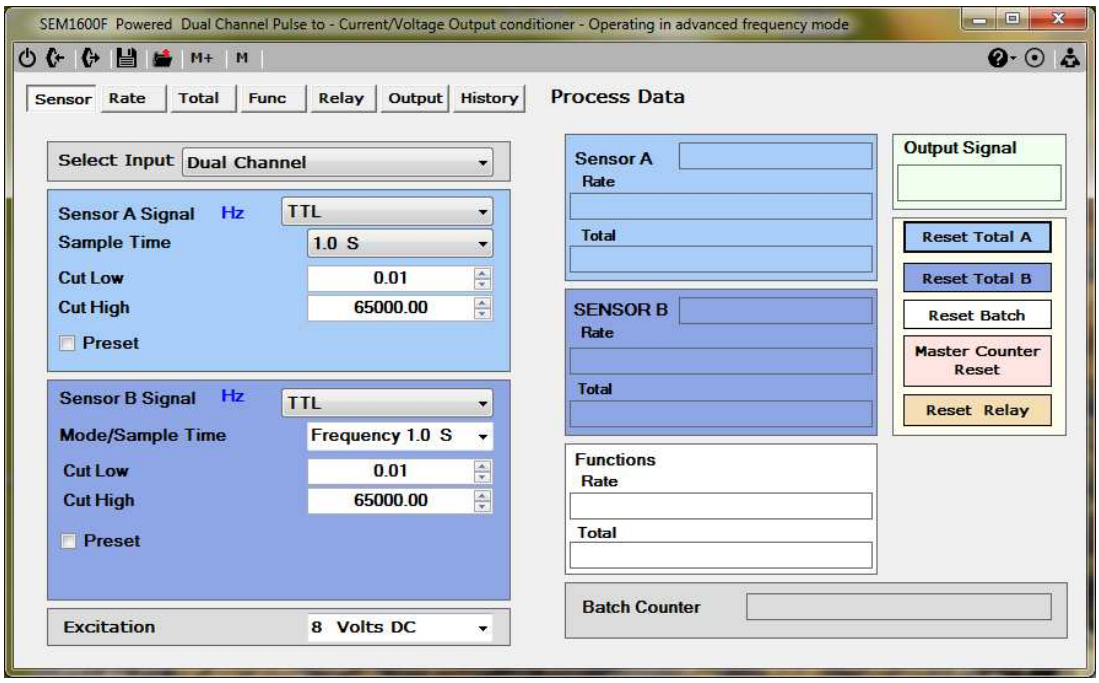
History

- **Data available – Power ups, operating time, meter operating time, max frequency.**
- **Reset – History reset with low level password.**

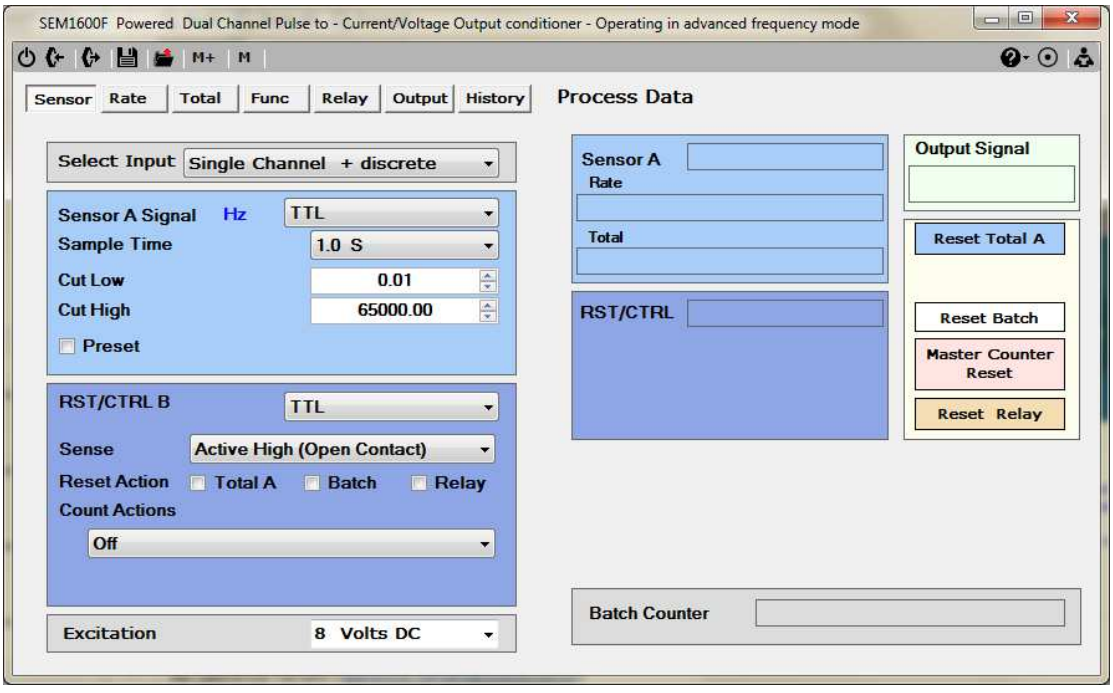
Live Data

- **Data - Frequency, rate, total, functions, discrete state, output signal, batch counter, record data.**

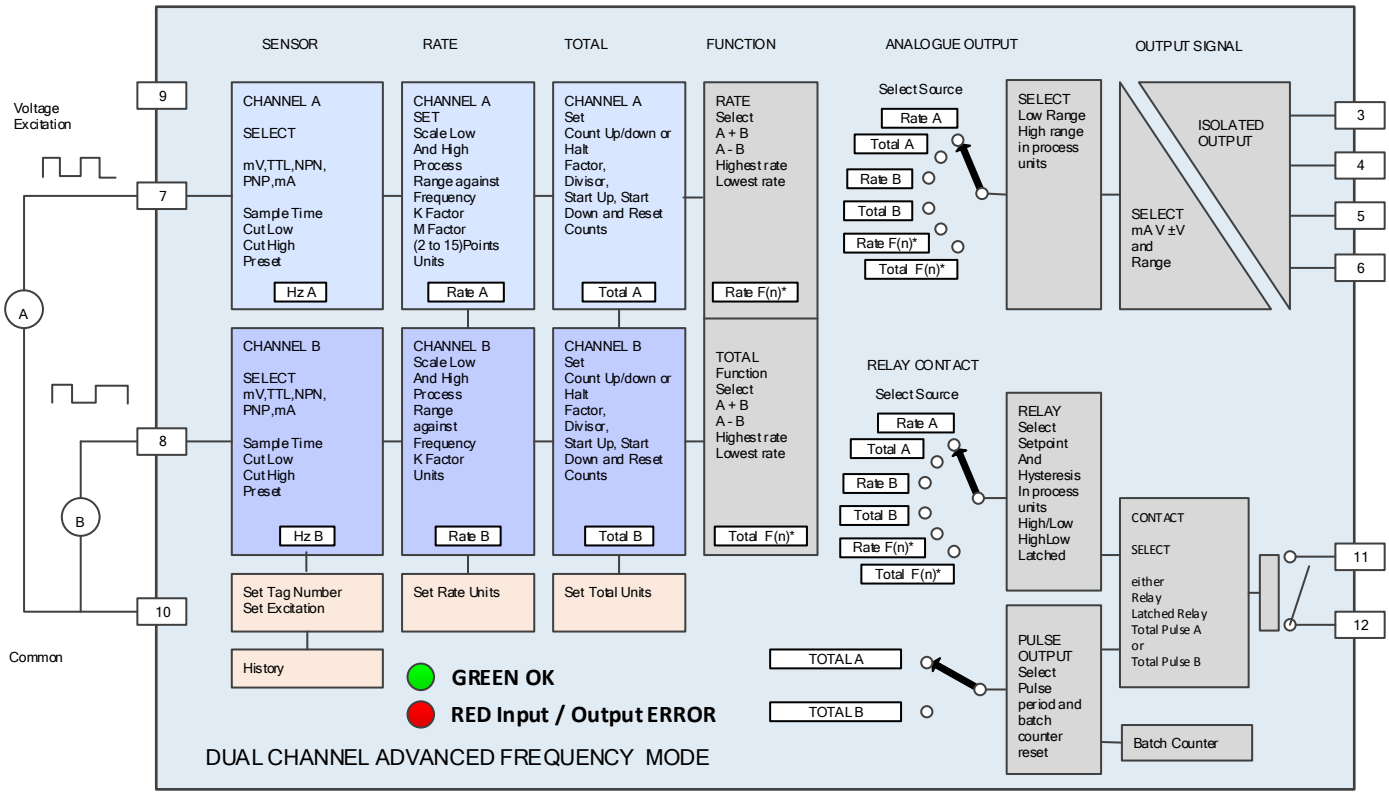
Advanced Frequency Configuration Screen Dual Channel



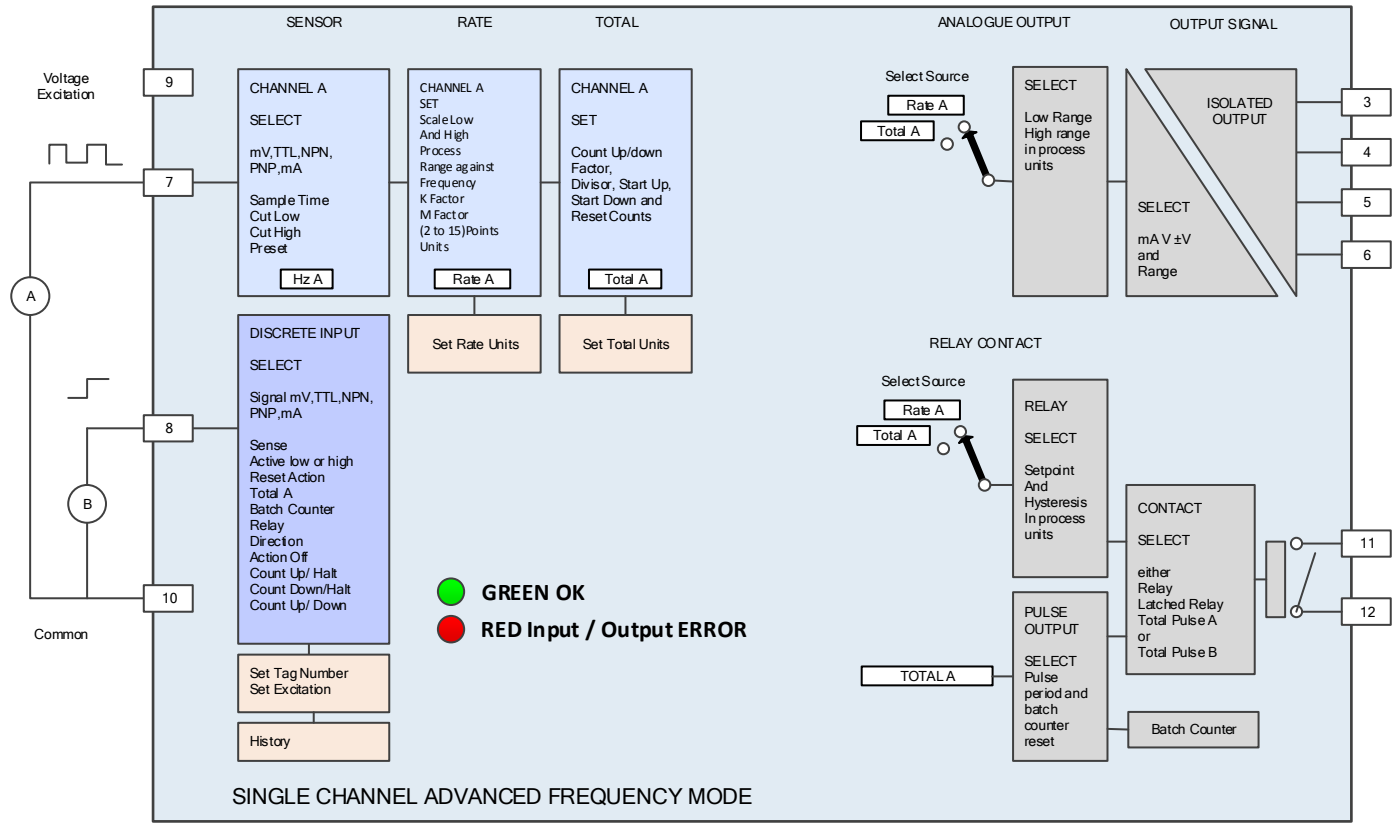
Advanced Frequency Configuration Screen Single Channel



Advanced Frequency Block Diagrams.



F(n) *= Maths Function



Counter Mode

Operation

- **Dual channel input with totalise maths functions relay and process signal.**
- **Single channel with totalise relay and process signal. Multi function discrete input.**

Count Input(s)

- **Rate (dc to 1000) Hz.**
- **Signal - TTL, mV, NPN, PNP, Contact, mA, Preset.**
- **Sensor Excitation voltage 8V or 15 V.**

Discrete Input (Single channel Mode only)

- **Signal - TTL, mV, NPN, PNP, Contact, mA, preset.**
- **Sense – Active low or active high**
- **Reset Actions - total A, Batch, Relay.**
- **Count Actions – Off, Count Up/halt, Count Down/halt, Count up/Count Down.**

Total

- **Up Down and halt modes are software or discrete input controlled.**
- **K Factor scaling. Units.**
- **Reset – user set up reset count, down reset count and reset to count.**

Functions Dual channel only rate

- **Total - Four maths functions acting on Total A and Total B, A+B, A-B, Highest (A or B), lowest (A or B).**

Relay (Dual channel mode)

- **Relay Actions – High Level, Low Level, Latched High Level, Latched Low Level,**
- **Relay Source –Total A, Total B, Total Function.**
- **Settings – User configured set point and hysteresis.**

Relay (Single channel mode)

- **Relay Actions – High Level, Low Level, Latched High Level, Latched Low Level,**
- **Relay Source – Total A**
- **Settings – User configured set point and hysteresis.**

Pulse Output (Dual channel mode)

- **Pulse Actions - Pulse (Total A), Pulse (Total B).**
- **Settings – User configured Set point and pulse duration.**

Pulse Output (Single channel mode)

- **Pulse Actions - Pulse (Total A).**
- **Settings – User configured Set point and pulse duration.**

Process Output (Dual channel mode)

- **Source –Total A, Total B, Total Function.**
- **Settings – User configured range.**

Process Output (Single channel mode)

- **Source – Total A.**
- **Settings – User configured range.**

Output Signal

- **Action – mA full range (0 to 20) mA, Volts full range (0 to 10) V, Bipolar volts full range ±10V.**
- **Settings – User configured range. example (4 to 20) mA, (1 to 5) V, (-5 to 5) V.**

Tag Number

- **User set 6 character tag number.**

Batch counter

- **Batch counter for diagnostics use. The batch counter will record the number of times the pulse relay has activated**

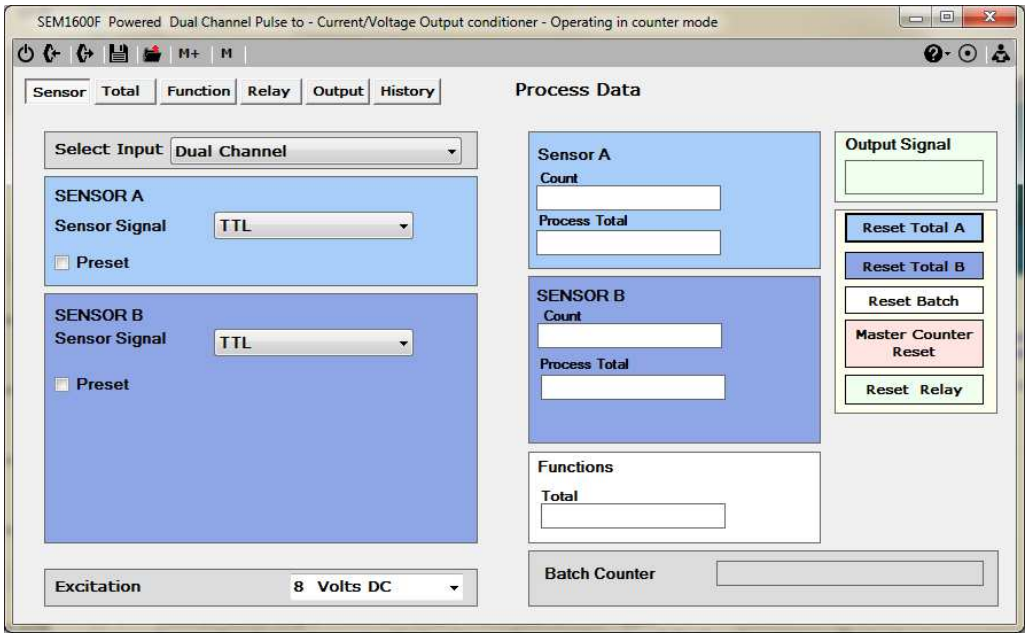
History

- **Data available – Power ups, operating time. Reset – History reset with low level password.**

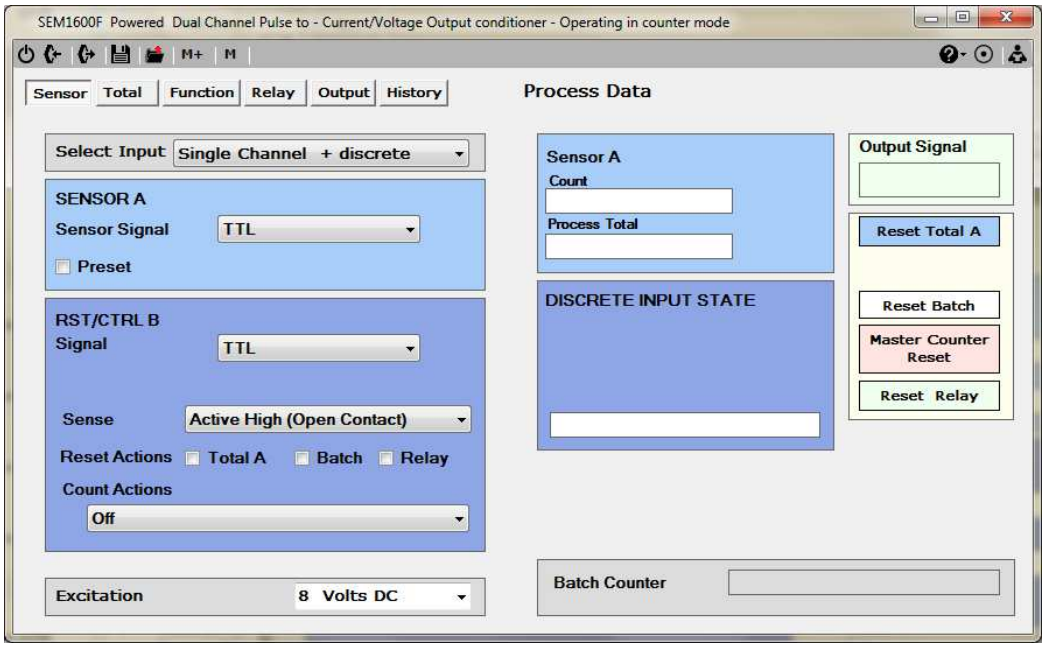
Live Data

- **Data - Count, total, functions, discrete state, output signal , record data.**

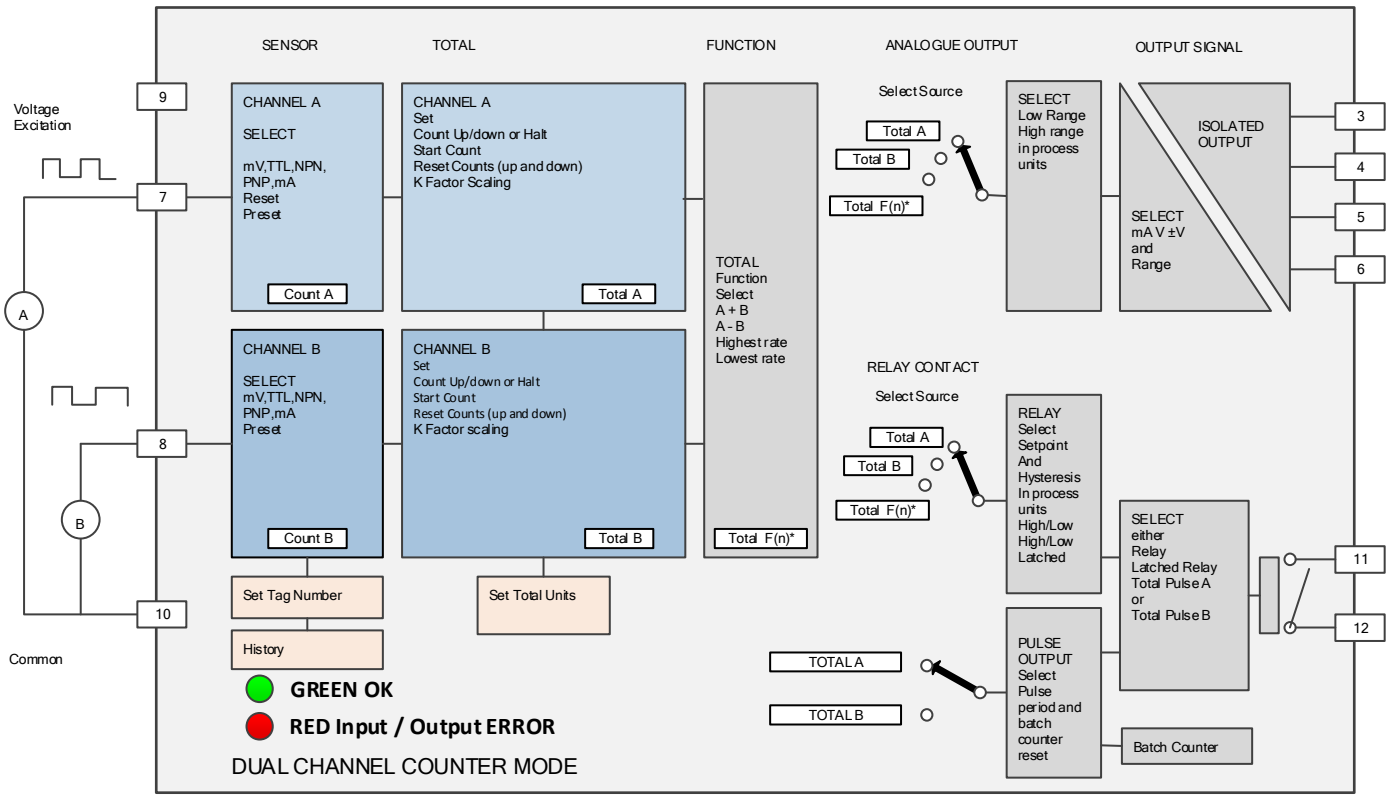
Count Mode Configuration Screen Dual Channel



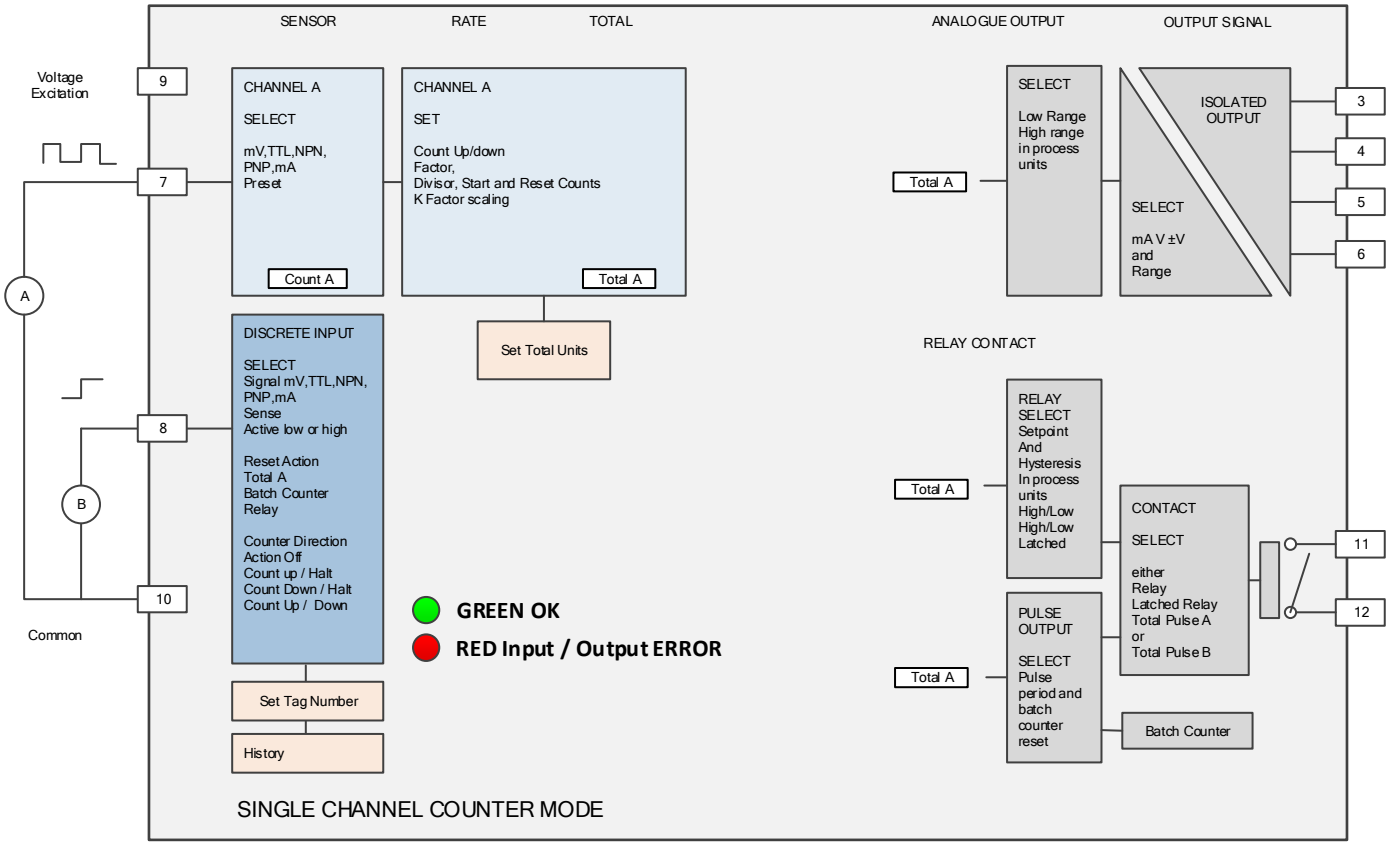
Count Mode Configuration Screen Single Channel



Counter Mode Block Diagrams

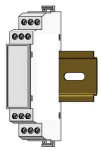


F(n) *= Maths Function



CONFIGURATION



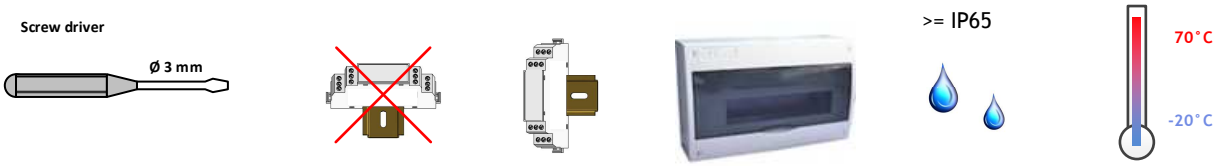


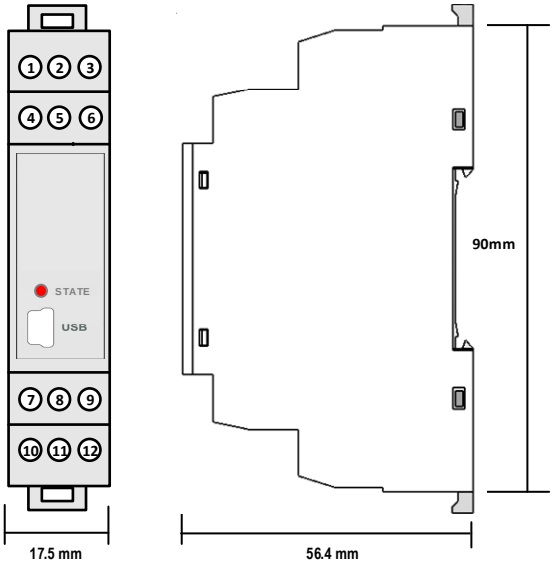
The product is configured by connecting to the USB port of a PC running USBSpeedLink software V 2.0.4 or later. The USBSpeedLink software is available from your supplier's web site. Your PC will need to be running windows version XP or later.
During configuration the product is powered direct from the USB port, removing the need for additional power. If the user wishes to monitor live process data during configuration, then powered must be applied. Note the input and USB port of the device share the same common therefore care must be taken to ensure isolation between PC and input circuit. This is best achieved by using a battery powered PC.

USBSpeedLink software is provided with detailed help, please click the Help button on the software menu bar to open.

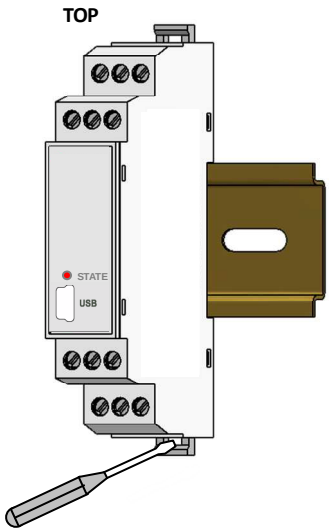
MECHANICAL INSTALLATION

MOUNTING





Style	DIN 43880 (1 module width)
Material	Polyamide 6.6 self extinguishing
Terminals	Screw terminal
Cable	2.5 mm Max
Colour	Grey



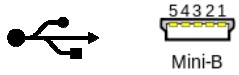
To fit or release module
Insert screw driver into slot and lever latch away from body

ELECTRICAL INSTALLATION

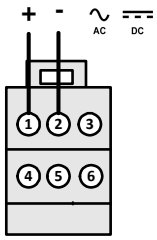
⚠ TURN POWER OFF BEFORE ANY WIRING.

Overview

Screw Terminals	2.5 mm Max
Universal Supply	Terminals (1 & 2)
mA Output	mA source (3 & 6), mA Sink (5 & 6)
Voltage Output	(4 & 5)
Input Common	10
Input A	7
Input B	8
Excitation Voltage	9
Relay Contact	(11 & 12)
Configuration Port	Mini B USB
State LED	Green = Output Signal in range (-0.1 to 100.1) % Red = Input / Output error.

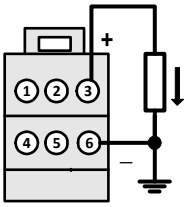


Universal Supply



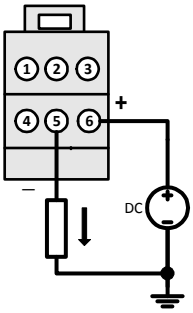
Type	Local supply
dc Supply	(10 to 48) V dc
ac Supply	(10 to 32) V rms ac
Power	< 1 VA
Protection	Over Voltage with internal 0.5 A self reset fuse.
Cable Run	< 30 Metres to maintain CE compliance.
Cable Requirements	-

mA Source Output



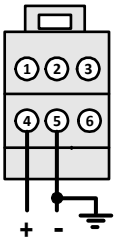
Type	Current signal, device powered.
Range (full)	(0 to 20) mA
Max Load	750 R
Max Range	21.5 mA
Protection	Over voltage > 33 V
Cable Run	< 1000 Metres Loop must be earthed at one point.
Cable Requirements	Twisted pair or screened cable.

mA Sink Output



Type	Current signal with external power.
Range (full)	(0 to 20) mA
Loop Supply	(10 to 30) V dc
Max Range	21.5 mA
Protection	Over voltage > 33 V
Cable Run	< 1000 Metres Loop must be earthed at one point.
Cable Requirements	Twisted pair or screened cable.

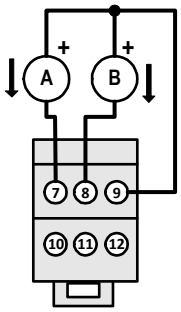
Voltage Output



Type	Voltage or bipolar voltage
Range (full)	(0 to 10) V dc or ±10.0 Vdc
Max Load Current	± 5 mA
Max Range	10.5 mA
Min Range	0 V or -10.5 V
Protection	Over voltage > ±15 V
Cable Run	< 30 Metres Loop must be earthed at one point.
Cable Requirements	Twisted pair or screened cable.

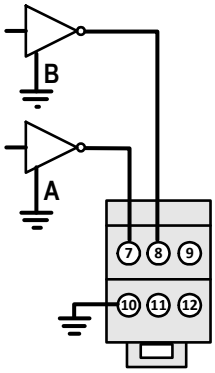
mA Input

Type	mA
Low Trigger	< 1.2 mA
High Trigger	> 2.1 mA
Excitation	8 or 15 V ± 0.5 V dc @ 25 mA
Impedance	1 K ohm
Protection	Over voltage > ±40 V
Cable Run	< 30 Metres.
Cable Requirements	Twisted pair or screened cable.



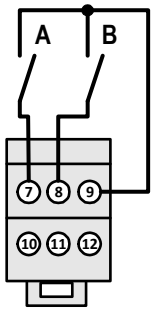
TTL Input

Type	Digital
Low Trigger	< 1.0 V
High Trigger	> 2.0 V
Impedance	100 K ohm
Protection	Over voltage > ±40 V
Cable Run	< 30 Metres.
Cable Requirements	Twisted pair or screened cable.



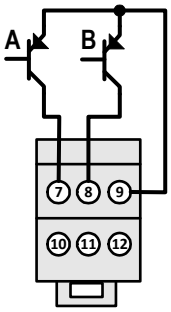
Volt Free Contact Input

Type	Volt free contact
Excitation Current	9 mA @ 8v Excitation, 16 mA @ 15 V excitation
Low Trigger	< 1.2 mA
High Trigger	> 2.1 mA
Impedance	1 K ohm
Protection	Over voltage > ±50 V
Cable Run	< 30 Metres.
Cable Requirements	Twisted pair or screened cable.



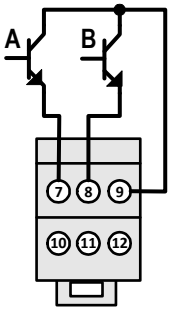
PNP Input

Type	PNP transistor
Contact Current	9 mA @ 8v Excitation, 16 mA @ 15 V excitation
Low Trigger	< 1.2 mA
High Trigger	> 2.1 mA
Impedance	1 K ohm
Protection	Over voltage > ±50 V
Cable Run	< 30 Metres.
Cable Requirements	Twisted pair or screened cable.



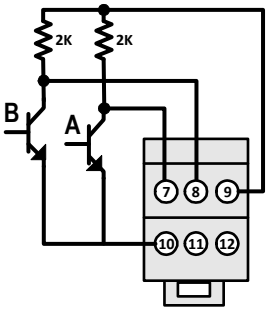
Isolated NPN Inputs

Type	Floating NPN transistor floating
Contact Current	9 mA @ 8v Excitation, 16 mA @ 15 V excitation
Low Trigger	< 1.2 mA
High Trigger	> 2.1 mA
Impedance	1 K ohm
Protection	Over voltage > ±50 V
Cable Run	< 30 Metres.
Cable Requirements	Twisted pair or screened cable.



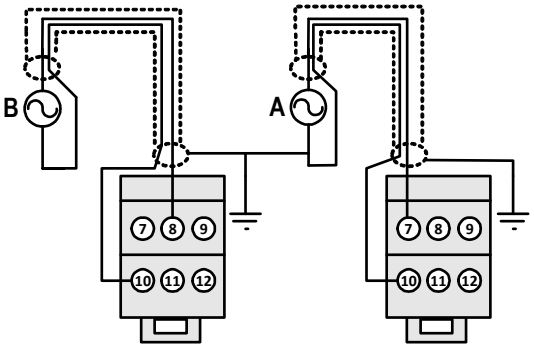
NPN Inputs

Type	NPN transistor
Low Trigger	< 1.0 V
High Trigger	> 2.0 V
Impedance	100 K ohm
Protection	Over voltage > ±50 V
Cable Run	< 30 Metres.
Cable Requirements	Twisted pair or screened cable.

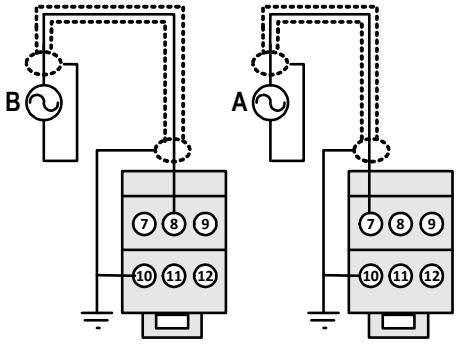


mV (Tacho) Input

Type	**Analogue**
Low Trigger	**< 100 mV**
High Trigger	**> 200 mV**
Impedance	**100 K ohm**
Protection	**Over voltage > ±50 V**
Cable Run	**< 30 Metres.**
Cable Requirements	**Screened Cable**



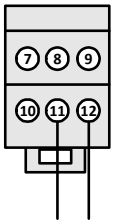
Screened cable



Single core screened cable

Contact

Type	**Volt free**
Max Voltage	**24 V dc**
Max Current	**0.5 A (resistive)**
Cable Run	**< 30 Metres.**
Cable Requirements	**-**



IMPORTANT SERVICE INFORMATION

- **The device contains no user serviceable parts. Please return any faulty devices to your supplier for repair or calibration.**
- **If installed correctly this device will never require cleaning. If cleaning is required use a cloth damped with mild water based detergent mixture.**

Fault finding

When using this device if possible we advise the user bench tests the system prior to installation. The USBSpeedLink diagnostics tool will assist in this operation. The following notes are aimed at helping the user overcome many of the common pitfalls of installation.

- **Always insure all wiring is correct before applying power. The device can be powered without input or output connections. To ensure the supply is connected correctly, check for red or green STATE led, ensure USB is disconnected as the USB port will also powers the device. In the event of the supply exceeding the specified limit the devices fast protection circuit will cut in, shutting down the device. Care must be taken to ensure the supply is clean and no voltage spikes are present.**
- **If the input sensor signal is not detected by the device check the correct signal type has been set in the configuration software. If available use an oscilloscope to view the sensor signal and ensure the low and high thresholds are being exceeded.**
- **If the output signal is incorrect, try removing the monitor system and directly connect a current or voltage meter. The most common problems with current loops are :-**
  - **Open circuit or high impedance connections.**
  - **More than one grounded devices in the same loop.**
  - **The loop burden is too high for the device or in sink mode the external supply.**