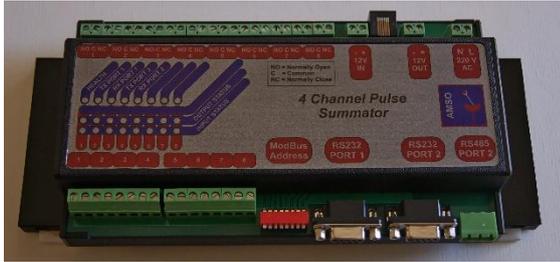


## Programmable Pulse Summator

### Brief Description



The 4 Channel Pulse Summator is designed to add up to 4 pairs of input pulses. The pulse weight for each input and output can be programmed individually. In case of electromechanical input pulses a programmable debounce for the inputs are provided.

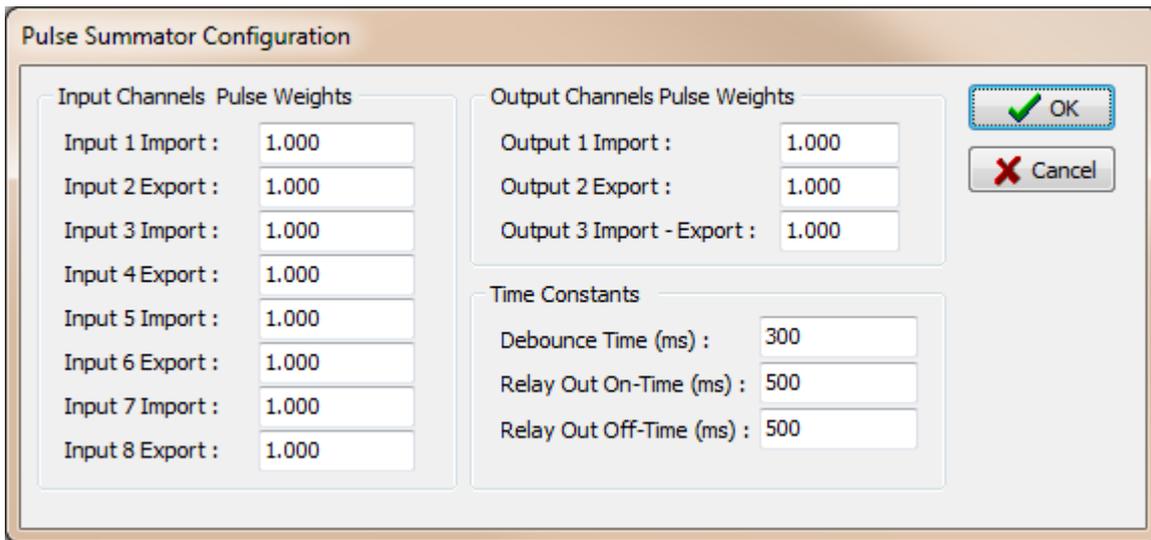
The output pulse duration of the 3 relay outputs are adjustable within the range of 50 ... 2000ms. This duration can be specified in terms of a minimum on and a minimum off time. The device is able to buffer output pulses for each output.

### Pulse Summation Algorithm

The 4 uneven inputs (1,3,5,7) will be summed at output1 and the 4 even inputs (2,4,6,8) will be summed at output 2. The difference between output1 and output2 will be summated at output3. (output1 – output2) output 3 will only be active if the output rate of output 1 is higher than the rate of output 2. The user can program the weight of each of the input pulses as a floating point number. The desired output pulse weight can be programmed for each of the 3 outputs. In a typical situation the 4 uneven inputs will be used for kWhr (import) pulses and the 4 even inputs will be used for the kVarhr or kVAhr pulses or kWhr (export) pulses.

### Software and Programming

Pulse weights and debounce times for each of the channels can be programmed with the provided Genlog Software. In the Genlog program click on the Configuration icon. The following screen will appear allowing the user to program the relevant parameters.



The pulse weights as programmed by the user does not have a unit connected to it, it is the responsibility of the user to determine the unit of the pulse. Pulse weights are typically programmed in either Whr per pulse or Varhr / VAhr per pulse.

## Connection diagrams

To connect the output of the pulse summator to the input of a Phoenix solid state relay see the following diagram. Connect the positive terminal of the PSU to the A1+ terminal of the solid state relay. (Red Wire) Connect the negative terminal of the PSU to the negative terminal of the 12V IN terminal on the pulse summator. (Black Wire) Connect the A2- terminal of the solid state relay to the C (common) terminal of the output terminal on the pulse summator. (Green Wire)

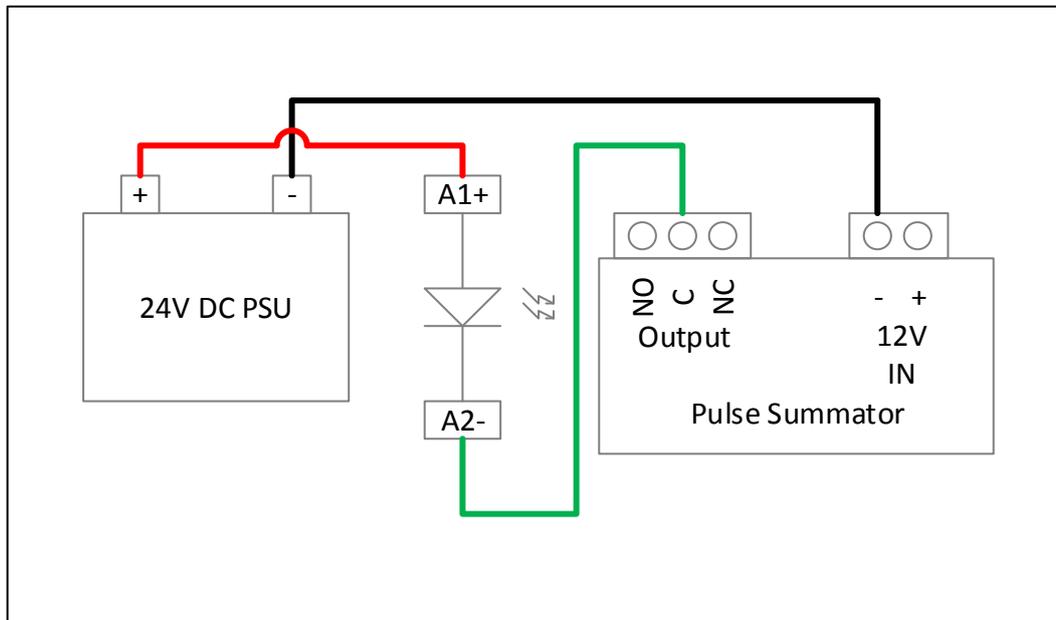


Figure 1: Connecting the pulse summator output to a Phoenix solid state relay.

To connect the input of the pulse summator to the output of a solid state relay see figure 2. In general the input of the pulse summator is the diode of an opto-coupler, where the left terminal of the input is referenced to the internal ground and the right terminal is the cathode of the diode. As shown in Figure 2 the collector (Pin 11) of the output must be connected to the rightmost terminal (red wire) and the emitter (Pin 14) of the output must be connected to the leftmost terminal (blue wire) of the pulse summator.

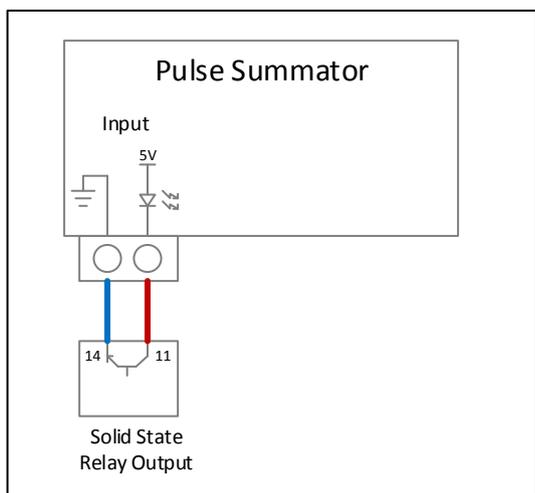


Figure 2: Connecting a solid state relay output to the pulse summator input.

## Technical Specifications

|   |   |
|---|---|
| Input Channels:                           | 8   |
| Output Channels:                          | 3   |
| Max Input Frequency:                      | 5Hz (Depending of input debounce time)                    |
| Max Output Frequency:                     | 5Hz (Depending on minimum on/off time)                    |
| Minimum Input Pulse Duration:             | 10ms  |
| Input Power Supply:                       | 85 – 250V AC  |
| Adjustable Input Debounce Time:           | 20 - 2000ms   |
| Adjustable Output Pulse Minimum On Time:  | 100 - 1000ms  |
| Adjustable Output Pulse Minimum Off Time: | 100 - 1000ms  |
| Output Type:                              | Open Collector (On common terminal)                       |
| Input Type:                               | Zero Potential Normally Open (Dry Contacts) or Transistor |
| Communication:                            | RS232 & RS485 @ 9600 Baud                                 |
| Communication Protocol:                   | ModBus RTU  |
| Available Registers:                      | Input 1 – 8 Count, Output 1 – 3 Count                     |
| Register Type:                            | 32 bit holding registers mapped over first 22 registers   |
| Maximum count before wrap:                | 4 000 000 000   |
| Dimensions:                               | 115mm x 200mm x 45mm (H x W x D)                          |