

# **PULSE SUMMATOR**

Type 112-60

**User Guide**

Continuous development may necessitate  
changes in these details without notice

Document Ref: UD112-60 Rev 0



**PROCESS MEASUREMENT, CONTROL & DISPLAY INSTRUMENTATION**

**STROUD INSTRUMENTS LTD**

36-40 Slad Road, Stroud, Gloucestershire GL5 1QW England

Tel: +44 (0)1453 765433 Fax: +44 (0)1453 764256

sales@sil.co.uk <http://www.sil.co.uk>



## **WARNING!**

**It is important that this guide is read and fully understood before attempting installation or commissioning of the instrument.**

**Instructions appearing in this document, and current safety legislation, must be observed to ensure personal safety and to prevent damage to the instrument or equipment connected to it.**

**The instrument should be installed, commissioned and operated *only* by suitably qualified and authorised personnel.**

## **Safety and EMC information**

Safety: EN61010 -1

Immunity: EN50082-1

Emissions: EN50081-1

CE certified



The specifications for the instrument must not be exceeded. If the instrument is used in a manner not specified, the protection provided by the instrument may be compromised.



The instrument must be installed in an enclosure that provides adequate protection against electric shock.



Ensure that power to the instrument is switched off and signal wiring isolated from hazardous voltages before carrying out installation or maintenance.



The instrument is designed for installation in a clean, dry environment (Pollution degree 1).



Stroud Instruments Ltd strongly recommends that repairs and re-calibration work are done on a return to factory basis in order that our quality standards, product specifications and safety precautions are not compromised.



The instrument is double insulated

Note: Clean with a moist cloth - USE NO SOLVENTS.

# Installation



**WARNING:** Installation should be conducted by appropriately skilled and authorised personnel only.



**WARNING:** Ensure that power to the instrument is switched off and signal wiring isolated from hazardous voltages before carrying out installation.



**WARNING:** The instrument must be installed in an enclosure that provides adequate protection against electric shock.

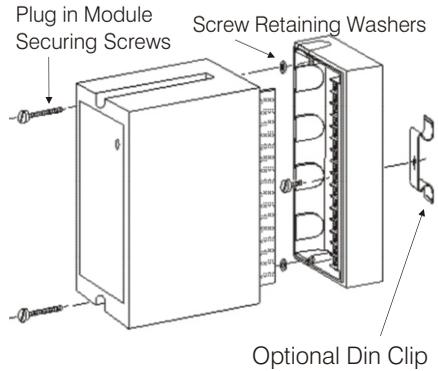
## Location

- The instrument is designed for installation in a clean, dry environment
- Do not install near to switch gear, motor controllers or other sources of strong magnetic fields.
- Avoid exposure to direct sunlight and ensure the ambient temperature inside the enclosure that the unit is mounted in will not exceed our specification.

## Fixing

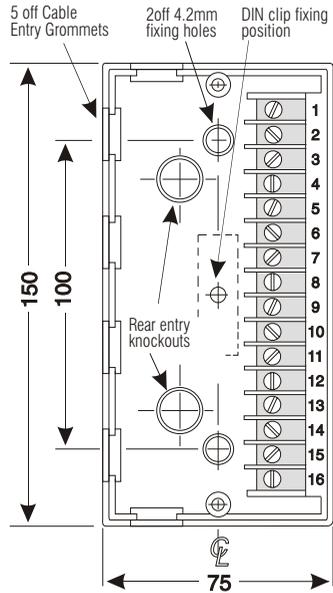
112 Series Modules are designed to be fitted to any flat dry surface using two 4mm screws. Alternatively, by fitting an optional DIN clip, they may be clipped to a rail conforming to BS5584:1978, EN50 022, DIN46277-3.

Grommets are provided on three sides of the base section and there are two rear entry knock outs in the bottom.



## Dimensions in mm

Module height 106mm



## Wiring and connections

- Segregate power supply and signal wiring.
- Use screened cable for all signal wiring with the screen earthed at instrument end only.
- All connections should be made using ferrules.

Screw terminals are provided - wire capacity 2 x 1.5mm<sup>2</sup>

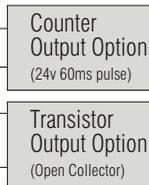
## Terminal connections

### Inputs

- 1 Input A (+)
- 2 Input A (-)
- 3 Input B (+)
- 4 Input B (-)
- 5 Input C (+)
- 6 Input C (-)
- 7 Input D (+)
- 8 Input D (-)
- 9 Input E (+)
- 10 Input E (-)

### Outputs

- 11 + V
- 12 Output
- 13 Output COM



### Supply

|            |              |        |
|------------|--------------|--------|
| 14 Earth   | Earth        | DC     |
| 15 Neutral | Negative (-) | Supply |
| 16 Line    | Positive (+) | Option |

## Subtractor Option Outputs

- 11 SUBTRACT Output
- 12 ADD Output
- 13 O/P Com

## Access to Terminals



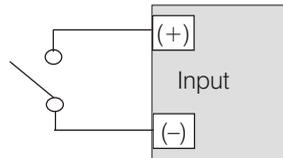
**WARNING:** Ensure that power to the instrument is switched off and signal wiring isolated from hazardous voltages

Loosen the two module securing screws. *(NB these screws are retained in the top section by captive washers).* Gently pull away the top section of the module from its base to expose the fixing points and wiring terminals. To refit the module, align the module edge connectors with the socket in the base and carefully press home. **NB** do not over tighten the module securing screws.

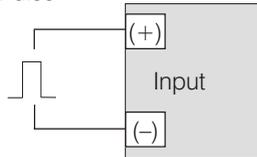
## Input Connections

NB The Pulse Summator is configured during manufacture to suit the application specified. A change in the type of input will require a return to factory for re-configuration.

### Volt-free contact



### 24V Pulse

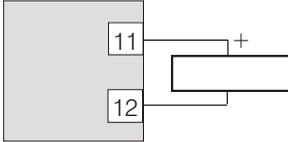


**Please note: Options available are those specified at time of order**

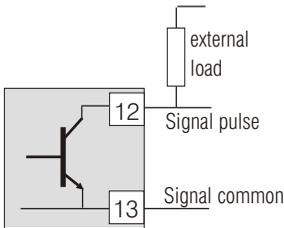
## Output connections

NB The Pulse Summator is configured during manufacture to suit the application specified. A change in the type of output will require a return to factory for re-configuration.

### EM Counter



### Open collector



## Power supply connections

This instrument is supplied in *one* of two power supply versions.

1. AC mains supply: 110, 220 or 240 VAC  $\pm 10\%$  50/60Hz; 5VA
2. DC supply: 12, 24 or 48V -10% to +20%; 3.5W



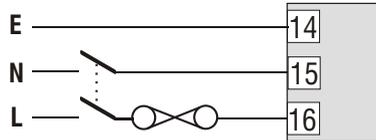
**WARNING:** Check that the supply voltage on the data label (on side of instrument) is suitable for the application.



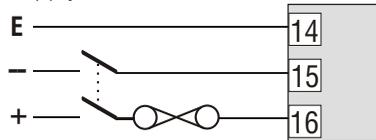
**WARNING:** Ferrules must be used for AC mains power wiring

Power supply wiring to the instrument should be protected by a suitable fuse and double pole switch - see below. The switch should be clearly marked as the isolating switch for the instrument.

### AC Mains



### DC supply



### Please note:

The unit cannot be changed by the user from one type of power supply version to another (e.g. AC to DC). This conversion can only be done on a return to factory basis.

# Fuse replacement and changing AC supply voltage

## Gaining access to power supply



**WARNING:** Switch off all supplies and isolate signal and other wiring from dangerous voltages before proceeding.

Remove plug-in module as described on page 3 - "Access to Terminals"

The plate with the terminal connections label can now be removed by easing apart the longer sides of the module to release the interlocking tongue and groove. Note the location of the printed circuit board which must be replaced in the same position. Slide out the board.

base section and secure with the two captive screws provided.

## Supply Voltage

Mains powered units can be adapted for operation on 110V, 220V or 240V supplies. Fig 1 provides details of the required link settings which are effected by soldered tinned copper wire links.



**WARNING:** Links for 110V operation must be insulated with silicon rubber sleeving.

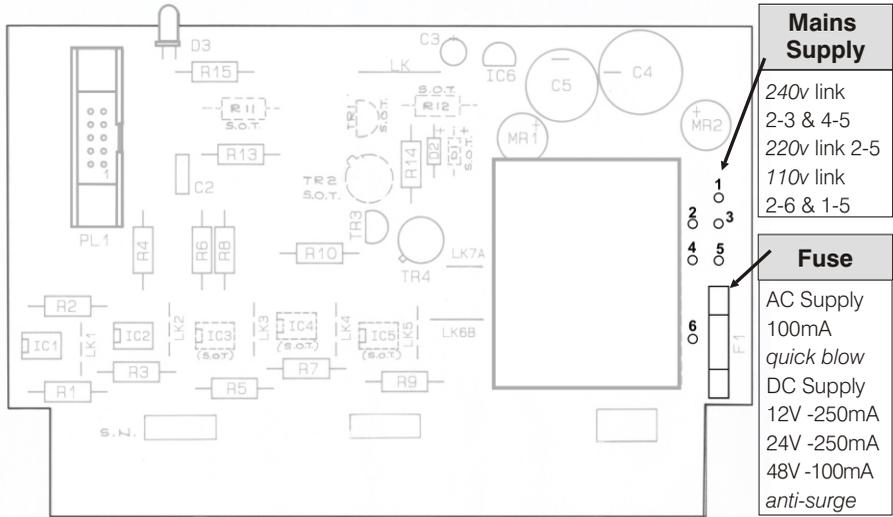
*NB: DC powered units are an option specified at the time of ordering and have no facilities for changing the operating supply voltage.*

## Re-assembly

Re-check your link selections.

Replace the printed circuit board into the case ensuring that it is located in the slot under the LED indicator window. Replace the bottom plate by first engaging the side with the two tongues into the slots in the case and then press the plate home to engage the side with the single tongue. Plug the reassembled module into the

**Fig. 1 Location of fuse and AC mains supply links**



# Specification

## INPUTS

- a) Standard input: 24Volt pulses, must source 10mA minimum.

*(Pulses of < 24 Volts can be accepted, provided that they can source 10 mA for each input).*

- b) Voltage-free Contacts

c) Other inputs may be possible e.g. Externally isolated TTL or CMOS signals.- please enquire  
*Note: The amplitude, frequency and pulse width of the input signals must be specified at the time of order.*

## ISOLATION

Standard inputs type a) above are isolated from each other and the output.  
Maximum Voltage 240 V RMS or 400VDC.

## INPUT FREQUENCY

The maximum permitted input frequency will depend on the number of inputs used and the required output pulse width. For an electro-magnetic counter output (60ms pulse), an output rate of 10Hz maximum is permitted. This gives a maximum of 1Hz per each of 5 inputs or 2.5Hz for 2 inputs. The relationship between input and output is given by the following formula:

$$\text{Output Rate} = \text{Maximum Input Rate} \times N \times 2$$

where N = the number of input channels.

NB: the output counter must be able to accept the output rate given by the above.

Higher input frequencies, giving a maximum output pulse rate of up to 5kHz (e.g. 2 inputs @ 1.25kHz or 5 inputs @ 0.5kHz), are available to special order.

## OUTPUT OPTIONS

*(the required type to be specified at time of ordering)*

- a) Open Collector Transistor  
b) Counter / 24Volt pulse of 60ms duration  
c) Subtractor option

## TEMPERATURE RANGE

Operating: -10°C to + 60°C

Storage: -20°C to + 70°C

## ACCURACY

Error ± 1 Output Pulse

## POWER SUPPLY

LED indication of power on.

### Standard AC:

110, 220 or 240V ±10% 50/60Hz; 5VA

Fuse (internal) 100mA quick-blow (20 x 5mm)

### Optional DC:

12, 24 or 48V -10% to +20%; 3.5W

Fuse (internal) 250mA anti-surge (20 x 5mm)

## WEIGHT

Approximately 0.6 kg

## SAFETY & EMC

Safety: EN61010-1

Emissions: EN50081-1

Immunity: EN50082-1

CE certified

Continuous development may necessitate changes in these details without notice.