



ANALOGUE SUMMATOR

Type B12-6

- Sum or subtract up to three inputs
- Performs averaging function with equal input ranges
- Scaling of process values
- High impedance output drive option
- AC or low voltage (11-32 VDC, 12-24VAC) powered versions
- Wall or DIN rail mounting
- Module unplugs without disturbing wiring or breaking input current loops
- Analogue circuitry used throughout

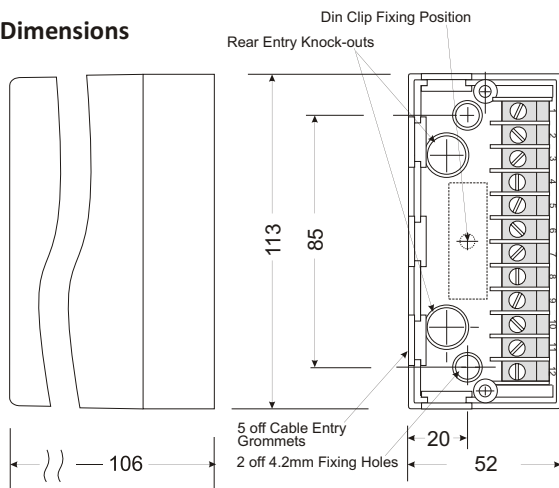
The B12-6 Analogue Summator will sum (or subtract) up to three analogue signals. The output signal, current or voltage, will be proportional to the sum or difference of the input signals. With equal input ranges, this unit will perform an averaging function.



The input signals may represent different ranges, e.g. Input A = 0-1000 m³/h, Input B = 0-1500 m³/h, and may be of different process signal types. Voltage and current, true or live zero, inputs may be summed to give either a true or live zero based, voltage or current output signal.

For current inputs, when the plug-in module is removed, signal loops are maintained via a base section mounted shunt resistor. This resistor is matched to the unit for optimum accuracy.

Dimensions



Information required when ordering

- Input signals (see specification overleaf)
- Percentage of output represented by each input at full scale or values of each input and the output in engineering units. Percentages or values for subtracting inputs should be specified as negative quantities.

Please note: During normal operation, inputs are required to be such that their sum (or difference) falls within the range of the output signal. In overrange, where input conditions require the output to exceed zero or fullscale, the output signal will be automatically limited to these values.

Example 1 (in percentages)

Input A = 4-20mA giving an output of 0 to +33.33%

Input B = 1-10V giving an output of 0 to +66.67%

Example 2 (in engineering units)

Input A = 4-20mA representing 0-1000m³/h

Input B = 1-10V representing 0-1500m³/h

Output = 4-20mA representing 0-2500m³/h

Example 3 (three input summator/subtractor)

Input A = 4-20mA giving an output of 0 to 70%

Input B = 4-20mA giving an output of 0 to 50%

Input C = 4-20mA giving an output of 0 to -20%

- Output signal (see specification overleaf)
- Supply voltage and frequency

Options

- High output drive required (mA outputs) ?
- DIN rail mounting clip required ?

Specifications

Notes:

1. Inputs and outputs, other than those shown are possible - our sales team will be pleased to advise
2. Input and output ranges are factory calibrated for one type of signal and not user configurable.
3. **All inputs must be able to share a common connection.** If they cannot be connected together, a Signal Isolator e.g. type B12-3 must be used to isolate the inputs.

Inputs

Current from 0-1mA to 0-30mA and Voltage from 0-1V to 0-250V. Typical inputs: 0-10mA (100R), 0-20mA (50R), 4-20 mA (62R), 0-5V, 1-5V, 0-10V, 2-10V (>200k)
Input impedances shown in brackets.

Function

kA ± kB ± kC = Output. (The output is always positive. The subtractor result must always be positive).

Input Signal No-break Loop Facility

mA input signal loops are maintained when the unit is unplugged from the base section.

Current Input Shunt Error

For current inputs, the summator is calibrated matched with the conditioning resistors mounted in the base section of the module. An error of ± 0.1% can be expected if the instrument is used with an unmatched input resistors.

Input Overrange Protection

Voltage Inputs: 250 volts RMS or DC, Current Inputs: 50mA

Outputs

0-10mA (2000R), 0-20 mA (1000R), 4-20 mA (1000R)
High impedance output drive options: 0-10mA (5000R), 0-20 mA (2500R), 4-20 mA (2500R) *Maximum output impedances in ohms shown in brackets.*
0-5v, 1-5V, 0-10V, 2-10V (500R minimum)
Current sink 4-20mA @ 50 volts max.

Isolation

The input and output are not isolated from each other but are isolated from the power supply.

Calibrated Accuracy

± 0.1% FSD at 100%

Linearity Error

± 0.1% FSD

Suppression / Elevation Error

± 0.1% FSD

Output Ripple

0.2% RMS of FSD

Load Resistance Effect

0.001% of span / 100 ohm change

Stability

Over 24 hours ± 0.1% FSD, Over 1 year ± 0.25% FSD

Interference Rejection

Filtering is incorporated to attenuate R.F. and other industrial noise.

Temperature Coefficients

Zero: ± 0.02% span / °C, Span: ± 0.02% span / °C

Environmental

Temperature: operating -10 to +60°C, storage -20 to +70°C
Humidity: 0 – 95% RH non-condensing

Power Supply

AC Supply: 110, 220 or 230V ±10% 50/60Hz 5VA

Fuse: 100mA quick-blow (internal)

Low voltage: 11-32VDC 4 W / 12-24VAC

Fuse: 250mA anti-surge (internal)

Supply Voltage Rejection

Span change: <0.02% span / % supply change.

Safety & EMC

Safety: EN61010-1, Immunity: EN50082-1,

Emissions: EN50081-1, CE certified

Mechanical

Weight: approx. 0.5kg

Enclosure: Fire retardent materials - PPO base, ABS cover
Screw terminal wire capacity: 2 x 1.5mm²

Electrical Connections



WARNING: these details are provided for pre-sales information only. Installation must be carried out in accordance with the User Guide

Inputs	1	Input B (+)		
	2	Input A (+)		
	3	Input common (-)		
	4	Input C		
	5	- no internal connection		
	6	- no internal connection		
Outputs	7	mA Output (+)	Current Sink	
	8	mA Output (-)	8 (+)	
		Voltage Output (+)	9 (-)	
	9	Voltage Output (-)		
Supply	10	Earth AC	Earth DC	
	11	Neutral Mains	Negative (-)	Supply
	12	Line Supply	Positive (+)	Option



THIS UNIT CAN BE MAINS POWERED, AND ALL INPUTS TO IT MUST BE ISOLATED FROM DANGEROUS VOLTAGES BEFORE THE FRONT COVER IS REMOVED. LIVE TERMINALS WILL BE EXPOSED.

Continuous development may necessitate changes in these details without notice

SIL

STROUD INSTRUMENTS LTD.
36-40 Slad Road, Stroud, Glos. GL5 1QW, England
Telephone: +44 (0)1453 765433 Fax No: +44 (0)1453 764256
www.sil.co.uk