# SIGNAL CONVERTER

## SQUARE ROOT EXTRACTOR • 3/2 LAW • 5/2 LAW

## Type 107-7B

- ***Square root, 3/2 Law & 5/2 Law functions***
- ***Wide Range of Input and Output Types***
- ***Performs Input / Output Signal Level Changes***
- ***Transducer Excitation***
- ***Surface or DIN Rail Mounting***


### FUNCTION

To provide a voltage or current output signal which is proportional to one of the following functions:

- Square root of an analogue input signal. The transfer function is:
  Output proportional to $\sqrt{Input}$
- 3/2 Law, output proportional to (input)$^{3/2}$
- 5/2 Law, output proportional to (input)$^{5/2}$

The 107-7B will also provide conversion of process signal type e.g. 0-10V input to 4-20mA output.

### Information required when ordering

- ❑ Specify type 107-7B
- ❑ Function
- ❑ Input signal (see specification overleaf)
- ❑ Output signal (see specification overleaf)
- ❑ Supply voltage and frequency

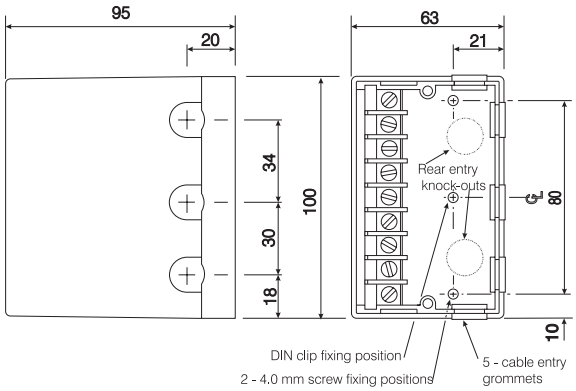
### APPLICATION

Square root: to compute flow-rate in a pipeline where the flowrate is measured with a DP transmitter (differential pressure is proportional to the flow-rate$^2$).

3/2 Law: With this option the unit will provide an output proportional to flow rate from a level measurement signal from a flume or weir

5/2 Law: This function will provide a signal proportional to flow rate from a 'V' notch weir level measurement.

### DIMENSIONS



# SPECIFICATION

## INPUTS
0-10 mA into 100 ohms
0-20 mA into 50 ohms
4-20 mA into 62.5 ohms
0-5v into greater than 1 M ohms
1-5v into greater than 1 M ohms
*(Other inputs available to order)*

## OUTPUTS
0-10 mA into 2000 (5000) ohms max.
0-20 mA into 1000 (2500) ohms max.
4-20 mA into 1000 (2500) ohms max.
} figures in brackets are options
0-5v into 500 ohms min.
1-5v into 500 ohms min.
Current Sink 4- 20 mA @ 50 Volts max.
*(Other outputs available to order)*

## TRANSDUCER EXCITATION SUPPLY
15 VDC @ 20 mA max.

## ACCURACY
Error ± 0.1% of span (2-100% input)

## INPUT SIGNAL CUT-OFF *(square root only)*
Input signals below 0.9% of span are automatically cut-off to zero.

## SUPPRESSION/ELEVATION ERROR
≤ ± 0.1% FSD.

## OUTPUT RIPPLE
≤ 0.1% (Peak to Peak) of FSD.

## LOAD RESISTANCE EFFECT
≤ 0.001% of span/100 ohms change.

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

## STABILITY
Over 24 hours ± 0.05% FSD.
Over 1 year ±0.1% FSD.

## INTERFERENCE REJECTION
Filtering is incorporated to reject R.F. and other industrial noise.

## SERIES MODE REJECTION
< 0.2% error for 50 Hz RMS
Signal equal to 50% span

## INPUT OVER-RANGE PROTECTION
250 volts RMS or DC (voltage inputs only)

## TEMPERATURE COEFFICIENTS
Zero: ± 0.02% span/°C
Span: ± 0.02% span/°C

## TEMPERATURE RANGE
Operating: -10°C to + 60°C
Storage: -20°C to + 70°C

## SUPPLY VOLTAGE REJECTION
Output change < 0.01% span/% supply change.

## POWER SUPPLY
A LED indicates when the power supply is connected.
**AC option**: 110, 220 or 240V ±10% 50/60Hz; 5VA
Fuse (internal) 100mA quick-blow (20 x 5mm)
**DC option:** 12, 24 or 48V -10% to + 20%; 3.5W
Fuse (internal) 250mA anti-surge (20 x 5mm)

## SAFETY & EMC
Safety: EN61010-1 Emissions: EN50081-1
Immunity: EN50082-1 CE certified

## ENCLOSURE DETAILS
Base: Phenol (black)
Cover: Polystyrol (light grey)
Protection: IP40

## WEIGHT
Approximately 0.5 kg

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

Supply
1 — Line
2 — Neutral } AC Mains Supply
3 — Earth

Positive (+) } DC Supply Option
Negative (–)
Earth

Output
4 — Output (–)
5 — Output (+)

6 — *no internal connection*

Input
7 — Input signal (+)
8 — Input common (0v)

Transducer supply
9 — Transducer excitation (+)

**Please Note:** Options are not available unless specified at time of order.

**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

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