



# FREQUENCY TO ANALOGUE CONVERTER

TYPE 107-10B

## Features

- \* Full scale input frequencies <math><1.0\text{Hz}</math> to 10kHz
- \* Programmable filtering and ranging
- \* Isolated output
- \* Integral transducer power supply

The 107-10B provides an output current or voltage which is proportional to the frequency of alternating voltage or pulse input signal. This instrument has many uses in applications including flowmetering and rotational measurements. Optional PC software enables range changing, e.g. to suit a turbine meter replacement, and optimisation of digital filtering to suit site conditions.

## Analogue filtering

The level of input signal at which the 107-10B triggers is set by the front panel control.

## Digital filtering

Digital filtering enables effective attenuation of noise yet permits a rapid response to a change in the input frequency. Factory-set default settings are suitable for many situations, however, the SIL 107-10B Programmer software enables the characteristics of the digital filter to be modified by the following parameters:

**Averaging Count:** Spurious input signals are attenuated by averaging the number of input measurements specified by the Averaging Count.

**Change Threshold:** To enable a rapid response to a change in the input signal, the most recent input measurement is continuously compared with the running average. If the change in input is greater than that specified by the Change Threshold parameter, the current averaging cycle is abandoned and a new one started.

See the 107-10B User Guide for more comprehensive information on digital filtering.



## Calibration

The output of the instrument may be scaled to the input signal frequency range with the following parameters.

**Zero Scale Frequency:** The input signal frequency required for 'zero' output signal.

**Full Scale Frequency:** The input signal frequency giving full scale output signal.

Other parameters which effect the output are:

**Static State Timeout:** The time which the input measurement is permitted to remain in the same state without causing the current measurement to be abandoned and the output signal cut to zero. In the event of a transducer or signal line failure, this facility ensures the output is not erroneously held at the last reading. NB This parameter overrides 'Minimum Threshold.'

**Minimum Threshold:** The percentage of full scale below which the output signal is cut-off to zero.

## Optional Programming Kit

A Programming Kit, comprising Windows™ 95/98/NT/ME/2000/XP compatible software and infrared serial link is available. This option enables adjustments on all the above parameters to be made.

## SPECIFICATION

### INPUT TYPE - factory set

Sine, square or triangular waveforms from volt-free switches, proximity switches, turbine meters, open collector, current pulse, etc.

**Input amplitude:** 10 mV p.t.p. to 250 V R.M.S.

**Current inputs:** ...use the change in current drawn on switching by proximity switches. Typical input currents include 1—3 mA.

### INPUT RANGE

See programmable options

### OUTPUTS - factory set

*NB other output signal ranges available to order.*

<b>mA ranges</b>	<b>Max. Load</b> (ohms)	<b>Option*</b> (ohms)
0 - 10mA	2000	4000
0 - 20mA	1000	2000
4 - 20mA	1000	2000

Current sink 4-20mA @ 50V max.

\* *High output drive options available to order*

<b>Voltage ranges</b>	<b>Min. Load</b> (ohms)
0 - 5 V	500
1 - 5 V	500
0 - 10V	1000
2 - 10V	1000

### TRANSDUCER POWER SUPPLY

Standard: 12 Volts @ 10mA max.

Other voltages from 5v to 15v available to order

### RESPONSE TIME

Typically 1 sec. with Averaging Count of 1 (i.e. no digital filtering).

### ISOLATION

Input and output are isolated from each other and from the power supply. Maximum voltage 250v RMS or 400v DC. Resistance  $\geq 50 \times 10^6$  ohms measured at 1000VDC.

### PROGRAMMABLE OPTIONS

Parameter	Min.	Max.	Default
Zero scale frequency (Hz)	0	10000	0
Full scale frequency (Hz)	0.1	10000	10000
Minimum threshold (% of FS)	0	100	1
Change threshold (% of FS)	0	100	10
Static state timeout (s)	2	4000	2
Averaging count	1	20	5

### SPAN ERROR

$\leq \pm 0.2\%$  FSD

### LINEARITY ERROR

$\leq \pm 0.1\%$  FSD (from 1 to 100% FSD)

### SUPPRESSION/ ELEVATION ERROR

$\leq \pm 0.1\%$  FSD

### OUTPUT RIPPLE

$\leq 0.1\%$  (Peak to Peak) of FSD

### LOAD RESISTANCE EFFECT

$\leq 0.001\%$  of Span / 100 ohms change.

### SUPPLY VOLTAGE REJECTION

Output change  $< 0.01\%$  Span per % supply change.

### TEMPERATURE COEFFICIENTS

Zero:  $\pm 0.02\%$  Span / °C

Span:  $\pm 0.02\%$  Span / °C

### TEMPERATURE RANGE

Operating:  $-10^\circ\text{C}$  to  $+60^\circ\text{C}$

Storage:  $-20^\circ\text{C}$  to  $+70^\circ\text{C}$

### POWER SUPPLY

**AC versions:** 110, 220, 240V  $\pm 10\%$  50/60Hz 5VA

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

**DC versions:** 12, 24, 48V  $-10\%$   $+20\%$  3.5W

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

### DIMENSIONS

100H x 63 W x 95D (mm)

### WEIGHT

Approximately 550 grams.

### TERMINAL CONNECTIONS

Supply

1	Line	Positive (+) DC Supply
2	Neutral	Negative (-) Option
3	Earth	Earth

Output

4	Output Signal (-)
5	Output Signal (+)
6	reserved

Input

7	Input Signal (~)
8	Input 0V
9	Transducer supply (+)

### ORDERING INFORMATION

- Input signal type and/or transducer
- Type of output (see specification)
- Supply voltage and frequency
- Transducer power supply (see specification)
- Whether programming kit required
- Zero scale frequency (Hz)
- Full scale frequency (Hz)

For the following, if default settings are required specify 'Default' against the appropriate parameter.

- Averaging count
- Change threshold (% of full scale)
- Static state timeout (seconds)
- Minimum threshold (% of full scale)

**WARNING** 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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