



## HS-557 Accelerometer and Temperature Signal Conditioner Module

**1. Description.** The HS-557 Signal Conditioner is used with a 100mV/g constant current type accelerometer and either a 10mV/°C or PT-100 temperature sensor to provide dual 4-20mA outputs suitable for direct input to a vibration monitoring PLC. The module 4-20mA output is proportional to true RMS velocity in mm/s. A buffered AC output is provided via the BNC connector and screw terminals to enable vibration analysis using an FFT signal analyser. The unit is housed in a compact DIN-Rail mounting plastic case and operates from 24VDC at 50mA. Terminal connections are shown on the drawing overleaf.

**2. Accelerometer Input.** The HS-557 provides a nominal 3.5mA constant current supply to an accelerometer, such as the Hansford Sensors HS-100 Series, which connects directly to the module input terminals.

**3. Temperature Input.** The HS-557 can accept two configurations of temperature signal, a 10mV/°C input, such as a HS-100T, or a PT-100 input, such as the HS-100PT. Both provide an output of 4-20mA with a temperature range of 0-100°C.

**4. AC Output.** A buffered AC output, proportional to acceleration, is provided via the BNC and screw terminal connectors. The 100mV/g signal is DC coupled to the accelerometer output and thus swings about the accelerometer bias voltage (12VDC nominal). If a data-collector is used to monitor this signal for vibration analysis, it must have the sensor power function of the data-collector turned off.

**5. 4-20mA Output – Acceleration.** The 4-20mA output is proportional to RMS acceleration in g, and the circuit incorporates high and low pass filters to limit the measurement bandwidth at 2Hz-10kHz. The output range is set at the factory for 4-20mA = 0-2g and alternative ranges can be specified at time of order. On request, this output can be configured at the factory to detect RMS velocity (mm/s).

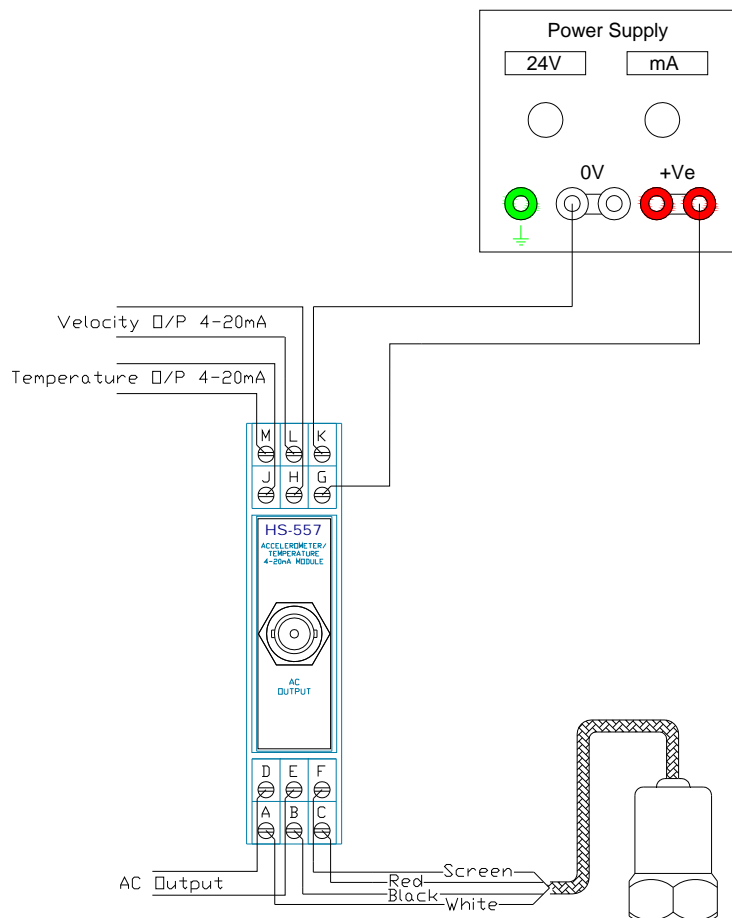
**6. 4-20mA Output – Temperature.** The 4-20mA output is proportional to temperature in °C. The output is set at the factory for 4-20mA = 0-100°C and alternative ranges can be specified at time of order, upto 140°C.

**7. System Grounding.** To avoid spurious 50Hz pick-up from surrounding equipment it is advisable for the cases of the sensors and the HS-557 power supply 0V to be grounded. This is normally achieved by the sensors being fitted to a grounded machine casing, and the HS-557 power supply 0V being grounded locally. In this instance the screen wires of the sensors should not be grounded at the measurement end in order to avoid grounding loop currents. For this reason, whilst

the HS-557 is operating with a  $10\text{mV}/^\circ\text{C}$  temperature input the accelerometer screen terminals are not internally connected to the power supply 0V.

In some applications the machine ground is sufficiently noisy to inject spurious signals into the measurement system. In this instance, the case of the accelerometer should be isolated from the machine casing using an isolating stud, and the screen wire connected, via wire links, from the HS-557 accelerometer screen terminals to the power supply 0V terminals and to ground.

**8. Connection details for the HS-557 Signal Conditioner ( $10\text{mV}/^\circ\text{C}$  input)**



**9. Terminal Connections**

Connector	Function
A	Accel PWR/SIG In
B	Accel 0V In
C	Temp In
D	Accel PWR/SIG Out
E	Accel 0V Out
F	Screen / Temp
G	+24V Power In
H	Iout + (Vel/g)
J	Iout + Temp Out
K	0V Power In
L	Iout – (0V) (Vel/g)
M	Iout – (0V) Temp

### 10. HS-557 Specification

Power Input.....	+24VDC $\pm$ 10% (regulated) 50mA max
Accelerometer Power.....	3.5mA $\pm$ 20% constant current, 23VDC driving voltage
Accel. Input Sensitivity.....	100mV/g
Temperature Input.....	10mV/ $^{\circ}$ C or PT-100
Filters .....	2 pole Butterworth 2Hz – 10kHz (-3dB)
Dual 4-20mA Output .....	Max. load resistance, 450 $\Omega$ Max. output current (input overload), 21mA
AC Output.....	Sensitivity 100mV/g (as accelerometer) Output resistance, < 200 $\Omega$ DC level + 12V nominal (as accelerometer) Connector, BNC and Screw Terminals (50 $\Omega$ )
Dimensions .....	24mm(w) x 75mm(d) x 118mm(overall height)
Weight.....	0.1kg