

SI-556A1V050Y1 Accelerometer Signal Conditioner Module

1. Description. The SI-556 Signal Conditioner is used with a 100mV/g constant current type accelerometer and provides a 4-20mA output suitable for direct input to a vibration monitoring PLC. The 4-20mA output is proportional to true RMS velocity in mm/s. A buffered AC output is provided via a BNC connector 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. Power Input The +24VDC power input terminals are duplicated to allow power looping to other modules in the measurement system.

3. Accelerometer Input. The SI-556 provides a nominal 3.5mA constant current supply to an accelerometer, such as the Hansford Sensors SI-100 Series, which connects directly to the module input terminals. Two sets of accelerometer input terminals allow for looping in and out.

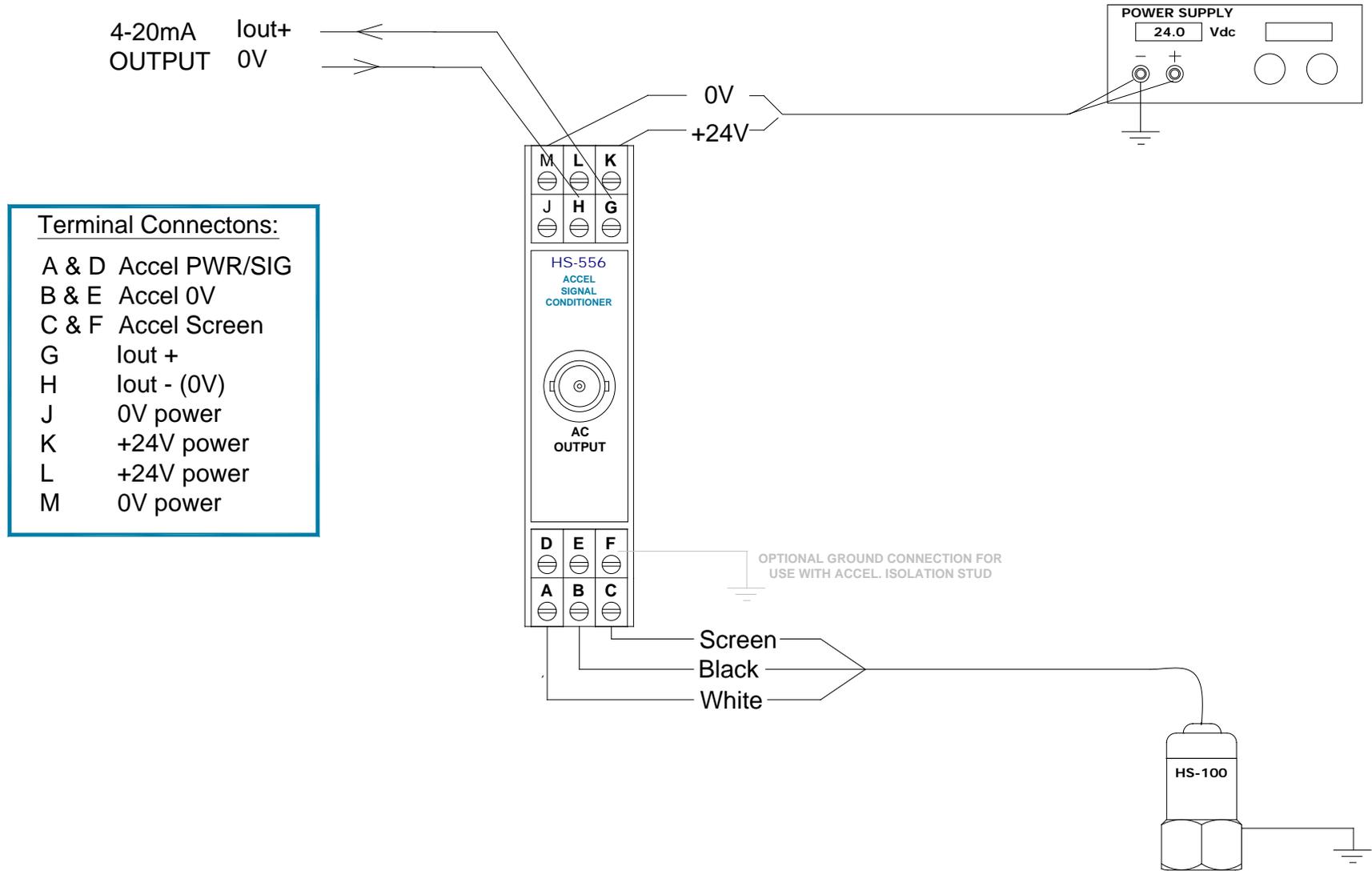
4. AC Output. A buffered AC output, proportional to acceleration, is provided via a BNC connector mounted on the front panel. The 100mV/g signal is DC coupled to the accelerometer output and thus swings about the accelerometer bias voltage (12VDC nominal). If a data-collector is used to monitor this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

5. 4-20mA Output. The 4-20mA output is proportional to RMS velocity in mm/s, and the circuit incorporates high and low pass filters to limit the measurement bandwidth at 2Hz to 5kHz, as requested by the customer. The output range is set at the factory for 4-20mA = 0-50mm/s and alternative ranges can be specified at time of order. On request, this output can be configured at the factory to detect RMS acceleration (g).

6. System Grounding. To avoid spurious 50Hz pick-up from surrounding equipment it is advisable for the case of the accelerometer and the SI-556 power supply 0V to be grounded. This is achieved, normally by the accelerometer being fitted to a grounded machine casing, and the SI-556 power supply 0V being grounded locally. In this instance the screen wire of the accelerometer should not be grounded at the measurement end in order to avoid ground loop currents. For this reason, the SI-556 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 SI-556 accelerometer screen terminals to the power supply 0V terminals and to ground.

7. Connection details for **HS-556** Signal Conditioner



SI-556 and HS-556 models are synonymous.

8. SI-556 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
Filters.....	2 pole Butterworth 2Hz – 5kHz (-3db)
Detection	True RMS (10% error for crest factor >6)
4-20mA Output	Max. load resistance - 450 Ω Max. output current (input overload) - 32mA
AC Output	Sensitivity 100mV/g (as accelerometer) Output resistance - <200 Ω DC level +12V nominal (as accelerometer) Connector - BNC (50 Ω)
Dimensions.....	24mm(w) x 75mm(d) x 118mm (overall height)
Weight	0.1Kg