

Description:

The NVM-01 is a low noise amplifier module, for sensitive DC/AC measurement and data acquisition systems. It is ideal as the input for precision voltage measuring systems, for measuring low noise and low impedances sources.

Key features:

- **Ultra-low noise & offset fluctuation amplifier, allowing very high resolution measurements (spectral density of noise down to $1 \text{ nT}/\sqrt{\text{Hz}}$)**
- **Very high linearity**

Typical applications:

- Vibrating wire magnetometry
- Rotating coil magnetometry
- Thermocouple thermometry
- Application in laboratories and in production lines

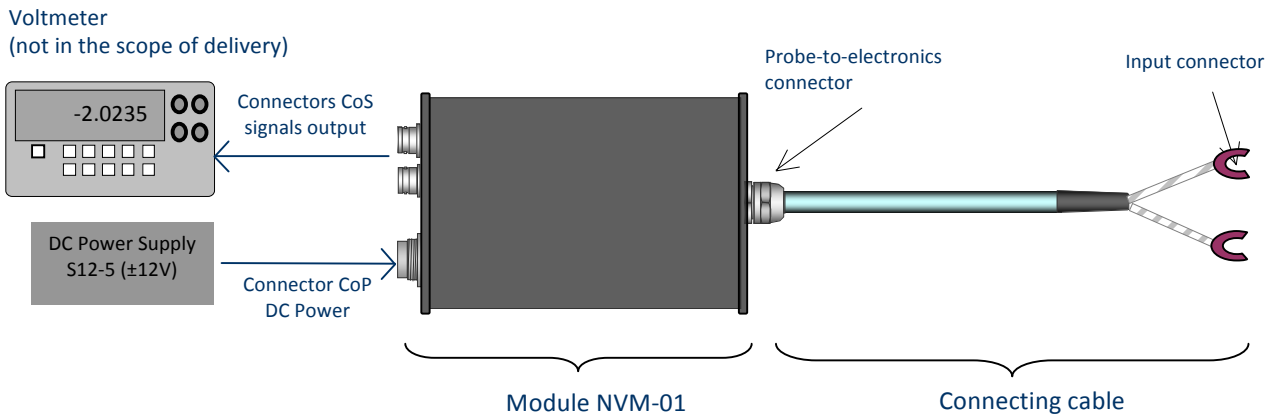


Figure 1: Typical measurement setup with a SENIS NVM-01



Figure 2: Illustrative image of NVM-01, Front and Rear side.

Electrical specifications:

Unless otherwise noted, the given specifications apply for all measurement channels at room temperature (23°C) and after a device warm-up time of 30 minutes.

Parameter	Value	Remarks
Input voltage ranges, V_{LR}	$\pm 1 \mu V$ $\pm 3 \mu V$ $\pm 10 \mu V$ $\pm 30 \mu V$	<i>Differential;</i>
Input Impedance	10 MOhm 2pF	
Source resistance	< 30 Ohm	<i>Optimal;</i>
Output voltages (V_{out})	differential	
Gain (G)	$10^7 V/V$, $3 \times 10^6 V/V$; $10^6 V/V$; $3 \times 10^5 V/V$	<i>Differential output; Selectable</i>
Tolerance of Gain (@ $V < \pm V_{LR}$)	1%	
Nonlinearity (NL) (@ $V < \pm V_{LR}$)	1%	
Temperature coefficient of gain	< 0.01%/°C	@ Temperature range 23 °C \pm 5 °C
Long-term instability of gain	< 1% over 10 years	
Output Offset (@ $V_{in} = 0 V$) (B_{offs})	< $\pm 100 mV$	<i>Adjustable</i> @ Temperature range 23 °C \pm 5 °C
Temperature coefficient of the input offset voltage	< $\pm 10 nV/^\circ C$	
Input Offset fluctuation and drift (0.1 to 10 Hz)	< 4 nV	<i>RMS value;</i>
Voltage noise		
Input Noise Spectral Density @ $f > 1 Hz$	< $1 nV/\sqrt{Hz}$	
Typical frequency response		
Frequency bandwidth [f_T]	100Hz	<i>Bessel filter;</i>
Settling time, 1%	< 10ms	
Output resistance	< 50 Ohms, short circuit proof	
Synchronization		
External clock	32kHz	Optional with trigger output; Internal synchronisation is default

Temperature output of the electronic box		
Ground-referred voltage	V_T [mV] = 200mV/°C	
DC power	100mA @ 24Vdc	
Environmental parameters		
Operating temperature	+5°C to +45°C	
Storage temperature	-20°C to +85°C	
Mechanical		
Differential Signal input connector	Lemo - EVP.1V.304.CLLSV - socket, panel, 4 way (mating Plug, FVN.1V.304.CLAC30)	
Power Input Connector	DIN SFV50, 5 pole, Plug, Power, +24V, pin3 Power common (GND), pin 2	
Temperature connector	BNC connector, panel,	
Voltage output connector	Radial BR2 bulkhead receptacle rear mount (mating plug, BR2 straight plug clamp 2 cores cab 4mm))	
Enclosure	High mechanical strength, electrically shielded aluminium case 103 W x 220 L x 53 H mm.	
Weight	<2kg	

Installation manual for the NVM-01:

Before you start, please touch a grounded object in order to discharge any static electricity you may have built on your body. This is especially important when the humidity is low as in the winter in areas that see snow or severe cold.

Important!! Thermal emf's are usually in the range of 10's of $\mu\text{V}/^\circ\text{C}$. This means that you need to have the NVM-01 thermally stable as possible. For best results the amplifier should be placed out of the way for drafts and away from windows or direct sunlight. For best results, place the NVM-01 in a cooler and lay cloth over the input terminals.