Precision High Voltage Modules LN001, LN2.5, LN005, LN010, LN015, LN020

- Exceptionally low levels of low frequency (LF) noise and drift
- High stability, low ripple, low microphon
- Fast recovery from load transients
- Analogue or digital control options
- Differential analogue input
- Short circuit and flashover proof
- Positive, negative and reversible versions
- <10ppm/°C temperature co-efficient

This range of precision high voltage modules has outputs that provide exceptionally low levels of noise, microphony and drift and is specifically designed for easy integration into systems requiring multiple high voltages. The modules are the ideal HV sources for mass-spectrometry, electron gun, ion gun, photomultiplier, nuclear and other applications.
All units are short circuit proof and use proprietary low noise techniques to achieve a very low ripple and exceptional low frequency noise performance. The power supplies are designed for reliability, building on the data gained from many years of field operation of LN predecessors. Standard units have a 1m low noise screened cable for the high voltage output. Options are available for internal high voltage sockets at the rear of the PSU.

Several options are available for control: digital interface, external differential analogue input (to eliminate noise from ground return offset voltages) or potentiometer.

Specifications: LN Series

Unipolar Unit Type	Max Output Voltage	Output Current	LF Noise	Ripple At Full Load	Temp-Co (/°C)	Size (mm)	Weight (kg)
LN001xIP010	1kV	5mA	<2mVp-p	<2mVp-p	<10ppm	147 x 98 x 47	0.8
LN2.5xIP010	2.5kV	2mA	<5mVp-p	<5mVp-p	<10ppm	147 x 98 x 47	0.8
LN005xIP010	5kV	1mA	<10mVp-p	<10mVp-p	<10ppm	147 x 98 x 47	1.0
LN010xIP010	10kV	0.5mA	<20mVp-p	<20mVp-p	<10ppm	200 x 98 x 47	1.2
LN015xIP010	15kV	0.33mA	<30mVp-p	<30mVp-p	<10ppm	200 x 98 x 47	1.7
LN020RIP010	20kV	0.25mA	<40mVp-p	<40mVp-p	<10ppm	210 x 120 x 55	1.7

Reversible Unit Type	Max Output Voltage	Output Current	LF Noise	Ripple At Full Load	Temp-Co (/°C)	Size (mm)	Weight (kg)
LN001RIP010	±1kV	5mA	<2mVp-p	<2mVp-p	<10ppm	147 x 98 x 47	1.0
LN2.5RIP010	±2.5kV	2mA	<5mVp-p	<5mVp-p	<10ppm	147 x 98 x 47	1.0
LN005RIP010	±5kV	1mA	<10mVp-p	<10mVp-p	<10ppm	147 x 98 x 47	1.2
LN010RIP010	±10kV	0.5mA	<20mVp-p	<20mVp-p	<10ppm	195 x 140 x 48	1.5
LN015RIP010	±15kV	0.33mA	<30mVp-p	<30mVp-p	<10ppm	240 x 165 x 52	3.5
LN020RIP010	±20kV	0.25mA	<40mVp-p	<40mVp-p	<10ppm	240 x 165 x 52	3.5

Minimum adjustable output voltage is 10% when operating at full output current. Derate linearly down to 1% of maximum output voltage.

File code: LS_DS_LN-Series_en/09/24

LN Series

Electrical Specification

Input	+24 volt dc ±5% <0.7A 0V input common to HV return and chassis Max inrush <10A
Control of output	50mV to 5V for 1% to 100% ±2% Z_{in}>100kΩ Trimmed Option ±0.2% Internal or external potentiometer—see options
Voltage monitor	0V to +5V ±2% for 0% to 100% (Z_{out}<1Ω I_{out} ≤2mA)
Current monitor	0V to +5V ±2% for 0% to 100%, Offset ±0.1% of FS (Z_{out}=1Ω I_{out} ≤2mA)
Reference option	+5V ±2% ≤3ppm/°C temp-co I_{out} ≤1mA
Polarity control	Low or <1V = -ve, >4.0V or OC =+ve
Inhibit	Low or <1V = enabled >4.0V or OC = inhibited
Line regulation	<10ppm over full input voltage range
Load regulation	<10ppm for load changes from 10% to 100% load
Drift (after 1 hour warmup)	<10ppm per hour, <50ppm over an 8 hour period
Protection (all outputs)	Protected against intermittent arcing and continued short circuit to ground

Mechanical Specification

Mountings	4 off M4 mounting holes in base
Input & Control	15W D-type male connector - analogue versions Digital versions - Comms connector plus 2 pin Molex 5569 series for power
Output	SHV BNC up to 5kV, GES HB30T for 10kV and higher OR 1m, low noise shielded cable The ripple maybe higher than specified if used with less than 1m of o/p cable

Environmental Specification

Temperature, operating:	+10°C to +50°C	Humidity (RH) <30°C non-condensing:	80% maximum non-condensing
Temperature, storage:	−35°C to +85°C	Humidity (RH) >30°C non-condensing:	Decrease linearly to 50% at 40°C
Altitude, operating:	Up to 2,000m	Altitude, storage:	−100m to 18,000m

The unit is to be supplied from a current limited supply providing 24V dc, impulse limited to overvoltage Category I (of IEC60364-4-443).
For use in an environment of pollution degree 2.

Pin Assignments

1	+ve Control input	6	0V Power return	11	Voltage monitor o/p
2	+5V Reference/Pot Wiper (if fitted)	7	0V Power return	12	Inhibit
3	Signal ground	8	Polarity select i/p	13	+24V dc input
4	Signal ground	9	-ve Control input	14	+24V dc input
5	0V Power return	10	Current monitor o/p	15	+24V dc input

Part Number Selection
Series Code: LN

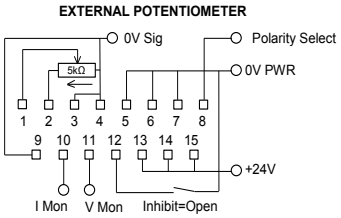
O/P Kv	Polarity	Options Code	Temp-Co/°C	O/p Conn/Lead Length
001= 1kV	P= +ve	IP = current monitor only	<10ppm/°C	00=o/p connector
010= 10kV	N= -ve	PR = Pot & reference fitted		0.5=0.5
	R=Reversible	IR = Reference only fitted		1.0=1 m
		DP= Digital control option		2.0=2 m
				3.0=3 m

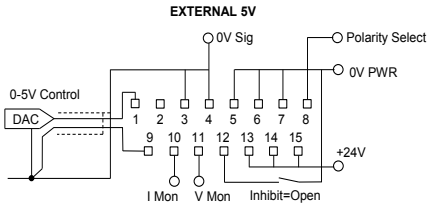
Example: LN005NIP010-1.0 = −5kV LN series + current monitor, <10ppm/°C tempco with 1m output cable
Tighter temp-co is available upon request

LN Series

Pin Connections

Analogue Versions

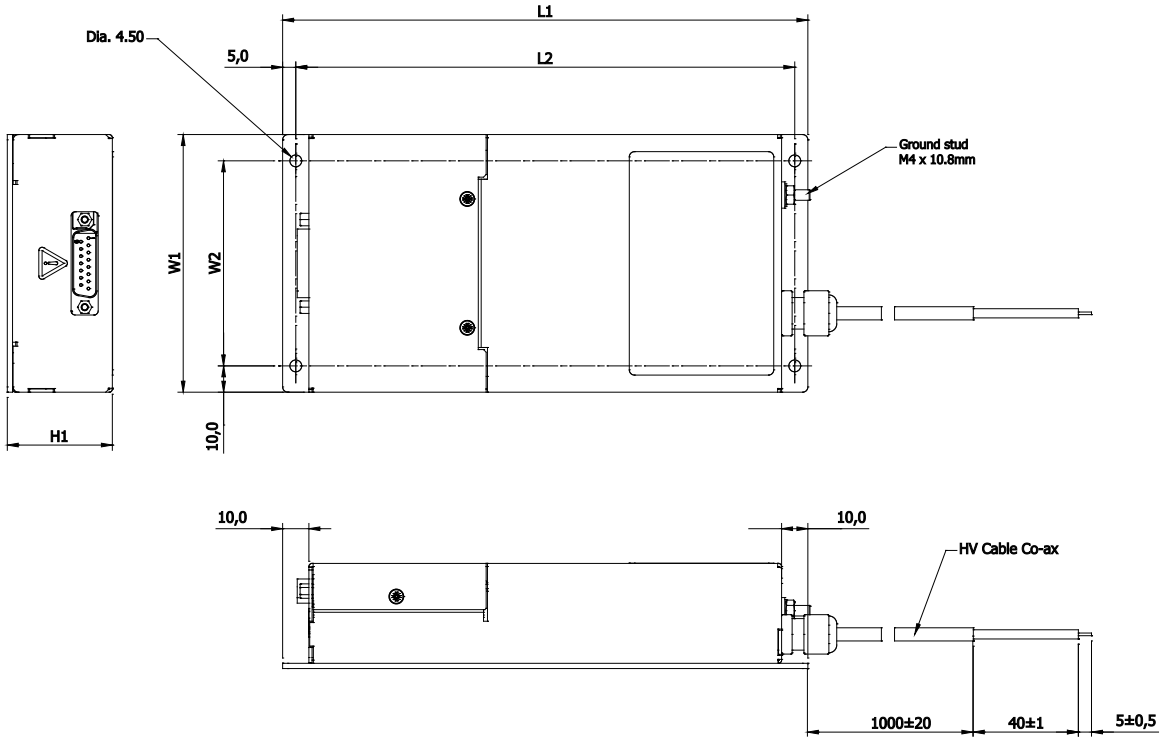




LN Series Outline Drawing

Dimensions

Dimensions in mm
Projection/first angle



Unit	L1	L2	W1	W2	H1
LN001-LN005 unipolar147	137	98	78		40
LN010-LN015 unipolar	200	190	98	78	40
LN020-LN030 unipolar	210	200	120	100	55
LN001-LN005 reversible	147	137	98	78	40
LN010 reversible	195	185	140	120	48
LN015 reversible	240	230	165	145	52
LN020-LN030 reversible	240	230	165	145	52