NHS High Precision HV Modules

NHS 62vvx)[1]

6 Channels with Common-GND

Technical Data

Contents

Attention!

-It is not allowed to use the unit if the covers have been removed.

-We decline all responsibility for damages and injuries caused by an improper use of the module. It is highly recommended to read the manual before any kind of operation.

Note

The information in this manual is subject to change without notice. We take no responsibility for any error in the document. We reserve the right to make changes in the product design without notification to the users.

Filename NHS62xx as of 2013-09-09

1. General information

The NHS modules of this series are High Precision multichannel high voltage power supplies in 1/12 NIM standard cassette. The output voltage features an exceptionally high stability, lowest ripple and a very small temperature coefficient. The extreme small ripple is ensured down to very low frequencies (below 0.1Hz). Each single channel has an independent voltage and current control. The current measurement includes two measurement ranges with a resolution down to a few picoampere.
The module provides full front panel control and visualization via a 1.44" TFT-display. A remote control via USB or CAN interface is also possible. The data for set and measure values are given in a format of Floating Point Single Precision values. The modules are equipped with 24 bit ADC and 20 bit DAC circuits.
The channels share a Common-GND, which is connected to the internal Crate-Ground.

The HV outputs via SHV (or BNC connector for NHS 6201x) connectors are located on the rear panel.

2. Technical data

	NHS 6201x)[1]	NHS 6210x)[1]	NHS 6220x)[1]	NHS 6230x)[1]	NHS 6240x)[1]	NHS 6260x)[1]
Output voltage $V_{O\,nom}$ [kV]	0.1	1	2	3	4	6
Output current $I_{O\,nom}$ [mA]	10	8	4	3	2	1
Resolution of voltage setting*) [mV]	0.5	2	5	10	10	12
current setting*) [nA]	30	20	10	5	4	2
voltage measurement*) [mV]	0.5	2	5	10	10	12
current measurement*) [nA] 1st range: $I_{nom} \geq I_O > 20\ \mu A$	8	5	4	3	2	1
current measurement*) [pA] 2nd range: $20\ \mu A \geq I_O > 0$	50	50	50	50	50	50
Ripple and noise [mV_{P-P}]	< 3	< 5				< 20
	- at max. load and $\lvert V_O \rvert > 1\% * V_{O\,nom}$ - f > 0.1 Hz					
Stability (no load/load and ΔV_{IN})	$<1*10^{-4} * V_{O\,nom}$					
Sample rates [samples/s]	5, 10, 25, 50, 60, 100, 500					
Digital filter averages	1, 16, 64, 256, 512, 1024					
The resolution of measurable values depends on the settings of the sampling rate and the digital filter!						
Accuracy of voltage measurement	$\pm (0.01\% * V_O + 0.01\% * V_{O\,nom})$					
Accuracy of current measurement	1st range: $I_{nom} \geq I_O > 20\ \mu A$ $\pm (0.01\% * I_O + 0.01\% * I_{O\,nom})$			2nd range: $20\ \mu A \geq I_O > 0$ $\pm (0{,}1\% * I_O + 1\ nA)$		
The measurement accuracy is guaranteed in the range $1\% * V_{O\,nom} < V_O \leq V_{O\,nom}$ and for 1 year						
Voltage ramp up / down [V/s]	$1*10^{-6} * V_{O\,nom}$ up to $0.2 * V_{O\,nom}$					
Temperature coefficient	$< \pm 50 * 10^{-6}/_K$					
Hardware limits V_{max} / I_{max}	potentiometer per module (V_{max} / I_{max} is the same for all channels)					

*) with standard sample rate 50/s and digital filter 64

)[1]x = p: polarity positive,)[1]x = n: polarity negative

	NHS 6201x[1]	NHS 6210x[1]	NHS 6220x[1]	NHS 6230x[1]	NHS 6240x[1]	NHS 6260x[1]
Interface	USB-Interface (potential free) CAN-Interface (potential free)					
Operating modes	Full module and channel control via: - Front panel - USB interface: iseg SCPI - CAN interface: EDCP (Enhanced Device Control Protocol)					
Status (for each channel)	green LED turns on if the channel has the status “Ready” yellow LED turns on if the channel has the status “HV ON”					
HV output protection	Overload, short-circuit and arc protection; only one short-circuit or arc per second allowed.					
Protection loop (I_s) potential free (2 pin Lemo-socket and REDEL SL)	5 mA < I_s < 20 mA ⇒ module on I_s < 0.5 mA ⇒ module off					
INHIBIT per channel	Via Sub-D-9 connector (TTL level)					
INHIBIT 0-5 / Channel	0	1	2	3	4	5	GND	GND	GND
Sub-D-9 connector / PIN	1	2	3	4	5	6	7	8	9
Power requirements V_{INPUT} ± 24 V	1.5 A (0.6 A for NHS 6201x) at full load 0.3 A with no load at nominal voltage					
Power requirements V_{INPUT} + 5 V	0.3 A					
Packing	1/12 NIM standard cassette					
HV connector	SHV connectors on rear panel					
Operating temperature	0 ... +40 °C					
Storage temperature	-20 ... +60 °C					

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