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NPC-D-5200 Series

Digital Controllers

A standalone single axis closed loop piezo actuator controller designed to cover a wide range of challenging applications needing the best dynamic performance. Ther is no compromise; the NPC-D-5200 delivers precision, accuracy and speed.

Key Features

- Precision capacitive sensor measurement circuit for closed loop operation.
- Update rate of 8.3 micro seconds (120KHz)
- Low electronic noise. The low noise design allows stage position noise as low as a few tens of picometres.
- High power rating, -30 to +150V drive with 160mA continuous current as standard.
- Stage designs incorporate capacitive sensors which give precise positional feedback in closed loop mode delivering high resolution/low noise and high linearity of movement.
- The controller is updated with the position of the stage 120000 times per second. This contributes to high speed positioning accuracy for applications that need high speed movement of the stage.
- A stable system which delivers repeatability of movement with improved precision and accuracy for precise imaging & focusing.
- The high power rating allows stages to be driven at higher maximum speeds with faster step settle times.
- This can be particularly important for longer range stages or stages designed for high load bearing.

Interfacing

- Analog command and position output +/-10 V
- Digital commands over USB or optional RS232C and Ethernet control interfaces.
- Easy to interface with OEM software using supplied DLL (Dynamic Link Library). In position digital outputs can be used to interface with external devices. Expansion slot to allow custom board for OEM integration.
- Examples of software in C/C++, Python and LabVIEW® provided.
- User programmable Function Playback of custom programmed waveforms such as constant velocity profiles.
- TTL input/output triggers f or external control.Programmable when “Function playback” feature used.
- TTL In-Position output to indicate when NanoMechanism reaches the desired/set position (user selectable positon accuracy).

Technical specification

Parameter	Value	Units	Comments
Mechanical			
Size (Width x Depth x Height) Height includes feet Not including protruding components at front and rear of controller	268 x 194 x 70	mm	Additional space required for rear connectors and cables.
Stage Mass	1.8	kg	
Cooling	Fan forced air		Vents on rear and base
Electrical			
Power input	96 to 265 47 to 63	Vrms Hz	Using external supply. Only use approved power supply provides protective earth connection.
DC power input	± 24 ± 0.75@5A	V	Only use Queensgate approved power supply
DC power input connector	4 pin DIN Plus protective earth connection		Rear panel
Connectivity			
USB	2.0 compliant		USB type B connector. Note: power not taken from USB port.
Ethernet	IEEE 802.3		RJ45 connector. Requires a Cat 5 male to male cable. MUST use shielded Ethernet cable.
Analog input command	BNC		Per channel - front panel
Analog Position Monitor output	BNC		Per channel - front panel
“TRIG” input, “TRIG” output, “IN-POS” output and Quadrature Interface	25 pin D-type socket		
Controller Synchronizing signals	9 pin D-type socket		Rear panel
Environmental - Operational			
Temperature	10 to 40	ºC	
Relative Humidity	5 to 80	%RH	Non-condensing
Environmental - Storage and Shipping			
Temperature	-20 to 70	ºC	
Relative Humidity	0 to 95	%RH	Non-condensing

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Technical specification

Parameter	Value	Units	Comments
General			
Warm up time	40 (typ)	Min	
“ANA I/P” analog input position command per channel	-10 to +10	V	Connector BNC – Single ended MAXIMUM input: ±15V
“ANA I/P” analog input impedance (per channel)	> 50k	Ohms	
“POS MON” analog output position monitor per channel	-10 to +10		Connector BNC – Single ended MAXIMUM input: ±15.5V
“IN- POSITION” Output	Logic “0” < 0.8 Logic “1” 2.4 to 5	V V	15 pin D-Type on rear panel. For OUTPUTS Load impedance: > 1k ohms. MAXIMUM
“TRIG”	Logic “0” < 0.8 Logic “1” 2.4 to 5	V V	output: 5.5V For INPUTS Input impedance: 50 ohms. MAXIMUM input: 5.5V
NanoMechanism interfacing – controller – per channel			
Connector	17W2 D type		Mixed signal connector
HV output swing	-30 to +150 -20 to +120	V	Factory set (default) Factory set (optional)
HV drive current	160	mA	Factory set (default)
HV amplifier bandwidth	>50	kHz	
HV amplifier intrinsic noise	0.3	mV	
“ANA I/P” analog output position command	-5 to +5	V	Connector BNC Differential input - core +ve
“POS MON” analog output position monitor	-5 to +5	V	Connector BNC Single ended
“READY” output signal	Logic “0” <0.8 Logic “1” 2.4 to 5	V V	Connector BNC

Ordering information

Product Ref	Description
QGNPC-D-5200	NPC-D-5200 Single axis high performance digital controller.

Owing to continuous development, we reserve the right to introduce improvements and modify specifications without prior notice.

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