

NPS2100-20/NPS2101 Controller



The NPS2101 and the NPS2100-20 are NanoSensor, high voltage amplifier and control electronics combined as a single channel standalone module, powered by an external $\pm 15V$, 130V and -30V DC supplies.

Designed to provide closed loop position control of Y mirror steering mechanisms, which incorporate Queensgate piezo actuators (MTP-15N) and sensors (NXB-3-AI).

The control electronics allows the user to optimize closed loop response giving significant improvements in stability and linearity compared to open-loop operation.

The NPS-2100-20 incorporates a -20V input. The NPS-2101 has positive and negative voltages inputs but has its Nanosensor screen driver disabled.

Key features

- Sub-nanometer position resolution
- Linearity error down to 0.02%
- User adjustable measurement bandwidth (50Hz, 500Hz or 5kHz)
- User adjustable amplifier gain (for applications that do not use the full measuring range)
- Selectable long ('-L') or short ('-S') measuring range (2pF or 10pF capacitance)

Applications

- Wafer inspection
- KLA 2135, 2138, 2139, 2367

Variants

- 2100 superseded by 2100-20
- 2100-20 KLA Ref 750-660755-001
- 2101 - NanoSensor screen driver disabled
KLA Ref 750-660755-002

NPS2100-20/NPS2101

Controller

Technical Specifications

Parameter	Value	Unit	Comments
State physical			
Size (Width x Depth x Height)	218 x 77 x 34	mm	
Power supply	±15 ±1 @120mA	VDC	
	+120 to +130 @ 30mA	VDC	
	-32 to -27 @ 30mA	VDC	Note 1
Sensor output	-5 to +5	V	Note 2
Analogue input range	-10 to +10	V	
Digital input D/A resolution	14	Bits	
NanoSensor Dynamic physical (Typical values)			
Scale factor	0.1 or 0.01	GV ⁻¹	Note 3
Noise level (-S) (2100 / 2100-20)	<0.03	ppmHz ^{-1/2} rms	Note 4
Noise level (-L) (2100 / 2100-20)	<0.15	ppmHz ^{-1/2} rms	Note 4
Thermal drift	5	ppmK ⁻¹ Typ	Note 4
Warm-up time	10	Minutes	
Warm-up drift	80	ppm	Note 4
PS rejection	10	ppmV ⁻¹	Note 4
Linearity error	<0.2	%	Note 5
Bandwidth	50, 500, 5000 ±10%	Hz	Note 6
HV Amplifier Dynamic physical (Typical values)			
Output voltage (2100)	0 to +120	V	
Output voltage (2100-20 / 2101)	-20 to +120	V	
Bandwidth	5	KHz	Note 7
Analogue input gain	6	V/V	Note 8
Digital input gain	7.3 m	V/bit	Note 8
Noise	0.2	mVrms	Note 9
Current limit	50	mA	

Notes

1. Negative supply not required on 2100 variant.
2. Greater range is available at reduced performance.
3. G is the nominal gap. The scale factor is switch selectable through the side panel.
4. ppm refers to parts per million of the nominal gap.

5. Linearity error depends on the accuracy of the sensor installation. Linearity errors as low as 0.02% can be achieved. Please contact Queensgate for further details.
6. The Bandwidth is switch selectable through the side panel.
7. Typical, depends on the actuator.
8. Open loop operation only.
9. Typical.

Ordering Information

Part Number	Description
QGNPS-2100-20	NPS-2100-20 Controller
QGNPS-2101	NPS-2101 Controller

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



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