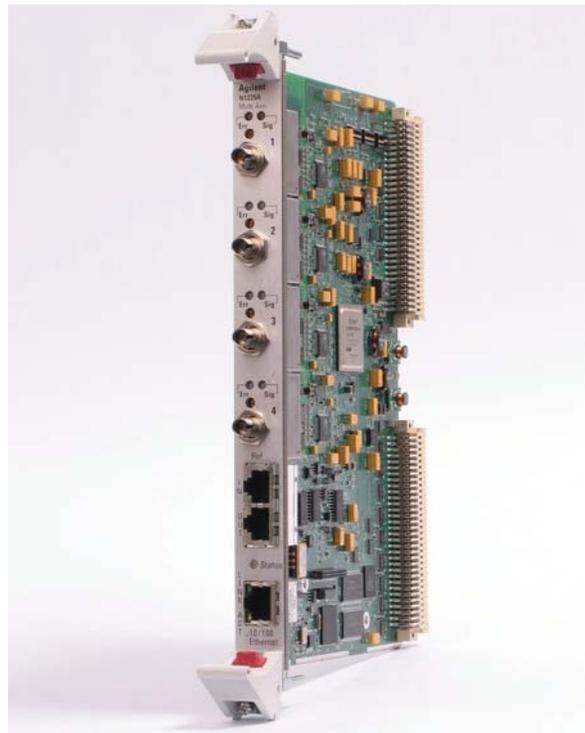


# Agilent N1225A Four Channel High Resolution Laser Axis Board for VME

Data Sheet



The N1225A axis board is a VME64x "6U" size board that supports a three-axis laser measuring system. The N1225A features a 0.15 nm plane mirror resolution, a  $\pm 10$  m range, and a velocity limit of  $\pm 2.29$  m/s when used with a 15 MHz split frequency laser head. The board requires a single +5V power supply and includes four high sensitivity receivers. To accommodate a greater number of axes, a digital reference can be passed between boards using Agilent-supplied Reference Passing patch cables.

The N1225A is compatible, with some limitations, with Agilent 10897/8 boards in the same backplane, and can provide most of their functions. It has five row connectors but can operate in three row as well as five row VME64x backplanes. The P2 connector rows A and C have pin-for-pin compatibility with the 10898A, and limited compatibility with the 10897. The P2-D and -Z rows provide access to the additional features of the N1225A (comparator functions and simultaneous data output from all axes at 10 MHz). The N1225A also provides LAN connectivity along with triggered data recording.



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<b>Agilent Technologies N1225A Four-Channel High Resolution Laser Axis Board for VME</b>	
<b>General System Specifications</b>	
<b>Maximum number of boards in system</b>	Eight on reference chain
<b>Measurement resolution</b>	$\lambda/4096$ (0.15 nm) with double pass I/F Linear Optics: 0.3 nm
<b>Velocity range (using double pass I/F)</b>	$\pm 2.290$ m/s with 15 MHz laser split frequency $\pm 1.580$ m/s with 20 MHz laser split frequency* $\pm 1.100$ m/s with 7.5 MHz laser split frequency $\pm 1.028$ m/s with Agilent 5517F laser head $\pm 0.870$ m/s with 6 MHz laser split frequency $\pm 0.458$ m/s with Agilent 5517D laser head $\pm 0.300$ m/s with Agilent 5517C laser head $\pm 0.221$ m/s with Agilent 5517B laser head $\pm 0.158$ m/s with Agilent 5517A laser head *maximum velocity for 20 MHz split is reduced because of 30 MHz upper limit on receiver
<b>Maximum axis acceleration</b>	400 g
<b>Working range with plane mirror optics</b>	$\pm 10.3$ m (37 bits in position register)
<b>Optical Inputs</b>	
<b>Sensitivity</b>	(Estimated power level considered to be measured at input to E1706A connected to 2m long glass fiber) 0.065 $\mu$ W @ 90% ac:dc ratio
<b>Frequency Range</b>	500 kHz to 30 MHz
<b>Maximum input levels:</b>	62.5 $\mu$ W AC power; 187 $\mu$ W DC power
<b>Signal Strength Voltage (SSV) update rate (typical, refers to per channel value)</b>	100 Hz
<b>Number of optical channels</b>	Four per board
<b>Number of optical reference inputs</b>	Two maximum for a single board system Three maximum for a two board system
<b>Squelch setting when shipped</b>	Preset to zero (inactive)
<b>Optical input connector</b>	ST Type
<b>Dynamic range (optical ac power in)</b>	1250:1 maximum (90% ac:dc ratio) 93.5:1 minimum (10% ac:dc ratio)
<b>Reference inputs</b>	One digital reference input One optical, using channel 4 ST connector 0.5–30 MHz nominal
<b>Reference outputs</b>	One digital reference output
<b>Measure inputs</b>	Four, if reference supplied by another board Three, if one channel is used for reference
<b>Signal Monitoring test points</b>	Front panel scope probe socket for each channel
<b>Status Indication</b>	Signal and error LED for each channel Status LED indicates bootup progress
<b>Measurement resolution</b>	4096 (0.15 nm) with double pass I/F Linear Optics: 0.3 nm

<b>Agilent Technologies N1225A Four-Channel High Resolution Laser Axis Board for VME</b>	
<b>Fixed data age for P2 data</b>	3.05 $\mu$ s, typical
<b>Frequency and dynamic range dependent error</b>	<0.6 nm in plane mirror system (estimate)
<b>Velocity resolution</b>	94.3 nm/s
<b>Velocity format</b>	27 bits, 2's complement
<b>Digital Interface</b>	
<b>Position Data Output Rate (over P2 bus)</b>	Maximum 10 MHz/# of axes 36 bit, 2's complement or output 32 contiguous bits out of 37
<b>High Speed Parallel Output</b>	10 bits/axis, 10 MHz simultaneous output 0.768 m/s maximum velocity
<b>N1225A VME characteristics/operations</b>  Note: for A24 addressing, the N1225A waits for the VME bus master to release AS* before it releases DTACK*. For some bus controllers, this will cause the bus to hang. This issue will be corrected in a future firmware revision.	6U EIA module A16/A24 addressing, GAP D16/D32 data transfer cycles Responds to address modifier codes: \$29 Short non-privileged access (A16 only) \$2D Short supervisory access (A16 only) \$39 Standard non-privileged data access \$3A Non-privileged program access \$3D Standard supervisory data access \$3E Supervisory program access D08(O) Interrupt acknowledge cycles VME 64x (160 pin P1/P2) ANSI/VITA 1-1994 American National Standard for VME64 ANSI/VITA 1-1997 American National Standard for VME64
<b>LAN</b>	10/100 Base T LAN Connection DHCP Enabled Built-in web page server
<b>Power Requirements</b>	
<b>Power requirements</b>	+5 V (4.875 V – 5.25 V) @ 5.6 A maximum (120 mV <sub>pp</sub> max. noise below 20 MHz) (80 mV <sub>pp</sub> max low frequency ripple, below 200 Hz)
<b>Environmental Requirements</b>	
<b>Airflow requirements</b>	400 ft/min, 40°C maximum inlet air temperature
<b>Operating environment</b>	The product is intended for use in an industrial or clean room environment.* * Elma level 2 RFI shielding or equivalent may be required for VME card cage.
<b>Operating temperature range</b>	0 to 40°C
<b>Humidity</b>	10 to 90% RH (non-condensing)
<b>Board Characteristics</b>	
<b>Bootup time</b>	Less than 30 seconds
<b>Data age variation over temperature</b>	+15 ps/°C, estimated
<b>Physical Characteristics</b>	
<b>Weight</b>	0.46 Kg (1 lb)
<b>Packaged Weight</b>	0.77 Kg (1 lb, 11 oz)

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