



## AUTOMATED LOW THERMAL MATRIX SCANNERS

- 10, 16 or 20 Four Terminal Channels
- Sealed Relays with 4 A Carrying Capacity
- 4 Conductor Wire or Binding Post Inputs
- Optional 30 A Capacity
- Low Thermal Matrix Design
- 1000 V DC
- Insulation Resistance >  $10^{12} \Omega$
- Front Panel or IEEE-488 Interface

## MODEL 4210, 4216 & 4220



## MODEL 4210, 4216 & 4220 AUTOMATED LOW THERMAL MATRIX SCANNERS

Measurements International's series of Low Thermal Matrix Scanners are ideal for automating precision measurements to sub-ppm accuracy. The model 4210, 4216 or 4220 series of Low Thermal Precision Scanners are ideal for use in automated resistance and thermometry applications where several artifacts need to be calibrated efficiently and accurately. This series of Matrix Scanners improves the efficiency by eliminating the need to continually change leads when measuring groups of resistors.

The input channels can be manually selected from the front panel or via the standard IEEE-488 interface when used in an automated system. LED's on the front panel enable the operator to quickly verify which channels have been selected.

Front panel LED's designated A and B indicate the selected channels. Additionally, the A and B boards are separated to improve the insulation resistance. Protection from selecting the same relay on both sides is also available on the rear panel IEEE address switch.

The relay boards are thermally isolated to maintain equilibrium in the switching areas. Furthermore, the A and B boards are separated to improve the insulation resistance. Ultra sensitive, high efficiency, polarized sealed relay technology is used to eliminate self-heating in the relay. Sealed relays have the advantage that they avoid contamination build up commonly found in competitive scanners where contamination builds up between the relay contacts and the contacts on the printed circuit boards.



A choice of six scanners is available. 10-channel, 16-channel, and 20-channel with either tellurium copper binding posts or 2-metre four-conductor Teflon cables.

In the A-series of scanners, the copper terminals are mechanically connected to the copper pads on the relay boards to reduce the thermals normally generated by soldered connections, thus reducing switching errors.





## MODEL 4210, 4216 & 4220 AUTOMATED LOW THERMAL MATRIX SCANNERS

The B-series features four-conductor Teflon cable inputs with 2 four-conductor Teflon cable outputs attached directly to the relay boards reducing the number of contacts. Each B-series scanner comes with a 2-metre lead. As an option, the leads can be extended to 3 or 4-metres.

The model 4210A has 10 four terminal input channels consisting of 40 tellurium copper binding posts and 2 four channel outputs consisting of eight tellurium copper binding posts.

The 4216A has 16 four terminal tellurium copper binding posts and 2 outputs consisting of 8 tellurium copper binding posts. The model 4216B has 16 four-conductor Teflon cable inputs with 2 four-conductor Teflon cable outputs.

The 4220A has 20 four terminal tellurium copper binding posts and 2 outputs consisting of 8 tellurium copper binding posts. The model 4220B has 20 four-conductor Teflon cable inputs with 2 four-conductor Teflon cable outputs. The 4220A is also available in a 30 Amp model to handle currents up to 30 A (model 4220A/30).





**MODEL 4210, 4216 & 4220 AUTOMATED LOW THERMAL MATRIX SCANNERS**

**Specifications:** Rev 2

<b>Operation</b>	Four Terminal Matrix
<b>Thermal EMF's</b>	< 50 nanovolts
<b>Error Contribution</b>	< 20 nanovolts
<b>Contact Configuration</b>	Relay – Two Coil Latching
<b>Max Carrying/Switching Current</b>	4/2 Amps @ < 30 Volt (DC)
<b>Maximum Working/Switching Voltage</b>	1000/220 Volts @ < 100 mA (DC)
<b>Contact Resistance</b>	< 0.05 Ω
<b>Expected Relay Life</b>	10 <sup>8</sup> Operations
<b>Insulation Resistance</b>	> 10 <sup>12</sup> Ω
<b>4210A, 4216A and 4220A Connection Type</b>	Tellurium Copper Binding Posts
<b>4210B, 4216B and 4220B Connection Type</b>	Teflon 4-Conductor Shielded Cables
<b>4210A Inputs (10-Channels) Rear Panel/Outputs (Front Panel)</b>	40/8
<b>4210B Inputs (10-Channels) Rear Panel/Outputs (Rear Panel)</b>	10/2
<b>4216A Inputs (16-Channels) Rear Panel/Outputs (Rear Panel)</b>	64/8
<b>4216B Inputs (16-Channels) Rear Panel/Outputs (Rear Panel)</b>	16/2
<b>4220A Inputs (20-Channels) Rear Panel/Outputs (Rear Panel)</b>	80/8
<b>4220B Inputs (20-Channels) Rear Panel/Outputs (Rear Panel)</b>	20/2
<b>Manual/IEEE-488</b>	Both
<b>Operating Environment</b>	18 to 34 °C, 10 to 80 % RH
<b>Warranty</b>	1 Year Parts & Labour

**Dimensions (L × W × H):**

Provide with Quote

**Weight:**

Provide with Quote

**Shipping Weight:**

Provide with Quote

**Main Power:**

100, 120, 220, 240 V – 50/60 Hz



C/ SEPTIEMBRE 31 28022 MADRID  
 Tel. 91 3000191 www.idm-instrumentos.es  
 idm@idm-instrumentos.es

**Corporate Headquarters**

Measurements International  
 PO Box 2359, 118 Commerce Drive  
 Prescott, Ontario, Canada K0E 1T0

Phone: 613-925-5934  
 Fax: 613-925-1195  
 Email: sales@mintl.com  
 Toll Free: 1-800-324-4988

**Worldwide Offices**

**MI-USA**  
 Phone: 407-706-0328  
 Email: sales@mintl.com

**MI-China**  
 Phone: +(86) 10-64459890  
 Email: sales@mintl.com

**MI-Europe**  
 Phone: +(420) 731-440-663  
 Email: sales@mintl.com

**MI-Japan**  
 Phone: +(81) 72 39 64 660  
 Email: kaz@mijpn.com

**MI-India**  
 Phone: +(91) 98 10 134 932  
 Email: sales@MILLP.co.in



[www.mintl.com](http://www.mintl.com)