

## MODEL 4210, 4216 & 4220



## Automated Low Thermal Matrix Scanners

- 10, 16 or 20 Four Terminal Channels
- Sealed Relays with 4A Carrying Capacity
- 4 Conductor Wire or Binding Post Inputs
- Optional 30A Capacity
- Low Thermal Matrix Design
- 1000V DC
- Insulation Resistance >  $10^{12} \Omega$
- Front Panel or IEEE488 Interface

## MODEL INFORMATION

Measurements International's series of Low Thermal 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 a number of 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 IEEE488 Interface when used in an automated system. LED's on the front panel enable the operator to quickly see which channels have been selected. Front panel LEDS designated A and B indicate

the selected channels. In addition, the A and B boards are separated to improve on 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. In addition, the A and B boards are separated to improve on 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 buildup 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 are available. 10 channel, 16 channel, and 20 channel with either Tellurium copper binding posts or 2 meter four-conductor Teflon cables.



consisting of eight tellurium copper binding posts.



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.

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 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 meter lead. As an option, the leads can be extended to 3 or 4 meters.

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 30A (model 4220A/30).

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



>163,65546 67810,72337 971  
 >198,65546 65612,23-2829 955  
 >198,65546 65612,23-2829 95556  
 >152,698016 68818,28-2399 92356  
 >198,643636 78617,73-2289 783 56  
 >124,634546 78672,23-7779 683 56  
 >458,11142 83417,73-2337 876 56  
 >145,523286 64486,22-2889 986 56  
 >140,77060 32814,07-7060 328 56-20



**Specifications:**

|  |                                    |
|--|------------------------------------|
| Operation                                      | Four Terminal Matrix               |
| Thermal EMF's                                  | < 50 nanovolts                     |
| Error Contribution                             | < 20 nanovolts                     |
| Contact Configuration                          | Relay - Two Coil Latching          |
| Max Carrying/Switching Current                 | 4/2 Amps @ <30 Volt (DC)           |
| Maximum Working/Switching Voltage              | 1000/220 Volts @ <100mA (DC)       |
| Contact Resistance                             | <0.05 Ω                            |
| Expected Relay Life                            | 10 <sup>8</sup> Operations         |
| Insulation Resistance                          | >10 <sup>12</sup> Ω                |
| 4210A,4216A and 4220A Connection Type          | Tellurium Copper Binding Posts     |
| 4210B,4216B and 4220B Connection Type          | Teflon 4 Conductor Shielded Cables |
| 4210A Inputs (10 Channels) rear panel/ Outputs | 40/8                               |
| 4210B Inputs (10 Channels) rear panel/ Outputs | 10/2                               |
| 4216A Inputs (16 Channels) rear panel/ Outputs | 64/8                               |
| 4216B Inputs (16 Channels) rear panel/ Outputs | 16/2                               |
| 4220A Inputs (20 Channels) rear panel/ Outputs | 80/8                               |
| 4220B Inputs (20 Channels) rear panel/ Outputs | 20/2                               |
| Manual/IEEE488                                 | Both                               |
| Operating Environment                          | 18 to 34°C, 10 to 80% RH           |
| Warranty                                       | 1 Year Parts & Labor               |



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