

# Laboratory

## Matrix Scanner

### LOW THERMAL DESIGN

Measurements International's Model 4220A utilises ultra-sensitive high efficiency polarized relay technology to deliver an automated low thermal matrix scanner. The relays used are 2 coil latching type, requiring only a short millisecond pulse to activate to eliminate self heating in the relay. The relay boards are thermally isolated to maintain thermal equilibrium in the switching area.

The Model 4220A has a total of 80 inputs and 8 outputs. For resistor applications it will handle up to 20 four terminal resistors and 40 two terminal connections for voltage applications. Connections to the resistors and measuring apparatus are made at the back of the scanner. Provisions have also been made for connecting the shields of the resistors.

True four terminal Matrix Scanner

20-four terminal inputs

40-two terminal inputs

Front panel or bus operation

Thermals in the nanovolt region

### OPERATION

The Model 4220A provides an easy means for intercomparing resistors, standard cells or 10 volt references. The relays selecting the rear panel input terminals are activated by front panel push-buttons or by commands sent over the IEEE-488 interface bus. The rear panel inputs are selected by pressing the channel desired and then the A or B button. The corresponding LED will be illuminated.

Several protection circuits are built into the 4220A. The corresponding LED is driven directly from a separate contact on the relay. Only one set of relays can be activated at any one time. It is necessary to open the closed set before another can be activated on the same side.

### APPLICATIONS

Resistance calibrations

Thermometry scanner

Low thermal voltage measurement

*True four terminal Matrix Scanner  
20 x four terminal inputs  
40 x two terminal inputs  
Front panel or bus operation  
Thermals in the nanovolt region*

Number of inputs

Model No 4220A 2-terminal = 40 channels  
4-terminal = 20 channels

Model No 4210A 2-terminal = 20 channels  
4-terminal = 10 channels

Thermoelectric Potentials <100 nanovolts maximum  
typically 50-70 nanovolts

Error Contribution <20 nanovolts

Bus Input 24 pin IEEE-488 connector

Relay Contact Rating  
Max switching power 60W, 125 VA  
Max switching Voltage 220V DC, 250 V AC  
Max switching current 2A AC, DC  
Max carrying current 2A AC, DC  
Contact Resistance <0.02 ohms

Expected Life Mechanical  $5 \times 10^7$   
Electrical at 1A 30V DC  $5 \times 10^5$

Power 120/240V, 50/60Hz, 40VA

Rear Panel Connections Low thermal tellurium copper  
MIL binding posts

Switch Outputs Low thermal tellurium copper  
MIL binding posts

Display Two LED displays indicating open circuit  
(flashing) and input select (solid)  
on both A and B inputs

Control Front panel local control  
IEEE-488 remote control

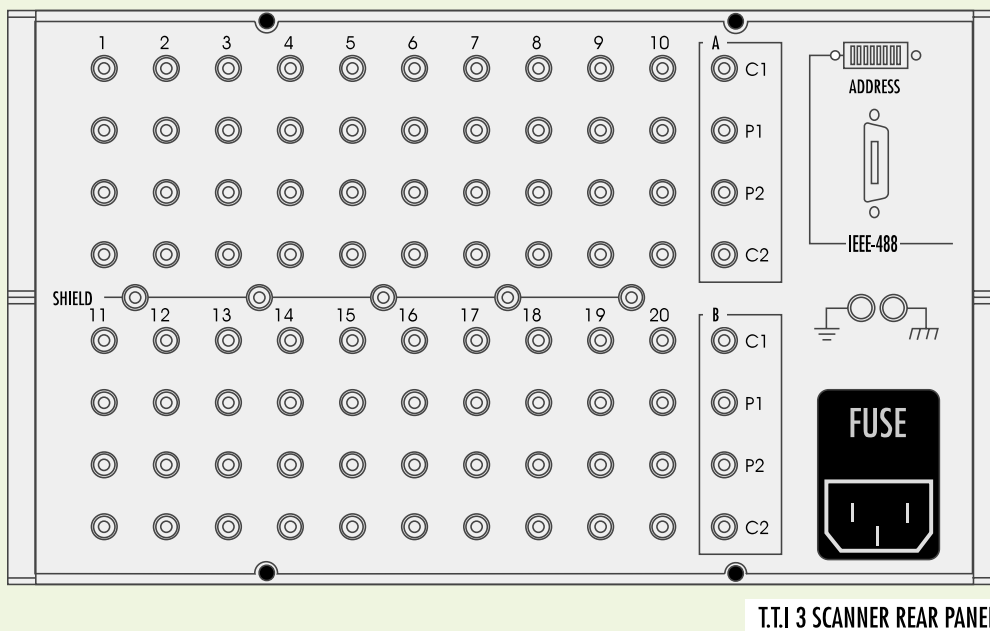
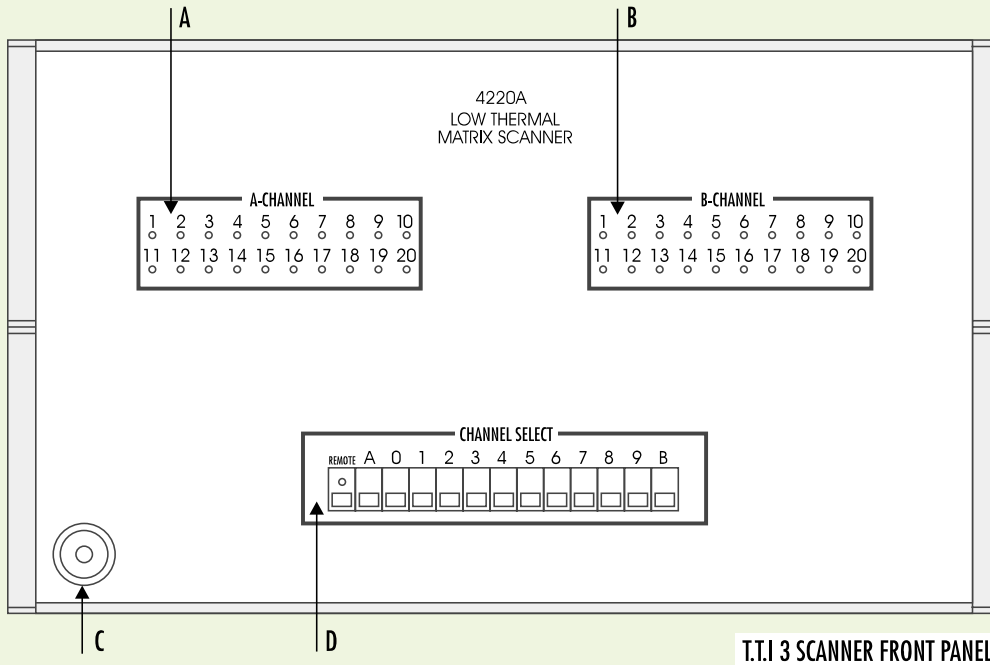
Dimensions Height 266mm  
Width 451mm  
Depth 306mm

#### How to order

Model 4220A or 4210A Matrix Scanner

Please specify voltage required

# Laboratory Matrix Scanner



- A: Indicators for selected 'A' channel
- B: Indicators for selected 'B' channel
- C: Power on/off switch
- D: Local (manual) channel select