PICOTEST®

M3500-OPT12
10 CH TC-Scanner Card
USER'S GUIDE

November 2011 Version 1 Printed in Taiwan

PICOTEST CORP.
8F-1, 286-9, Hsin-Ya Rd., 80673, Kaoshiung, Taiwan
TEL: +886-7-815-7183
FAX: +886-7-815-8312
URL http://www.picotest.com.tw

Product Introduction

Picotest thanks you to purchase the "M3500-OPT12 (TC-Scanner Card)". To reach the best performance from the product, please read this guide carefully.

1. Overview

The M3500-OPT12 supports the multi-function measurements, including 2-/4-wired Ohm, Voltage, Freq., Period, Thermocouple, RTD, and indirect Current (Shunt via Software's MX+B).

2. Inspection & Upkeep

Inspection:
When you open the package, inspect it carefully to make sure whether defects occur on the appearance or malfunctions show in the operation. Please contact with your local reseller or PICOTEST representative for more help.

Upkeep:
To clean the product, wipe its cover (except the circuit) gently with a soft and moistened cloth. Prevent using solvents, such as benzene, alcohol, acetone, ether, ketones, thinners or gasoline because of their destructive capabilities.

3. Safety

This safety information with the warning and danger marks on the user's guide reminds users to avoid risks as they are using it.

⚠ **Warning:** The triangle symbol in black indicates that incorrect operation might cause an injury to users or damage to the product.

⚠ **Danger:** The triangle symbol in red indicates that incorrect operation might cause an extreme hazard to users' life.

4. Prenotion

⚠ Danger

- To avoid electrical shock and personal injury, please don't measure the source out of specification.
- The maximum AC voltage is 110V rms or 155V peak, 100kHz, 1A switched 30VA (resistive load), and DC voltage is 110V, 1A switched, 30VA (resistive load).

⚠ Warning

- To avoid breaking the product, please do not pull it away when measurement is executed.

5. General Specifications

Maximum AC Voltage	110V rms or 155V peak, 100kHz, 1A switched, 30VA (resistive load)
Maximum DC Voltage	110V, 1A switched, 30VA (resistive load)
Contact Life	>100000 operations at maximum signal level; >100000000 operations cold switching.
Contact Resistance	<1ohm at end of contact life
Actuation Time	5ms maximum on/off
Contact Potential	<±500nV typical per contact, 1μV max <±500nV typical per contact pair, 1μV max
Connector Type	Screw terminal, #22 AWG wire size
Isolation btw Any Two terminals	>10 Gohm, < 75pF
Isolation btw Any Terminal and Earth	>10 Gohm, < 150pF
Common Mode Voltage	200V peak btw any terminal and earth
Max. Voltage btw Any Two Terminals	160V peak
Max. Voltage btw Any Terminal and M3500A Input LO	160V peak
Environmental	Meets all M3500A Environmental Spec.

6. Specifications

Type	Range	1 Year Accuracy
E	-250°C ~1000°C	± 1.0°C
J	-210°C ~ 1200°C	± 1.0°C
K	-200°C ~ 1372°C	± 1.5°C
N	-200°C ~ 1300°C	± 1.0°C
R	0°C ~ 1767°C	± 1.5°C
S	0°C ~ 1760°C	± 1.5°C
T	-250°C ~ 400°C	± 1.5°C

7. SCPI Commands

Command	Description
ROUTe:CLOSe <channel>	Close channels <1 ~ 10>.
ROUTe:CLOSe?	Query the closed channels
ROUTe:OPEN	Open all channels.
ROUTe:STATe?	Ask the state. The state 1 means Card inserted or 0 means Card not inserted.
ROUTe:SCAN:FUNCtion <channel>,{<function>|"VOLT:DC"|"VOLT:AC"|"FREQuency"|"RESistance"|"FRESistance"|"NONE"}	Set card states which might measure the VAC, VDC, Frequency, 2-Wire Resistance, 4-Wire Resistance or disabling the channel.
ROUTe:SCAN:FUNC? <channel>	Ask the channel's state of the card.
ROUTe:SCAN:TIMER?	Read the time interval of scanning.
ROUTe:SCAN:TIMER <value>	Set the time interval of scanning <The unit is second>.
ROUTe:SCAN:COUNT?	Read the number of times of scanning.
ROUTe:SCAN:COUNT <value>	Set the number of times of scanning.
ROUTe:SCAN:STATe?	Read the state of scanning. 1 means "finished". 0 means "not finished".
ROUTe:SCAN:SCAN	Run SCAN mode
ROUTe:SCAN:STEP	Run STEP mode
[SENSe:]TCOuple:RJUNction:RSELect {REAL|SIMulated }	Select the reference junction (REAL) or self-definition (Simulated)
[SENSe:]TCOuple:RJUNction:REAL?	Query a current temp of the reference junction.
[SENSe:]TEMPerature:RTD:TYPE {PT100|D100|F100|PT385|PT3916|USER|SPRTD|NTCT},@{scanner channel number}	Set a RTD type on an indicated channel.
[SENSe:]TEMPerature:RTD:TYPE? @{scanner channel number}	Query RTD type info. on an indicated channel.
[SENSe:]TEMPerature:TRANsducer FRTD,@{scanner channel number}	Set the TRANsducer to be FRTD on the indicated channel while measuring temp.
[SENSe:]TEMPerature:TRANsducer RTD,@{scanner channel number}	Set the TRANsducer to be RTD on the indicated channel while measuring temp.
[SENSe:]TEMPerature:TRANsducer? @{scanner channel number}	Query TRANsducer info. on an indicated channel.
[SENSe:]TCOuple:TYPE {E|J|K|N|R|S|T} ,@{scanner channel number}	Set a TC type on an indicated channel.
[SENSe:]TCOuple:TYPE? @{scanner channel number}	Query TC type info. on an indicated channel.

8. Tcouple Settings

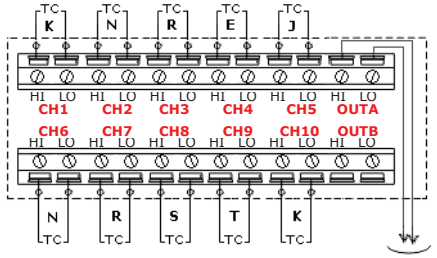
On the front panel, press CONFIG + SHIFT + TEMP to enter the following menu.

```
TYPE
UNITS
RJUNCTION
        REAL        Select the reference junction. (Default)
        SIMULATED   Define a reference you want.
VIEW REAL           View the current inside DMM's temperature.
```

On the front panel, press CONFIG + SHIFT + DIGITS to enter the channel configuration. Under the thermocouple mode, you need to set the type only. For example:

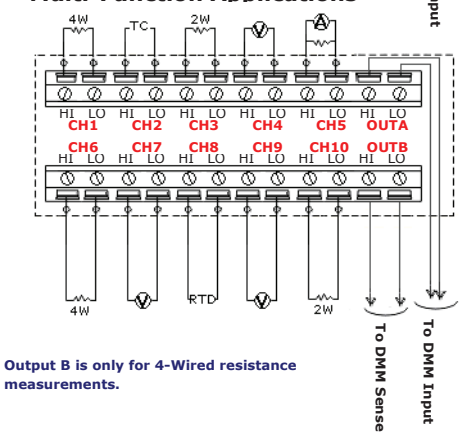
CH01 = TCOUPLE **CH02 = TCOUPLE** **CH03 = TCOUPLE**
CH01 = K TYPE **CH02 = N TYPE** **CH03 = R TYPE** ...

- **TC-Scanner Applications**



9. Others

- **Multi-Function Applications**



Output B is only for 4-Wired resistance measurements.