

3010 PRECISION MULTI PRODUCT CALIBRATOR

VOLTAGE



1000V Max.
2 Wire Ohms



CURRENT



2A Max.
4 Wire Ohms



HIGH CURRENT



AUXILIARY TERMINALS




50V Max.

NEG EARTH SCOPE FREQ / TAG

VE TO GND
10.000000V DC
0.0PPM
+/- POWER SCOPE NEXT

OUTPUT CONTROL



3000A SERIES

ADVANCED COMMAND SET

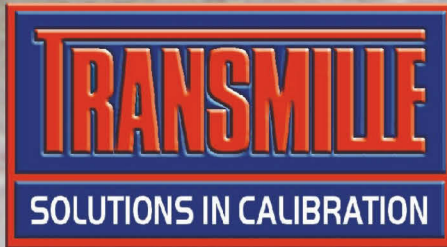


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3000A Series Remote Commands - Introduction

All Commands are subject to change to accommodate improved functionality.

All commands followed by Carriage Return or Line Feed (ASCII 13 or 10) or both.

Symbols

The following symbols are used throughout this document :

Symbol	Description
<cr>	Carriage Return (ASCII Character 13)
<lf>	Line Feed (ASCII Character 10)

Response codes

Commands (excluding Reading commands) will give a response code

DESCRIPTION	RESPONSE CODE
Command Accepted	*0<cr><lf>
Unrecognised Command	*1<cr><lf>
Incorrect Range	*2<cr><lf>
Incorrect Frequency	*3<cr><lf>
Incorrect Output Value	*4<cr><lf>
Incorrect Calibration Factor	*5<cr><lf>
Unauthorised Command	*6<cr><lf>
Incorrect Command Parameters	*7<cr><lf>
Over Temperature	*8<cr><lf>
Output Error	*9<cr><lf>

3000A Series Commands

- Command words are separated by a colon.
- A space is required between the command words and the parameters.
- Command words are not case sensitive.

Command	Format	Parameters
Transmit Reading	READ?	Only in: Adapter read-back ranges, Workstation Measure ranges
Set Output, autorange (3000A)	o<value><prefix><unit>	<value> output value, defaults to current range units. <prefix> scales unit value, defaults to current range scale factor n u m k M <unit> defaults to current range units V - Voltage A - Current R - Resistance F - Capacitance H - Inductance
Set range	r<value>	<value> = 1-149 Allowed ranges dependent on selected options
Select AC Voltage Range	RANGE:AC:VOLTAGE<space> <value>,<accuracy> RANGE:AC:VOLT<space> <value>	value = 0.01 to 1000 Volts accuracy = 4-8 digits displayed
Select DC Voltage Range	RANGE:DC:VOLTAGE<space> <value> RANGE:DC:VOLT <space><value>	value = 0.1 to 1000
Select AC Current Range	RANGE:AC:CURRENT <space><value> RANGE:AC:CURR<space> <value>	value = 10^{-4} to 30
Select DC Current Range	RANGE:DC:CURRENT <space><value> RANGE:DC:CURR<space> <value>	value = 10^{-8} to 30
Select 4-Wire Resistance	RANGE:FRES<space> <value> RANGE:FRESISTANCE<space> <value>	value=1 to 10^7
Select 2-Wire Resistance	RANGE:RES <space><value> RANGE:RESISTANCE <space><value>	value=1 to 10^{12}

Enter EA015 Workstation Mode	MODE:WORKSTATION 1	
Leave EA015 Workstation Mode	MODE:WORKSTATION 0	
Select adapter mode	adaptermode <n>	0=off 1=picoamp measure 2=electrometer 3=3A PSU 4=60APSU 5=environmental - Temp 6=environmental - Humidity
Select adapter subrange	adapterrang <n>	Picoamp measure subranges. n=0 to 4 for 10nA,100nA,1uA,10uA,100uA
Select adapter subrange - autorange	adapterrang a	
Adapter set zero	MODE:SETZERO	
Thermocouple Cold Junction : Manual (3000A)	KT<temp>	<temp> = -50 to 100 °C
Set Active PRT R0	PRTRZERO <resistance>	resistance = 25 to 1000 ohm
Select Active PRT	r95	
Set GPIB Address	COMMUNICATE:GPIB:ADDRESS<space><address>	address = {1-30}
Reset to startup state	*RST	Returns to 200mV range and clears state
Reboot calibrator	SYSTEM:REBOOT	Processor reset
Reset to starting state	*RST	System state reset
Identification String	*IDN?	



Scope Amplitude	A1	
Leave Scope Amplitude	A0	
AC Power Mode	B1	
DC Power Mode	B5	
Leave Power Mode	B0	
Power Mode: Set Current	C<value><prefix>	value=0 – 30A floating-point prefix: u = ÷ 1,000,00 m = ÷ 1,000
Power Mode: Set Both Waveforms	E<index>	index: 0="Sine",1="3rd 5%",2="3rd 10%",3="5th 10%",4="12th 10%",5="21st 10%",6="Cust Blip",7="Custom"
Power Mode: Set Voltage Waveform (3000a)	EV < index >	
Power Mode: Set Current Waveform (3000A)	EI < index >	
Set Frequency	F <value>	<i>value</i> : allowed values depend on instrument specification
Scope Amplitude square wave output	G0	
Scope Amplitude DC output	G1	
PWM preset	H<index>	index=0-8: 10%,20%,30%,40%,50%,60%,70%,80%,90%
Frequency Range: presets	H<index>	index=0-11: 1,10,100,1k,10k,20k,50k,100k,300k,500k,1M,10M
Frequency Range: variable	O<frequency>	frequency=1 up to 1000000 or 10000000

Scope Amplitude sub-range	H0 - 2mV/div 20mV H1 - 5mV H4 - 50mV H5 - 100mV H6 - 200mV H7 - 500mV H8 - 1V H9 - 2V H10 - 5V H11 - 10V H12 - 20V H13 - 50V	
Scope Timebase sub-range	H0 - 5s/div 500mS H1 - 2s H4 - 200ms H5 - 100ms H6 - 50ms H7 - 20ms H8 - 10ms H9 - 5ms H10 - 2ms H11 - 1ms H12 - 500us H13 - 200us H14 - 100us H15 - 50us H16 - 20us H17 - 10us H18 - 5us H19 - 2us H20 - 1us H21 - 500ns H22 - 200ns H23 - 100ns H24 - 50ns H25 - 20ns H26 - 10ns H27 - 5n	
2-wire Resistance	I0	
4-wire Resistance	I1	Must be in resistance range capable of 4-wire
Active Resistance	I2	
Earth Relay (Low to Ground) ON	J0	
Earth Relay (Low to Ground) OFF	J1	
Thermocouple Cold Junction : Manual Zero	K0	
Thermocouple Cold Junction : Auto	K1	
Thermocouple Cold Junction : Manual (3000A)	KT<temp>	<temp> = -50 to 100 °C
Thermocouple Type	L<type>	<type> = {1,2,3,4,5,6,7,8}
Thermocouple Type (3000A)	L<type>	<type> = {K,J,T,R,S,E,N,B}
Power: Set Phase	M<phase>	<phase> = 0.0 to 359.9°
Set Output, locked to current range	O<value>	<value> range-dependent, specified in range units.

Set Range	R<range>	<range> = 1 to 79
Standby Off	S0	No space
Standby On	S1	
Print Option Information	U	reply: (16 char strings) Model Options 1 Options 2 Serial Cal Date Cal Due Cal Period Cert No Spare Spare Address Prev Cal Date Prev Cert No Prev Cal Date 2 Prev Cert No 2
Print displayed reading	X	reply: Primary Display Text Frequency *0
Print displayed reading (on 1GOhm Range)	X	reply: Value in MOhms 0 *0
Local Mode	l	
Read adapter A/D input	v	reply: Voltage in μV *0
Display Fullscreen Message	#<text>	
Clear Fullscreen Message	#	