

# 6½ DIGITAL MULTIMETER MODEL 12061

#### **Solution for General Instrument Measurement**

6½ Digital Multimeter is the most frequent used measurement instrument in Electronic industry. Chroma 12061 provides a combination of speed, accuracy and high performance measurement functions that can be used either solely or with system to meet your requirements swiftly.

Chroma 12061 offers the resolution and specification of the same class in the industry plus enhanced speed and accuracy it turns into the best solution for various kind of basic measurements. A brand new design was made for the operating interface of Chroma 12061. The commonly used functions can be selected with a single button pressed that increases the panel accessibility greatly.

#### **Fast & High Performance**

The 12061 6½ Digital Multimeter has assorted settings of resolution, integration time and ranges that allows users to optimize the configuration of measurement speed, resolution and accuracy when in individual measurement test mode.

The 12061 has built-in a high speed, low interference A/D converter with a maximum speed of 2000 rdgs/s, it is the best solution for high speed measurement.

## **Individual Application**

Chroma 12061 is equipped with 11 types of measurement functions which contains DC voltage/current, AC voltage/current, resistance 2/4-wire ohms, period, frequency, diode, continuity and temperature as well as diverse math functions of NULL, Max/Min/Avg, High/Low limit, High/Low limit, Percentage/Ratio/MX+B, dB/dBm, etc. Along with trigger and memory functions, Chroma 12061 is the right tool for you to perform the basic measurement.

# **Test System Application**

For user's convenience, Chroma supports various softwares for different control platforms.

# 61/2 Digital Multimeter

# **MODEL 12061**

## Key Features:

- 6½ digits resolution
- 11 types of measurement characteristics
  - DC voltage/current (1000V/3A max)
  - AC voltage/current (750V/3A max)
  - Resistance 2 or 4-wire ohms measurement
  - Period & frequency
  - Diode & continuity
  - Temperature
    (Thermocouple & RTD)
- Various math functions
  - NULL
  - Max/Min/Avg
  - High/Low limit
  - Percentage/Ratio/ MX+B
  - dB/dBm
- DC voltage accuracy: 0.0015%
- AC voltage accuracy: 0.04%
- Optional Multi-point TC Scanner Card (10ch), multi-point scanner card (10/20ch)
- Measurement and data transmission up to 2000 readings/sec (4½)
- Up to 2000 readings memory storage
- Standard SCPI control
- Standard USB interface, support USBTMC
- Optional GPIB interface
- Software control support
  - Chroma 12061 software
  - LabView® Driver







## **BUILT-IN USB (USBTMC SUPPORTED)**

Different from the traditional interface, Chroma 12061 uses USB as its standard feature that not only improves the transmission speed but also makes the connection more easier with the plug and play functions.

The USB interface fully supports USBTMC (USB Test & Measurement Class). As long as the instrument is equipped with USB interface that supports USBTMC, it can communicate with PC in real time via VISA driver without the restrictions of platform and environment. USBTMC is a communication protocol built on top of the USB and uses GPIB-like methodology to communicate with USB. Therefore, from user's point of view by using USB should be as simple as using GPIB.

#### PASS/FAIL SIGNAL OUTPUT

Chroma 12061 can provide PASS/FAIL signal to system by USB port (either communication or PASS/FAIL signal) with high/low limit set. USB type B female connect to system with signal (1 floating/ 2 PSS/ 3 FAIL/ 4 GND) in 2ms low and please disable USB interface. If result over the high/low limit, the beeper will alarm and signal output. (Beeper can be off)



#### TEMPERATURE MEASUREMENT

Chroma 12061 has temperature measurement function that supports 7 kinds of Thermocouples:E, J, K, N, R, S, and T type. It also supports RTDs 4-wire measurement. The built-in ITS-90, IEC751 and Callendar-Van Dusen temperature conversion can satisfy the diverse measurement requirements of yours.

## **MULTI-POINT SCANNER CARD**

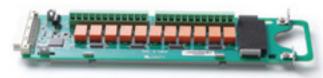
#### Multi-Point Scanner Card (10ch/20ch)

Chroma  $6\frac{1}{2}$  Digital Multimeter supports Multi-point Scanner Card which is a scanning measurement tool not supported by most of the  $6\frac{1}{2}$  Digital Multimeters in the field. Multi-point Scanner Card offers multiplexing ten two poles (ACV, ACI, DCV, DCI, Resistance, Period, Frequency) that can be installed on the extension card option directly of the rear panel.

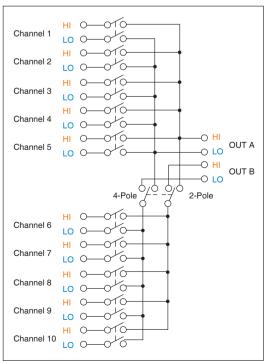
#### Multi-Point TC Scanner Card (10ch)

The multi-point temperature scanning card has multiple functions including 2-wire/4-wire resistance, AC/DC voltage/current, frequency, period and temperature measurements. As cold junction compensation is equipped for temperature measurement, it increases the measurement accuracy greatly. In addition, it can scan the temperature of 10 different channels that can be applied extensively to electronic devices and industrial studies for temperature measurement

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Multi-point TC Scanner Card A120004		
Maximum AC Voltage	110V rms or 155V peak, 100kHz, 1A switched, 30VA (resistive load)	
Maximum DC Voltage	110V, 1A switched, 30VA (resistive load)	
Connector Type	Screw terminal, #22 AWG wire size	
Common Mode Voltage	200V peak btw any terminal and earth	
Max. Voltage btw Any Two Terminals	160V peak	
Thermocouple	K type (-200°C $\sim$ 1372°) $\pm$ 1.5°C (Other type refer to the detailed specifications)	



A120000 Multi-point Scanner Card



A120000 Scanner Card Configuration

## **OPERATION SPEED (INDIVIDUAL)**

	6½ SLOW	5.9 reading/s
	6½ FAST	59 reading/s
DCV \ DCI	5½ SLOW	59 reading/s
and Resistance	5½ FAST	545 reading/s
	4½ SLOW	545 reading/s
	4½ FAST	2000 reading/s

	6½ SLOW	0.15 reading/s (3Hz)
ACV \ ACI	6½ MEDIUM	1 reading/s (3Hz)
	6½ FAST	10 reading/s (200Hz)
	61/2	1 reading/s
Frequency or Period	5½	9.8 reading/s
	4½ 80 reading/	
Diode / Continuity	Response time	300 reading/s

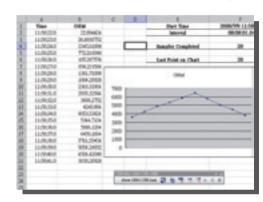
# SOFTPANEL

Chroma 12061 TOOL and Chroma 12061 LINK are two free softpanels provide with data collection and drawing for analysis.



#### **CHROMA 12061 TOOL**

- Real-time display interface for value monitoring
- Data log and output in CSV format for analysis



#### **CHROMA 12061 LINK**

- Softpanel toolbar open with EXCEL or WORD
- Real-time data transferring to computer directly and save it to EXCEL or WORD format
- Create data patterns in EXCEL format automatically
- Test engineers can use ActiveX components to control the 12061 using SCPI commands

# PANEL DESCRIPTION



2 9 13 14 10 11

- Easy-to-read display with 5X7 matrix triple colored double-line screen that can identify the meaning of data and symbol easily
- 2. Easy-to-switch function keys
- 3. 2 or 4-wire ohms measurement
- 4. Built-in frequency, diode, continuity and temperature measurement capability
- 5. Fast TRIGGER control
- 6. Data storage memory
- 7. Math calculation
- 8. Fast range changes
- 9. Optional Scanner Card
- 10. USB Interface supports USBTMC
- 11. GPIB Interface

- 12. 7A/250V Fuse
- 13. Measurement completed signal output terminal for automatic operation
- 14. External triggered input terminal for automatic operation

## ORDERING INFORMATION

12061:61/2 Digital Multimeter

**12061**: 6½ Digital Multimeter with GPIB **A120000**: Multi-point Scanner Card (10ch) **A120001**: Thermal-measurement Adapter

A120002: Multi-point Scanner Card (20ch)

**A120003:** HV Probe (1000:1)

A120004: Multi-point TC Scanner Card (10ch)

Range         Resolution         Input Resistance         1 year accuracy ±(reading%+range%) (23°C±5°C)           100.0000V         0.1 μV         >100GΩ         0.0050 + 0.0035           100.0000V         10 μV         100MΩ         0.0040 + 0.0007           100.0000V         100 μV         10MΩ         0.0045 + 0.0006           100.0000V         1mV         10MΩ         0.0045 + 0.0010           DC Current         Range         Resolution         Shunt Resistance         1 year accuracy ±(reading%+range%) (23°C±5°C)           10.00000mA         10nA         5.1Ω         0.050 + 0.020           10.00000mA         10nA         5.1Ω         0.050 + 0.020           1.000000A         1 μA         0.1Ω         0.100 + 0.010           3.00000A         10 μA         0.1Ω         1 year accuracy ±(reading%+range%) (23°C±5°C)           4 CRMS Voltage         Frequency (Hz)         1 year accuracy ±(reading%+range%) (23°C±5°C)           100.0000mV         0.1 μV         5 ~ 10         0.35 + 0.04           100.0000mV         0.1 μV         10 ~ 20K         0.06 + 0.04           100.0000mV         1. μV         10 ~ 20K         0.06 + 0.04           100.00000V~         2.0 μV ~ 1mV         20K ~ 50K <td< th=""><th>DC Voltage</th><th></th><th></th><th></th></td<>	DC Voltage			
1.000000V   1.0 $\mu$ V   100 $\mu$ C   100000V   10 $\mu$ V   100000V   100 $\mu$ V   100000V   100 $\mu$ V   100000V   100 $\mu$ C   100000V   1mV   10MΩ   100000   100000V   1mV   10MΩ   1000000   1000000   1mV   10MΩ   10000000   10000000   1000000000   100000000		Resolution	Input Resistance	$\pm$ (reading%+range%)
1.000000V   1.0 $\mu$ V   100 $\mu$ C   100000V   10 $\mu$ V   100000V   100 $\mu$ V   100000V   100 $\mu$ V   100000V   100 $\mu$ C   100000V   1mV   10MΩ   100000   100000V   1mV   10MΩ   1000000   1000000   1mV   10MΩ   10000000   10000000   1000000000   100000000	100.000mV	0.1 μ V		0.0050 + 0.0035
	1.000000V		>10GΩ	0.0040 + 0.0007
	10.00000V	10 μV		0.0035 + 0.0005
1000.000V   1mV   10MΩ   10MΩ   10MΩ   100000   1000000   100000000   100000000	100.0000V		40145	0.0045 + 0.0006
Range         Resolution         Shunt Resistance         1 year accuracy $\pm$ ((reading)%+range%) $\pm$ (23°C±5°C)           10.00000mA         10nA         5.1Ω         0.050 + 0.020           10.00000A         1 μ A         0.1Ω         0.100 + 0.010           3.0000A         1 μ A         0.1Ω         0.100 + 0.010           3.0000A         10 μ A         0.120 + 0.020           AC RMS Voltage           Range         Resolution         Frequency (Hz)         1 year accuracy ± (reading)%+range%) (23°C±5°C)           100.0000mV         0.1 μ V         3 ~ 5         1.00 + 0.04           5 ~ 10         0.35 + 0.04         10 ~ 20K         0.06 + 0.04           100.0000mV ~ 750.000V         1.0 μ V ~ 1mV         3 ~ 5         1.00 + 0.04           3 ~ 5         1.00 + 0.05         50K ~ 100K         0.60 + 0.08           1000K ~ 300K         4.00 + 0.50         3 ~ 5         1.00 + 0.03           3 ~ 5         1.00 + 0.03         5 ~ 10         0.35 + 0.03           100 K ~ 50K         0.60 + 0.03         20K ~ 50K         0.12 + 0.05           50K ~ 100K         0.60 + 0.03         20K ~ 50K         0.12 + 0.05           50K ~ 100K         0.60 + 0.03         20K ~ 50K         0.12 + 0.05	1000.000V		10M <u>C</u> 2	0.0045 + 0.0010
Range         Resolution         Shuft Resistance $\pm$ (reading%+range%) (23°C±5°C)           10.00000mA         100nA $5.1\Omega$ $0.050 + 0.020$ 10.00000A         1 $\mu$ A $0.1\Omega$ $0.050 + 0.020$ 3.0000A         10 $\mu$ A $0.1\Omega$ $0.100 + 0.010$ AC RMS Voltage         Frequency (Hz)         1 year accuracy           8 ange         Resolution         Frequency (Hz)         1 year accuracy           100.0000mV         0.1 $\mu$ V         10 $\sim$ 20K         0.06 + 0.04           20K $\sim$ 50K         0.12 + 0.05         50K $\sim$ 100         0.05 + 0.04           100.00000V $\sim$ 1.0 $\mu$ V $\sim$ 1mV         3 $\sim$ 5         1.00 + 0.04         0.06 + 0.08           1.000000V $\sim$ 3 $\sim$ 5         1.00 + 0.03         5 $\sim$ 10         0.35 + 0.04         0.06 + 0.08           1.00000V $\sim$ 1.0 $\mu$ V $\sim$ 1mV         3 $\sim$ 5         1.00 + 0.03         5 $\sim$ 10         0.35 + 0.04         0.06 + 0.03         20K $\sim$ 50K         0.12 + 0.05         5 $\sim$ 10         0.35 + 0.03         0.06 + 0.03         10 $\sim$ 20K         0.06 + 0.03         10 $\sim$ 20K         0.06 + 0.03         0.06 + 0.03         0.06 + 0.03         0.06 + 0.03         0.06 + 0.03         0.06 + 0.03	DC Current			
	Range	Resolution		$\pm$ (reading%+range%) (23°C $\pm$ 5°C)
		-	5.10	
3.00000A $10 \mu A$ $0.1\Omega$ $0.120 + 0.020$ AC RMS Voltage         Frequency (Hz)         1 year accuracy ± (reading%+range%) (23°C±5°C)           100.0000mV         Resolution         Frequency (Hz)         1 year accuracy ± (reading%+range%) (23°C±5°C)           100.0000mV $5 \sim 10$ $0.35 + 0.04$ $0.06 + 0.04$ 100.00000V~ $0.06 + 0.08$ $0.06 + 0.08$ $0.06 + 0.08$ 1.000000V~ $0.06 + 0.08$ $0.06 + 0.03$ $0.06 + 0.03$ 1.000000V~ $0.06 + 0.08$ $0.06 + 0.03$ $0.06 + 0.03$ 1.000000V~ $0.06 + 0.08$ $0.06 + 0.08$ $0.06 + 0.08$ 1000000A $0.06 + 0.08$ $0.06 + 0.08$ $0.06 + 0.08$ 1000000A $0.06 + 0.08$ $0.06 + 0.08$ $0.06 + 0.08$ 1000000A $0.06 + 0.08$ $0.06 + 0.08$ $0.06 + 0.08$ 1.000000A $0.06 + 0.08$ $0.06 + 0.08$ $0.06 + 0.08$ 1.000000A $0.06 + 0.08$ $0.06 + 0.08$ $0.06 + 0.08$ 1.000000A $0.06 + 0.08$ $0.06 + 0.08$ $0.06 + 0.08$ $0.06 + 0.08$ 1.000			31122	
AC RMS Voltage         Frequency (Hz)         1 year accuracy $\pm$ (reading%+range%) (23°C ± 5°C)           100.0000mV         0.1 μ V			0.10	
Range         Resolution         Frequency (Hz) (Hz) (23°C±5°C)         1 year accuracy ± (reading%+range%) (23°C±5°C)           100.0000mV         3 - 5 1.00 + 0.04         1.00 + 0.04           5 - 10 0.35 + 0.04         0.06 + 0.04           10 - 20K 0.06 + 0.08         0.12 + 0.05           50K - 100K 0.60 + 0.08         1.00 + 0.03           1.000000V - 750.000V         5 - 10 0.35 + 0.03           1.000000V - 750.000V         1.00 + 0.03           8 c r 100K 0.60 + 0.08         100K - 300K 0.60 + 0.03           10 - 20K 0.06 + 0.03         10 - 20K 0.60 + 0.03           20K - 50K 0.12 + 0.05         50K - 100K 0.60 + 0.08           100K - 300K 0.60 + 0.08         100K - 300K 0.60 + 0.08           100K - 300K 0.60 + 0.08         1.00 + 0.50           4 c r 20K 100K 0.60 + 0.08         1.00 + 0.50           1 r 20K 100K 0.60 + 0.08         1.00 + 0.50           1 r 20K 20K 0.10 + 0.05         1.00 + 0.05           1 r 20K 20K 0.10 + 0.00         1.00 + 0.00           1 r 20K 20K 0.10 + 0.00         1.00 + 0.00           1 r 20K 20K 0.10 + 0.00         1.00 + 0.00           1 r 20K 20K 0.10 + 0.00         1.00 + 0.00           1 r 20K 20K 0.10 + 0.00         1.00 + 0.00           1 r 20K 20K 0.10 + 0.00         1.00 + 0.00           1 r		10 μ A	0.132	0.120 + 0.020
Range         Resolution         Frequency (Hz) (Hz) (23°C ± 5°C) $\pm$ (reading%+range%) (23°C ± 5°C)           100.0000mV         0.1 μ V $5 \sim 10$ 0.35 + 0.04 0.06 + 0.04 0.06 + 0.04 0.06 0.06 + 0.08 0.06 + 0.08 0.06 + 0.08 0.06 + 0.08 0.06 + 0.08 0.06 0.00 0.06 0.03 0.05 + 0.03 0.03 0.00 0.00 0.00 0.00 0.00 0.	AC RMS Voltage			
$100.0000mV \\ 100.0000mV \\ 0.1 μV \\ 0.1 μV \\ 20K \sim 50K \\ 0.06 + 0.04 \\ 20K \sim 50K \\ 0.12 + 0.05 \\ 50K \sim 100K \\ 0.60 + 0.08 \\ 100K \sim 300K \\ 4.00 + 0.50 \\ 3 \sim 5 \\ 1.00 + 0.03 \\ 5 \sim 10 \\ 0.35 + 0.03 \\ 100 \approx 20K \\ 0.06 + 0.03 \\ 20K \sim 50K \\ 0.12 + 0.05 \\ 50K \sim 100K \\ 0.60 + 0.03 \\ 100K \sim 300K \\ 4.00 + 0.50 \\ 0.60 + 0.03 \\ 100K \sim 300K \\ 4.00 + 0.50 \\ 0.60 + 0.08 \\ 100K \sim 300K \\ 4.00 + 0.50 \\ 0.60 + 0.08 \\ 100K \sim 300K \\ 4.00 + 0.50 \\ 0.60 + 0.08 \\ 100K \sim 300K \\ 0.12 + 0.05 \\ 0.12$	Range	Resolution		$\pm$ (reading%+range%)
			3 ~ 5	1.00 + 0.04
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$				0.35 + 0.04
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	100.0000m\/	0.1 // V	10 ~ 20K	0.06 + 0.04
	100.00001117	0.1 μ ν	20K ~ 50K	0.12 + 0.05
			50K ~ 100K	0.60 + 0.08
$ \begin{array}{c} 1.000000V \sim \\ 750.000V \\ \hline \end{array} \\ 1.0  \mu  V \sim 1  \text{mV} \\ \hline \end{array} \\ 1.0  \mu  V \sim 1  \text{mV} \\ \hline \end{array} \\ \begin{array}{c} 1.0  \mu  V \sim 1  \text{mV} \\ \hline \end{array} \\ \begin{array}{c} 1.0  \mu  V \sim 1  \text{mV} \\ \hline \end{array} \\ \begin{array}{c} 1.0  \mu  V \sim 1  \text{mV} \\ \hline \end{array} \\ \begin{array}{c} 1.0  \mu  V \sim 1  \text{mV} \\ \hline \end{array} \\ \begin{array}{c} 1.0  \mu  V \sim 1  \text{mV} \\ \hline \end{array} \\ \begin{array}{c} 10  \sim 20  \text{K} \\ \hline 0.06  + 0.03 \\ \hline 0.06  + 0.05 \\ \hline 0.06  + 0.08 \\ \hline \end{array} \\ \begin{array}{c} 100  K  \times  100  K \\ \hline 0.000000  + 100  \mu  M \\ \hline 0.0000000  + 100  \mu  M \\ \hline 0.0000000  + 100  \mu  M \\ \hline 0.00000000  + 100  \mu  M \\ \hline 0.000000000000000000000000000000000$			100K ~ 300K	4.00 + 0.50
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$			3 ~ 5	1.00 + 0.03
			5 ~ 10	0.35 + 0.03
	1.000000V ~	10 // // a, 1m//	10 ~ 20K	0.06 + 0.03
Touck ~ 300K $4.00 + 0.50$ AC RMS Current         Frequency (Hz)         1 year accuracy ± (reading%+range%) (23°C±5°C)           1.000000A         1 μ A         5 ~ 10         0.30 + 0.04           1.00 + 0.04         10 ~ 5K         0.10 + 0.04           3.000000A         1.0 μ A         5 ~ 10         0.35 + 0.06           3.000000A         1.0 μ A         5 ~ 10         0.35 + 0.06           10 ~ 5K         0.15 + 0.06         0.15 + 0.06           Resistance (4W Measurement)           Range         Resolution         Test Current         1 year accuracy ± (reading%+range%) (23°C±5°C)           100Ω         100 μ Ω         1mA         0.010 + 0.004           1.000000kΩ         1mΩ         1mA         0.010 + 0.001           10.00000kΩ         10mΩ         10 μ A         0.010 + 0.001           1.000000MΩ         10Ω         5 μ A         0.010 + 0.001           10.00000MΩ         10Ω         500nA         0.040 + 0.001           1000e Test         Test Current         ± (reading%+range%) (23°C±5°C)	750.000V	$1.0 \mu$ V ~ $1111$ V	20K ~ 50K	0.12 + 0.05
Range         Resolution         Frequency (Hz)         1 year accuracy $\pm$ (reading%+range%) (23°C ± 5°C)           1.000000A         1 μ A         5 ~ 10         0.30 + 0.04           1.00 + 0.04         10 ~ 5K         0.10 + 0.04           3.000000A         1.0 μ A         5 ~ 10         0.35 + 0.06           3.000000A         1.0 μ A         5 ~ 10         0.35 + 0.06           10 ~ 5K         0.15 + 0.06         0.15 + 0.06           Resistance (4W Measurement)         Test Current         1 year accuracy ± (reading%+range%) (23°C ± 5°C)           100Ω         100 μ Ω         1mA         0.010 + 0.004           1.000000kΩ         1mΩ         1mA         0.010 + 0.001           10.00000kΩ         10mΩ         10μ A         0.010 + 0.001           1.000000kΩ         10mΩ         10 μ A         0.010 + 0.001           1.000000MΩ         1Ω         5 μ A         0.010 + 0.001           10.00000MΩ         10Ω         500nA         0.040 + 0.010           10ide Test         1 year accuracy ± (reading%+range%) (23°C ± 5°C)			50K ~ 100K	0.60 + 0.08
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$			100K ~ 300K	4.00 + 0.50
Range         Resolution         Frequency (Hz) $\pm$ (reading%+range%) (23°C ± 5°C)           1.000000A         1 μ A $3 \sim 5$ 1.00 + 0.04           1.00 + 0.04 $5 \sim 10$ 0.30 + 0.04           10 ~ 5K         0.10 + 0.04           3.000000A         1.0 μ A $5 \sim 10$ 3 ~ 5         1.10 + 0.06           10 ~ 5K         0.15 + 0.06           Resistance (4W Measurement)         1 year accuracy           Expression (23°C ± 5°C)         100Ω           100Ω         100 μ Ω         1mA           1.000000kΩ         1mΩ         1mA           1.000000kΩ         10mΩ         100 μ A           1.000000kΩ         10mΩ         10 μ A           1.000000kΩ         10mΩ         10 μ A           1.000000MΩ         1Ω         5 μ A           1.000000MΩ         10Ω         500nA           1000000MΩ         10Ω         500nA           1000000MΩ         10Ω         500nA           1000000MΩ         10Ω         500nA           1000000MΩ         10Ω         500nA           10000000MΩ         10Ω         500nA           100000000MΩ         10000         10000 <td><b>AC RMS Current</b></td> <td></td> <td></td> <td></td>	<b>AC RMS Current</b>			
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	Range	Resolution		$\pm$ (reading%+range%)
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$			3 ~ 5	1.00 + 0.04
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	1.000000A	1μΑ	5 ~ 10	0.30 + 0.04
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$			10 ~ 5K	0.10 + 0.04
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$		1.0 μ A		1.10 + 0.06
Resistance (4W Measurement)           Range         Resolution         Test Current         1 year accuracy $\pm$ (reading%+range%) (23°C ± 5°C)           100Ω         100 μΩ         1mA         0.010 + 0.004           1.000000kΩ         1mΩ         1mA         0.010 + 0.001           10.00000kΩ         10mΩ         100 μA         0.010 + 0.001           10.00000kΩ         100mΩ         10 μA         0.010 + 0.001           1.000000MΩ         1Ω         5 μA         0.010 + 0.001           10.00000MΩ         10Ω         500nA         0.040 + 0.001           10000 Test         1 year accuracy $\pm$ (reading%+range%) (23°C ± 5°C)	3.000000A		5 ~ 10	0.35 + 0.06
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$			10 ~ 5K	0.15 + 0.06
Range         Resolution         Test Current $\pm$ (reading%+range%) (23°C ± 5°C) $100\Omega$ $100 \mu \Omega$ 1mA $0.010 + 0.004$ $1.000000k\Omega$ $1m\Omega$ 1mA $0.010 + 0.001$ $10.00000k\Omega$ $10m\Omega$ $100 \mu A$ $0.010 + 0.001$ $1.000000k\Omega$ $10m\Omega$ $10 \mu A$ $0.010 + 0.001$ $1.000000M\Omega$ $1\Omega$ $5 \mu A$ $0.010 + 0.001$ $10.00000M\Omega$ $10\Omega$ $500nA$ $0.040 + 0.001$ $100.0000M\Omega$ $100\Omega$ $500nA$ $0.800 + 0.010$ Diode Test           Range         Resolution         Test Current $\frac{1}{2}$ year accuracy $\pm$ (reading%+range%) $(23°C \pm 5°C)$	Resistance (4W N	leasurement)		
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	Range	Resolution	Test Current	$\pm$ (reading%+range%)
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	100Ω	100 μ Ω	1mA	0.010 + 0.004
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	1.000000kΩ	1mΩ	1mA	0.010 + 0.001
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	10.00000kΩ	10m $\Omega$	100 μ A	0.010 + 0.001
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$	100.0000kΩ	100mΩ	10 μ A	0.010 + 0.001
100.0000MΩ100Ω500nA $0.800 + 0.010$ Diode TestRangeResolutionTest Current1 year accuracy $\pm$ (reading%+range%) $(23^{\circ}C \pm 5^{\circ}C)$	$1.000000M\Omega$	1Ω	5μΑ	0.010 + 0.001
$\begin{tabular}{ c c c c c c c c c c c c c c c c c c c$	10.00000M $\Omega$	10Ω	500nA	0.040 + 0.001
Range Resolution Test Current $\pm$ (reading%+range%) (23°C $\pm$ 5°C)	100.0000MΩ	100Ω	500nA	0.800 + 0.010
Range Resolution Test Current $\pm$ (reading%+range%) (23°C $\pm$ 5°C)	Diode Test			
1.00000V 10 μV 1mA 0.010 + 0.020	Range	Resolution	Test Current	$\pm$ (reading%+range%)
	1.00000V	10 μ V	1mA	0.010 + 0.020

	_			
Continuity Test				
Range	Resolution	Shunt Resistance	1 year accuracy $\pm$ (reading%+range%) (23°C $\pm$ 5°C)	
1000.00Ω	100m $Ω$	1mA	0.010 + 0.030	
Frequency and P	eriod			
Range	Freque	ncy (Hz)	1 year accuracy $\pm$ (reading%+range%) (23°C $\pm$ 5°C)	
		~ 5	0.1	
100mV ~ 750V	_	· 10	0.05	
		~ 40	0.03	
		300K	0.01	
Measurement Ch		.:	- ID. AV. D	
Math Functions		nin / max / average O, %, limit test (wi		
Measurement Noise Rejection 60Hz(50Hz)		DC CMRR:140 dB AC CMRR:70 dB		
Integration Time & Normal Mode Rejection NMRR	10 plc / 167 ms (200 ms) : 60 dB 1 plc / 16.7 ms (20 ms) : 60 dB			
DC Voltage	Input bias current : 25°C < 30pA Input protection : 1000V			
DC Current	Input	Input protection: Froody Input protection: External 3 A 250V fuse		
AC Voltage	Input im	Input impedance: 1 MΩ parallel with 100 pF Input protection: 750Vrms all ranges		
AC Current		protection: Extern		
Resistance	Maximum lead resistance (4-wire): 10% of range per lead for 100Ω and 1kΩ ranges. 1kΩ per lead on all other ranges. Input protection: 1000 V all ranges			
Continuity/Diode	With audible tone Continuity threshold: Selectable from $1\Omega$ to $1000\Omega$			
Temperature	Thermocouple: E, J, K, N, R, S and T type sensors supported. RTD: 2-wire, 3-wire and 4-wire measurement Temperature Conversion: ITS-90, IEC751, Callendar-Van Dusen			
<b>External Control</b>				
Samples/Trigger		1 ~ 50,000	0	
Trigger Delay		0 ~ 3600 sec.		
Memory	2000 readings			
Equivalent	SCPI (IEEE-488.2) \ Agilent 34401			
Interface	USB (standard) , GPIB (option)			
General				
Power Consumption	25VA max.			
Power Requirements	100 V / 12	100 V / 120 V / 220 V / 240 V · 45 Hz ~ 440 Hz		
Dimensions (HxWxD)		88.6 x 213.6 x 34	6.9 mm	
Operating Temperature	0°C to 50°C			
Weight Approx. 4.36 kgs				
All specifications are	subject to change			

All specifications are subject to change without notice.

Developed and Manufactured by:

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