ISO-TECH

Quick Start Guide

Dual Measurement Multimeter

IDM-8341/8342 Series

EN

Limited Warranty

This meter is warranted to the original purchaser against defects in material and workmanship for 3 years from the date of purchase. During this warranty period, RS Components will, at its option, replace or repair the defective unit, subject to verification of the defect or malfunction. This warranty does not cover fuses, disposable batteries, or damage from abuse, neglect, accident, unauthorized repair, alteration, contamination, or abnormal conditions of operation or handling. Any implied warranties arising out of the sale of this product, including but not limited to implied warranties of merchantability and fitness for a particular purpose, are limited to the above. RS Components shall not be liable for loss of use of the instrument or other incidental or consequential damages, expenses, or economic loss, or for any claim or claims for such damage, expense or economic loss. Some states or countries laws vary, so the above limitations or exclusions may not apply to you. For full terms and conditions, refer to the RS website

The information in this manual was correct at the time of printing. However we continue to improve our products and therefore reserve the right to change the specifications, equipment, and maintenance procedures at any time without notice.

SAFETY INSTRUCTIONS

This chapter contains important safety instructions that should be followed when operating and storing the function generator. Read the following before any operation to ensure your safety and to keep the function generator in the best condition.

Safety Symbols

These safety symbols may appear in this manual or on the instrument.

 WARNING	Warning: Identifies conditions or practices that could result in injury or loss of life.
 CAUTION	Caution: Identifies conditions or practices that could result in damage to the DMM or to other properties.
	DANGER High Voltage
	Attention: Refer to the Manual
	Protective Conductor Terminal
	Earth (Ground) Terminal
	Do not dispose electronic equipment as unsorted municipal waste. Please use a separate collection facility or contact the supplier from which this instrument was purchased.

Safety Guidelines

General Guideline

CAUTION

- Make sure that the voltage input level does not exceed DC1000V/AC750V.
- Make sure the current input level does not exceed 12A.
- Do not place any heavy object on the instrument.
- Avoid severe impact or rough handling that can lead to damaging the instrument.
- Do not discharge static electricity to the instrument.
- Use only mating connectors, not bare wires, for the terminals.
- Do not block or obstruct the cooling fan vent opening.
- Do not perform measurement at the source of a low-voltage installation or at building installations (Note below).
- Do not disassemble the instrument unless you are qualified as service personnel.
- Make sure that the COM terminal to earth is limited to 500Vpk.

(Note) EN 61010-1:2010 specifies the measurement categories and their requirements as follows. The IDM-8341/ 8342 falls under category II 600V.

- Measurement category IV is for measurement performed at the source of low-voltage installation.
- Measurement category III is for measurement performed in the building installation.
- Measurement category II is for measurement performed on the circuits directly connected to the low voltage installation.

Power Supply WARNING	• AC Input voltage: 100/120/220/240 V AC, 50/60Hz • The power supply voltage should not fluctuate more than 10%. • Connect the protective grounding conductor of the AC power cord to an earth ground, to avoid electrical shock.
Fuse WARNING	• Fuse type: 0.125AT 100/120VAC 0.063AT 220/240 VAC • Make sure the correct type of fuse is installed before power up. • To avoid risk of fire, replace the fuse only with the specified type and rating. • Disconnect the power cord before fuse replacement. • Make sure the cause of a fuse blowout is fixed before fuse replacement.
Cleaning the Instrument	• Disconnect the power cord before cleaning. • Use a soft cloth dampened in a solution of mild detergent and water. Do not spray any liquid. • Do not use chemicals containing harsh material such as benzene, toluene, xylene, and acetone.
Operation Environment	• Location: Indoor, no direct sunlight, dust free, almost non-conductive pollution (Note below) • Humidity: 0~35°C: < 80%RH >35°C: <70%RH • Altitude: < 2000m • Temperature: 0°C to 50°C (Note) EN 61010-1:2010 specifies the pollution degrees and their requirements as follows. The IDM-8342/8341 falls under degree 2. Pollution refers to “addition of foreign matter, solid, liquid, or gaseous (ionized gases), that may produce

	a reduction of dielectric strength or surface resistivity”. • Pollution degree 1: No pollution or only dry, non-conductive pollution occurs. The pollution has no influence. • Pollution degree 2: Normally only non-conductive pollution occurs. Occasionally, however, a temporary conductivity caused by condensation must be expected. • Pollution degree 3: Conductive pollution occurs, or dry, non-conductive pollution occurs which becomes conductive due to condensation which is expected. In such conditions, equipment is normally protected against exposure to direct sunlight, precipitation, and full wind pressure, but neither temperature nor humidity is controlled.
Storage environment	• Location: Indoor • Temperature: -10°C to 70°C • Humidity: 0~35°C: <90%RH >35°C: <80%RH
Disposal 	Do not dispose this instrument as unsorted municipal waste. Please use a separate collection facility or contact the supplier from which this instrument was purchased. Please make sure discarded electrical waste is properly recycled to reduce environmental impact.

Power cord for the United Kingdom

When using the dual measurement multimeter in the United Kingdom, make sure the power cord meets the following safety instructions.

NOTE: This lead/appliance must only be wired by competent persons

WARNING: THIS APPLIANCE MUST BE EARTHED

IMPORTANT: The wires in this lead are coloured in accordance with the following code:

Green/ Yellow:	Earth
Blue:	Neutral
Brown:	Live (Phase)

As the colours of the wires in main leads may not correspond with the coloured marking identified in your plug/appliance, proceed as follows:

The wire which is coloured Green & Yellow must be connected to the Earth terminal marked with either the letter E, the earth symbol ⏚ or coloured Green/Green & Yellow.

The wire which is coloured Blue must be connected to the terminal which is marked with the letter N or coloured Blue or Black.

The wire which is coloured Brown must be connected to the terminal marked with the letter L or P or coloured Brown or Red.

If in doubt, consult the instructions provided with the equipment or contact the supplier.

This cable/appliance should be protected by a suitably rated and approved HBC mains fuse: refer to the rating information on the equipment and/or user instructions for details. As a guide, a cable of 0.75mm^2 should be protected by a 3A or 5A fuse. Larger conductors would normally require 13A types, depending on the connection method used.

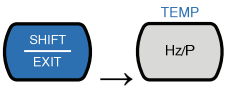
Any exposed wiring from a cable, plug or connection that is engaged in a live socket is extremely hazardous. If a cable or plug is deemed hazardous, turn off the mains power and remove the cable, any fuses and fuse assemblies. All hazardous wiring must be immediately destroyed and replaced in accordance to the above standard.

INTRODUCTION

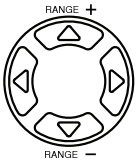
The IDM-8341/ 8342 series quick start guide is intended for users who are already familiar with operating multimeters. This guide is merely a brief introduction to get started quickly. For more details such as setup procedure, parameters, remote control commands, optional scanner, digital I/O, and specifications, refer to the user manual.

Conventions

= press the ACV key.



= press the SHIFT key, and then press the Hz/P key to access the temperature measurement function.

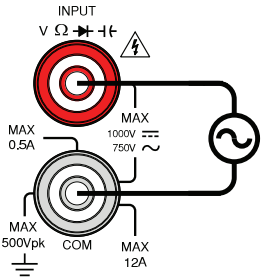


= press the Up or Down key to select a parameter.

=press the MAX/MIN key twice.

BASIC MEASUREMENT

AC Voltage

Range	0 to 750V	Connection
Activation		
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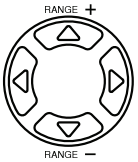
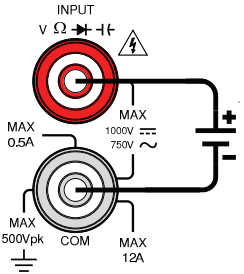
Manual range setting		

DC Voltage

Range	0 to 1000V	Connection
Activation		
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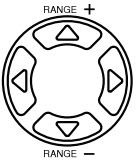
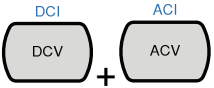
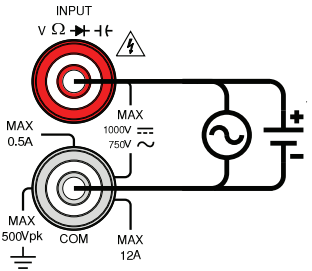
Manual range setting		

AC + DC Voltage

Range	0 to 1000V	Connection

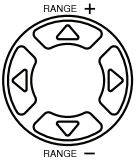
Activation



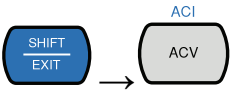
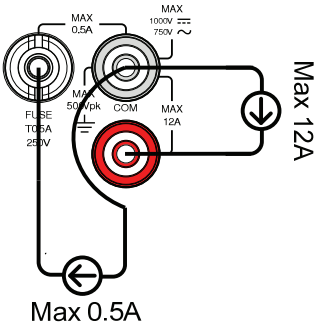
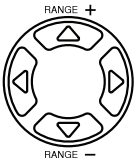


Auto range setting

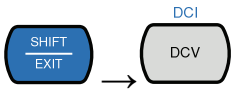
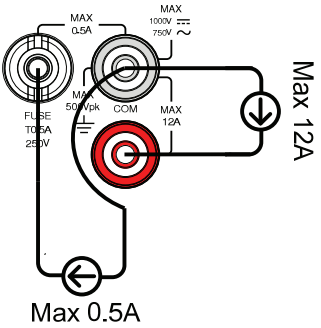
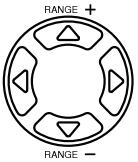
Manual range setting



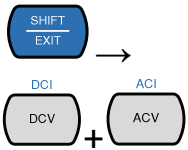
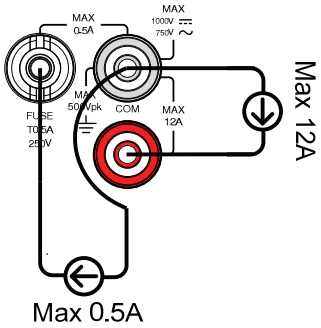
AC Current

Range	0 to 0.5A or 0 to 12A	Connection
Activation		
Auto range setting		
Manual range setting		

DC Current

Range	0 to 2A	Connection
Activation		
Auto range setting		
Manual range setting		

AC + DC Current

Range	0 to 2A	Connection
Activation		
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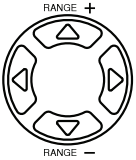
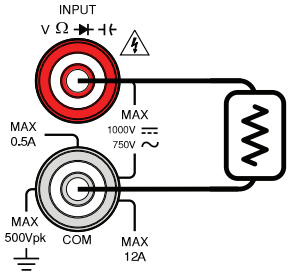
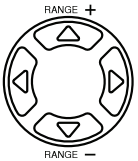
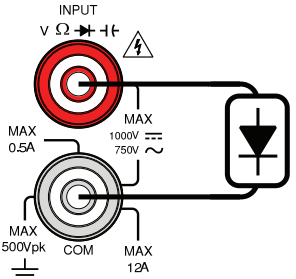
Manual range setting		

Resistance

Range	0 to 50MΩ	Connection
Activation		
Auto range setting		
Manual range setting		

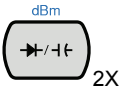
Diode

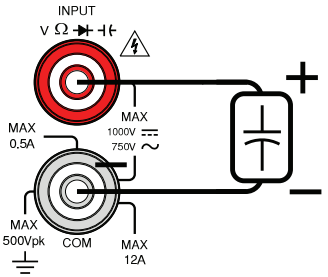
Range	N/A	Connection
Activation		

Capacitance

Range	5nF to 50uF	Connection

Activation

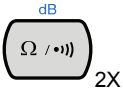


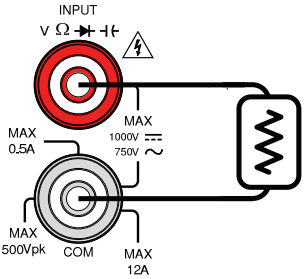


Continuity

Threshold	<5Ω	Connection

Activation



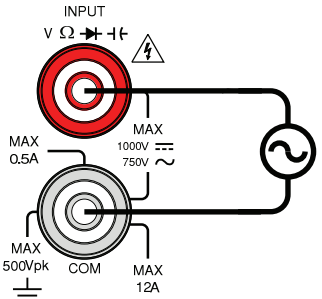


Frequency/Period Measurement

Range 10Hz~1MHz

Connection

Activation

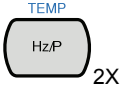


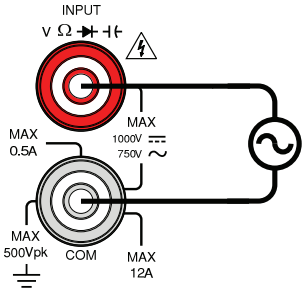
Period Measurement

Range 1.0μs ~100ms

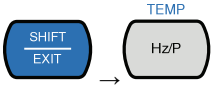
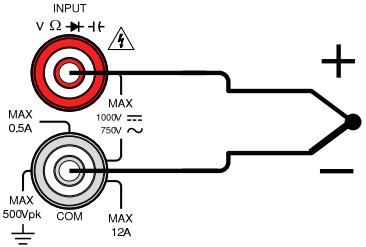
Connection

Activation





Temperature

Range	Thermocouple 200°C ~ +300°C	Connection
Activation		

ADVANCED MEASUREMENT

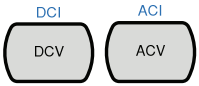
Advanced measurements refer to measurements that are obtained using one of the basic measurements: ACV, DCV, ACA, DCA, Resistance, Diode/ Capacitance, Frequency/Period, and Continuity. Before an advanced measurement can be made, a basic measurement function must first be selected.

Combination with Basic Measurement

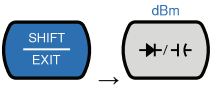
Advanced Measurement	Basic Measurement						
	AC/DCV	AC/DCA	Ω	Hz/P	TEMP*		
dB	●	—	—	—	—	—	—
dBm	●	—	—	—	—	—	—
Max/Min	●	●	●	●	●	—	●
Compare	●	●	●	—	●	—	●
Relative	●	●	●	●	●	—	—
Hold	●	●	●	—	●	—	●
Auto hold	●	●	●	—	●	—	—

dBm/W

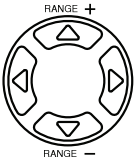
Available in



Activation

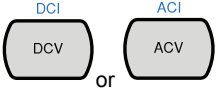


Reference impedance setting

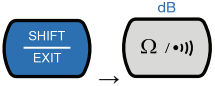


dB

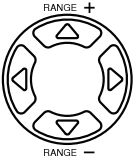
Available in



Activation

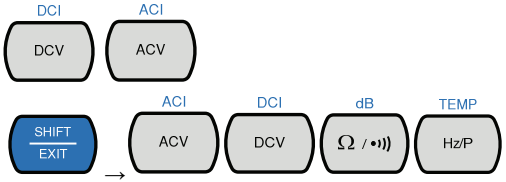


Change voltage range



Max

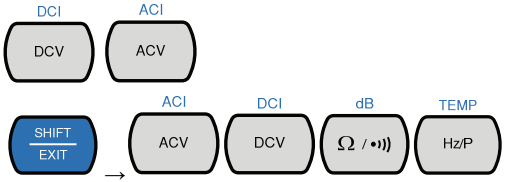
Applicable in



Activation

Min

Applicable in

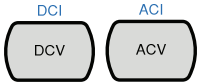


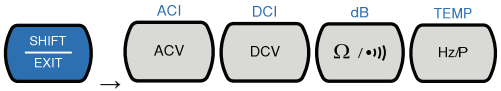
Activation

x 2

Relative

Available in





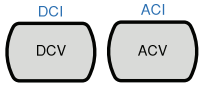
Activation

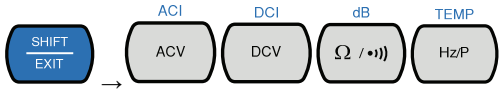
Reference value setting

Measured value when activated is the reference value

Hold

Available in

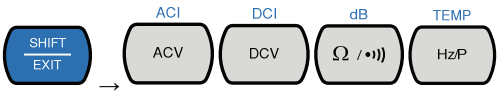




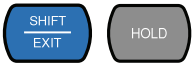
Activation

Compare

Available in



Activation

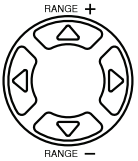


Limit setting

1. Enter high limit

Use the Left and Right arrow keys to navigate to the digit to be edited, or to select the decimal point.

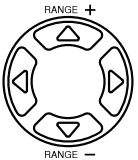
Use the Up and Down arrow keys to edit the selected digit, or to place the position of the decimal point.



2. Confirm high setting.

3. Enter the low limit value.

Enter the low limit setting in the same fashion as the high setting.



4. Confirm low setting.

SPECIFICATIONS

The specifications apply when the DMM is warmed up for at least 30 minutes and operates in slow rate.

Below are the basic conditions required to operate the DMM within specifications:

- Calibration: Yearly
- Operating Temperature Specification: 18~28˚C (64.4~82.4˚F)
- Relative Humidity: 80% (Non condensing)
- Accuracy: ± (% of Reading + Digits)
- AC measurements are based on a 50% duty cycle.
- The power supply cable must be grounded to ensure accuracy.
- All specifications are applicable to the main (1^{st}) display only.

General Specifications

Specification Conditions:
Temperature: 23˚C±5˚C
Humidity: <80%RH, 75%RH for resistance measurement readings greater than 10MΩ.
Operating Environment: (0~50˚C)
Temperature Range: 0~35˚C, Relative Humidity: <80%RH;
>35˚C, Relative Humidity: <70%RH
Indoor use only
Altitude: 2000 meters
Pollution degree 2
Storage Conditions (-10~70˚C)
Temperature Range: 0~35˚C, Relative Humidity: <90%RH;
>35˚C, Relative Humidity: <80%RH
General:
Power Consumption: Max 15VA
Dimensions: 265 mm (W) X 107 mm (H) X 302 mm (D)
Weight: Approximately 2.9 kg

DC Voltage

Range	Resolution	Full Scale	Accuracy (1 year 23˚C ±5˚C)	Input Resistance
500mV	10μV	510.00	0.02%+4	10MΩ or >10GΩ
5V	100μV	5.1000		10MΩ or >10GΩ
50V	1mV	51.000		11.1MΩ
500V	10mV	510.00		10.1MΩ
1000V	100mV	1020.0		10MΩ

* When the input value exceeds the full scale of the selected range, the display will show -OL- (over load) on the display.

* The specifications are guaranteed to an input voltage of 1000V. A beeping alarm will go off when the input voltage is higher than 1000V.

* Input protection of 1000V peak on all ranges.

* DC Common Mode Rejection Ratio
>90 dB at dc, 50 or 60Hz ± 0.1% (1kΩ unbalanced, slow rates)

DC Current

Range	Resolution	Full Scale	Accuracy (1 year 23˚C ±5˚C)	Shunt Resistance	Burden Voltage
500μA	10nA	510.00	0.05%+5	100Ω	0.06V max
5mA	100nA	5.1000	0.05%+4	100Ω	0.6V max
50mA	1μA	51.000	0.05%+4	1Ω	0.14V max
500mA	10μA	510.00	0.10%+4	1Ω	1.4V max
5 A	100μA	5.1000	0.25%+5	10mΩ	0.5V max
10 A	1mA	12.000	0.25%+5	10mΩ	0.8V max

* 500μA~500mA range has a 3.6V voltage limit protection and 0.5A fuse protection. And 10A range has a 12A fuse protection.

* When the input value exceeds the full scale of the selected range, the display will show -OL- (over load) on the display.

* The specifications are guaranteed to an input of 10A. A beeping alarm will go off when the input value is higher than 10A.

AC Voltage, ACV+DCV[3] (AC Coupled)

Range	Resolu -tion	Full Scale	Accuracy (1 year 23˚C ±5˚C) [1]			
			30-50Hz	50-10kHz	10K-30kHz	30K-100kHz
500mV	10μV	510.00	1.00%+40	0.50%+40	2.00%+60	3.00%+120
5V	100μV	5.1000	1.00%+20	0.35%+15	1.00%+20	3.00%+50
50V	1mV	51.000	1.00%+20	0.35%+15	1.00%+20	3.00%+50
500V	10mV	510.00	x	0.5%+15	1.00%+20[2]	3.00%+50[2]
750V	100mV	765.0	x	0.5%+15	x	x

[1]Specifications are for sine wave inputs that are greater than 5% range.

[2]Input voltage <300Vrms.

[3]The accuracy of ACV+DCV is equal to ACV's with 10 more digits added.

* The specifications are guaranteed to an input of 750V. A beeping alarm will go off when the input value is higher than 750V.

* Input protection of 1000V peak on all ranges.

* AC-coupled true RMS – measures the AC component of the input with up to 400Vdc of bias on any range.

* AC Common Mode Rejection Ratio.

>60 dB at dc, 50 or 60Hz ± 0.1% (1kΩ unbalanced, slow rates)

*Input impedance 1MΩ±2% in parallel with 100pF.

AC Current, ACI+DCI[3] (AC Coupled)

Range	Resolu -tion	Full Scale	Accuracy (1 year 23˚C ±5˚C) [1]				Burden Voltage
			30-50Hz	50-2kHz	2K-5kHz	5K-20kHz	
500μA	10nA	510.00	1.50%+50	0.50%+40	1.50%+50	3.00%+75	0.06V max
5mA	100nA	5.1000	1.50%+40	0.50%+20	1.50%+40	3.00%+60	0.6V max
50mA	1μA	51.000	1.50%+40	0.50%+20	1.50%+40	3.00%+60	0.14V max
500mA	10μA	510.00	1.50%+40	0.50%+20	1.50%+40	3.00%+60[2]	1.4V max
5A	100μA	5.1000	2.0%+40	0.50%+30	x	x	0.5V max
10A	1mA	12.000	2.0%+40	0.50%+30	x	x	0.8V max

[1] The 500μA range requires an input of >35μA to meet specifications. The 5mA~10A ranges need more than 5% of full scale range to meet specifications.

[2] Input current (5k ~ 20kHz)<330mArms.

[3]The accuracy of ACI+DCI is equal to ACI's with 10 more digits added.

* The specifications are guaranteed to 10A. A beeping alarm will go off when the input current being measured is higher than 10A.

Resistance

Resistance	Resolution	Full Scale	Test Current	Accuracy (1 year 23˚C ±5˚C)[2]
500Ω	10mΩ	510.00	0.83mA	0.1%+5 [1]
5kΩ	100mΩ	5.1000	0.83mA	0.1%+3 [1]
50kΩ	1Ω	51.000	83μA	0.1%+3
500kΩ	10Ω	510.00	8.3μA	0.1%+3
5MΩ	100Ω	5.1000	830nA	0.1%+3
50MΩ	1KΩ	51.000	560nA//10MΩ	0.3%+3

[1] Using the REL function. If you don't use the REL function then increase the error by 0.2Ω.

[2] When measuring resistances greater than 500kΩ, please use shielded test leads to eliminate the noise interference that may be induced by standard test leads.

* Open circuit voltage approximates 6V max on 500~5MΩ range, approximates 5.5V max on 50MΩ range.

* Input protection of 500V peak on all ranges.

Diode

Range	Resolution	Full Scale	Test Current	Accuracy(1 year 23˚C ±5˚C)
5V	100μV	5.1000	0.83mA	0.05%+5

* Input protection of 500V peak. *Open circuit voltage approximates 6V.

Continuity

Range	Resolution	Full Scale	Test Current	Accuracy(1 year 23˚C ±5˚C)
5000.0Ω	100mΩ	5100.0	0.83mA	0.1%+5

* Input protection of 500V peak. *Open circuit voltage approximates 6V.

Capacitance

Range	Resolution	Full Scale	Test Current	Accuracy (1 year 23˚C ±5˚C) [1]
5nF: 0.5~1nF [2]	0.001nF	5.100	8.3μA	2.0%+20
5nF: 1~5nF [2]				2.0%+10
50nF: 5~10nF [2]	0.01nF	51.00	8.3μA	2.0%+30
50nF: 10~50nF [2]				2.0%+10
500nF	0.1nF	510.0	83μA	2.0%+4
5μF	1nF	5.100	0.56mA	
50μF	10nF	51.00	0.83mA	

[1] For the 5nF ~ 50μF range, make sure that the input is greater than 10% of the range.

[2] Need to use the REL function.

* Input protection of 500V peak on all ranges.

Frequency

Measurement Range	Accuracy (1 year 23˚C ±5˚C)
10Hz ~ 500Hz	0.01%+5
500Hz ~ 500kHz	0.01%+3
500kHz ~ 1MHz	0.01%+5

* AC + DC measurements do not allow frequency measurements.

* Input protection of 1000V peak on all ranges.

Voltage Measurement Sensitivity

	Minimum Sensitivity (RMS sine wave)		
Range	10~100kHz	100k~500kHz	500kHz ~ 1MHz
500mV	35mV	200mV	500mV
5V	0.25V	0.5V	1V
50V	2.5V	5V	5V
500V	25V	uncal	uncal
750V	50V	uncal	uncal

Current Measurement Sensitivity

Range	Minimum Sensitivity (RMS sine wave)
	30~20kHz
500μA	35μA
5mA	0.25mA
50mA	2.5mA
500mA	25mA
5 A	0.25A(<2kHz)
10 A	2.5A(<2kHz)

Temperature Specifications

Sensor	Type	Measurement Range	Resolution	Accuracy (1 year 23˚C ±5˚C)
Thermocouple	J	-200 ~ +300°C	0.1°C	2 °C
	K			
	T			

* Note: The temperature specifications do not include sensor error.

* Note: This feature is not supported on the IDM-8341.

Declaration of Conformity

We declare that the below mentioned product

Type of Product: Digital Multimeter

Model Number: IDM-8342, IDM-8341

are herewith confirmed to comply with the requirements set out in the Council Directive on the Approximation of the Law of Member States relating to Electromagnetic Compatibility (2004/108/EC) and Low Voltage Directive (2006/95/EC).

For the evaluation regarding the Electromagnetic Compatibility and Low Voltage Directive, the following standards were applied:

◎ **EMC**	
EN 61326-1: EN 61326-2-1:	Electrical equipment for measurement, control and laboratory use — EMC requirements (2013)
Conducted & Radiated Emission EN 55011: 2009+A1:2010	Electrostatic Discharge EN 61000-4-2: 2009
Current Harmonics EN 61000-3-2: 2006+A1: 2009+A2: 2009	Radiated Immunity EN 61000-4-3: 2006+A1:2008+A2:2010
Voltage Fluctuations EN 61000-3-3: 2008	Electrical Fast Transients IEC 61000-4-4: 2012
----------	Surge Immunity EN 61000-4-5: 2006
----------	Conducted Susceptibility EN 61000-4-6: 2009
----------	Power Frequency Magnetic Field EN 61000-4-8: 2010
----------	Voltage Dip/ Interruption EN 61000-4-11: 2004

Low Voltage Equipment Directive 2006/95/EC	
Safety Requirements	EN 61010-1: 2010 EN 61010-2-030: 2010

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