HIOKI

2000

New

7015 SIGNAL SOURCE

SIGNAL SOURCE

Actual Size

Signal Generator with DMM

A signal generator that can measure as well as generate constant voltage, constant current and pulse signals.

The 7015 SIGNAL SOURCE is a handy signal generator that is equipped with a high-performance DMM and many other functions, all at a low price. In addition to generating constant voltage and constant current, it is capable of generating pulse signals, and can be used to generate voltage pulses for calibration of devices such as flow meters. Also, the 7015 is not simply a signal generator, but comes equipped with a variety of functions allowing it to be used as a stand-alone DMM. In this capacity, it can measure AC voltage/current, resistance, frequency, and temperature, and be used to check continuity. Moreover, the 3855 RS-232C package (available as a separate option) allows data to be sent to a connected computer. With the 7015, you get multiple functions, high precision and high performance at low cost in an instrument that is suitable for use in the laboratory as well as in the field.

ISO14001
JQA-E-90091

CE

http://www.hioki.co.jp/

HIOKI company overview, new products, environmental considerations and other information are available on our website.

A handy signal generator that can simultaneously measure and generate pulse for calibration of industrial instruments

As a signal generator

- DCCV [±1.5000 V/±15.000 V range]
- DCCA [±25.000mA range]
- PULSE [0.5 Hz to 4800 Hz, 5 V/12 V/±5 V/±12 V]
- Other Standard Features
  Bipolar sink/source generation, pulse generation with variable duty ratio, pulse width, and amplitude, memory generation, scan generation, and ramp generation function

Pulse signal generation for calibration of flow meters

As a DMM

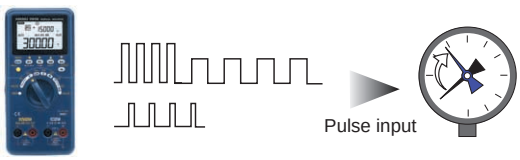
- DC/ACV [40 mV to 300 V range]
- DC/ACA [40 mA to 400 mA range]
- OHM [400 Ω to 40 MΩ range]
- FREQ [measurement range 1 Hz to 200 kHz]
- Continuity check
- Diode check
- Temperature [-40˚C to 1000˚C]
- AC+DC RMS measurement of voltage and current, 1 ms peak hold function

A high-performance, multi-function DMM

Compact calibrator capable of generating pulse signals

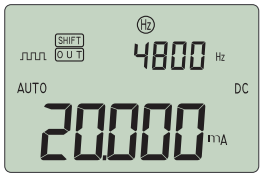
■Convenient pulse source for calibrating flow meters, as well generation of constant current and constant voltage

Meters that use pulse output as sensor signals, such as flow meters, can easily be calibrated in the field by using the 7015 as a pulse generator to supply reference signal input. Its ability to generate constant voltage and constant current in the range from 1-5 V and 4-20 mA makes it ideally suited to a variety of maintenance needs, such as calibration of equipment instrumentation in the 1-5 V/4-20 mA range.



■Signal generator and measurement functions can be used simultaneously to measure input/output insulation

When measuring insulation between inputs and outputs, the 7015 can be simultaneously used as both a signal generator and DMM without compromising the functionality of either. A dual display makes it easy to simultaneously check inspection results for both inputs and outputs.



■Bipolar output expands test utility

Ability to function both as source and sink makes the 7015 well suited for signal loop testing in instrumentation systems or testing charge/discharge of secondary batteries.

■Up to 16 steps of memory scan output

Memory scan output allows the 7015 to quickly accommodate calibration requirements that involve repetitive checks.

■3-way power supply for use in any location

The 7015 is equipped with 3 different power supplies for easy use regardless of your location: AA alkaline batteries, Ni-Cd battery pack, and AC adapter.

■A wide variety of accessories

A wide variety of accessories, such as an AC adapter, Ni-Cd battery and three types of test leads are provided with the 7015 as standard features. The 7015 is also equipped with a carrying case for transporting the unit together with all of its accessories.

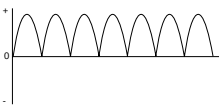
More advanced functions as a DMM

■High resolution, high accuracy and advanced measurement functions

The 7015 achieves unparalleled performance for a handy DMM, providing DC voltage measurement accuracy of ±0.03% rdg. ±3dgt. (in the 4000-count mode), with display switchable to 40000 count. Also, in addition to the basic measurements of DC voltage, DC current, AC voltage, resistance, diode, and grounding, this multi-function instrument also supports frequency and temperature measurement.

■AC+DC measurement function provides RMS measurement of full- and half-wave rectified waveforms

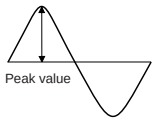
The 7015 can measure RMS values of full-wave and half-wave rectified waveforms used in household electrical equipment.



(AC+DC V) accuracy:
±0.8% rdg. ±10 dgt. (50/60 Hz)
(AC+DC A) accuracy:
±1.2% rgd. ±10 dgt. (45 Hz to 2 kHz)
(Accuracy at 4000 count mode)

■1ms Peak Hold Function maintains maximum/minimum peak values

The waveform peak values can be acquired and the crest factors calculated from measurement of the instantaneous peak value and calculated true RMS value.



Accuracy: ±2% rdg. ±43 dgt. for both V, A
(Accuracy at 4000 count mode)

Crest factor = Peak value/effective value

■Temperature measurement function

Measuring temperature is possible by connecting the 7015 to the optional 9180-9183 or 9472-9476 temperature probe.

Related Product

The 7011 DC SIGNAL SOURCE: a DC signal generator for calibrating thermocouples.

In addition to measuring and generating ±25 V, ±25 mA, the 7011 is capable of generating seven types of thermoelectromotive force by temperature settings.

■RS-232C communications provided as a standard feature

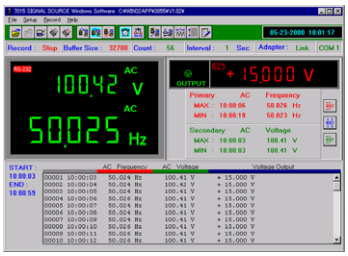
(Requires optional special cable and data transfer software)

The 3855 RS-232C PACKAGE, available as a separate option, includes a dedicated cable and software for transferring measurement data to a computer. Because data is sent to the computer and stored in text format, effective data management can be supported through commercial spreadsheet software.

3855 RS-232C PACKAGE

- Connector on computer side: D-sub, 9 pin
- Cable length: about 2 m (approx. 79")
- 1 disk

3855 RS-232C Package Data Acquisition Screen



- Operating environment: Windows 95 *1
- Fetch interval: 1 to 999 sec.
- Memory: Max. 32,700 data
- Miscellaneous: storage in text format, header setting

*1 Windows 95 is a registered trademark of Microsoft Corp.

■General Specifications

●Generator functions: DC constant voltage, DC constant current, pulse generation ●Measurement functions: AC voltage, DC voltage, AC+DC voltage, AC current, DC current, AC+DC current, resistance, diode, continuity, temperature, frequency, duty ratio, pulse width measurement ●Output method: Bipolar sink/source output ●AC measurement method: True RMS measurement method ●Crest factor: under 3.0 ●Additional functions: Pulse generation with variable duty ratio, pulse width, and amplitude; memory generation function (16 memory data settings for each range); scan generation function; lamp generation function; AC+DC RMS measurement function for voltage/current; 1 ms peak hold function (voltage/current measurement function) ●Display: LCD with backlight, 40000 or 4000 count selectable ●Sample rate: 3 times/sec. (however, when set to 40000 count, frequency measurement time is 1 time/sec.), 0.25-4 times/sec (when measuring duty ratio and pulse width) ●Range selection: auto or manual ●Auto power off: after 30 minutes ●Noise elimination: NMRR DCV -60dB or above (50/60 Hz), CMMR DCV -120dB or above (50/60 Hz), ACV -60dB or above (50/60 Hz) ●Environmental conditions: [Operating temperature range] 0 to 40˚C under 80% RH (no condensation), [operating location] indoors, below an altitude of 2000m ●Power supply: 1.5V AA-sized alkaline batteries (LR6), 8; 1.2V Ni-Cd batteries, 8; AC adapter (DC 14V-1A or above) ●Maximum fixed power: 5VA ●Continuous use time: approx.12 hours [for measurement only], 2.5 hours or better (with fully-charged, new Ni-Cd batteries) [for DCCC mode 25mA generation, DCA mode 25mA measurement], charge time approx.6 hours. ●Dimensions and mass: approx. 90W×192H×54D mm (approx. 3.54"W×7.56"H×2.13"D), 700 g (24.7 oz.) (except batteries)
●Compatible Standards: [safety] EN61010-1: 1993+A2:1995
Output section: overvoltage category I
(anticipated transient overvoltage 330V), pollution level 2
Input section: overvoltage category Ⅱ
(anticipated transient overvoltage 2.5kV), pollution level 2
EN61010-2-031:1994
[EMC] EN61326-1:1997

■Generation Range Specifications

(Guaranteed accuracy for 23˚C±5˚C (73.4˚F±9˚F) under 80%RH)
In other cases, ±(50ppm setting + 0.5dgt)/˚C added

DC constant voltage generation (DCCV)

range	resolution	accuracy	sync/source output
±1.5 V	100μV	±0.03% setting±3dgt.	max. output approx. ±25 mA*
±15 V	1 mV	↑	↑

* Load regulation: 0.012 mV/mA (when generating 1.5V)
Maximum input voltage: ±25V

DC constant current generation (DCCC)

range	resolution	accuracy	sync/source output
±25 mA	1μA	±0.03% setting±5dgt.	max. output approx. ±12V*

* Load regulation: 1μA/V
Maximum input voltage: ±25V

Pulse generation (PULSE)

parameter	range	resolution	accuracy
frequency	0.5, 1, 2, 5, 10, 15, 20, 25, 30, 40, 50, 60, 75, 80, 100, 120, 150, 200, 240, 300, 400, 480, 600, 800, 1200, 1600, 2400, 4800 Hz	0.01 Hz	±0.005% range ±0.01 Hz
duty ratio*	0.39% to 99.60%	0.390625%	±0.01% setting ±0.1 %
pulse width*	1/frequency	range/256	±0.01% setting ±0.3 ms
amplitude	5 V, ±5 V, 12 V, ±12 V	0.1 V	±2% setting ±0.2 V

* Measurement accuracy of duty ratio : frequency ≤ 100 Hz
* Duty ratio and pulse width should be set above 50 μs on the plus side for each range.
* Range and accuracy is regulated when the pulse width is above 50 μs on the plus side
max. input voltage: ±25V

■Measurement range specifications (Guaranteed accuracy for 23˚C±5˚C(73.4˚F±9˚F) under 80% RH) In other cases, ±(measurement accuracy × 0.15)/˚C added

The measurement range is set in 4000 count mode. Measurement accuracy of 40000 count mode is the same rdg difference and 10x the dgt. difference shown in the values in the tables below.

DC Voltage (DC V)

*Accuracy of 1ms peak hold measurement is ±2%rdg ±43dgt.

range	resolution (40000 f.s.)	accuracy with 4000 f.s.	input impedance
40 mV	10µV (1µV)	±0.08%rdg.±5dgt.	approx. 1000 MΩ
400 mV	100µV (10µV)	±0.03%rdg.±3dgt. (+) ±0.06%rdg.±3dgt. (-)	↑
4 V	1 mV (100µV)	↑	approx. 10 MΩ
40 V	10 mV (1 mV)	↑	↑
300 V	100 mV (10 mV)	±0.06%rdg.±3dgt.	↑

AC Voltage (AC V)/ AC+DC (AC DC V)

*For AC+DC function, ±0.1%rdg ±5dgt. is added to the values below

range	resolution (40000 f.s.)	accuracy with 4000 f.s.		
		50 Hz/60 Hz	45 Hz to 5 kHz	5 kHz to 20 kHz
40 mV	10µV (1µV)	±0.7%rdg.±5dgt.	±1.5%rdg.±5dgt.	±2.0%rdg.±5dgt.
400 mV	100µV (10µV)	↑	↑	↑
4 V	1 mV (100µV)	↑	↑	↑
40 V	10 mV (1 mV)	↑	↑	↑
300 V	100 mV (10 mV)	↑	↑ (45 to 1 kHz)	-

Measurement accuracy is regulated for input above 5% of range full-scale
Input interface: approx. 1000MΩ (mV range), approx. 10MΩ (V range)
Input capacity: under 100pF, crest factor: under 3

DC Current (DC A)

*Accuracy of 1ms peak hold measurement is ±2%rdg ±43dgt.

range	resolution (40000 f.s.)	accuracy with 4000 f.s.	internal resistance
40 mA	10µA (1µA)	±0.2%rdg.±3dgt.	shunt resistance 1Ω
400 mA	100µA (10µA)	↑	↑

AC Current (AC A)/AC+DC Current (AC DC A)

*For AC+DC function, ±0.2% rdg ±5 dgt. is added to the values below.

range	resolution (40000 f.s.)	accuracy with 4000 f.s.	internal resistance
40 mA	10µA (1µA)	(45 Hz to 2 kHz) ±1.0%rdg.±5dgt.	shunt resistance 1Ω
400 mA	100µA (10µA)	↑	↑

measurement accuracy is regulated for input above 5% of range full-scale
crest factor: under 3

Resistance (Ω)/continuity

range	resolution (40000 f.s.)	accuracy with 4000 f.s.	open terminal voltage
400 Ω	0.1 Ω (0.01Ω)	±0.2%rdg.±3dgt.	approx. 3.3V
4 kΩ	1 Ω (0.1 Ω)	↑	approx. 1.28V
40 kΩ	10 Ω (1 Ω)	↑	↑
400 kΩ	100 Ω (10 Ω)	↑	↑
4 MΩ	1 kΩ (100 Ω)	↑	↑
40 MΩ	10 kΩ (1 kΩ)	±1.0%rdg.±5dgt.	↑

When testing continuity, the internal buzzer sounds when the resistance value is below 100 dgt. (1000 dgt. at 40000 f.s.) for each range.

Diode

range	resolution (40000 f.s.)	accuracy with 4000 f.s.	measurement current	measurement voltage
diode	1 mV (0.1 mV)	±1.0%rdg.±2dgt. buzzer sounds under approx. 100 mV	approx.1.65mA	under approx.3.3V

Frequency (Hz with V function)

range	resolution (40000 f.s.)	accuracy with 4000 f.s.	lowest measurement frequency
100 Hz	0.01 Hz (0.001 Hz)	±0.02%rdg. ±1dgt.	1 Hz
1 kHz	0.1 Hz (0.01 Hz)	↑	↑
10 kHz	1 Hz (0.1 Hz)	↑	↑
100 kHz	10 Hz (1 Hz)	↑	↑
200 kHz	100 Hz (10 Hz)	↑	↑

Frequency sensitivity

Input range	Minimum input level (rms sine wave)		trigger level (DC coupling)	
	40 Hz to 20 kHz	10 Hz to 200 kHz	< 20 kHz	20 kHz to 200 kHz
40 mV	10 mV	unregulated	15 mV	unregulated
400 mV	30 mV	40 mV	40 mV	80 mV
4 V	0.3 V	0.4 V	0.4 V	0.8 V
40 V	3 V	4 V	4 V	8 V
300 V	30 V	40V (under 100kHz)	40 V	80V (under 100kHz)

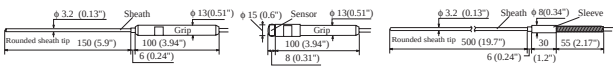
Maximum input voltage that regulates measurement accuracy: range full-scale voltage × 10 or 300V duty ratio, measurement accuracy in pulse width measurement is regulated for DCV: square waves of 5V in 4V range.
Duty ratio (0.01 to 99.9%: DC coupling, 5 to 95%: AC coupling), (±0.3%/kHz±0.3% f.s.)
Pulse width (0.1 to 1999 ms: pulse width range is decided according to signal frequency).
±0.2% rdg.±3dgt. (regulated at pulse widths above 10µs)

Temperature measurement (K type thermocouple)

range	resolution	main unit accuracy
-40 ˚C to 1000˚C	1 ˚C	±0.3% rdg.±3 ˚C
-40 ˚F to 1832 ˚F	1 ˚F	±0.3% rdg.±6 ˚F

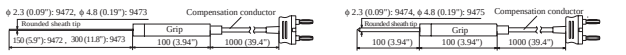
Probes

9180, 9183 SHEATH TYPE TEMPERATURE PROBE | **9181 SURFACE TYPE TEMPERATURE PROBE** | **9182 SHEATH TYPE TEMPERATURE PROBE**

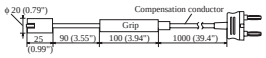


Model name	9180, 9183	9180, 9183	9182
Type of element wire	K (CA) Chromel/Alumel		
Tolerance	JIS C 1602, class 2*(class 1* for 9183)		
Sheath dimensions	3.2×150 mm (0.13×5.91")	15×8 mm (0.59×0.31")	3.2×500 mm (0.13×19.69")
Compensation lead	for general use 1m (-20 to 90˚C, -4˚F to 194˚F)	for general use 2m (-20 to 150˚C, -4˚F to 302˚F)	
Max. use temperature	750˚C (1382˚F)	400˚C (752˚F)	750˚C (1382˚F)
Grip heat resistance	150˚C (302˚F)		90˚C (194˚F)

9472, 9473 SHEATH TYPE TEMPERATURE PROBE | **9474, 9475 SHEATH TYPE TEMPERATURE PROBE**



9476 SURFACE TYPE TEMPERATURE PROBE



9272-9275 are water resistant

Model name	9472	9473	9474	9475	9476
Type of element wire	K (CA) Chromel/Alumel (JIS C 1602: 1995)				
Tolerance	Class 1 (the greater of ±1.5˚C (±2.7˚F) or ±0.4% of the measurement temperature)				Class 2*
Sheath dimensions	2.3 × 100 mm (0.09×3.94")	4.8 × 30 mm (0.19×1.18")	2.3 × 100 mm (0.09×3.94")	4.8 × 100 mm (0.19×3.94")	20 mm (0.79")
Compensation lead	for general use 1 m (-20 to 90˚C, -4˚F to 194˚F)				
Max. use temperature	300˚C (572˚F)	800˚C (1472˚F)	300˚C (572˚F)	500˚C (932˚F)	
Grip heat resistance	80˚C (176˚F)				

*Class 2 is the greater of ±2.5˚C (±4.5˚F) or ±0.75% of the measurement temperature)

7015 SIGNAL SOURCE

Accessories : Carrying case 1, AC adapter 1, Ni-Cd battery 8, 3851 TEST LEAD 1, Alligator clip 1, Test lead(yellow)1, Test leads(red, black)1

OPTION

3855 RS-232C PACKAGE
*9180 SHEATH TYPE TEMPERATURE PROBE
*9181 SURFACE TYPE TEMPERATURE PROBE
*9182 SHEATH TYPE TEMPERATURE PROBE
*9183 SHEATH TYPE TEMPERATURE PROBE (class 1)
9472 SHEATH TYPE TEMPERATURE PROBE (class 1)
9473 SHEATH TYPE TEMPERATURE PROBE (class 1)
9474 SHEATH TYPE TEMPERATURE PROBE (class 1)
9475 SHEATH TYPE TEMPERATURE PROBE (class 1)
9476 SURFACE TYPE TEMPERATURE PROBE

** Non-CE mark products*

HIOKI E. E. CORPORATION

HEAD OFFICE :
81 Koizumi, Ueda, Nagano, 386-1192, Japan
TEL +81-268-28-0562 / FAX +81-268-28-0568
E-mail: os-com@hioki.co.jp

HIOKI USA CORPORATION :
6 Corporate Drive, Cranbury, NJ 08512 USA
TEL +1-609-409-9109 / FAX +1-609-409-9108
E-mail: hioki@hiokiusa.com

DISTRIBUTED BY