

Vew

6146/6156 DC Voltage/Current Source

Standard power source best used as calibrator and secondary battery simulator

- Wide dynamic range of sourcing 6146 Voltage: 0 to ±32.000V Current: 0 to ±220.00mA 6156 Voltage: 0 to ±32.0000V Current: 0 to ±220.000mA
- High resolution
 1µV/100nA (6146), 100nV/10nA (6156)
- High accuracy (one-year guarantee)
 Basic accuracy for voltage: ±0.025% (6146), ±0.015% (6156)
 Basic accuracy for current: ±0.03% (6146), ±0.02% (6156)
- Synchronous operation of multiple units
- JIS-compliant thermal electromotive force output function (6156)





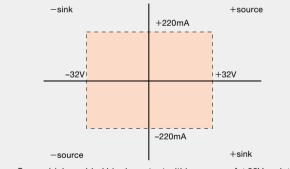
The 6146/6156 is a precision DC voltage/current source suitable for characteristic evaluation of semiconductor or electronic components and modules in R&D fields and for calibration of meters or measuring instruments.

It achieves wide dynamic range, high resolution, high accuracy and low output noise based on the comprehensive DC voltage/current sourcing technologies of ADC, allowing highly reliable and high-throughput system architect.

With various user-friendly functions, the 6146/6156 can not only operate as stand-alone but also can be integrated into an auto measuring system as secondary battery simulator.

In addition, the 6156 is equipped with a thermal electromotive force output function compliant with JIS, allowing easy temperature calibration.

Wide Dynamic Range of Sourcing



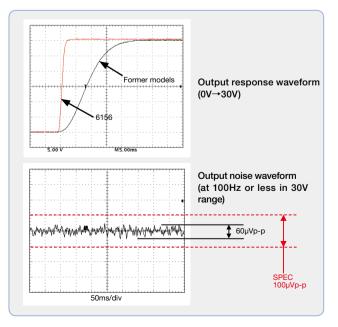
 \cdot Source/sink-enabled bipolar output within a range of $\pm 32V$ and \pm 220mA

Zero-crossing continuous variable output from negative to positive and vice versa

Model	6146	6156			
Digits	41/2	51/2			
Output	Bipolar				
Maximum output	±32V / ±220mA				
Voltage source range	1µV to 32.000V	100nV to 32.0000V			
Voltage source accuracy (typical)	0.025%	0.015%			
Current source range	100nA to 220.00mA	10nA to 220.000mA			
Current source accuracy (typical)	0.03%	0.02%			
Thermal electromotive force sourcing	-	Available			
High-frequency output noise (20MHz)	3m\	/р-р			
Settling time	10	ms			
Interface	GPIB, USB (standard) a	nd BCD (factory option)			
Memory	Up to 50	000 data			

High-Speed Response and Low Noise Voltage/ Current Sourcing

The response time in voltage or current sourcing of the 6146/6156 is greatly improved compared to the former models, and the settling time to reach the final value $\pm 0.1\%$ of 10ms or less is achieved. Consequently, the characteristic evaluation time for components or modules or the takt time for automatic test can be greatly reduced. Also, it features low output noise of 100μ Vp-p (30V range, DC to 100Hz band), enhancing the measurement reliability in characteristic evaluation of semiconductors or sensors.



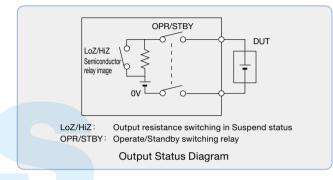
Suspend Function Suitable for Automatic Tests

When DUTs such as electronic components or modules are replaced on automatic test equipment, the output status needs to be "Standby" that opens the output relay so as not to apply unnecessary voltage to the DUTs. Every switching between "Operate" and "Standby" turns ON or OFF the output relay, giving a great impact on the relay lifetime.

The 6146/6156 has a suspend function that keeps the output status in "high impedance (HiZ: output relay ON, high resistance)" or "low impedance (LoZ: output relay ON, low resistance)" without switching the relay. The output OFF status can be selected from these two statuses and "Standby (output relay OFF)."

Using this function can extend the relay lifetime and improve the system throughout.

In addition, it can prevent transient current from being generated when connecting voltage sourcing devices such as batteries.

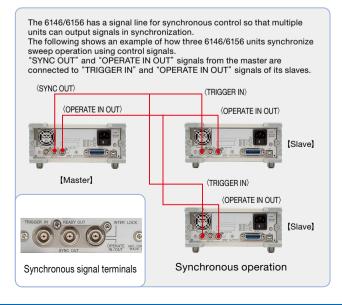


Multiple-Unit Operation and Synchronous Operation with DMM

In an electronic device or module test, voltage sometimes needs to be applied from more than one source. In this case, voltage to be applied to DUTs needs to vary in a synchronous timing.

More than one 6146/6156 units can be synchronized by connecting the Operate and Standby timing signals and variable voltage timing signals from the master to its slaves.

For voltage measurement using DMM, the 6146/6156 builds up an automatic measuring system with the DMM with the minimum waiting time as voltage application timing and measurement timing can be synchronized.

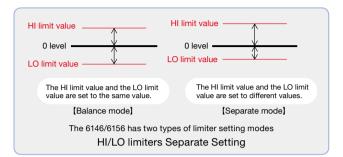


HI/LO Limiters Separate Setting

The limiter function is highly important for voltage or current sourcing to protect connected devices.

The current limiter works for voltage source to restrict output current and the voltage limiter works for current source to restrict compliance voltage.

The 6146/6156 has two setting levels for both voltage and current limiters which can be set separately.



User Friendly Operation Panel

Voltage or current values to be generated can be entered directly using the keyswitches on the front panels, and can be varied (increased or decreased) continuously by specifying an arbitrary digit using the rotary knob or the UP and DOWN keys.

Thus, the operability is greatly improved, so that measurement such as a device input and output characteristic test can be performed by simple key operations.



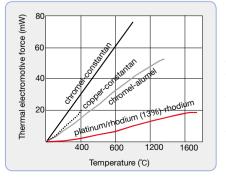
Thermal Electromotive Force Output Function (6156 Only)

The 6156 is capable of generating thermal electromotive force of thermocouples in accordance with JIS standards. Selecting the type of thermocouple and temperature to be generated will output voltage corresponding to the setting temperature.

The type of thermocouple is selectable from type T, J, E, K, S, R, B and N. The JIS standard is JISC1602-1995 or JISC1602-1981. For type N, only JISC1602-1995 is applicable.

The reference junction compensation is at 0° C or arbitrary temperature (user selectable).

This function enables temperature calibration of thermometers and other measuring instruments.



The 6156 thermal electromotive force output function can linearize the temperature and the thermal electromotive force of each thermocouple. Thus, thermometers can be calibrated easily just by setting the temperature to be calibrated on the 6156.

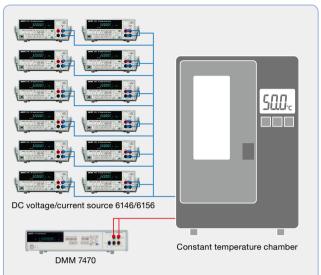
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For Reliability Test of Semiconductors and Electronic Components

To secure the reliability of electronic components such as semiconductor and sensors, aging tests with current applied are conducted on the devices. Such tests require highly stable voltage sources.

In some tests, the normal operating range of the devices is verified by changing the supply voltage.

With its low noise, high stability and high sourcing resolution, the 6146/6156 offers high reliability in these tests.



- The 6146/6156 is used as power source to the devices or input signal.
- A digital multimeter monitors output voltage of the devices.
 The 6146/6156 and the digital multimeter can acquire long-time aging data using GPIB or USB.

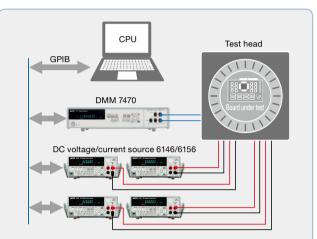
For Embedded Power Source or Signal Source in a Board Tester

Control boards used in home electric appliance and industrial equipment undergo functional tests at shipping and incoming inspections.

The 6146/6156 can be used as embedded power source in a board tester, applying voltage to a board under test and applying voltage or current as pseudo sensor signal.

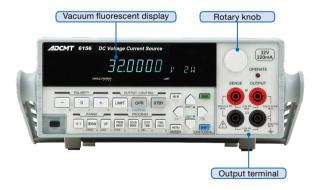
As the 6146/6156 stabilizes its output values with a settling time of 10 msec or less, the time of a multi-item test can be reduced.

In addition, the 6146/6156 is equipped with GPIB and USB interfaces for remote control as standard, allowing highly flexible system architect.

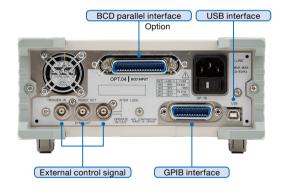


The 6146/6156 supplies power and applies voltage as pseudo sensor signal to the board under test.

The 6146 has a minute voltage resolution of 1μ V and the 6156 has that of 100nV. Thus, the 6146/6156 can be used as a substitute for sensor signal and make correct PASS/FAIL judgment on the board.



Front Panel (6156)



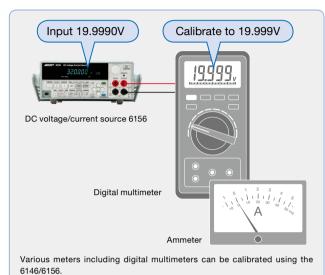
Rear Panel (6146/6156)

For Calibration of Meters and Measuring Instruments

Meters or measuring instruments used in plants or instrumentation systems need to be calibrated periodically.

The 6146/6156 is suitable for calibration of these meters or instruments with its high source accuracy.

The calibration time can be reduced by storing voltages or currents of points to be calibrated in the memory of the 6146/6156 and reading them out by turns.



Zero point and full scale calibrations are available by easy operation.

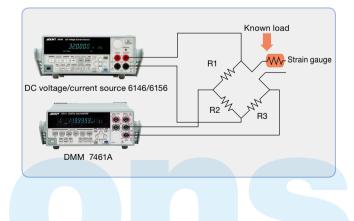
For Characteristic Test of Strain Sensors (Strain Gauges)

A strain gauge used in a strain or pressure sensor utilizes subtle variation in resistance.

In a strain gauge test, resistance with a known load applied is measured using a Wheatstone bridge circuit.

As a voltage source for the Wheatstone bridge circuit, the 6146/6156 is best suited with its high stability.

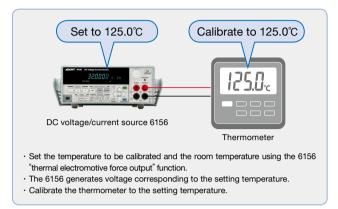
The output voltage is measured by using a digital multimeter such as the 7461A.



For Calibration of Thermometers (6156 Only)

When calibrating a thermometer that uses a thermocouple as a temperature sensor, DC voltage corresponding to thermal electromotive force of the thermocouple needs to be applied.

The 6156 generates easily thermal electromotive force of thermocouples compliant with JIS. For reference junction compensation, the 6156 has a "room temperature compensation ON/OFF" function that generates thermal electromotive force to arbitrary temperature just by setting the source temperature and the room temperature.



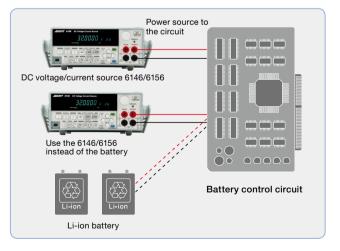
For Evaluation Test of Secondary Battery Control Circuits

As a secondary battery such as a lithium ion battery is high-energy density, the control circuit plays an important role in monitoring the charge-discharge characteristics.

To test the operation of this control circuit, the 6146/6156 can be used as a battery simulator.

The control circuit is tested correctly by changing the voltage of the battery simulator for each test item.

The 6146/6156 realizes such precise characteristic measurement with its wide measurement range, high sourcing resolution and low output noise.



DC Voltage Current Source

Specifications

All accuracy specifications are satisfied at a temperature of $23^{\circ}C \pm 5^{\circ}C$ and a relative humidity not exceeding 85%.

Voltage/current source 6146

Voltage source range:

0 0		
Range	Source range	Setting resolution
30mV	0 to ±32.000mV	1µV
300mV	0 to ±320.00mV	10µV
3V	0 to ±3.2000V	100µV
30V	0 to ±32.000V	1mV

Current source range:

Range	Source range	Setting resolution
3mA	0 to ±3.2000mA	100nA
30mA	0 to ±32.000mA	1µA
200mA	0 to ±220.00mA	10µA

Overall accuracy: Includes calibration accuracy, 1-day stability, the temperature coefficient, and linearity.

1-day stability: At constant power and load

Temperature coefficient: At temperature of 0 to 50°C

Voltage source:

-					
	Overall accuracy	Overall accuracy	1-day stability	1-day stability	Temperature
Danga	(1year)	(90days)	(23°C±1°C)	(23°C±5°C)	coefficient
Range		± (ppm of			
		± (% of s	etting+v)		setting+V)/°C
30mV	0.03+5µV	0.025+4µV	0.006+4µV	0.01+4µV	20+200nV
300mV	0.03+25µV	0.025+20µV	0.006+5µV	0.01+10µV	20+2µV
3V	0.025+200µV	0.02+200µV	0.005+20µV	0.008+30µV	15+10µV
30V	0.025+2mV	0.02+2mV	0.005+100µV	0.008+200µV	15+40µV
Current s	source:				
	Overall accuracy	Overall accuracy	1-day stability	1-day stability	Temperature
Banga	(1year)	(90days)	(23°C±1°C)	(23°C±5°C)	coefficient
Range		± (% of s	otting (A)		± (ppm of
		± (% 01 S	etting+A)		setting+A) /°C
3mA	0.03+250nA	0.025+250nA	0.008+20nA	0.01+20nA	20+4nA
30mA	0.03+2.5µA	0.025+2.5µA	0.008+200nA	0.01+200nA	20+40nA
200mA	0.035+25µA	0.03+25µA	0.008+2µA	0.01+2µA	20+400nA
30mA	0.03+2.5µA	0.025+250nA 0.025+2.5μA	0.008+20nA 0.008+200nA	0.01+200nA	20+4nA 20+40nA

Source linearity: ±60ppm of range or less

6156

Voltage source range:

200mA

J		
Range	Source range	Setting resolution
30mV	0 to ±32.0000mV	100nV
300mV	0 to ±320.000mV	1µV
3V	0 to ±3.20000V	10µV
30V	0 to ±32.0000V	100µV
Current source range:		
Range	Source range	Setting resolution
3mA	0 to ±3.20000mA	10nA
30mA	0 to ±32.0000mA	100nA

0 to ±220.000mA

Overall accuracy: Includes calibration accuracy, 1-day stability, the temperature coefficient, and linearity

1-day stability: At constant power and load, and temperature of $23^{\circ}C\pm1^{\circ}C$ Temperature coefficient: At temperature of 0 to $50^{\circ}C$

Voltage source:

Overall accuracy	Overall accuracy	1 dov otobility	Temperature
(1year)	(90days)	I-day stability	coefficient
	(9/ of potting)	Λ	± (ppm of
±	(% of setting+v)	setting+V)/°C
0.02+5µV	0.018+5µV	0.002+3µV	15+200nV
0.02+10µV	0.018+10µV	0.003+3µV	15+700nV
0.015+80µV	0.008+70µV	0.001+10µV	8+7μV
0.015+240µV	0.01+200µV	0.001+40µV	8+25µV
	(1year) ± 0.02+5µV 0.02+10µV 0.015+80µV	(1year) (90days) ± (% of setting+V 0.02+5µV 0.018+5µV 0.02+10µV 0.018+10µV 0.015+80µV 0.008+70µV	(1year) (90days) 1-day stability ± (% of setting+V) .0.02+5µV 0.018+5µV 0.002+3µV 0.02+10µV 0.018+10µV 0.003+3µV 0.001+10µV 0.015+80µV 0.008+70µV 0.001+10µV 0.001+10µV

Current source:

	Overall accuracy	Overall accuracy	4	Temperature
Danga	(1year)	(90days)	1-day stability	coefficient
Range		(% of setting+A	\	± (ppm of
	±	(% of setting+A	9	setting+A) /°C
3mA	0.02+50nA	0.018+50nA	0.0015+15nA	15+4nA
30mA	0.02+500nA	0.018+500nA	0.0025+150nA	15+40nA
200mA	0.025+5µA	0.022+5µA	0.004+1.5µA	20+400nA
Source lin	oority: Coom o	f range or loss		

Source linearity: ±6ppm of range or less

Thermal electromotive force 6156 only

Thermal electromotive force source range:

Thermocouple	Source range	Setting resolution
T (CC)	−200.0°C to +400.0°C	0.1°C
J (IC)	–200.0°C to +1200.0°C	0.1°C
E (CRC)	−200.0°C to +1000.0°C	0.1°C
K (CA)	–200.0°C to +1372.0°C	0.1°C
S (PR10)	–10.0°C to +1768.0°C	0.1°C
R (PR13)	–10.0°C to +1768.0°C	0.1°C
B (PR30)	+330.0°C to +1820.0°C	0.1°C
N	–200.0°C to +1300.0°C	0.1°C
Deems temperatu	ve aatting range. 05°C to .05°C	

Room temperature setting range: $-25^{\circ}C$ to $+85^{\circ}C$

For thermocouple type B, the room temperature of less than 0° C is deemed to be 0° C.

Standard setting: JIS C1602-1995 or JIS C1602-1981 For type N, JIS C1602-1995 is applied.

Thermal electromotive force overall accuracy:

Thermocouple		Accu	iracy
mennocoupie	Source temperature range	Range	± (% of setting+℃)
		–200.0°C to –120.1°C	0.034+0.5°C
T (CC)	-200.0°C to +400.0°C	–120.0℃ to –50.1℃	0.025+0.3℃
		−50.0°C to +400.0°C	0.02+0.2°C
		–200.0℃ to –150.1℃	0.035+0.6°C
J (IC)	-200.0°C to +1200.0°C	–150.0℃ to –501℃	0.025+0.5℃
		–50.0℃ to +1200.0℃	0.02+0.4°C
		–200.0℃ to –150.1℃	0.035+0.5℃
E (CRC)	-200.0°C to +1000.0°C	–150.0°C to –50.1°C	0.026+0.4°C
		−50.0°C to 1000.0°C	0.02+0.3°C
		–200.0°C to –150.1°C	0.037+0.7°C
	_200.0℃ to +1372.0℃	–150.0°C to –50.1°C	0.026+0.6°C
K (CA)	-200.0 C 10 + 1372.0 C	-50.0℃ to +1100.0℃	0.02+0.4°C
		+1100.1°C to +1372.0°C	0.023+0.4°C
S (PR10)	−10.0°C to +1768.0°C	-10.0°C to +550.0°C	0.02+1°C
3 (FN10)	-10.0 C t0 +1700.0 C	+550.1℃ to +1768.0℃	0.02+0.6°C
R (PR13)	−10.0°C to +1768.0°C	-10.0°C to +300.0°C	0.02+0.7°C
n (FN 13)	-10.0 C t0 +1700.0 C	+300.1℃ to +1768.0℃	0.02+0.6°C
	+330.0°C to +1820.0°C	+330.0°C to +1000.0°C	0.02+1.5℃
B (PR30)	+330.0 0 10 + 1620.0 0	+1000.1°C to +1820.0°C	0.02+0.7°C
		–200.0°C to –130.1°C	0.04+1°C
Ν	-200.0°C to +1300.0°C	–130.0°C to –50.1°C	0.025+0.7°C
		–50.0℃ to +1300.0℃	0.02+0.5℃

6146/6156

1µA

Maximum load/output resistance: 3V/30V range: output resistance in 4-wire connection Other ranges: output resistance in 2-wire connection

		9 · · · · · · ·	
	Range	Maximum load	Output resistance
	30mV	1.5μA ^{*1}	Approx. 2Ω
Voltage	300mV	15µA*1	Approx. 232
source	3V	+220mA	$2m\Omega$ or less
	30V	±22011A	$2m\Omega$ or less
	3mA	Output compliance	500M Ω or higher
Current source	30mA		$320M\Omega$ or higher
course	200mA	voltage:±32V	$32M\Omega$ or higher

*1: Load that gives an error of 0.01% of the range

					stance of 1k <u>c</u> ency noise	_	gh frequency nois
	Ra	nge	DC to 100	<u> </u>	DC to 10kHz	_	C to 20MH
		20ma\/					
\/-H	-	30mV	5µV		10µV	_	
Voltage source	30	00mV	15µV		30µV	_	3mV
[Vp-p]		3V	30µV		120µV	_	
		30V	100µV		300µV	_	
Current source		3mA	30nA		100nA	_	
[Ap-p]		30mA	300nA		400nA	_	6μΑ
Settling time		00mA	3μΑ		3µA ue ±0.1% wh		
-	ions: So		es and limite load and 20		ues are full-sca max. load ca Sett		ance
		30	mV				
Voltage source		300	mV		10m	s or l	000
vonaye source			3V		10/11	3 01 1	633
		;	30V				
		3	mA				
Current source		30	mA		10m	s or l	ess
		200	mA				
Overshoot: ±0 Line regulatio Load regulat	on: ±(ion: ±(0.003% 0	of range or l of range or	ess	end of stand		
			,	and '	300mV range	s)	
Maximum loa					n value that d	'	not oscillat
	oupo				e source or vo		
Volt	age sou	irce/volta	age limiter:	-9	1000µF		
Maximum loa				mun	n value that d	loes i	not oscillat
			in cu	rren	t source or cu	urren	t limiter
Curi	rent sou	irce/curr	ent limiter:		1mH		
CMRR: Vol							
	laye ou	tput	100dB	or h	nigher		
Cu	rrent ou	tput	72dB (or hig	gher		
Cu	rrent ou	tput	72dB (or hig	•	50/601	Hz ± 0.1%
Cui At u	rrent ou unbalanc	tput ced impe	72dB (or hig	gher	50/601	Hz ± 0.1%
Cu	rrent ou unbalanc	tput ced impe	72dB (or hig	gher	50/60	Hz ± 0.1%
Cui At u	rrent ou unbalanc ent limit Setting	tput ced imper er: g range	72dΒ dance 1kΩ a	or hig	gher n DC and AC 5 Setting a	ccurac	y
Cur At u Voltage/curre Voltage limiter	rrent ou unbalance ent limit Setting 1V to	er: g range o 32V	72dB d dance 1kΩ a Resolution 100mV	or hiệ Ind ir	gher DC and AC 5 Setting a ±5% of setti	ccurac	y 00mV
Cur At u Voltage/curre Voltage limiter Current limiter	rrent ou unbaland ent limit Setting 1V to 5mA to	er: grange o 32V 220mA	72dB d dance 1kΩ a Resolution 100mV 1mA	or hig ind ir ±10	gher h DC and AC 5 Setting a ±5% of setting 0% of setting:	ccurac	y 00mV
Cur At u Voltage/curre Voltage limiter	rrent ou unbaland ent limit Setting 1V to 5mA to	er: grange o 32V 220mA	72dB d dance 1kΩ a Resolution 100mV 1mA	or hig ind ir ±10	gher h DC and AC 5 Setting a ±5% of setting 0% of setting:	ccurac	y 00mV
Voltage/curred Voltage imiter Current imiter ※The current	rrent ou unbaland ent limit Setting 1V to 5mA to limiter is	tput ced imped er: grange o 32V o 220mA available i	72dB d dance 1kΩ a Resolution 100mV 1mA	or hig ind ir ±10	gher h DC and AC 5 Setting a ±5% of setting 0% of setting:	ccurac	y 00mV
Cur At u Voltage/curre Voltage limiter Current limiter	rrent ou unbaland ent limit Setting 1V to 5mA to limiter is	tput ced imped er: grange o 32V o 220mA available i	72dB d dance 1kΩ a Resolution 100mV 1mA	or hig ind ir ±10	gher h DC and AC 5 Setting a ±5% of setting 0% of setting:	ccurac	y 00mV
Curi At u Voltage/curre Voltage limiter Current limiter **The current li Source Fu	rrent ou unbalance ent limit Setting 1V to 5mA to limiter is Inction	tput ced imper er: g range o 32V o 220mA available i	72dB d dance 1kΩ a Resolution 100mV 1mA in the 3V and	er hig ind ir ±10 30V	Setting a ±5% of setting 0% of setting- ranges.	ccurac ing±1 ±1mA	y 00mV
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Cur At u Voltage/currer Voltage limiter Current limiter **The current I Source Fu Memory reca Scan mode: Scan mode: Scan mode: Suspend fun Continuous v Limiter: Output syste Output termi	rrent ou unbalance ent limit Setting 1V to 5mA to limiter is inction all: emory: ion: ction: variable em: nal:	tput ced imped er: grange o 32V 220mA available i Reads of Specifie Hold Single Repeat 5000 da Setting Increme step val value. Can be s (low resi function Increme to the fu step tim Voltage Current Voltage HI and L Floating Front, s: HI OUTP	72dB of dance 1kΩ a Resolution 100mV 1mA in the 3V and but a specification out a specification out a specification but a specification call a specification call a specification but a specification call a specification but a specification call a specicat	ied n num ap tir a a num ap tir ta a n num ap tir ta a n ta n t	Setting a <u>setting a</u> <u>±5% of setting</u> ranges. nemory numbrish nemory numbrish nemory numbrish nemory numbrish room the first rish redly from the ast number. 0.00s, setting nts the source cified start van h HiZ (high ression output relay O nts the current at intervals sp iters are sepate e source ts source an be set sepate D OUTPUT, LO	ccurac ing±1 ±1mA oper. at inf oper b first istan istan istan N. nt sel opecifi aratel oparate	y 00mV +60µA/1V tervals y trigger er through number lution 0.01 ue by the o stop ce) and Lo2 tring value ed by the y set. ely. SE 300mV rang

Maximum remote	e sensing voltage:			
		ENSE ±0.3V Max		
		SENSE ±0.3V Max		
		en HI SENSE and LO		st be
		m output voltage range	e)	
GPIB interface:	Compliant with II			
		AH1, T6, L3, SR1, RL1, PP0,	DC1, D11, CC), E2
USB interface:	Connector Amp			
USB Internace:	USB 2.0 Full-spe			
BCD parallel inte	Connector Type rface (factory opti			
DOD parallel litte		on). output level, polarity, rar	iae Onerate	load signal
	Connector Amp		ige, operate	, iouu sigilui
External control				
	TRIGGER IN			
	READY OUT/SYN	NC OUT		
	INTERLOCK/OP	ERATE IN/OPERATE	OUT,	
	Connector BNC			
Operate hold fun				
	Starts up with outp	ut ON at recover from a	a power fail	ure.
General Spec	cifications			
-		rature N°C to 150°C		
operating environme	nt: Ambient temper	rature 0 C to +50 C lity 85% or below, wi	th no con	densation
Storage environme		rature -25°C to +70°C		acrisation
Storage environme		ity 85% or below, wi	th no con	densation
Warming up time				
Display:		l (6146)/6-digit decin	nal (6156)	
		uum fluorescent dis		
Power supply:		120V/220V/and240V (U		able)
	Option No.		OPT. 42	OPT. 44
	Power Voltage	100V 120V	220V	240V
	Specify the opti-	on number when order	ing.	
	When changing	the power voltage, use	only a pov	ver cable
	and rated fuse a	pproved for the respec	tive count	ry.
Line frequency:	50Hz/60Hz			
Power consumpt		6		
Dimensions:	Annrox 212			
		? (width)×88 (height)×	:340 (dept	h) mm
Mass:	4kg or less			h) mm
Safety:	4kg or less Compliant v	vith IEC61010-1 Ed.3		h) mm
Safety:	4kg or less Compliant v			h) mm
Safety: EMI:	4kg or less Compliant v Compliant v	vith IEC61010-1 Ed.3		h) mm
Safety: EMI: Supplied access	4kg or less Compliant v Compliant v ories	vith IEC61010-1 Ed.3 vith EN61326 classA		h) mm
Safety: EMI: Supplied access Part number	4kg or less Compliant v Compliant v ories	vith IEC61010-1 Ed.3 vith EN61326 classA Name		h) mm
Safety: EMI: Supplied access Part number A01402	4kg or less Compliant v Compliant v ories	vith IEC61010-1 Ed.3 vith EN61326 classA Name ; 2m)		h) mm
Safety: EMI: Supplied access Part number A01402 A01044	4kg or less Compliant v Compliant v ories Power cable (JIS Input and output	vith IEC61010-1 Ed.3 vith EN61326 classA Name 2 2m) cable (safety plug)		h) mm
Safety: EMI: Supplied access Part number A01402 A01044 A08531	4kg or less Compliant v Compliant v ories Power cable (JIS Input and output Banana tip adap	vith IEC61010-1 Ed.3 vith EN61326 classA Name 2m) cable (safety plug) ter (for A01044)		h) mm
Safety: EMI: Supplied access Part number A01402 A01044	4kg or less Compliant v Compliant v ories Power cable (JIS Input and output Banana tip adap	vith IEC61010-1 Ed.3 vith EN61326 classA Name 2 2m) cable (safety plug)		h) mm
Safety: EMI: Supplied access Part number A01402 A01044 A08531	4kg or less Compliant v Compliant v ories Power cable (JIS Input and output Banana tip adap	vith IEC61010-1 Ed.3 vith EN61326 classA Name 2m) cable (safety plug) ter (for A01044)		h) mm
Safety: EMI: Supplied access Part number A01402 A01044 A08531 A08532	4kg or less Compliant v Compliant v ories Power cable (JIS Input and output Banana tip adap	vith IEC61010-1 Ed.3 vith EN61326 classA Name 2m) cable (safety plug) ter (for A01044)		h) mm
Safety: EMI: Supplied access Part number A01402 A01044 A08531	4kg or less Compliant v Compliant v ories Power cable (JIS Input and output Banana tip adap	vith IEC61010-1 Ed.3 vith EN61326 classA Name cable (safety plug) ter (for A01044) upter (for A01044)		h) mm
Safety: EMI: Supplied access Part number A01402 A01044 A08531 A08532	4kg or less Compliant v Compliant v ories Power cable (JIS Input and output Banana tip adap	vith IEC61010-1 Ed.3 vith EN61326 classA Name cable (safety plug) ter (for A01044) upter (for A01044)		h) mm
Safety: EMI: Supplied access Part number A01402 A01044 A08531 A08532	4kg or less Compliant v Compliant v ories Power cable (JIS Input and output Banana tip adap Alligator clip ada	vith IEC61010-1 Ed.3 vith EN61326 classA Name 2m) cable (safety plug) ter (for A01044) pter (for A01044) 0ption 1 6146+04		h) mm
Safety: EMI: Supplied access Part number A01402 A01044 A08531 A08532 Option	4kg or less Compliant v Compliant v ories Power cable (JIS Input and output Banana tip adap Alligator clip ada	vith IEC61010-1 Ed.3 vith EN61326 classA Name cable (safety plug) ter (for A01044) upter (for A01044)		h) mm
Safety: EMI: Supplied access Part number A01402 A01044 A08531 A08532 Option	4kg or less Compliant v Compliant v ories Power cable (JIS Input and output Banana tip adap Alligator clip ada	vith IEC61010-1 Ed.3 vith EN61326 classA Name 2m) cable (safety plug) ter (for A01044) pter (for A01044) 0ption 1 6146+04		h) mm
Safety: EMI: Supplied access Part number A01402 A01044 A08531 A08532 Option	4kg or less Compliant v Compliant v ories Power cable (JIS Input and output Banana tip adap Alligator clip ada	vith IEC61010-1 Ed.3 vith EN61326 classA Name 2m) cable (safety plug) ter (for A01044) pter (for A01044) 0ption 1 6146+04		h) mm
Safety: EMI: Supplied access Part number A01402 A01044 A08531 A08532 Option BCD parallel inte Optional accesse	4kg or less Compliant v Compliant v ories Power cable (JIS Input and output Banana tip adap Alligator clip ada	vith IEC61010-1 Ed.3 vith EN61326 classA 2m) cable (safety plug) ter (for A01044) pter (for A01044) 0ption 1 6146+04 6156+04		h) mm
Safety: EMI: Supplied access Part number A01402 A01044 A08531 A08532 Option BCD parallel inte Optional accesso Part number	4kg or less Compliant v Compliant v ories Power cable (JIS Input and output Banana tip adap Alligator clip ada erface	vith IEC61010-1 Ed.3 vith EN61326 classA 2m) cable (safety plug) ter (for A01044) pter (for A01044) 6146+04 6156+04 Name		h) mm
Safety: EMI: Supplied access Part number A01402 A01044 A08531 A08532 Option BCD parallel inte Optional accesso Part number A01041	4kg or less Compliant v Compliant v Power cable (JIS Input and output Banana tip adap Alligator clip ada erface	vith IEC61010-1 Ed.3 vith EN61326 classA 2 cm) cable (safety plug) ter (for A01044) pter (for A01044) 6146+04 6156+04 Name probe)		h) mm
Safety: EMI: Supplied access Part number A01402 A01044 A08531 A08532 Option BCD parallel inte Optional accesse Part number A01041 A01044	4kg or less Compliant v Compliant v Ories Power cable (JIS Input and output Banana tip adap Alligator clip ada erface	vith IEC61010-1 Ed.3 vith EN61326 classA Name 2 cm) cable (safety plug) ter (for A01044) pter (for A01044) 0 ption n 6146+04 6156+04 Name probe) cable (safety plug)		h) mm
Safety: EMI: Supplied access Part number A01402 A01044 A08531 A08532 Option BCD parallel inte Optional accesse Part number A01041 A01044 A08531	4kg or less Compliant v Compliant v Power cable (JIS Input and output Banana tip adap Alligator clip ada erface	vith IEC61010-1 Ed.3 vith EN61326 classA Name 2 cm) cable (safety plug) ter (for A01044) pter (for A01044) 0 ption n 6146+04 6156+04 Name probe) cable (safety plug) ter (for A01044)		h) mm
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Safety: EMI: Supplied access Part number A01402 A01044 A08531 A08532 Option BCD parallel inte Optional accesse Part number A01041 A01044 A08531 A08532 A01036-1500	4kg or less Compliant v Compliant v Orries Power cable (JIS Input and output Banana tip adap Alligator clip ada Pories	vith IEC61010-1 Ed.3 vith EN61326 classA Name 2 cm) cable (safety plug) ter (for A01044) pter (for A01044) 6146+04 6156+04 Name probe) cable (safety plug) ter (for A01044) upter (for A01044) upter (for A01044) (1.5 m)		h) mm
Safety: EMI: Supplied access Part number A01402 A01044 A08531 A08532 Option BCD parallel inter Optional accesse Part number A01041 A01044 A08531 A08532	4kg or less Compliant v Compliant v Compliant v Power cable (JIS Input and output Banana tip adap Alligator clip ada Pories Input cable (test Input cable (test Input cable (test Input and output Banana tip adap Alligator clip ada BNC-BNC cable Rack mount set	vith IEC61010-1 Ed.3 vith EN61326 classA Name 2 cm) c cable (safety plug) ter (for A01044) pter (for A01044) 6146+04 6156+04 Name probe) c cable (safety plug) ter (for A01044) ter (for A01044) upter (for A01044) (JIS 2U half)		h) mm
Safety: EMI: Supplied access Part number A01402 A01044 A08531 A08532 Option BCD parallel inte Optional accesse Part number A01041 A01044 A08531 A08532 A01036-1500	4kg or less Compliant v Compliant v Compliant v Power cable (JIS Input and output Banana tip adap Alligator clip ada Pories Input cable (test Input cable (test Input cable (test Input and output Banana tip adap Alligator clip ada BNC-BNC cable Rack mount set	vith IEC61010-1 Ed.3 vith EN61326 classA Name 2 cm) cable (safety plug) ter (for A01044) pter (for A01044) 6146+04 6156+04 Name probe) cable (safety plug) ter (for A01044) upter (for A01044) upter (for A01044) (1.5 m)		h) mm
Safety: EMI: Supplied access Part number A01402 A01044 A08531 A08532 Option BCD parallel inte Optional accesse Part number A01041 A01044 A08531 A08532 A01036-1500 A02263	4kg or less Compliant v Compliant v Compliant v Power cable (JIS Input and output Banana tip adap Alligator clip ada Pories Input cable (test Input cable (test Input cable (test Input and output Banana tip adap Alligator clip ada BNC-BNC cable Rack mount set	vith IEC61010-1 Ed.3 vith EN61326 classA Name 2 cm) c cable (safety plug) ter (for A01044) pter (for A01044) 6146+04 6156+04 Name probe) c cable (safety plug) ter (for A01044) (1.5 m) (JIS 2U half) (JIS 2U half twin)		h) mm
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Safety: EMI: Supplied access Part number A01402 A01044 A08531 A08532 Option BCD parallel inter Optional accesse Part number A01041 A01044 A08531 A08532 A01036-1500 A02263 A02264 A02463	4kg or less Compliant v Compliant v Power cable (JIS Input and output Banana tip adap Alligator clip ada erface pries Input cable (test Input and output Banana tip adap Alligator clip ada BNC-BNC cable Rack mount set Rack mount set Rack mount set	vith IEC61010-1 Ed.3 vith EN61326 classA icable (safety plug) ter (for A01044) pter (for A01044) (6146+04 6156+04 6156+04 Coption (6146+04 6156+04 (156+04 (1.5 m) (JIS 2U half) (JIS 2U half) (EIA 2U half twin) (EIA 2U half twin)		h) mm
Safety: EMI: Supplied access Part number A01402 A01044 A08531 A08532 Option BCD parallel inter Optional accesse Part number A01041 A01044 A08531 A01036-1500 A02263 A02264 A02463 A02464	4kg or less Compliant v Compliant v Compliant v Power cable (JIS Input and output Banana tip adap Alligator clip ada erface pries Input cable (test Input cable (test Input and output Banana tip adap Alligator clip ada BNC-BNC cable Rack mount set Rack mount set	vith IEC61010-1 Ed.3 vith EN61326 classA ith EN61326 classA icable (safety plug) ter (for A01044) upter (for A01044) ifter (for A01044) 6146+04 6156+04 ifter (for A01044) ifter (for A0		h) mm

• Please read through the operation manual carefully before using the products.

• All specifications are subject to change without notice.



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