

DC Voltage Current Source/Monitor

Capable of high-speed response pulse source, 5½-digit measurement and high-precision low-resistance measurement



- Source and measurement range
Voltage: 0 to ±15 V, Current: 0 to ±4 A (1 A for DC)
- Source and measurement accuracy: ±0.02 %
- Measurement display of 5½ digits with resolution of 1 μV/100 pA
- Source/sink of ±4 A for the maximum pulse width of 20 ms
- Pulse measurement with minimum pulse width of 50 μs and 1 μs step
- Sink-enabled bipolar output
- Low-resistance measurement canceling thermal electromotive force for conductive materials



ADCMT 6240B DC Voltage Current Source/Monitor

PLS HOLD S AUTO 4W
AZ
FIT 4A mΩ FAST SLOW HL LL T_PALM

10.0000 V
4.0000 A

SOURCE RANGE: 6 MODE VS/IS 7 LIMIT 8 4W/2W 9 SUSPEND OPR STBY

MEASURE TRIGGER: 0 FIT DOWN UP 1 MON AUTO 2 HOLD TRIG 3 SWP STOP 4 MENU 5

OUTPUT CONTROL: NULL SEL 4/-/ ENTER 123 UNIT UNIT EXP CE EXIT/LOCAL

15V/1A
10V/4A Pulse

SENSE OUTPUT

HI LO 15V PK MAX 2V PK MAX 250V MAX

Semiconductor test with high-speed pulses avoiding heat generation

Contact resistance measurement that cancels thermal EMF

The DC Voltage Current Source/Monitor 6240B not only maintains the performance of the 6240A but also adopts newly high-speed response pulse source and measurement function and a low-resistance measurement function that cancels thermal EMF (electromotive force).

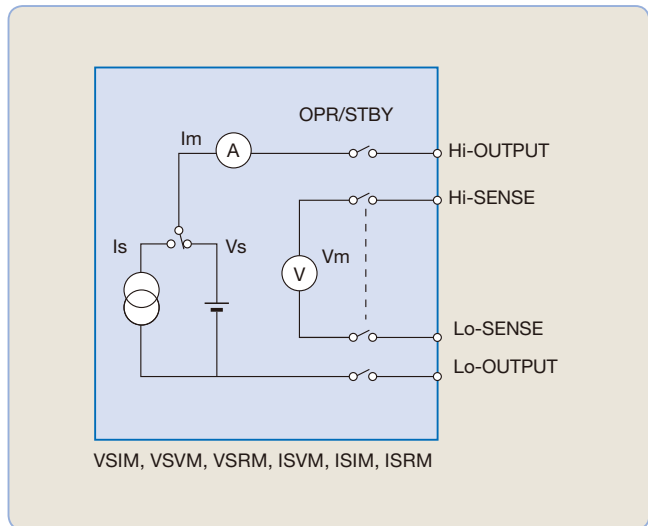
It has 4½-digit display for voltage and current source and 5½-digit display for measurement, and features high accuracy of ±0.02 %.

There are four types of sweep modes available: liner, fixed, random and 2-slope linear sweep, and also pulse measurement with a minimum pulse width of 50 μs is available. Thus, this model can be widely used as evaluation power supply for developing semiconductors and other electronic components and as power supply of characteristic test systems used in production lines.

The maximum 4 A pulse source or pulse load function is suitable for evaluating small devices with larger current capacities, and the HI/LO limiter separate setting function has an advantage for evaluating LEDs, batteries and power ICs. Also, low-resistance test of connectors and low-resistance measurement of conductive materials according to JIS are possible. Moreover, the 6240B is capable of high-precision contact resistance measurement that cancels thermal EMF generated on metal contact surfaces.

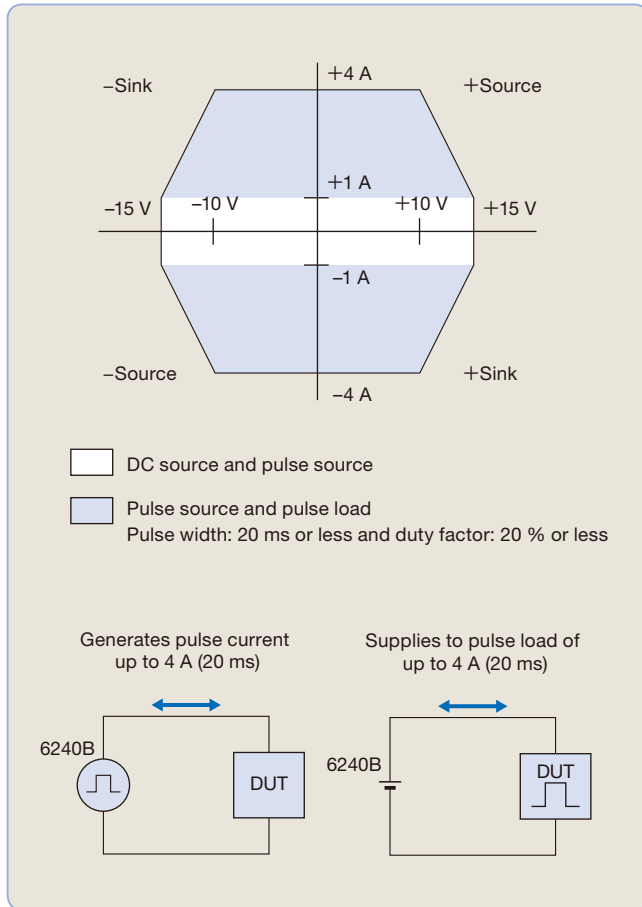
Source and Measurement Function

The source and measurement functions are selectable from voltage source, current source, voltage measurement, current measurement and resistance measurement.

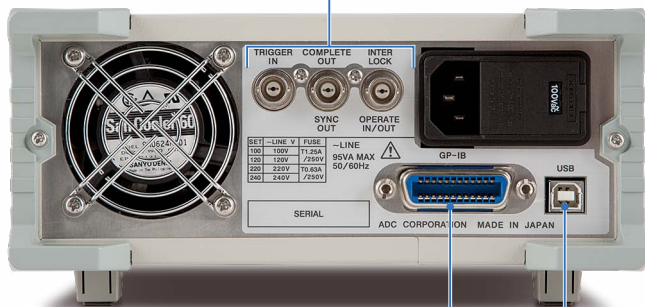


Wider applications with various voltage and current source modes and limiter separate setting

Output Range



TRIGGER IN/SYNC OUT signal to perform synchronous operation of multi-units or synchronous control on external measuring instruments and to output comparison operation results, and INTERLOCK signal to prevent malfunction



6240B rear panel

GPIB interface

USB interface

Voltage and Current Source Mode

There are four source modes; DC, pulse, DC sweep, pulse sweep. Then, the sweep modes are classified into four sweep types: fixed sweep, linear sweep, random sweep (arbitrary waveform generation by user programming), 2-slope linear sweep (linear sweep with step value switching).

The minimum pulse width is 50 μ s.

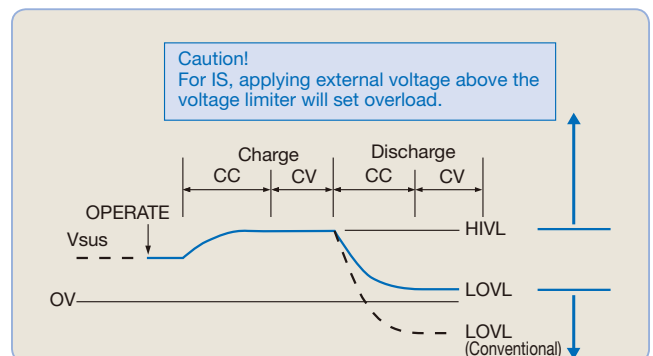
The minimum cycle is 2 ms, or 500 μ s without measurement.

	DC	PULSE
Continuous spot		
Fixed sweep		
Linear sweep		
Random sweep		
2-slope linear sweep		

HI/LO Limiter Separate Setting

In voltage or current source, the HI/LO limiter settings are very important. For current source, the limiter voltage must be higher than the applied voltage. When voltage higher than the limiter voltage is applied from the outside, the instrument detects overload and sets standby. When a capacitor is discharged after being charged at a constant current with the positive and negative limiters being set to the same value, overload occurs if the limiter voltage is lowered. In addition, it is discharged down to negative voltage when applying reverse polarity current.

However, the 6240B allows separate setting of HI and LO limiters. Furthermore, for the voltage-limiter, both HI and LO limiters can be set homo-polar. This prevents a capacitor or a battery from being over-discharged. Also, it is suitable for evaluating devices that are used at a constant current and do not tolerate reverse voltage application.



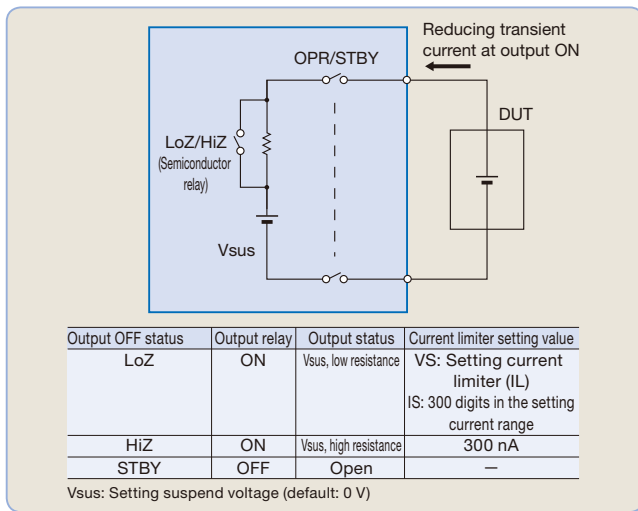
High-speed response, low-noise and high-precision testing Suitable for system architect by output ON/OFF without relay switching

Suspend Function

The 6240B can select from three output OFF statuses; STBY (output relay OFF), HiZ (output relay ON and high resistance), and LoZ (output relay ON and low resistance). Using this function can omit unnecessary relay ON/OFF operations, and consequently solve conventional problems:

- Prevents throughput reduction due to relay operating time.
- Extends relay lifetime and increases product reliability.

In addition, the setting of a suspend voltage (voltage in HiZ and LoZ status) can prevent transient current from being generated when connecting voltage sourcing devices such as batteries.

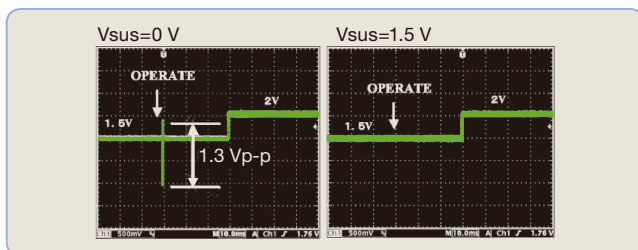


When a conventional generator or electronic load is connected with a battery, the output voltage is 0 V, and then the setting current starts flowing. In this case, the moment that it is connected, transient current sink occurs, causing unnecessary battery discharge. On the other hand, by setting the suspend voltage, the 6240BD is connected in high-impedance state at the specified voltage and then the setting current flows. This prevents unnecessary discharge at the connection to the battery.

Comparison of transient current at output ON

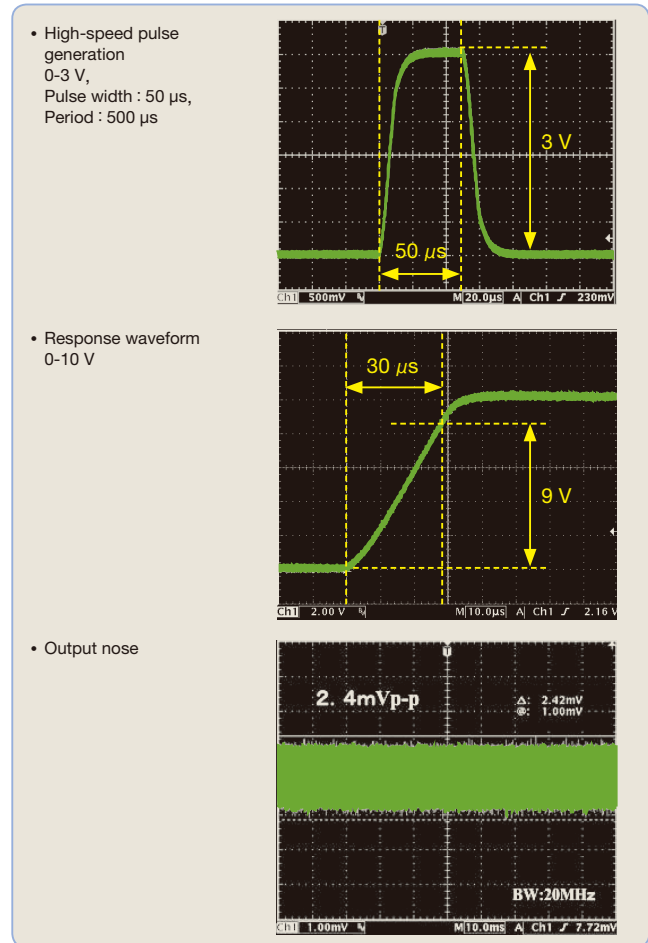
The following shows the comparison of transient current when the output status is set to Operate with IS=500 mA, VL=±3 V, Vbatt=1.5 V and load resistance = 1 Ω.

When setting Vsus = 0 V, transient current of 1.3 A flows at 1.3 V. When setting to Vsus = 1.5 V, it becomes almost 0 A.



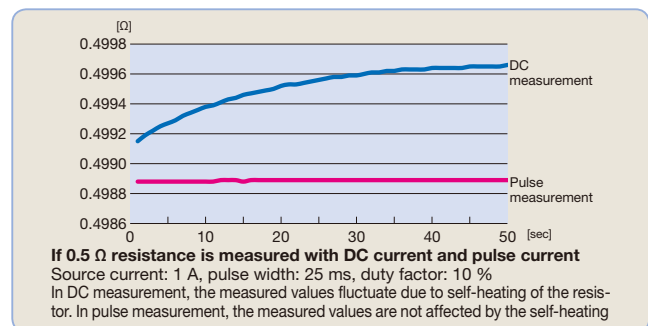
High-Speed Response and Low Noise

The following shows a representative response waveform and output noise. The response between 0 V and 10 V is approximately 30 μs at 0 to 90 % rising time and the output noise is approximately 2.4 mV p-p from DC to 20 MHz.



Low-Resistance Measurement with Pulse Current Unaffected by Heat

The 6240B achieves low-resistance measurement without being affected by self-heating of DUTs by using pulse current application, bringing more precise measured values with little errors.



From characteristic test of semiconductors, new-energy devices and sensors to contact resistance measurement of connectors, wire harnesses and shunt resistors

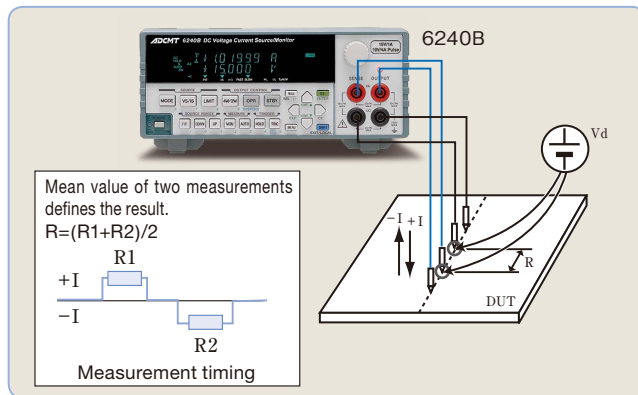
Low Resistance Measurement of Conductive Materials

The 6240B newly adopts the low-resistance measurement function.

When there is a temperature difference between the measurement cable and the DUT, thermal EMF (voltage: V_d) will be generated.

Such thermal EMF becomes a significant cause of errors in low-resistance measurement at $m\Omega$ order or less. These errors can be canceled by switching the polarity of measurement current.

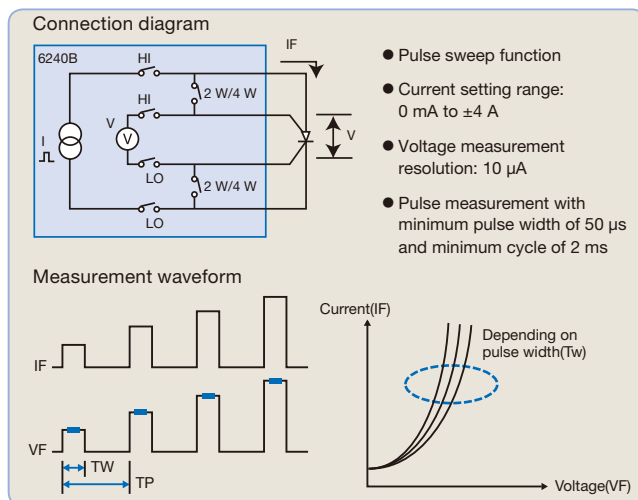
Former models use sample software to cancel thermal EMF in measurement, however the 6240B can cancel it without the software. Consequently, low-resistance test of connectors and low-resistance measurement of conductive materials are possible. Moreover, the 6240B is capable of high-precision contact resistance measurement that cancels thermal EMF generated on the contact surfaces of metals such as wire harness.



Diode Temperature Dependence Evaluation

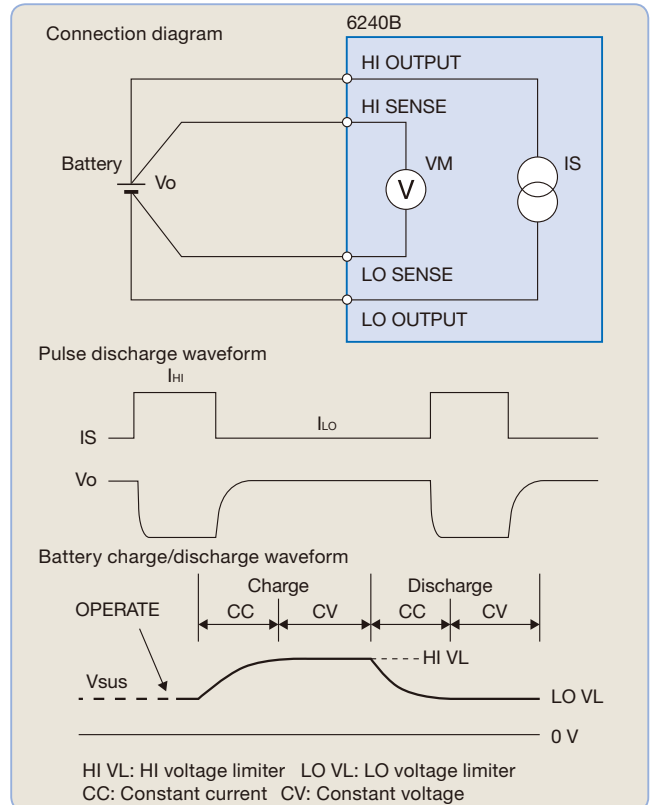
In I-V characteristic test on devices that generate heat when current flows, applying pulse current is effective for avoiding the influence of the self-heating.

By using the current pulse sweep function and voltage measurement in synchronous with pulses, precise VF characteristic test with large current is available.



Battery Charge/Discharge Tests and Power Device Evaluation

The 6240B handles bipolar output and is capable of \pm source and \pm sink operations. Therefore, it has achieved 0 V sink operation which cannot be done by general electronic loads. With its pulse source function, it can be used for evaluation of batteries and power supply devices used for various portable devices.



- Capable of handling various pulses of cell phones with a minimum pulse width of 50 μ s and 1 μ s step
- Capable of CV/CC operation for both charge and discharge Both the HI and LO voltage limiters can be set to positive values (or negative values) at the same time. If HI is set to +1.8 V and LO to +1.2 V, for instance, the mode becomes constant voltage operation when the battery voltage reaches +1.8 V, and discharging terminates when it reaches +1.2 V.
- Avoids unnecessary discharge at output ON A general power supply is at 0 V or in open status of 0 V when output is OFF, and a low impedance state of 0 V always occurs when output is ON. At this time, the battery is being discharged unnecessarily for a moment. However, by setting the suspend voltage of the 6240B to +1.2 V, for instance, unnecessary discharge can be avoided since the voltage of the output terminal is +1.2 V the same as that of the battery, even in a temporary low impedance state that occurs when the output is ON. This function is also useful for preventing FET from being set to ON instantaneously at output ON when it is used as a gate voltage of J-FET or GaAsFET.

Setting Time

Minimum pulse width: 50 μ s
 Minimum step (repeat) time: Under fixed source/measurement range, integration time of 100 μ s, the minimum measurement or source delay time, calculation function OFF, and voltage/current measurement

Measurement	Memory mode	Minimum step time
OFF	—	0.5 ms
ON	BURST	2 ms
	NORMAL	10 ms
	OFF	

Source delay time:

Setting range	Resolution*7	Setting accuracy
0.030 ms to 60.000 ms	1 μ s	\pm (0.1 % +10 μ s)
60.01 ms to 600.00 ms	10 μ s	
600.1 ms to 6000.0 ms	100 μ s	
6001 ms to 59998 ms	1 ms	

Period (pulse cycle):

Setting range	Resolution*7	Setting accuracy
0.500 ms to 60.000 ms	1 μ s	\pm (0.1 % +10 μ s)
60.01 ms to 600.00 ms	10 μ s	
600.1 ms to 6000.0 ms	100 μ s	
6001 ms to 60000 ms	1 ms	

Pulse width:

Setting range	Resolution*7	Setting accuracy
0.050 ms to 60.000 ms	1 μ s	\pm (0.1 % +10 μ s)
60.01 ms to 600.00 ms	10 μ s	
600.1 ms to 6000.0 ms	100 μ s	
6001 ms to 59998 ms	1 ms	

Measurement delay time:

Setting range	Resolution*7	Setting accuracy
0.050 ms to 60.000 ms	1 μ s	\pm (0.1 % +10 μ s)
60.01 ms to 600.00 ms	10 μ s	
600.1 ms to 6000.0 ms	100 μ s	
6001 ms to 59998 ms	1 ms	

*7: The setting resolution is determined by the period time resolution.

Hold time :

Setting range	Resolution	Setting accuracy
1 ms to 60000 ms	1 ms	\pm (2 % +3 ms)

Auto range delay time :

Setting range	Resolution	Setting accuracy
0 ms to 500 ms	1 ms	\pm (2 % +3 ms)

General Specifications

Operating environment: Temperature: 0° C to +50° C
 Relative humidity: 85% or less, no condensation
 Storage environment: Temperature: -25° C to +70° C
 Relative humidity: 85% or less, no condensation
 Warm-up time: 60 minutes or more
 Display: 16 segments x 12 digits vacuum fluorescent display
 Power supply: AC power supply 100V/120V/220V/240V (User selectable)

Option number	Standard	OPT.32	OPT.42	OPT.44
Power voltage	100 V	120 V	220 V	240 V

Specify the option when ordering.

Use a power cable and a fuse that are compliant with the safety standard when changing the power supply voltage.

Line frequency: 50 Hz/60 Hz
 Power consumption: 85 VA or less
 Dimensions: Approx. 212 (W) x 88 (H) x 400 (D) mm
 Mass: 5 kg or less
 Safety: Compliant with IEC61010-1 Ed.3
 EMI: EN61326-1 class A
 Vibration proof: Compliant with IEC60068-2-6 2G

Supplied accessories

Name	Model	Quantity
Power cable	A01402	1
Input/output cable (safety plug)	A01044	1

Optional accessories

Name	Model
Test fixture	12701A
Input cable (test probe)	A01041
Input/output cable (safety plug)	A01044
Banana adapter (for A01044)	A08531
Alligator clip adapter (for A01044)	A08532
Input/output cable (high current 0.5 m)	A01047-01
Input/output cable (high current 1m)	A01047-02
Input/output cable (high current 1.5m)	A01047-03
Input/output cable (high current 2m)	A01047-04
BNC-BNC cable (1.5m)	A01036-1500
Rack mount set (JIS 2U half)	A02263
Rack mount set (JIS 2U half twin)	A02264
Rack mount set (EIA 2U half)	A02463
Rack mount set (EIA 2U half twin)	A02464
Panel mount set (2U half)	A02039
Panel mount set (2U half twin)	A02040

Note: When mounting the instrument on a rack, install a shelf plate or support bar as necessary

- Please read through the operation manual carefully before using the products.
- All specifications are subject to change without notice.



ADC CORPORATION

E-mail : kcc@adcmt.com URL : <http://www.adcmt-e.com>

Head Office

Shoei Bldg, 3-6-12, Kyobashi, Chuou-ku,
 Tokyo 104-0031, Japan
 Phone: +81-3-6272-4433 Fax: +81-3-6272-4437

Higashimatsuyama Office (R&D Center)

77-1, Miyako Namegawa-machi, Hiki-gun,
 Saitama 355-0812, Japan
 Phone: +81-493-56-4433 Fax: +81-493-57-1092