

PEL-2000B Series

Programmable D.C. Electronic Load

FEATURES

- Sequence Function to do High Speed Load Simulations
- Flexible Configuration with Mainframes and Plug-in Modules
- Multiple Independent Load Inputs up to 8 Channels in a Mainframe
- Parallel Connection of Inputs for Higher Load Capacity
- Program Mode to Create Work Routines for Repetitive Tests
- OPP/OCP/OVP/OTP/RVP/UVP Protections
- External Channel Control/Monitoring via Analog Control Connector
- Multiple-Interface USB Device/Host, RS-232C/RS485, LAN and GPIB(optional)



The PEL-2004B and PEL-2002B are multiple channel, programmable DC electronic loads with a modularized structure. The PEL-2000B Series is designed to meet the continuing shift toward high speed operation in today's semiconductor market. As the power supply units, DC-DC converters, and batteries that drive semiconductor circuits need to follow this shift, power supply design, quality inspection and characteristic certification using high-speed performance loads have become necessary. The PEL-2000B Series includes two types of mainframes and 4 types of load modules to accommodate users' requirements in a flexible manner. Any load module combination can be used with a mainframe to tailor a test system based on the number of channels, and the maximum load power, voltage and current of each channel. Multiple loads can be connected in parallel to provide a higher-power load to test higher power supply outputs. This flexibility significantly reduces the investment needed for future projects that have differed power requirements.

PEL-2004B is a 4-slot mainframe with a master control unit to hold 4 load modules, while PEL-2002B is a 2-slot mainframe with master control unit to hold 2 load modules. When PEL-2004B is configured with 4 load modules rated at 350W each, the PEL-2000B series is able to sink up to 1.4kVA of power.

For higher load capacities, mainframes can be linked together in parallel with standard MIL 20-pin connectors. A maximum of 5 mainframes, including one master and 4 slaves can be chained together to create a total load capacity of 7kW for high current and high power applications. Using 4 dual channel load modules, PEL-2004B is able to test 8 power supply outputs simultaneously.

The Sequence function allows each channel to change its load sink according to a predefined sequence at a rate of up to 100μ s per step. Each sequence is able to run concurrently, under the control of one clock. This is one of the most powerful features of the PEL-2000B Series as it is able to realistically simulate a multi-output power supply load. Under Dynamic mode, the load current or load resistance pulses between two preset levels at a pre-defined speed up to 25μ s per step. This is often used as the standard test procedure to verify the response of a power supply to quick load changes. Most remarkably, multiple load channels can be connected in parallel to run Dynamic tests synchronously under a single clock. This Parallel Dynamic functionality gives the flexibility to perform dynamic tests for a high-power power supply without the need of another high-power load.

The PEL-2000B Series includes a number of protection modes: Over Current Protection (OCP), Over Voltage Protection (OVP), Over Power Protection (OPP), Reverse Voltage Protection (RVP), and Under Voltage Protection (UVP). The protection modes are useful to protect both the load modules and the DUT(s). A buzzer can be set for when a protection setting has been tripped. When a protection mode has been tripped, the load unit will display an alarm and stop sinking current/voltage. When a load unit is operating in CR or CV mode, the unit may need Over Current Protection to prevent excessive current being sunk. Over Current Protection stops the load from sinking more current than its recommended limit and prevents the load from burn-out damage. Over Voltage Protection is used to limit the amount of voltage sunk. If the OVP trips, the PEL-Series load will stop sinking voltage. Over Power Protection is used when the input power exceeds the specifications of the load. When OPP is tripped, the power will cease to be sunk. Reverse Voltage Protection prevents reverse voltage damage to the PEL-2000B Series up to the specified rating. When Reverse Voltage Protection has been tripped, an alarm tone will sound until the reverse voltage is removed. Under Voltage Protection will turn off the load when the voltage drops below a set limit.

The Go/NoGo function is available to monitor test results all the time. When a test result goes beyond a preset limit range, a "No Go" indication will be shown on the display and a "No Go" signal can be sent out through the D-SUB interface for external device control. This Go/NoGo function is available for CC mode, CV mode and CR mode. Under "Program" mode, 12 programs each containing 10 panel-setup memories, can be edited to create work routines for repetitive tests. After a program has been executed, the results of all test steps, along with the Go/NoGo judgments, will be shown on the screen. For external control and system configuration, the PEL-2000B Series has USB, RS-232C/RS-485 and LAN interfaces as standard and GPIB as an option. The LabView driver and Data Logging PC software are both supported for all the available interfaces. Each channel has an analog control/monitoring connector on the rear panel to externally turn a load on/off and to externally monitor load input current and voltage.

PANEL INTRODUCTION



Modularized Structure

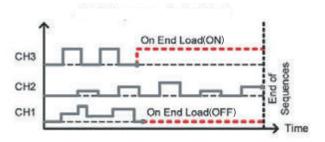
PEL-2004B is a 4-slot mainframe with a master control unit made to hold 4 load modules, and PEL-2002B is a 2-slot mainframe with a master control unit made to hold 2 load modules. The modularized structure of the PEL-2000B Series allows any combination of mainframe and load module (PEL-2020B, PEL-2030B, PEL-2040B, PEL-2041B) to be integrated into a custom-tailored system.

Multiple loads within the same mainframe can be connected in parallel to perform both static and dynamic tests. This flexibility makes the PEL-2000B Series a very cost-effective instrument for testing a broad range of power supply outputs.

Program & Interface

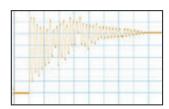
The PEL-2000B Series supports a total of 12 different programs and 10 sequences to each program. With a total of up to 120 different configurations. For external control and system configuration, the PEL-2000B Series has USB, RS-232C/RS-485 and LAN interfaces as standard and GPIB as an option. The LabView driver and Data Logging PC software are supported for all the interfaces available. Each channel has an analog control/monitoring connector to externally turn a load on/off and to externally monitor load input current and voltage.

AUTOMATICALLY SEQUENCE FUNCTION



Sequence - On End Load

The Sequence function allows each channel to change its load sink according to a predefined sequence at a rate of up to $100\,\mu s$ per step. Each sequence is able to run concurrently, under the control of one clock. This is one of the most powerful features of the PEL-2000B Series as it is able to realistically simulate a multi-output power supply load. Under Dynamic mode, the load current or load resistance pulses between two preset levels at a pre-defined speed up to $25\,\mu s$ per step. This is often used as the standard test procedure to verify the response of a power supply to quick load changes.



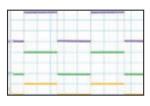
The figure above shows the current waveform of a simulation using the sequence function.

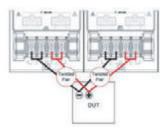
The picture above is an example of a sequence used as a load profile for a single output switching power supply. A load profile is programmed to simulate the current drawn of a power supply load.

By using a current professor to acquire a current waveform, PEL-2000B is

able to evaluate the performance of a power supply based on the load sequence that is programmed. An oscilloscope is then used to display the result.

PARALLEL DYNAMIC LOADING



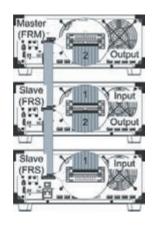


Dynamic Test

Wire Connection

All the load channels in a PEL-2000B mainframe can be connected in parallel to perform any combination of static or dynamic loading. Under Dynamic mode, the load current or load resistance pulses between two preset levels at a predefined speed of up to $25\,\mu s$ per step. When the channels are connected in parallel, dynamic tests are synchronously clocked. The ability to perform parallel dynamic loading gives you the flexibility to perform dynamic tests to high-power power supplies without the need for a dedicated high power electronic load.

D. FRAMELINK



The PEL-2000B Series allows multiple mainframes to be linked together with standard MIL 20-pin connectors to provide higher power load capacity. A maximum of 5 mainframes, including one master and 4 slaves, can be chained together to give a 7kW load capacity for high current and high power applications

OCP TEST AUTOMATION FUNCTION

OCP is one of the basic protection functions for power supply products. Hence, a fully automatic test function of electronic load is designed for testing OCP function of the output terminal of power supply products.

I. BENEFITS

Provide users with high resolution OCP measurement values to verify DUT's OCP activation point. Provide users with measurement results so as to help them determine whether DUT's actual OCP activation point meets the regulations.

DUT: Power Supply

OCP Verification Specification: 3A (ideal)±0.1%

Actual Measurement : DUT1 : 3.000A

DUT2 : 2.999A DUT3 : 3.000A

Test the value of OCP by setting load current increment from start current to stop current. OCP's activation point can be accurately measured.

II. FEATURES OF PARAMETER SETTINGS (This mode can only be used under CC mode)

Parameters

 $\label{eq:Active Channel: Applies the setting to the load channel.}$

Range: High(CC Mode High) or Low(CC Mode Low)

Start Current(Start C): Starting current value for the test.

End Current (End C): The current value that will end the test. The value must be higher than the OCP value of the DUT you are testing.

Step Current(Step C): Sets the step resolution of the current.

Last Current (Last C): Sets the final current value after OCP has been tripped. This is the steady-state current draw after the OCP has been tripped.

Step Time(Step T): Sets the execution time of each step. (50ms to 1600s)

Delay Time(Delay): The OCP testing delay time. Sets the how long to delay starting the test after the Load On key has been pressed.

(5ms ~ 160ms)

Trig Voltage(Trig V): Sets the voltage trigger level needed see whether the power supply OCP has been triggered.



Schematic Diagram



Waveforms Corresponding to Parameters



Parameter Settings



Result: Final DUT Output Status Before Entering OCP

III. GENERAL MEASUREMENT & HIGH RESOLUTION MEASUREMENT

GENERAL MEASUREMENT (STEP_C → 0.5A)

DUT: OCP specification 3A

Set test current from 0A to 4A and each current increment of 0.5A for 0.5 seconds. When DUT's voltage drops to 9V for over 0.5 seconds, it is determined as OCP status.



Parameter Settings



Actual Waveforms (ch1:Voltage of DUT;ch2:Current of DUT)



Result: Final DUT Output Status Before Entering OCP

HIGH RESOLUTION MEASUREMENT (STEP_C → 0.001A)

DUT: OCP specification 3A

Set test current from 2.9A to 4A and each current increment of 0.001A for 0.5 seconds. When DUT's voltage drops to 9V for over 0.5 seconds, it is determined as OCP status.



Parameter Settings



Actual Waveforms (ch1:Voltage of DUT;ch2:Current of DUT)



Result: Final DUT Output Status Before Entering OCP

CHANNEL RANGE	SPECIFICATIONS		DEL-2020B/100\Y/~2\		PEL-2030B(250W/30W)				040B	PEL-2041B		
	SUANDIS!		PEL-2020B(100Wx2)		<u> </u>				PEL-2040B			
RANGE		L/R	L/R	Let		Right	Right	one channel	one channel	one channel	one channel	
		LOW	HIGH	N/A		LOW	HIGH	LOW	HIGH	LOW	HIGH	
POWER		100W	100W	30\		250W	250W	35			0W	
CURRENT		0~2A	0~20A	0~5A		0~4A	0~40A	0~7A 0~70A		0~1A	0~10A	
VOLTAGE		0~8	30V	0~8		~80V	-80V		0~80V		V00V	
MIN.OPERATING VOLTAGE(dc)(Typ.)		0.4V at 2A	0.8V at 20A	0.8V a	t 5A	0.4V at 4A	0.8V at 40A	0.4V at 7A 0.8V at 70A		1V at 1A	2V at 10A	
		0.2V at 1A	0.4V at 10A	0.4V at	2.5A	0.2V at 2A		0.2V at 3.5A	0.4V at 35A	0.5V at 0.5A	1V at 5A	
STATIC MODE			•			•	•					
CONSTANT CURR	RENT MODE											
	Operating Range	0~2A	0~20A	0~5	A	0~4A	0~40A	0~7A	0~70A	0~1A	0~10A	
	Setting Range	0~2.04A	0~20.4A	0~5.		0~4.08A	0~40.8A	0~7.14A	0~71.4A	0~1.02A	0~10.2A	
		0.1mA	1mA	0.125		0.1mA		0~7.14A 0.2mA	2mA	0.05mA	0.5mA	
	Resolution			0.123	ITIA	+	1mA					
	Accuracy	±(0.1%set +	±(0.1%set +	±(0.1%set +	- 0.1%F.S)	±(0.1%set +	±(0.1%set +	±(0.1%set +	±(0.1%set +	±(0.1%set +	±(0.1%set -	
		0.1%F.S. ^{*1})	0.2%F.S.)	`		0.1%F.S ^{*1})	0.2%F.S)	0.1%F.S ^{*1})	0.2%F.S)	0.1%F.S ^{*1})	0.2%F.S)	
CONSTANT RESIS	STANCE MODE											
	Operating Range	0.075Ω~300Ω(100W/16V)		0.3Ω~1.2kΩ(30W/16V)		0.0375Ω~150Ω(250W/16V)		0.025Ω~100Ω(350W/16V)		1.25Ω~5kΩ(350W/125V)	
	operating names	3.75Ω~15kΩ(100W/80V)		15Ω~60kΩ(30W/80V)		1.875Ω~7.5kΩ(250W/80V)		1.25Ω~5kΩ(350W/80V)		50Ω~200kΩ(350W/500V)		
	Catting Dance	0.075Ω~3000	2(100W/16V)	0.3Ω~1.2kΩ(30W/16V)		0.0375Ω~150Ω(250W/16V)		0.025Ω~100Ω(350W/16V)		1.25Ω~5kΩ(350W/125V)		
	Setting Range	3.75Ω~15kΩ(100W/80V) 15Ω~60kΩ(Ω(30W/80V) 1.875Ω~7.5kΩ(250W		Ω(250W/80V)) 1.25Ω~5kΩ(350W/80V)		50Ω~200kΩ(350W/500V)			
	*1	0.333mS(100W/16V)		83.333µS(30W/16V)		0.666mS(250W/16V)		1mS(350W/16V)		20μS(350W/125V)		
	Resolution ^{°1}	6.667µS(100W/80V)		1.666µS(30W/80V)		13.333µS(250W/80V)		20μS(350W/80V)		0.5μS(350W/500V)		
	Accuracy ^{*2}	300Ω: ±(0.2%set + 0.1S)		1.2kΩ : ±(0.2%set + 0.1S)		150Ω: ±(0.2%set + 0.1S)		20μS(330W/80V) 100Ω : ±(0.2%set + 0.1S)		0.5μS(350W/500V) 5kΩ: ±(0.2%set + 0.02S)		
	With≥2.5V at input	35kΩ: ±(0.19	- '	, , ,		7.5kΩ: ±(0.1%set + 0.01S)		$5k\Omega$: ±(0.1%set + 0.15)		3kΩ: ±(0.2%set + 0.02S) 200kΩ: ±(0.1%set + 0.005S)		
NOTE - #1 - C (- '		, ·				7.3K2: ±(0.1)	703CL T U.U.3)	JK12. ±(U.1%	301 T 0.013)	200K12: ±(0.15	· U.UUJ.3)	
	mens) is the unit of conductance,		onm. ~2 : Accuracy mu	use the calculated in con	uuciiviiy units.							
LUNS I AN I VOLT	AGE + CONSTANT CURRE											
	Operating Range	1~16V	1~80V	1~16V	1~80V	1~16V	1~80V	1~16V	1~80V	2.5~125V	2.5~500V	
	Setting Range	0~16.32V	0~81.6V	0~16.32V	0~81.6V	0~16.32V	0~81.6V	0~16.32V	0~81.6V	0~127.5V	0~510V	
	Resolution	0.4mV	2mV	0.4mV	2mV	0.4mV	2mV	0.4mV	2mV	2.5mV	10mV	
	Accuracy	±(0.05%set	+ 0.1%F.S.)	±(0.05%set -	+ 0.1%F.S.)	±(0.05%set	+ 0.1%F.S.)	±(0.05%set	+ 0.1%F.S.)	±(0.05%set	+ 0.1%F.S.)	
	Current Setting Range	0~20.4A	0~2.04A	0~5.	1A	0~40.8A	0~4.08A	0~71.4A	0~7.14A	0~10.2A	0~1.02A	
	Resolution	1mA	0.1mA	0.125		1mA	0.1mA	2mA	0.2mA	0.5mA	0.05mA	
	11000111111111	±(0.1%set +				±(0.1%set +	±(0.1%set +	±(0.1%set +	±(0.1%set +	±(0.1%set +		
	Accuracy	0.2%F.S.)	±(0.1%set + 0.1%F.S.*1)	±(0.1%set +	0.2%F.S.)	0.2%F.S)	±(0.1%set + 0.1%F.S ^{*1})	0.2%F.S)	±(0.1%set + 0.1%F.S*1)	0.2%F.S)	±(0.1%set - 0.1%F.S ^{*1})	
CONCTANT DOW	ER MODE + CONSTANT CL	,	0.170F.3.)			0.2/01.3)	0.170F.3	0.2701.3)	0.1701.3	0.2/01.3)	0.1%F.3	
LONSTANT POW						1						
	Operating Range	1~10W	1~100W	1~30		1~25W	1~250W	1~35W	1~350W	1~35W	1~350W	
	Setting Range	0~10.2W	0~102W	0~30.		0~25.5W	0~255W	0~35.7W	0~357W	0~35.7W	0~357W	
	Resolution	1mW	10mW	1m'	W	1mW	10mW	1mW	10mW	1mW	10mW	
	A	±(0.5%set +	±(0.5%set +	±(0.5%set +	0 E0/ E C)	(0.50/	0.50/5.6*]	±(0.5%set +	±(0.5%set +	±(0.5%set +	±(0.5%set	
	Accuracy	0.5%F.S ^{*1})	0.5%F.S)	±(0.5%set +	- U.3%F.S)	±(0.5%set -	+ 0.5%F.S ^{*1})	0.5%F.S*1)	0.5%F.S)	0.2%F.S*1)	0.5%F.S)	
	Current Setting Range	0~2.04A	0~20.4A	0~5.	1A	0~4.08A	0~40.8A	0~7.14A	0~71.4A	0~1.02A	0~10.2A	
	Resolution	0.1mA	1mA	0.125		0.1mA	1mA	0.2mA	2mA	0.05mA	0.5mA	
	Translation .	±(0.1%set +				±(0.1%set +	±(0.1%set +	±(0.1%set +	±(0.1%set +	±(0.1%set +		
	Accuracy	0.1%F.S.*1)	±(0.1%set + 0.2%F.S.)	±(0.1%set +	0.2%F.S.)	0.1%F.S ^{*1})	±(0.1%set + 0.2%F.S)	0.1%F.S ^{*1})	±(0.1%set + 0.2%F.S)	0.1%F.S*1)	±(0.1%set + 0.2%F.S)	
NOTE 41 FG	5 11 1 6110	U.1%F.3.)	0.2/61.3.)			0.1%F.3	0.2761.3)	0.1701.5	0.2/61.3)	0.170F.5	0.2761.3)	
	Full scale of H Range											
DYNAMIC MODE												
	T1&T2	0.025ms ~ 10	ms / Res : 1µs	0.025ms ~ 10					ms / Res : 1µs	0.025	0.025ms ~ 10ms / Res : 1μs	
	11012	10 20-				0ms / Res : 1μs				0.025ffls ~ 10		
	A	iums ~ 30s	/ Res : 1ms			0ms / Res : 1μs 0s / Res : 1ms			/ Res : 1ms		/ Res : 1ms	
	Accuracy		/ Res : 1ms ± 100ppm		10ms ~ 30			10ms ~ 30s	/ Res : 1ms ± 100ppm	10ms ~ 30s	/ Res : 1ms ± 100ppm	
CONSTANT CURR					10ms ~ 30	s / Res : 1ms		10ms ~ 30s	,	10ms ~ 30s		
CONSTANT CURR				0.8 ~ 200	10ms ~ 30 1μs / 1m	s / Res : 1ms	6.4 ~ 1600mA/µs	10ms ~ 30s	,	10ms ~ 30s	± 100ppm	
CONSTANT CURR	RENT MODE Slew Rate	1μs / 1ms 0.32 ~ 80mA/μs	± 100ppm 3.2 ~ 800mA/μs		10ms ~ 30 1μs / 1m 0mA/μs	0s / Res : 1ms s + 100ppm 0.64 ~ 160mA/μs		10ms ~ 30s 1μs / 1ms 0.001 ~ 0.28A/μs	± 100ppm 0.01 ~ 2.8A/μs	10ms ~ 30s 1μs / 1ms 0.16 ~ 40mA/μs	± 100ppm	
CONSTANT CURR	Slew Rate Slew Rate Resolution	lμs / lms	± 100ppm	0.8m/	10ms ~ 30 1μs / 1m 0mA/μs λ/μs	0s / Res : 1ms s + 100ppm	6.4 ~ 1600mA/μs 6.4mA/μs	10ms ~ 30s 1μs / 1ms	± 100ppm	10ms ~ 30s 1μs / 1ms	± 100ppm	
CONSTANT CURR	Slew Rate Slew Rate Resolution Slew Rate Accuracy of	1μs / 1ms 0.32 ~ 80mA/μs	± 100ppm 3.2 ~ 800mA/μs		10ms ~ 30 1μs / 1m 0mA/μs λ/μs	0s / Res : 1ms s + 100ppm 0.64 ~ 160mA/μs		10ms ~ 30s 1μs / 1ms 0.001 ~ 0.28A/μs	± 100ppm 0.01 ~ 2.8A/μs	10ms ~ 30s 1μs / 1ms 0.16 ~ 40mA/μs	± 100ppm 1.6 ~ 400mA/ 1.6mA/μs	
CONSTANT CURR	Slew Rate Slew Rate Resolution Slew Rate Accuracy of Setting	1μs / 1ms 0.32 ~ 80mA/μs 0.32mA/μs ±(10% + 15μs)	3.2 ~ 800mA/µs 3.2mA/µs ±(10% + 15µs)	0.8mA ±(10% +	10ms ~ 30 1μs / 1m 0mA/μs λ/μs - 15μs)	0.64 ~ 160mA/µs 0.64 ~ 164mA/µs 0.64 ~ 15µs)	6.4mA/µs ±(10% + 15µs)	10ms ~ 30s 1µs / 1ms 0.001 ~ 0.28A/µs 0.001A/µs ±(10% + 15µs)		10ms ~ 30s 1µs / 1ms 0.16 ~ 40mA/µs 0.16mA/µs ±(10% + 15µs)	1.6 ~ 400mA/ 1.6mA/μs ±(10% + 15μ	
CONSTANT CURR	Slew Rate Slew Rate Resolution Slew Rate Accuracy of Setting Current Setting Range	1μs / 1ms 0.32 ~ 80mA/μs 0.32mA/μs ±(10% + 15μs) 0~2.04A	± 100ppm 3.2 ~ 800mA/μs 3.2mA/μs ±(10% + 15μs) 0~20.4A	0.8mA ±(10% + 0~5.	10ms ~ 30 1µs / 1m 0mA/µs A/µs - 15µs)	0s / Res : 1ms s + 100ppm 0.64 ~ 160mA/µs 0.64mA/µs ±(10% + 15µs) 0~4.08A	6.4mA/µs ±(10% + 15µs) 0~40.8A	10ms ~ 30s 1µs / 1ms 0.001 ~ 0.28A/µs 0.001A/µs ±(10% + 15µs) 0~7.14A	0.01 ~ 2.8A/μs 0.01 ~ 2.8A/μs 0.01A/μs ±(10% + 15μs) 0~71.4A	10ms ~ 30s 1μs / 1ms 0.16 ~ 40mA/μs 0.16mA/μs ±(10% + 15μs) 0~1.02A	1.6 ~ 400mA/ 1.6mA/µs ±(10% + 15µ 0~10.2A	
CONSTANT CURR	Slew Rate Slew Rate Resolution Slew Rate Accuracy of Setting Current Setting Range Current Resolution	1μs / 1ms 0.32 ~ 80mA/μs 0.32mA/μs ±(10% + 15μs) 0~2.04A 0.1mA	± 100ppm 3.2 ~ 800mA/μs 3.2mA/μs ±(10% + 15μs) 0~20.4A 1mA	0.8mA ±(10% +	10ms ~ 30 1µs / 1m 0mA/µs A/µs - 15µs) 1A mA	0s / Res : 1ms s + 100ppm 0.64 ~ 160mA/µs 0.64mA/µs ±(10% + 15µs) 0~4.08A 0.1mA	6.4mA/µs ±(10% + 15µs)	10ms ~ 30s 1µs / 1ms 0.001 ~ 0.28A/µs 0.001A/µs ±(10% + 15µs) 0~7.14A 0.2mA	- ± 100ppm 0.01 ~ 2.8A/μs 0.01A/μs ±(10% + 15μs) 0~71.4A 2mA	10ms ~ 30s 1μs / 1ms 0.16 ~ 40mA/μs 0.16mA/μs ±(10% + 15μs) 0~1.02A 0.05mA	1.6 ~ 400mAy 1.6 ~ 400mAy 1.6mA/µs ±(10% + 15µ 0~10.2A 0.5mA	
	Slew Rate Slew Rate Resolution Slew Rate Accuracy of Setting Current Setting Range Current Resolution Current Accuracy	1μs / 1ms 0.32 ~ 80mA/μs 0.32mA/μs ±(10% + 15μs) 0~2.04A	± 100ppm 3.2 ~ 800mA/μs 3.2mA/μs ±(10% + 15μs) 0~20.4A 1mA	0.8mA ±(10% + 0~5.	10ms ~ 30 1µs / 1m 0mA/µs A/µs - 15µs) 1A mA	0s / Res : 1ms s + 100ppm 0.64 ~ 160mA/µs 0.64mA/µs ±(10% + 15µs) 0~4.08A	6.4mA/µs ±(10% + 15µs) 0~40.8A	10ms ~ 30s 1µs / 1ms 0.001 ~ 0.28A/µs 0.001A/µs ±(10% + 15µs) 0~7.14A	- ± 100ppm 0.01 ~ 2.8A/μs 0.01A/μs ±(10% + 15μs) 0~71.4A 2mA	10ms ~ 30s 1μs / 1ms 0.16 ~ 40mA/μs 0.16mA/μs ±(10% + 15μs) 0~1.02A 0.05mA	1.6 ~ 400mA/ 1.6mA/µs ±(10% + 15µ 0~10.2A	
	Slew Rate Slew Rate Resolution Slew Rate Accuracy of Setting Current Setting Range Current Resolution Current Accuracy	1μs / 1ms 0.32 ~ 80mA/μs 0.32mA/μs ±(10% + 15μs) 0~2.04A 0.1mA	± 100ppm 3.2 ~ 800mA/μs 3.2mA/μs ±(10% + 15μs) 0~20.4A 1mA	0.8mA ±(10% + 0~5. 0.125	10ms ~ 3(1μs / 1m 0mA/μs λ/μs - 15μs) 1A mA	0s / Res : 1ms s + 100ppm 0.64 ~ 160mA/µs 0.64mA/µs ±(10% + 15µs) 0~4.08A 0.1mA	6.4mA/µs ±(10% + 15µs) 0~40.8A	10ms ~ 30s 1μs / 1ms 0.001 ~ 0.28A/μs 0.001A/μs ±(10% + 15μs) 0~7.14A 0.2mA ±0.49	± 100ppm 0.01 ~ 2.8A/µs 0.01A/µs ±(10% + 15µs) 0~71.4A 2mA 6 F.S.	10ms ~ 30s 1μs / 1ms 0.16 ~ 40mA/μs 0.16mA/μs ±(10% + 15μs) 0~1.02A 0.05mA	1.6 ~ 400mA _j 1.6mA _j µs ±(10% + 15µ 0~10.2A 0.5mA	
	Slew Rate Slew Rate Resolution Slew Rate Accuracy of Setting Current Setting Range Current Resolution Current Accuracy	1µs / 1ms 0.32 ~ 80mA/µs 0.32mA/µs ±(10% + 15µs) 0-2.04A 0.1mA ±0.49	± 100ppm 3.2 ~ 800mA/μs 3.2mA/μs ±(10% + 15μs) 0~20.4A 1mA	0.8mA ±(10% + 0~5.	10ms ~ 3(1μs / 1m 0mA/μs λ/μs - 15μs) 1A mA	0s / Res : 1ms 0s + 100ppm 0.64 - 160mA/µs 0.64mA/µs ±(10% + 15µs) 0-4.08A 0.1mA	6.4mA/µs ±(10% + 15µs) 0~40.8A	10ms ~ 30s 1µs / 1ms 0.001 ~ 0.28A/µs 0.001A/µs ±(10% + 15µs) 0~7.14A 0.2mA	± 100ppm 0.01 ~ 2.8A/µs 0.01A/µs ±(10% + 15µs) 0~71.4A 2mA 6 F.S.	10ms ~ 30s 1µs / 1ms 0.16 ~ 40mA/µs 0.16mA/µs ±(10% + 15µs) 0~1.02A 0.05mA ±0.45	1.6 ~ 400mA 1.6mA/µs ±(10% + 15µ 0~10.2A 0.5mA	
	Slew Rate Slew Rate Resolution Slew Rate Accuracy of Setting Current Setting Range Current Resolution Current Accuracy	1µs / 1ms 0.32 – 80mA/µs 0.32mA/µs ±(10% + 15µs) 0-2.04A 0.1mA ±0.45	± 100ppm 3.2 ~ 800mA/µs 3.2mA/µs ± (10% + 15µs) 0~20.4A 1mA 6 F.S.	0.8mA ±(10% + 0~5. 0.125	10ms ~ 3(1μs / 1m 0mA/μs λ/μs - 15μs) 1A mA ±0.4	0s / Res : 1ms 0s + 100ppm 0.64 ~ 160mA/µs 0.64mA/µs ±(10% + 15µs) 0~4.08A 0.1mA 6.4 ~ 16	6.4mA/µs ±(10% + 15µs) 0-40.8A 1mA	10ms ~ 30s 1μs / 1ms 0.001 ~ 0.28A/μs 0.001A/μs ±(10% + 15μs) 0~7.14A 0.2mA ±0.49	±100ppm 0.01 ~ 2.8A/μs 0.01A/μs ±(10% + 15μs) 0~71.4A 2mA 6 F.S.	10ms ~ 30s 1 µs / 1ms 0.16 ~ 40mA/µs 0.16mA/µs ±(10% + 15µs) 0~1.02A 0.05mA ±0.45	± 100ppm 1.6 ~ 400mA/ 1.6mA/µs ±(10% + 15µ 0~10.2A 0.5mA	
	Slew Rate Slew Rate Resolution Slew Rate Accuracy of Setting Current Setting Range Current Resolution Current Accuracy STANCE MODE Slew Rate	1µs / 1ms 0.32 ~ 80mA/µs 0.32mA/µs ±(10% + 15µs) 0-2.04A 0.1mA ±0.49 3.2 ~ 80	± 100ppm 3.2 - 800mA/µs 3.2mA/µs ± (10% + 15µs) 0-20.4A 1mA 6 F.S.	0.8m/ ±(10% + 0~5. 0.125	10ms ~ 3(1μs / 1m 0mA/μs N/μs -15μs) 1A mA ±0	0.64 ~ 160mA/µs 0.64 ~ 160mA/µs 0.64mA/µs ±(10% + 15µs) 0~4.08A 0.1mA 9% F.S.	6.4mA/μs ±(10% + 15μs) 0-40.8A 1mA	10ms ~ 30s 1µs / 1ms 0.001 ~ 0.28A/µs 0.001A/µs ±(10% + 15µs) 0.2mA ±0.49 0.01 ~ .	± 100ppm 0.01 ~ 2.8A/µs 0.01A/µs ± (10% + 15µs) 0-71.4A 2mA 6 F.S.	10ms ~ 30s 1µs / 1ms 0.16 ~ 40mA/µs 0.16mA/µs ±(10% + 15µs) 0~1.02A 0.05mA ±0.49 1.6 ~ 40	± 100ppm 1.6 ~ 400mA/μs ± (10% + 15μ 0.5mA % F.S. 00mA/μs	
	Slew Rate Slew Rate Resolution Slew Rate Accuracy of Setting Current Setting Range Current Resolution Current Accuracy STANCE MODE Slew Rate Slew Rate Resolution	1µs / 1ms 0.32 ~ 80mA/µs 0.32mA/µs ±(10% + 15µs) 0-2.04A 0.1mA ±0.49 3.2 ~ 80	± 100ppm 3.2 - 800mA/µs 3.2mA/µs ± (10% + 15µs) 0-20.4A 1mA 6 F.S.	0.8m/ ±(10% + 0~5. 0.125	10ms ~ 3(1μs / 1m 2mA/μs λ/μs -15μs) 1A mA ±0	0s / Res : 1ms 0s + 100ppm 0.64 ~ 160mA/µs 0.64mA/µs ±(10% + 15µs) 0~4.08A 0.1mA 6.4 ~ 16	6.4mA/μs ±(10% + 15μs) 0-40.8A 1mA	10ms ~ 30s 1 µs / 1ms 0.001 ~ 0.28A/µs 0.001A/µs ±(10% + 15µs) 0-7.14A 0.2mA ±0.49	± 100ppm 0.01 ~ 2.8A/µs 0.01A/µs ± (10% + 15µs) 0-71.4A 2mA 6 F.S.	10ms ~ 30s 1µs / 1ms 0.16 ~ 40mA/µs 0.16mA/µs ±(10% + 15µs) 0~1.02A 0.05mA ±0.49 1.6 ~ 40	± 100ppm 1.6 ~ 400mA/ 1.6mA/µs ±(10% + 15µ 0~10.2A 0.5mA % F.S.	
CONSTANT CURR	Slew Rate Slew Rate Resolution Slew Rate Resolution Slew Rate Accuracy of Setting Current Setting Range Current Resolution Current Accuracy STANCE MODE Slew Rate Slew Rate Resolution Slew Rate Accuracy of Setting	1µs / 1ms 0.32 ~ 80mA/µs 0.32mA/µs ±(10% + 15µs) 0-2.04A 0.1mA ±0.49 3.2 ~ 80	± 100ppm 3.2 ~ 800mA/µs 3.2mA/µs ±(10% + 15µs) 0~20.4A 1mA 6 F.S. 0mA/µs A/µs + 50µs)	0.8m/ ±(10% + 0~5. 0.125 0.8 ~ 200 0.8m/	10ms ~ 30 1μs / 1m 2mA/μs λ/μs 115μs) 1A mA ±0.4 2mA/μs λ/μs ±(10%)	0.64 ~ 160mA/μs 0.64 ~ 160mA/μs 0.64mA/μs ±(10% + 15μs) 0~4.08A 0.1mA 0.54mA 0.64 ~ 16 6.4 ~ 16 6.4 ~ 16	6.4mA/µs ±(10% + 15µs) 0~40.8A 1mA	10ms ~ 30s 1µs / 1ms 0.001 ~ 0.28A/µs 0.001A/µs ±(10% + 15µs) 0-7.14A 0.2mA ±0.49 0.01 ~	± 100ppm 0.01 ~ 2.8A/μs 0.01A/μs ± (10% + 15μs) 0~71.4A 2mA 6 F.S. 2.8A/μs A/μs	10ms ~ 30s 1μs / 1ms 0.16 – 40mA/μs 0.16mA/μs ±(10% + 15μs) 0–1.02A 0.05mA ±0.45 1.6 – 40 1.6m	± 100ppm 1.6 ~ 400mA/μs ± (10% + 15μ 0.5mA % F.S. 00mA/μs	
	Slew Rate Resolution Slew Rate Resolution Slew Rate Accuracy of Setting Current Setting Range Current Resolution Current Accuracy STANCE MODE Slew Rate Slew Rate Resolution Slew Rate Accuracy of	1μs / 1ms 0.32 ~ 80mA/μs 0.32mA/μs ±(10% + 15μs) 0-2.04A 0.1mA ±0.49 3.2 ~ 80 3.2m ±(10%	± 100ppm 3.2 ~ 800mA/µs 3.2mA/µs ±(10% + 15µs) 0~20.4A 1mA 6 F.S. 10mA/µs A/µs + 50µs)	0.8m/ ±(10% + 0~5. 0.125 0.8 ~ 200 0.8m/	10ms ~ 30 1	0.64 - 160mA/μs 0.64 - 160mA/μs 0.64mA/μs ±(10% + 15μs) 04.08A 0.1mA 0.54mA 0.1mA 0.64 - 16 6.4 - 16 0.40s	6.4mA/μs ±(10% + 15μs) 0-40.8A 1mA 00mA/μs 00mA/μs	10ms ~ 30s 1μs / 1ms 0.001 ~ 0.28A/μs 0.001A/μs ±(10% + 15μs) 0-7.14A 0.2mA ±0.49 ±(10% 0.01 ~ 0.01 ~ 0.01 ±(10% 0.025Ω~1006	±100ppm 0.01 ~ 2.8A/µs 0.01A/µs ±(10% + 15µs) 0-71.4A 2mA 6 F.S. 2.8A/µs A/µs +50µs)	10ms ~ 30s 1μs / 1ms 0.16 – 40mA/μs 0.16mA/μs ±(10% + 15μs) 0-1.02A 0.05mA ±0.49 1.6 – 40 ±(10% 1.25Ω~5kΩ(1.25Ω~5kΩ(± 100ppm 1.6 ~ 400mA, 1.6mA/µs ±(10% + 15µ 010.2A 0.5mA % F.S. 00mA/µs 1A/µs + 50µs) 350W/125V)	
	Slew Rate Slew Rate Resolution Slew Rate Resolution Slew Rate Accuracy of Setting Current Setting Range Current Resolution Current Accuracy STANCE MODE Slew Rate Slew Rate Resolution Slew Rate Accuracy of Setting	1μs / 1ms 0.32 ~ 80mA/μs 0.32mA/μs ±(10% + 15μs) 0-2.04A 0.1mA ±0.49 3.2 ~ 80 3.2m ±(10% 0.075Ω~3000 3.75Ω~15kΩ	± 100ppm 3.2 - 800mA/µs 3.2mA/µs ± (10% + 15µs) 0-20.4A 1mA 6 F.S. 10mA/µs 1A/µs + 50µs) 2(100W/16V) (100W/80V)	0.8m/ ±(10% + 0~5. 0.125 0.8 ~ 200 0.8m/ 0.3Ω~1.2kΩ 15Ω~60kΩ(:	10ms ~ 30 1	0.64 ~ 160mA/μs 0.64 ~ 160mA/μs 0.64mA/μs ±(10% + 15μs) 0~4.08A 0.1mA 9% F.S. 6.4 ~ 16 6.4m 6+50μs) 0.0375Ω-150 1.875Ω-7.5kd	6.4mA/μs ±(10% + 15μs) 0-40.8A 1mA 1mA 00mA/μs 100mA/μs 100mA/μs 100mA/μs	$\begin{array}{c} 10ms \sim 30s \\ 1\mu s \ / \ 1ms \\ \\ 0.001 \sim 0.28A \ / \mu s \\ 0.001A \ / \mu s \\ \\ \pm (10\% + 15\mu s) \\ 0.7.14A \\ 0.2mA \\ \pm 0.49 \\ \\ 0.01 \sim 1 \\ \\ \pm (10\% \\ 0.025\Omega \sim 100c \\ 1.25\Omega \sim 5k\Omega \\ \end{array}$	± 100ppm 0.01 ~ 2.8A/µs 0.01A/µs ± (10% + 15µs) 0-71.4A 2mA 6 F.S. 2.8A/µs A/µs + 50µs) 0(350W/16V) 3350W/80V)	10ms ~ 30s 1µs / 1ms 0.16 ~ 40mA/µs 0.16mA/µs ±(10% + 15µs) 0~1.02A 0.05mA ±0.49 1.6 ~ 40 1.6m ±(10%	± 100ppm 1.6 ~ 400mA _γ 1.6mA/μs ±(10% + 15μ 0~10.2A 0.5mA % F.S. 00mA/μs hA/μs + 50μs) 350W/125V) (350W/500V)	
	Slew Rate Slew Rate Resolution Slew Rate Resolution Slew Rate Accuracy of Setting Current Setting Range Current Resolution Current Accuracy STANCE MODE Slew Rate Slew Rate Resolution Slew Rate Accuracy of Setting	1μs / 1ms 0.32 ~ 80mA/μs 0.32mA/μs ±(10% + 15μs) 0-2.04A 0.1mA ±0.49 3.2 ~ 80 3.2m ±(10% 0.075Ω~3000 3.75Ω~15kΩ 0.333mS(°)	± 100ppm 3.2 ~ 800mA/µs 3.2mA/µs ± (10% + 15µs) 0~20.4A 1mA 6 F.S. 0mA/µs + 50µs) 2(100W/16V) (100W/80V) 100W/16V)	0.8m/ ±(10% + 0~5. 0.125 0.8 ~ 200 0.8m/ 0.3Ω~1.2kΩ(15Ω~60kΩ(83.333µS(3	10ms ~ 30 1	0.64 ~ 160mA/μs 0.64 ~ 160mA/μs 0.64mA/μs ±(10% + 15μs) 0~4.08A 0.1mA 9% F.S. 6.4 ~ 16 6.4m 6 + 50μs) 0.0375Ω-150 1.875Ω-7.5kd 0.666mS(:	6.4mA/μs ±(10% + 15μs) 0-40.8A 1mA 00mA/μs α(250W/16V) α(250W/80V) 250W/16V)	$\begin{array}{c} 10ms \sim 30s \\ 1\mu s \ / \ 1ms \\ \hline \\ 0.001 \sim 0.28A/\mu s \\ 0.001A/\mu s \\ \pm (10\% + 15\mu s) \\ \hline 0-7.14A \\ 0.2mA \\ \pm 0.49 \\ \hline \\ 0.01 \sim \\ \hline \\ 0.01 \\ \pm (10\% \\ \hline \\ 0.25\Omega \sim 100c \\ \hline \\ 1.25\Omega \sim 5k\Omega \\ \hline \\ 1mS(35) \\ \hline \end{array}$	±100ppm 0.01 ~ 2.8A/µs 0.01A/µs ±(10% + 15µs) 0-71.4A 2mA 6 F.S. 2.8A/µs 4/µs +50µs) 2(350W/16V) 350W/80V)	10ms ~ 30s 1 μs / 1ms 0.16 ~ 40mA/μs 0.16mA/μs ±(10% + 15μs) 0~1.02A 0.05mA ±0.45 1.6 ~ 4€ 1.6m ±(10% 1.25Ω~5kΩ(50Ω~20μS(356)	± 100ppm 1.6 ~ 400mA 1.6mA/μs ±(10% + 15μ 0~10.2A 0.5mA % F.S. 00mA/μs +50μs) 350W/125V) (350W/500V) 00W/125V)	
	Slew Rate Slew Rate Resolution Slew Rate Accuracy of Setting Current Setting Range Current Resolution Current Accuracy STANCE MODE Slew Rate Slew Rate Resolution Slew Rate Accuracy of Setting Resistance Setting Range	1μs / 1ms 0.32 ~ 80mA/μs 0.32mA/μs ±(10% + 15μs) 0-2.04A 0.1mA ±0.49 3.2 ~ 80 3.2m ±(10% 0.075Ω~3000 3.75Ω~15kΩ 0.333mS(6.667μS(1	± 100ppm 3.2 ~ 800mA/µs 3.2mA/µs ± (10% + 15µs) 0~20.4A 1mA 6 F.S. 0mA/µs 4 / 50µs) 2(100W/16V) (100W/16V) 00W/16V) 00W/80V)	0.8m/ ±(10% + 0~5. 0.125 0.8 ~ 200 0.8m/ 0.3Ω~1.2kΩ(15Ω~60kΩ(: 83.333µS(3) 1.666µS(3)	10ms ~ 30 1 µs / 1m 20mA/µs 3/µs - 15µs) 1A mA ±0 20mA/µs ±(109 30W/16V) 30W/80V) 10W/16V) 00W/80V)	0.64 ~ 160mA/μs 0.64 ~ 160mA/μs 0.64mA/μs ±(10% + 15μs) 0~4.08A 0.1mA 9% F.S. 6.4 ~ 16 6.4m 6 + 50μs) 0.0375Ω~150 1.875Ω~7.5kd 0.666mS(; 13.333μS(6.4mA/μs ±(10% + 15μs) 0-40.8A 1mA 00mA/μs νA/μs Ω(250W/16V) Ω(250W/80V) 250W/16V)	10ms ~ 30s 1 μs / 1ms 0.001 ~ 0.28A/μs 0.001A/μs ±(10% + 15μs) 0-7.14A 0.2mA ±0.49 0.01 ~ . 0.01 ±(10% 0.025Ω~1000 1.25Ω~5kΩ 1mS(35i 20 μS(35)	±100ppm 0.01 ~ 2.8A/µs 0.01A/µs ±(10% + 15µs) 0~71.4A 2mA 6 F.S. 2.8A/µs 4/µs +50µs) 2(350W/16V) 350W/80V) 0W/16V) 0W/80V)	10ms ~ 30s 1 μs / 1ms 0.16 ~ 40mA/μs 0.16mA/μs ±(10% + 15μs) 0~1.02A 0.05mA ±0.45 1.6 ~ 46 1.6m ±(10% 1.25Ω~5kΩ(50Ω~200kΩ(20μS(35i 0.5μS(35i	± 100ppm 1.6 ~ 400mA 1.6mA/μs ±(10% + 15μ 0~10.2A 0.5mA % F.S. 00mA/μs 1A/μs + 50μs) 350W/125V) 0W/125V) 0W/125V)	
	Slew Rate Slew Rate Resolution Slew Rate Accuracy of Setting Current Setting Range Current Resolution Current Accuracy STANCE MODE Slew Rate Slew Rate Resolution Slew Rate Accuracy of Setting Resistance Setting Range	1μs / 1ms 0.32 – 80mA/μs 0.32mA/μs ±(10% + 15μs) 0-2.04A 0.1mA ±0.45 3.2 – 80 3.2m ±(10% 0.075Ω-3006 3.75Ω-15kΩ 0.333mS(6.667μS(1 300Ω : ±(0.5	± 100ppm 3.2 - 800mA/µs 3.2mA/µs ± (10% + 15µs) 0-20.4A 1mA 6 F.S. 0mA/µs 1A/µs + 50µs) 0(100W/16V) (100W/16V) 100W/16V) 00W/80V) %set + 0.1S)	0.8m/ ±(10% + 0~5. 0.125 0.8 ~ 200 0.8m/ 15Ω~60kΩ(83.333µS(2 1.666µS(3) 1.2kΩ : ±(0.59	10ms ~ 30 1μs / 1m 2mA/μs λ/μs - 15μs) 1A mA ±0.4 20mA/μs ±(109 330W/16V) 30W/80V) 00W/80V) 60W/80V) 65eet + 0.15)	0s / Res : 1ms 0s + 100ppm 0.64 – 160mA/µs 0.64mA/µs ±(10% + 15µs) 0~4.08A 0.1mA 0% F.S. 6.4 – 16 6.4m 6 + 50µs) 0.0375Ω–150 1.875Ω–7.5ks 0.666mS(: 13.333µS(: 150Ω : ±(0.5)	6.4mA/μs ±(10% + 15μs) 0-40.8A 1mA 00mA/μs 1A/μs Ω(250W/16V) Ω(250W/80V) 250W/16V) 250W/80V) %set + 0.1S)	10ms ~ 30s 1 μs / 1ms 0.001 ~ 0.28A/μs 0.001A/μs ±(10% + 15μs) 0-7.14A 0.2mA ±0.49 0.01 ~ . 1.25Ω ~ 5kΩ 1ms(35) 20 μS(35) 100Ω : ±(0.5)	±100ppm 0.01 ~ 2.8A/μs 0.01A/μs ±(10% + 15μs) 0~71.4A 2mA 6 F.S. 2.8A/μs 4/μs +50μs) (350W/16V) (350W/16V) (30W/16V) (350W/80V) (350W/80V) (350W/80V)	$\begin{array}{c} 10\text{ms} \sim 30\text{s} \\ 1\mu\text{s} \ / \ 1\text{ms} \\ \end{array}$ $\begin{array}{c} 0.16 - 40\text{mA}/\mu\text{s} \\ 0.16\text{mA}/\mu\text{s} \\ \pm (10\% + 15\mu\text{s}) \\ 0.05\text{mA} \\ \pm 0.05\text{mA} \\ \pm 0.45 \\ \end{array}$ $\begin{array}{c} -1.02\text{A} \\ 0.05\text{mA} \\ \pm 0.45 \\ \end{array}$ $\begin{array}{c} 1.6 \sim 40 \\ 1.6\text{m} \\ \pm (10\% \\ \end{array}$ $\begin{array}{c} 1.25\Omega - 5\text{k}\Omega \\ 50\Omega - 200\text{k}\Omega \\ 20\mu\text{S} (35\text{f}) \\ 0.5\mu\text{S} (35\text{f}) \\ 5\text{s} \Omega : \pm (0.5\% \\ \end{array}$	± 100ppm 1.6 ~ 400mA 1.6mA/μs ±(10% + 15μ 0~10.2A 0.5mA % F.S. 00mA/μs 1A/μs + 50μs) 350W/125V) 350W/500V) 0W/500V) 6set + 0.02S)	
CONSTANT RESIS	Slew Rate Slew Rate Resolution Slew Rate Accuracy of Setting Current Setting Range Current Resolution Current Accuracy STANCE MODE Slew Rate Slew Rate Resolution Slew Rate Accuracy of Setting Resistance Setting Range	1μs / 1ms 0.32 – 80mA/μs 0.32mA/μs ±(10% + 15μs) 0-2.04A 0.1mA ±0.45 3.2 – 80 3.2m ±(10% 0.075Ω-3006 3.75Ω-15kΩ 0.333mS(6.667μS(1 300Ω : ±(0.5	± 100ppm 3.2 ~ 800mA/µs 3.2mA/µs ± (10% + 15µs) 0~20.4A 1mA 6 F.S. 0mA/µs 4 / 50µs) 2(100W/16V) (100W/16V) 00W/16V) 00W/80V)	0.8m/ ±(10% + 0~5. 0.125 0.8 ~ 200 0.8m/ 0.3Ω~1.2kΩ(15Ω~60kΩ(: 83.333µS(3) 1.666µS(3)	10ms ~ 30 1μs / 1m 2mA/μs λ/μs - 15μs) 1A mA ±0.4 20mA/μs ±(109 330W/16V) 30W/80V) 00W/80V) 60W/80V) 65eet + 0.15)	0s / Res : 1ms 0s + 100ppm 0.64 – 160mA/µs 0.64mA/µs ±(10% + 15µs) 0~4.08A 0.1mA 0% F.S. 6.4 – 16 6.4m 6 + 50µs) 0.0375Ω–150 1.875Ω–7.5ks 0.666mS(: 13.333µS(: 150Ω : ±(0.5)	6.4mA/μs ±(10% + 15μs) 0-40.8A 1mA 00mA/μs νA/μs Ω(250W/16V) Ω(250W/80V) 250W/16V)	10ms ~ 30s 1 μs / 1ms 0.001 ~ 0.28A/μs 0.001A/μs ±(10% + 15μs) 0-7.14A 0.2mA ±0.49 0.01 ~ . 0.01 ±(10% 0.025Ω~1000 1.25Ω~5kΩ 1mS(35i 20 μS(35)	±100ppm 0.01 ~ 2.8A/μs 0.01A/μs ±(10% + 15μs) 0~71.4A 2mA 6 F.S. 2.8A/μs 4/μs +50μs) (350W/16V) (350W/16V) (30W/16V) (350W/80V) (350W/80V) (350W/80V)	$\begin{array}{c} 10\text{ms} \sim 30\text{s} \\ 1\mu\text{s} \ / \ 1\text{ms} \\ \end{array}$ $\begin{array}{c} 0.16 - 40\text{mA}/\mu\text{s} \\ 0.16\text{mA}/\mu\text{s} \\ \pm (10\% + 15\mu\text{s}) \\ 0.05\text{mA} \\ \pm 0.05\text{mA} \\ \pm 0.45 \\ \end{array}$ $\begin{array}{c} -1.02\text{A} \\ 0.05\text{mA} \\ \pm 0.45 \\ \end{array}$ $\begin{array}{c} 1.6 \sim 40 \\ 1.6\text{m} \\ \pm (10\% \\ \end{array}$ $\begin{array}{c} 1.25\Omega - 5\text{k}\Omega \\ 50\Omega - 200\text{k}\Omega \\ 20\mu\text{S} (35\text{f}) \\ 0.5\mu\text{S} (35\text{f}) \\ 5\text{s} \Omega : \pm (0.5\% \\ \end{array}$	± 100ppm 1.6 ~ 400mA, 1.6mA/μs ±(10% + 15μ 0~10.2A 0.5mA % F.S. 00mA/μs 1A/μs + 50μs) 350W/125V) 0350W/500V) 0W/125V) 00W/500V)	
CONSTANT RESIS	Slew Rate Slew Rate Resolution Slew Rate Accuracy of Setting Current Setting Range Current Accuracy STANCE MODE Slew Rate Accuracy STANCE MODE Slew Rate Resolution Slew Rate Accuracy of Setting Rate Resistance Setting Range Resistance Resolution Resistance Resolution	1μs / 1ms 0.32 – 80mA/μs 0.32mA/μs ±(10% + 15μs) 0-2.04A 0.1mA ±0.45 3.2 – 80 3.2m ±(10% 0.075Ω-3006 3.75Ω-15kΩ 0.333mS(6.667μS(1 300Ω : ±(0.5	± 100ppm 3.2 - 800mA/µs 3.2mA/µs ± (10% + 15µs) 0-20.4A 1mA 6 F.S. 0mA/µs 1A/µs + 50µs) 0(100W/16V) (100W/16V) 100W/16V) 00W/80V) %set + 0.1S)	0.8m/ ±(10% + 0~5. 0.125 0.8 ~ 200 0.8m/ 15Ω~60kΩ(83.333µS(2 1.666µS(3) 1.2kΩ : ±(0.59	10ms ~ 30 1μs / 1m 2mA/μs λ/μs - 15μs) 1A mA ±0.4 20mA/μs ±(109 330W/16V) 30W/80V) 00W/80V) 60W/80V) 65eet + 0.15)	0s / Res : 1ms 0s + 100ppm 0.64 – 160mA/µs 0.64mA/µs ±(10% + 15µs) 0~4.08A 0.1mA 0% F.S. 6.4 – 16 6.4m 6 + 50µs) 0.0375Ω–150 1.875Ω–7.5ks 0.666mS(: 13.333µS(: 150Ω : ±(0.5)	6.4mA/μs ±(10% + 15μs) 0-40.8A 1mA 00mA/μs 1A/μs Ω(250W/16V) Ω(250W/80V) 250W/16V) 250W/80V) %set + 0.1S)	10ms ~ 30s 1 μs / 1ms 0.001 ~ 0.28A/μs 0.001A/μs ±(10% + 15μs) 0-7.14A 0.2mA ±0.49 0.01 ~ . 1.25Ω ~ 5kΩ 1ms(35) 20 μS(35) 100Ω : ±(0.5)	±100ppm 0.01 ~ 2.8A/μs 0.01A/μs ±(10% + 15μs) 0~71.4A 2mA 6 F.S. 2.8A/μs 4/μs +50μs) (350W/16V) (350W/16V) (30W/16V) (350W/80V) (350W/80V) (350W/80V)	$\begin{array}{c} 10\text{ms} \sim 30\text{s} \\ 1\mu\text{s} \ / \ 1\text{ms} \\ \end{array}$ $\begin{array}{c} 0.16 - 40\text{mA}/\mu\text{s} \\ 0.16\text{mA}/\mu\text{s} \\ \pm (10\% + 15\mu\text{s}) \\ 0.05\text{mA} \\ \pm 0.05\text{mA} \\ \pm 0.45 \\ \end{array}$ $\begin{array}{c} -1.02\text{A} \\ 0.05\text{mA} \\ \pm 0.45 \\ \end{array}$ $\begin{array}{c} 1.6 \sim 40 \\ 1.6\text{m} \\ \pm (10\% \\ \end{array}$ $\begin{array}{c} 1.25\Omega - 5\text{k}\Omega \\ 50\Omega - 200\text{k}\Omega \\ 20\mu\text{S} (35\text{f}) \\ 0.5\mu\text{S} (35\text{f}) \\ 5\text{s} \Omega : \pm (0.5\% \\ \end{array}$	± 100ppm 1.6 ~ 400mA 1.6mA/μs ±(10% + 15μ 0~10.2A 0.5mA % F.S. 00mA/μs 1A/μs + 50μs) 350W/125V) 350W/500V) 0W/125V) 0W/500V) 6set + 0.02S)	
CONSTANT RESIS	Slew Rate Slew Rate Resolution Slew Rate Accuracy of Setting Current Setting Range Current Accuracy STANCE MODE Slew Rate Accuracy STANCE MODE Slew Rate Resolution Slew Rate Accuracy of Setting Rate Resistance Setting Range Resistance Resolution Resistance Resolution	1μs / 1ms 0.32 – 80mA/μs 0.32mA/μs ±(10% + 15μs) 0-2.04A 0.1mA ±0.45 3.2 – 80 3.2m ±(10% 0.075Ω-3006 3.75Ω-15kΩ 0.333mS(6.667μS(1 300Ω : ±(0.5	± 100ppm 3.2 - 800mA/µs 3.2mA/µs ± (10% + 15µs) 0-20.4A 1mA 6 F.S. 0mA/µs 1A/µs + 50µs) 0(100W/16V) (100W/16V) 100W/16V) 00W/80V) %set + 0.1S)	0.8m/ ±(10% + 0~5. 0.125 0.8 ~ 200 0.8m/ 15Ω~60kΩ(83.333µS(2 1.666µS(3) 1.2kΩ : ±(0.59	10ms ~ 30 1μs / 1m 2mA/μs λ/μs - 15μs) 1A mA ±0.4 20mA/μs ±(109 330W/16V) 30W/80V) 00W/80V) 60W/80V) 65eet + 0.15)	0s / Res : 1ms 0s + 100ppm 0.64 – 160mA/µs 0.64mA/µs ±(10% + 15µs) 0~4.08A 0.1mA 0% F.S. 6.4 – 16 6.4m 6 + 50µs) 0.0375Ω–150 1.875Ω–7.5ks 0.666mS(: 13.333µS(: 150Ω : ±(0.5)	6.4mA/μs ±(10% + 15μs) 0-40.8A 1mA 00mA/μs 1A/μs Ω(250W/16V) Ω(250W/80V) 250W/16V) 250W/80V) %set + 0.1S)	10ms ~ 30s 1 μs / 1ms 0.001 ~ 0.28A/μs 0.001A/μs ±(10% + 15μs) 0-7.14A 0.2mA ±0.49 0.01 ~ . 1.25Ω ~ 5kΩ 1ms(35) 20 μS(35) 100Ω : ±(0.5)	±100ppm 0.01 ~ 2.8A/μs 0.01A/μs ±(10% + 15μs) 0~71.4A 2mA 6 F.S. 2.8A/μs 4/μs +50μs) (350W/16V) (350W/16V) (30W/16V) (350W/80V) (350W/80V) (350W/80V)	$\begin{array}{c} 10\text{ms} \sim 30\text{s} \\ 1\mu\text{s} \ / \ 1\text{ms} \\ \end{array}$ $\begin{array}{c} 0.16 - 40\text{mA}/\mu\text{s} \\ 0.16\text{mA}/\mu\text{s} \\ \pm (10\% + 15\mu\text{s}) \\ 0.05\text{mA} \\ \pm 0.05\text{mA} \\ \pm 0.45 \\ \end{array}$ $\begin{array}{c} -1.02\text{A} \\ 0.05\text{mA} \\ \pm 0.45 \\ \end{array}$ $\begin{array}{c} 1.6 \sim 40 \\ 1.6\text{m} \\ \pm (10\% \\ \end{array}$ $\begin{array}{c} 1.25\Omega - 5\text{k}\Omega \\ 50\Omega - 200\text{k}\Omega \\ 20\mu\text{S} (35\text{f}) \\ 0.5\mu\text{S} (35\text{f}) \\ 5\text{s} \Omega : \pm (0.5\% \\ \end{array}$	± 100ppm 1.6 ~ 400mA ₁ 1.6mA/μs ±(10% + 15μ 0~10.2A 0.5mA % F.S. 00mA/μs 1A/μs + 50μs) 350W/125V) 350W/500V) 0W/125V) 0W/500V) 6set + 0.02S)	
CONSTANT RESIS	Slew Rate Slew Rate Resolution Slew Rate Accuracy of Setting Current Setting Range Current Accuracy STANCE MODE Slew Rate Accuracy STANCE MODE Slew Rate Resolution Slew Rate Accuracy of Setting Rate Resistance Setting Range Resistance Resolution Resistance Resolution	1μs / 1ms 0.32 – 80mA/μs 0.32mA/μs ±(10% + 15μs) 0-2.04A 0.1mA ±0.45 3.2 – 80 3.2m ±(10% 0.075Ω-3006 3.75Ω-15kΩ 0.333mS(6.667μS(1 300Ω : ±(0.5	± 100ppm 3.2 - 800mA/µs 3.2mA/µs ± (10% + 15µs) 0-20.4A 1mA 6 F.S. 0mA/µs 1A/µs + 50µs) 0(100W/16V) (100W/16V) 100W/16V) 00W/80V) %set + 0.1S)	0.8m/ ±(10% + 0~5. 0.125 0.8 ~ 200 0.8m/ 15Ω~60kΩ(83.333µS(2 1.666µS(3) 1.2kΩ : ±(0.59	10ms ~ 30 1μs / 1m 2mA/μs λ/μs - 15μs) 1A mA ±0.4 20mA/μs ±(109 330W/16V) 30W/80V) 00W/80V) 60W/80V) 65eet + 0.15)	0s / Res : 1ms 0s + 100ppm 0.64 – 160mA/µs 0.64mA/µs ±(10% + 15µs) 0~4.08A 0.1mA 0% F.S. 6.4 – 16 6.4m 6 + 50µs) 0.0375Ω–150 1.875Ω–7.5ks 0.666mS(: 13.333µS(: 150Ω : ±(0.5)	6.4mA/μs ±(10% + 15μs) 0-40.8A 1mA 00mA/μs 1A/μs Ω(250W/16V) Ω(250W/80V) 250W/16V) 250W/80V) %set + 0.1S)	10ms ~ 30s 1 μs / 1ms 0.001 ~ 0.28A/μs 0.001A/μs ±(10% + 15μs) 0-7.14A 0.2mA ±0.49 0.01 ~ . 1.25Ω ~ 5kΩ 1ms(35) 20 μS(35) 100Ω : ±(0.5)	±100ppm 0.01 ~ 2.8A/μs 0.01A/μs ±(10% + 15μs) 0~71.4A 2mA 6 F.S. 2.8A/μs 4/μs +50μs) (350W/16V) (350W/16V) (30W/16V) (350W/80V) (350W/80V) (350W/80V)	$\begin{array}{c} 10\text{ms} \sim 30\text{s} \\ 1\mu\text{s} \ / \ 1\text{ms} \\ \end{array}$ $\begin{array}{c} 0.16 - 40\text{mA}/\mu\text{s} \\ 0.16\text{mA}/\mu\text{s} \\ \pm (10\% + 15\mu\text{s}) \\ 0.05\text{mA} \\ \pm 0.05\text{mA} \\ \pm 0.45 \\ \end{array}$ $\begin{array}{c} -1.02\text{A} \\ 0.05\text{mA} \\ \pm 0.45 \\ \end{array}$ $\begin{array}{c} 1.6 \sim 40 \\ 1.6\text{m} \\ \pm (10\% \\ \end{array}$ $\begin{array}{c} 1.25\Omega - 5\text{k}\Omega \\ 50\Omega - 200\text{k}\Omega \\ 20\mu\text{S} (35\text{f}) \\ 0.5\mu\text{S} (35\text{f}) \\ 5\text{s} \Omega : \pm (0.5\% \\ \end{array}$	± 100ppm 1.6 ~ 400mA 1.6mA/μs ±(10% + 15μ 0~10.2A 0.5mA % F.S. 00mA/μs 1A/μs + 50μs) 350W/125V) 350W/500V) 0W/125V) 0W/500V) 6set + 0.02S)	
CONSTANT RESIS	Slew Rate Slew Rate Resolution Slew Rate Accuracy of Setting Current Setting Range Current Resolution Current Accuracy STANCE MODE Slew Rate Slew Rate Resolution Slew Rate Accuracy of Setting Resistance Setting Range Resistance Resolution	1μs / 1ms 0.32 – 80mA/μs 0.32mA/μs ±(10% + 15μs) 0–2.04A 0.1mA ±0.49 3.2 – 80 3.2m ±(10% 0.075Ω–300α 3.75Ω–15kΩ 0.333mS'(6.667μS(1 300Ω : ±(0.59)	± 100ppm 3.2 - 800mA/μs 3.2mA/μs ± (10% + 15μs) 0 - 20.4A 1mA 6 F.S. 10mA/μs A/μs + 50μs) Ω(100W/16V) (100W/80V) 00W/80V) %set + 0.1S) 6set + 0.01S)	0.8m/ ±(10% + 0~5. 0.125 0.8 ~ 200 0.8m/ 0.3Ω~1.2kΩ(15Ω~60kΩ(83.333µS(3 1.666µS(35) 60kΩ: ±(0.5%)	10ms ~ 30 1	0.64 - 160mA/μs 0.64 - 160mA/μs 0.64mA/μs ±(10% + 15μs) 0-4.08A 0.1mA 3% F.S. 6.4 ~ 16 6.4m 6+50μs) 0.0375Ω-150 1.875Ω-7.5k0 1.3331±(0.51) 1.50Ω : ±(0.51)	6.4mA/μs ±(10% + 15μs) 0~40.8A 1mA 00mA/μs nA/μs Ω(250W/16V) Ω(250W/80V) 250W/80V) %set + 0.15) %set + 0.015)	10ms ~ 30s 1μs / 1ms 0.001 ~ 0.28A/μs 0.001A/μs ±(10% + 15μs) 0-7.14A 0.2mA ±0.49 ±(10% 0.01 ~ 1.25Ω~5kΩ 1ms (35) 20 μs (35) 5kΩ: ±(0.5%)	±100ppm 0.01 ~ 2.8A/μs 0.01A/μs ±(10% + 15μs) 0-71.4A 2mA 6 F.S. 2.8A/μs Α/μs +50μs) 0(350W/16V) 3350W/80V) 0W/16V) 00W/80V) %sect + 0.1S) sect + 0.01S)	10ms ~ 30s 1 μs / 1ms 0.16 ~ 40mA/μs 0.16mA/μs ±(10% + 15μs) 0~1.02A 0.05mA ±0.49 1.6 ~ 40 1.6m ±(10% 20μS(35i 0.5μS(35i 5 κΩ : ±(0.59) 200kΩ: ±(0.59)	± 100ppm 1.6 ~ 400mA 1.6mA/μs ±(10% + 15 0~10.2A 0.5mA % F.S. 00mA/μs +50μs) 350W/125V) (350W/500V) 6set + 0.025) 2.5w/set + 0.005S)	
CONSTANT RESIS	Slew Rate Slew Rate Resolution Slew Rate Resolution Slew Rate Resolution Slew Rate Accuracy of Setting Current Setting Range Current Resolution Current Accuracy STANCE MODE Slew Rate Slew Rate Resolution Slew Rate Accuracy of Setting Resistance Setting Range Resistance Resolution Resistance Accuracy ACK Range Resolution	1μs / 1ms 0.32 ~ 80mA/μs 0.32mA/μs ±(10% + 15μs) 0-2.04A 0.1mA ±0.49 3.2 ~ 80 3.2m ±(10% 0.075Ω~3000 3.75Ω~15kΩ 0.333mS(6.667μS(1 3000: ±(0.59) 0-16V 0.32mV	± 100ppm 3.2 ~ 800mA/µs 3.2mA/µs ± (10% + 15µs) 0~20.4A 1mA 6 F.S. 0mA/µs + 50µs) 2(100W/16V) (100W/80V) 100W/16V) 00W/80V) %set + 0.1S) 6set + 0.01S)	0.8m/ ±(10% + 0~5. 0.125 0.8 ~ 200 0.8m/ 15Ω~60lα(). 83.333µS(3 1.666µS(3) 1.2kΩ : ±(0.5% 60kΩ: ±(0.5%	10ms ~ 30 1	0.64 ~ 160mA/μs 0.64 ~ 160mA/μs 0.64mA/μs ±(10% + 15μs) 0~4.08A 0.1mA 9% F.S. 6.4 ~ 16 6.4m 6 + 50μs) 0.0375Ω-150 1.875Ω-7.5kd 0.666mS(: 13.333μS(: 150Ω:±(0.5)	6.4mA/µs ±(10% + 15µs) 0-40.8A 1mA 00mA/µs nA/µs 0(250W/16V) 0(250W/80V) 250W/16V) 250W/16V) 250W/80V) %set + 0.015)	10ms ~ 30s 1μs / 1ms 0.001 ~ 0.28A/μs 0.001A/μs ±(10% + 15μs) 0-7.14A 0.2mA ±0.49 0.01 ~ . 1000 1.25Ω~5kΩ 1mS(35i 20 μS(35 100Ω : ±(0.5%) 0.16V 0.32mV	±100ppm 0.01 ~ 2.8A/µs 0.01A/µs ±(10% + 15µs) 0-71.4A 2mA 6 F.S. 2.8A/µs 4/µs 4 50µs) 2(350W/16V) 350W/80V) 350W/80V) 350W/80V) 50w/80V) 50w/80V) 50w/80V) 1.6mV	10ms ~ 30s 1 μs / 1ms 0.16 ~ 40mA/μs 0.16mA/μs ±(10% + 15μs) 0~1.02A 0.05mA ±0.45 1.6 ~ 4C 1.6m ±(10% 50Ω~200kΩ 20μS(35i 0.5μS(35) 5kΩ: ±(0.59 200kΩ: ±(0.59)	± 100ppm 1.6 ~ 400mA 1.6mA/µs ±(10% + 15 0~10.2A 0.5mA % F.S. 00mA/µs 150w/125V) 0350W/125V) 00W/125V) 00W/500V) 06set + 0.025) 06set + 0.005S)	
CONSTANT RESIS MEASUREMENT VOLTAGE READBA	Slew Rate Slew Rate Resolution Slew Rate Resolution Slew Rate Accuracy of Setting Current Setting Range Current Resolution Current Accuracy STANCE MODE Slew Rate Slew Rate Resolution Slew Rate Accuracy of Setting Resistance Setting Range Resistance Accuracy ACK Range Resolution Accuracy	1μs / 1ms 0.32 – 80mA/μs 0.32mA/μs ±(10% + 15μs) 0-2.04A 0.1mA ±0.49 3.2 ~ 80 3.2m ±(10% 0.075Ω~3000 3.75Ω~15kΩ 0.333mS(' 6.667μS(1) 300Ω:±(0.59)	± 100ppm 3.2 ~ 800mA/µs 3.2mA/µs ± (10% + 15µs) 0~20.4A 1mA 6 F.S. 0mA/µs + 50µs) 2(100W/16V) (100W/80V) 100W/16V) 00W/80V) %set + 0.1S) 6set + 0.01S)	0.8m/ ±(10% + 0~5. 0.125 0.8 ~ 200 0.8m/ 15Ω~60lα(). 83.333µS(3 1.666µS(3) 1.2kΩ : ±(0.5% 60kΩ: ±(0.5%	10ms ~ 30 1	0.64 - 160mA/μs 0.64 - 160mA/μs 0.64mA/μs ±(10% + 15μs) 04.08A 0.1mA 9% F.S. 6.4 - 16 6.4m 6+ 50μs) 0.0375Ω-150 1.875Ω-7.5kα 1.50Ω: ±(0.5)	6.4mA/µs ±(10% + 15µs) 0-40.8A 1mA 00mA/µs nA/µs 0(250W/16V) 0(250W/80V) 250W/16V) 250W/16V) 250W/80V) %set + 0.015)	10ms ~ 30s 1μs / 1ms 0.001 ~ 0.28A/μs 0.001A/μs ±(10% + 15μs) 0-7.14A 0.2mA ±0.49 0.01 ~ 0.01 ±(10% 1.25Ω – 5kΩ 1mS (35; 20 μS (35; 5kΩ: ±(0.5%)	±100ppm 0.01 ~ 2.8A/µs 0.01A/µs ±(10% + 15µs) 0-71.4A 2mA 6 F.S. 2.8A/µs 4/µs 4 50µs) 2(350W/16V) 350W/80V) 350W/80V) 350W/80V) 50w/80V) 50w/80V) 50w/80V) 1.6mV	10ms ~ 30s 1 μs / 1ms 0.16 ~ 40mA/μs 0.16mA/μs ±(10% + 15μs) 0~1.02A 0.05mA ±0.45 1.6 ~ 4C 1.6m ±(10% 50Ω~200kΩ 20μS(35i 0.5μS(35) 5kΩ: ±(0.59 200kΩ: ±(0.59)	± 100ppm 1.6 ~ 400mA 1.6mA/μs ±(10% + 15 0~10.2A 0.5mA % F.S. 00mA/μs +50μs) 350W/125V) 0350W/500V) 6set + 0.025) 6set + 0.025)	
	Slew Rate Slew Rate Resolution Slew Rate Resolution Slew Rate Accuracy of Setting Current Setting Range Current Resolution Current Accuracy STANCE MODE Slew Rate Slew Rate Resolution Slew Rate Accuracy of Setting Resistance Setting Range Resistance Accuracy ACK Range Resolution Accuracy ACK	1μs / 1ms 0.32 – 80mA/μs 0.32mA/μs ±(10% + 15μs) 0-2.04A 0.1mA ±0.49 3.2 ~ 80 3.2m ±(10% 0.075Ω~3000 3.75Ω~15kΩ 0.333mS(6.667μS(1 300Ω : ±(0.59) 0-16V 0.32mV ±(0.025%set	± 100ppm 3.2 - 800mA/µs 3.2mA/µs ± (10% + 15µs) 0-20.4A 1mA % F.S. 10mA/µs 4/6 F.S. 10mA/µs 100W/16V) 100W/16V	0.8m/ ±(10% + 0~5, 0.125 0.8 ~ 200 0.8m/ 15Ω-60kΩ(. 83.333µS(3 1.666µS(3) 1.2kΩ : ±(0.5% 60kΩ: ±(0.5%)	10ms ~ 30 1	0.64 - 160mA/μs 0.64mA/μs 0.64mA/μs ±(10% + 15μs) 0.4.08A 0.1mA 9% F.S. 6.4 - 16 6.4m 6 + 50μs) 0.0375Ω-150 1.875Ω-7.5k 0.666mS(: 13.333μS(: 150Ω:±(0.5) 0-16V 0.32mV 1 + 0.025% F.S.)	6.4mA/μs ±(10% + 15μs) 0-40.8A 1mA 00mA/μs 1A/μs Ω(250W/16V) Ω(250W/80V) 250W/80V) %set + 0.1S) %set + 0.01S) 0-80V 1.6mV	10ms ~ 30s 1 μs / 1ms 0.001 ~ 0.28A/μs 0.001A/μs ±(10% + 15μs) 0-7.14A 0.2mA ±0.49 0.01 ~ . 0.01 ~ . 10% 0.025Ω~1000 1.25Ω~5kΩ. 1mS(35i 20 μS(35 1000: ±(0.5%) 0-16V 0.32mV ±(0.025%set	± 100ppm 0.01 ~ 2.8A/μs 0.01A/μs ± (10% + 15μs) 0-71.4A 2mA 6 F.S. 2.8A/μs 4/μs + 50μs) (350W/16V) 00W/16V) 00W/80V) %set + 0.1S) set + 0.01S)	10ms ~ 30s 1 μs / 1ms 0.16 ~ 40mA/μs 0.16mA/μs ±(10% + 15μs) 0~1.02A 0.05mA ±0.45 1.6 ~ 4€ 1.6m ±(10% 50Ω~200kΩ: 20μS(35i 5kΩ:±(0.59) 200kΩ:±(0.55) 0~125V 2.5mV ±(0.025%set	± 100ppm 1.6 ~ 400mA, 1.6mA/µs ±(10% + 15µ 0~10.2A 0.5mA % F.S. 00mA/µs +50µs) 350W/125V) 00W/125V) 00W/500V) 6set + 0.025) %set + 0.025) 0~500V 10mV + 0.025% F.S.)	
CONSTANT RESIS MEASUREMENT VOLTAGE READBA	Slew Rate Slew Rate Resolution Slew Rate Accuracy of Setting Current Setting Range Current Setting Range Current Resolution Current Accuracy STANCE MODE Slew Rate Slew Rate Resolution Slew Rate Resolution Slew Rate Resolution Resistance Setting Range Resistance Accuracy ACK Range Resolution Accuracy ACK Range	1μs / 1ms 0.32 – 80mA/μs 0.32mA/μs ±(10% + 15μs) 0-2.04A 0.1mA ±0.45 3.2 – 80 3.2m ±(10% 0.075Ω-300% 3.75Ω-15kΩ 0.333mS(6.667μS(1 300Ω : ±(0.59) 0-16V 0.32mV ±(0.025%set	± 100ppm 3.2 - 800mA/µs 3.2mA/µs ± (10% + 15µs) 0-20.4A 1mA 6 F.S. 0mA/µs 1A/µs + 50µs) 0(100W/16V) 0(100W/16V) 00W/80V) %set + 0.1S) 6set + 0.01S) 0-80V 1.6mV + 0.025% F.S.)	0.8m/ ±(10% + 0~5, 0.125 0.8 ~ 200 0.8m/ 15Ω-60kΩ(15Ω-60kΩ(83.333µS(3) 1.2kΩ : ±(0.5% 60kΩ: ±(0.5%) 0~16V 0.32mV	10ms ~ 30 1μs / 1m 2mA/μs λ/μs 115μs) 11A mA ±0.4 2mA/μs λ/μs ±(109 330W/16V) 330W/16V) 30W/16V) 50W/16V) 50W/16V) 50W/16V) 50W/16V) 64 + 0.15) 5 + 0.15) 5 + 0.15) 6 + 0.15 6 + 0.15 7 + 0.15 8 + 0.15 8 + 0.15 9 + 0.15 1.6mV ±(0.025%se	0s / Res : 1ms 0s + 100ppm 0.64 – 160mA/μs 0.64mA/μs ±(10% + 15μs) 0~4.08A 0.1mA 1% F.S. 6.4 – 16 6.4m 6 + 50μs) 0.0375Ω–150 1.875Ω–7.5kd 0.666mS(: 13.333μS(150Ω : ±(0.59) 0.16V 0.32mV 1 + 0.025% F.S.)	6.4mA/μs ±(10% + 15μs) 0-40.8A 1mA 00mA/μs hA/μs Ω(250W/16V) Ω(250W/80V) 250W/16V) 250W/80V) %set + 0.15) %set + 0.015) 0-80V 1.6mV	10ms ~ 30s 1μs / 1ms 0.001 ~ 0.28A/μs 0.001A/μs ±(10% + 15μs) 0-7.14A 0.2mA ±0.49 0.01 ~ ±(10% 0.025Ω~1000 1.25Ω~5kΩ 1mS(35s 20 μS(35 1000 : ±(0.5%) 0~16V 0.32mV ±(0.025%set	±100ppm 0.01 ~ 2.8A/μs 0.01A/μs ±(10% + 15μs) 0~71.4A 2mA 6 F.S. 2.8A/μs Α/μs + 50μs) (350W/16V) 0350W/80V) 0W/16V 00W/80V) %set + 0.01S) set + 0.01S) - 0.80V 1.6mV - 0.025% F.S.)	10ms ~ 30s 1 μs / 1ms 0.16 ~ 40mA/μs 0.16mA/μs ±(10% + 15μs) 0~1.02A 0.05mA ±0.45 1.6 ~ 40 1.6m ±(10% 1.25Ω~5kΩ(50Ω~200kΩ(20μS(35i 0.5μS(35i 5kΩ : ±(0.59) 200kΩ: ±(0.59) 0~125V ±(0.025%set	± 100ppm 1.6 ~ 400mA 1.6mA/μs ±(10% + 15μ 0~10.2A 0.5mA % F.S. 00mA/μs +50μs) 350W/125V) 350W/500V) 6set + 0.025) %set + 0.025% 10mV + 0.025% F.S.)	
CONSTANT RESIS MEASUREMENT VOLTAGE READBA	Slew Rate Slew Rate Resolution Slew Rate Accuracy of Setting Current Setting Range Current Setting Range Current Resolution Current Resolution Slew Rate Slew Rate Slew Rate Resolution Slew Rate Resolution Slew Rate Resolution Resistance Setting Range Resistance Accuracy of Setting Resistance Resolution Accuracy ACK Range Resolution Accuracy ACK Range Resolution	1μs / 1ms 0.32 – 80mA/μs 0.32mA/μs ±(10% + 15μs) 0-2.04A 0.1mA ±0.49 3.2 – 80 3.2m ±(10% 0.075Ω-3000 3.75Ω-15kΩ 0.333m5(6.667μS(1 300Ω : ±(0.59) 0-16V 0.32mV ±(0.025%set	± 100ppm 3.2 - 800mA/µs 3.2mA/µs ± (10% + 15µs) 0-20.4A 1mA 6 F.S. 0mA/µs 1A/µs + 50µs) 0(100W/16V) (100W/80V) 00W/80V) %set + 0.1S) 6set + 0.01S) 0-80V 1.6mV + 0.025% F.S.)	0.8m/ ±(10% + 0~5, 0.125 0.8 ~ 200 0.8m/ 15Ω-60kΩ(. 83.333µS(3 1.666µS(3) 1.2kΩ : ±(0.5% 60kΩ: ±(0.5%)	10ms ~ 30 1μs / 1m λ/μs λ/μs 115μs) 11A mA ±0.4 λ/μs ±(109 300W/16V) 300W/80V) 600W/16V) 000W/80V) 600W/80V) 1.6mV ±(0.025%se	0.64 - 160mA/μs 0.64 - 160mA/μs 0.64mA/μs 0.64mA/μs ±(10% + 15μs) 04.08A 0.1mA 0.1mA 0.64 ~ 16 6.4π 6.4 > 50μs) 0.0375Ω-150 1.875Ω-7.5kΩ 0.666mS(: 13.333μS(: 150Ω : ±(0.5) 0.32mV 0.32mV 0.4A 0.08mA	6.4mA/μs ±(10% + 15μs) 0-40.8A 1mA 00mA/μs 1A/μs Ω(250W/16V) Ω(250W/80V) 250W/80V) %set + 0.1S) %set + 0.01S) 0-80V 1.6mV	10ms ~ 30s 1μs / 1ms 0.001 ~ 0.28A/μs 0.001A/μs ±(10% + 15μs) 0-7.14A 0.2mA ±0.49 0.01 ~ 0.01 ±(10% 0.025Ω~100c 1.25Ω~5kΩ 1mS(35i 20 μS(35i 100Ω : ±(0.5%) 0~16V 0.32mV ±(0.025%set · 0.7A 0.14mA	±100ppm 0.01 ~ 2.8A/μs 0.01A/μs ±(10% + 15μs) 0~71.4A 2mA 6 F.S. 2.8A/μs 4/μs + 50μs) 2(350W/16V) 3350W/80V) 350W/80V) 350W/80V) 350W/80V) 500W/16V 00W/80V) 1.6mV - 0.025% F.S.)	10ms ~ 30s 1 μs / 1ms 0.16 ~ 40mA/μs 0.16mA/μs ±(10% + 15μs) 0~1.02A 0.05mA ±0.45 1.6 ~ 40 1.6m ±(10% 1.25Ω~5kΩ(50Ω~200kΩ(20μS(35i 0.5μS(35) 5kΩ ± (0.59) 200kΩ ± (0.55) 0~125V 2.5mV ±(0.025%set	± 100ppm 1.6 ~ 400mA 1.6mA/μs ±(10% + 15μ 0~10.2A 0.5mA % F.S. 00mA/μs +50μs) 350W/125V) (350W/500V) 6set + 0.025) 0~500V 10mV + 0.025% F.S.)	
CONSTANT RESIS MEASUREMENT VOLTAGE READBA	Slew Rate Slew Rate Resolution Slew Rate Resolution Slew Rate Resolution Slew Rate Accuracy of Setting Current Setting Range Current Resolution Current Accuracy STANCE MODE Slew Rate Slew Rate Resolution Slew Rate Accuracy of Setting Resistance Setting Range Resistance Resolution Accuracy ACK Range Resolution Accuracy ACK Range Resolution Accuracy ACK Range Resolution Accuracy ACK Range Resolution Accuracy	1μs / 1ms 0.32 – 80mA/μs 0.32mA/μs ±(10% + 15μs) 0-2.04A 0.1mA ±0.45 3.2 – 80 3.2m ±(10% 0.075Ω-300% 3.75Ω-15kΩ 0.333mS(6.667μS(1 300Ω : ±(0.59) 0-16V 0.32mV ±(0.025%set	± 100ppm 3.2 - 800mA/µs 3.2mA/µs ± (10% + 15µs) 0-20.4A 1mA 6 F.S. 0mA/µs 1A/µs + 50µs) 0(100W/16V) (100W/80V) 00W/80V) %set + 0.1S) 6set + 0.01S) 0-80V 1.6mV + 0.025% F.S.)	0.8m/ ±(10% + 0~5, 0.125 0.8 ~ 200 0.8m/ 15Ω-60kΩ(15Ω-60kΩ(83.333µS(3) 1.2kΩ : ±(0.5% 60kΩ: ±(0.5%) 0~16V 0.32mV	10ms ~ 30 1μs / 1m λ/μs λ/μs 115μs) 11A mA ±0.4 λ/μs ±(109 300W/16V) 300W/80V) 600W/16V) 000W/80V) 600W/80V) 1.6mV ±(0.025%se	0s / Res : 1ms 0s + 100ppm 0.64 – 160mA/μs 0.64mA/μs ±(10% + 15μs) 0~4.08A 0.1mA 1% F.S. 6.4 – 16 6.4m 6 + 50μs) 0.0375Ω–150 1.875Ω–7.5kd 0.666mS(: 13.333μS(150Ω : ±(0.59) 0.16V 0.32mV 1 + 0.025% F.S.)	6.4mA/μs ±(10% + 15μs) 0-40.8A 1mA 00mA/μs hA/μs Ω(250W/16V) Ω(250W/80V) 250W/16V) 250W/80V) %set + 0.15) %set + 0.015) 0-80V 1.6mV	10ms ~ 30s 1μs / 1ms 0.001 ~ 0.28A/μs 0.001A/μs ±(10% + 15μs) 0-7.14A 0.2mA ±0.49 0.01 ~ ±(10% 0.025Ω~1000 1.25Ω~5kΩ 1mS(35s 20 μS(35 1000 : ±(0.5%) 0~16V 0.32mV ±(0.025%set	±100ppm 0.01 ~ 2.8A/μs 0.01A/μs ±(10% + 15μs) 0~71.4A 2mA 6 F.S. 2.8A/μs 4/μs + 50μs) 2(350W/16V) 3350W/80V) 350W/80V) 350W/80V) 350W/80V) 500W/16V 00W/80V) 1.6mV - 0.025% F.S.)	10ms ~ 30s 1 μs / 1ms 0.16 ~ 40mA/μs 0.16mA/μs ±(10% + 15μs) 0~1.02A 0.05mA ±0.45 1.6 ~ 40 1.6m ±(10% 1.25Ω~5kΩ(50Ω~200kΩ(20μS(35i 0.5μS(35) 5kΩ ± (0.59) 200kΩ ± (0.55) 0~125V 2.5mV ±(0.025%set	± 100ppm 1.6 ~ 400mA, 1.6mA/μs ±(10% + 15μ 0~10.2A 0.5mA % F.S. 00mA/μs +50μs) 350W/125V) 0350W/500V) 06set + 0.025) %set + 0.025S 0~500V 10mV + 0.025% F.S.)	
CONSTANT RESIS MEASUREMENT VOLTAGE READBA	Slew Rate Slew Rate Resolution Slew Rate Resolution Slew Rate Resolution Slew Rate Accuracy of Setting Current Setting Range Current Accuracy STANCE MODE Slew Rate Slew Rate Resolution Slew Rate Accuracy of Setting Resistance Setting Range Resistance Resolution Resistance Accuracy ACK Range Resolution Accuracy ACK Range Resolution Accuracy Resolution Accuracy ACK Range Resolution Accuracy	1μs / 1ms 0.32 – 80mA/μs 0.32mA/μs ±(10% + 15μs) 0–2.04A 0.1mA ±0.45 3.2 – 80 3.2m ±(10% 0.075Ω~300¢ 3.75Ω~15kΩ 0.333mS(' 6.667μS(1 300Ω : ±(0.59) 0–16V 0.32mV ±(0.025%set -	± 100ppm 3.2 - 800mA/µs 3.2mA/µs ± (10% + 15µs) 0-20.4A 1mA 6 F.S. 0mA/µs + 50µs) 2(100W/16V) (100W/80V) 100W/16V) 00W/80V) %set + 0.1S) 6set + 0.01S) 0-80V 1.6mV + 0.025% F.S.)	0.8m/ ±(10% + 0~5. 0.125 0.8 ~ 200 0.8m/ 15Ω~60kΩ(15Ω~60kΩ(1.666μS(3) 1.2kΩ : ±(0.5% 60kΩ: ±(0.5%)	10ms ~ 30 1	0.64 - 160mA/μs 0.64 - 160mA/μs 0.64mA/μs ±(10% + 15μs) 04.08A 0.1mA 9% F.S. 6.4 - 16 6.4m 6+ 50μs) 0.0375Ω-150 1.875Ω-7.5kα 0.666mS(13.333μS(150Ω : ±(0.5) 0.16V 0.32mV 1+ 0.025% F.S.)	6.4mA/μs ±(10% + 15μs) 0~40.8A 1mA 00mA/μs nA/μs 0(250W/16V) 0(250W/80V) 250W/80V) %set + 0.15) 0~80V 1.6mV 0~40A 0.8mA	10ms ~ 30s 1μs / 1ms 0.001 ~ 0.28A/μs 0.001A/μs ±(10% + 15μs) 0-7.14A 0.2mA ±0.49 0.01 ~ 0.01 ±(10% 1.25Ω-5kΩ 1mS(35) 20 μS(35 100Ω : ±(0.5% 0-16V 0.32mV ±(0.025%set -	±100ppm 0.01 ~ 2.8A/µs 0.01A/µs ±(10% + 15µs) 0-71.4A 2mA 6 F.S. 2.8A/µs A/µs +50µs) 0(350W/16V) 3350W/80V) 3W/16V) 0W/80V) %set + 0.1S) set + 0.01S) 0-80V 1.6mV +0.025% F.S.)	10ms ~ 30s 1µs / 1ms 0.16 ~ 40mA/µs 0.16mA/µs ±(10% + 15µs) 0~1.02A 0.05mA ±0.49 1.6 ~ 40 1.6m ±(10% 1.25Ω~5kΩ(50Ω~200kΩ(20µS(35(0.5µS(35) 5kΩ : ±(0.59) 200kΩ: ±(0.59) 1.25V 2.5mV ±(0.025%set + 4) 0~1A 0.02mA	± 100ppm 1.6 ~ 400mA, 1.6mA/μs ±(10% + 15μ 0-10.2A 0.5mA % F.S. 00mA/μs +50μs) 350W/125V) (350W/500V) 00W/500V) 6set + 0.025) %set + 0.025) 10mV + 0.025% F.S.) 0-10A 0.2mA 0.05% F.S. ²²)	
CONSTANT RESIS MEASUREMENT VOLTAGE READBA	Slew Rate Slew Rate Resolution Slew Rate Resolution Slew Rate Resolution Slew Rate Accuracy of Setting Current Setting Range Current Resolution Current Accuracy STANCE MODE Slew Rate Slew Rate Resolution Slew Rate Accuracy of Setting Resistance Setting Range Resistance Resolution Accuracy ACK Range Resolution Accuracy ACK Range Resolution Accuracy ACK Range Resolution Accuracy ACK Range Resolution Accuracy	1μs / 1ms 0.32 – 80mA/μs 0.32mA/μs ±(10% + 15μs) 0-2.04A 0.1mA ±0.49 3.2 – 80 3.2m ±(10% 0.075Ω-3000 3.75Ω-15kΩ 0.333m5(6.667μS(1 300Ω : ±(0.59) 0-16V 0.32mV ±(0.025%set	± 100ppm 3.2 - 800mA/µs 3.2mA/µs ± (10% + 15µs) 0-20.4A 1mA 6 F.S. 0mA/µs 1A/µs + 50µs) 0(100W/16V) (100W/80V) 00W/80V) %set + 0.1S) 6set + 0.01S) 0-80V 1.6mV + 0.025% F.S.)	0.8m/ ±(10% + 0~5, 0.125 0.8 ~ 200 0.8m/ 15Ω-60kΩ(15Ω-60kΩ(83.333µS(3) 1.2kΩ : ±(0.5% 60kΩ: ±(0.5%) 0~16V 0.32mV	10ms ~ 30 1	0.64 - 160mA/μs 0.64 - 160mA/μs 0.64mA/μs 0.64mA/μs ±(10% + 15μs) 04.08A 0.1mA 0.1mA 0.64 ~ 16 6.4π 6.4 > 50μs) 0.0375Ω-150 1.875Ω-7.5kΩ 0.666mS(: 13.333μS(: 150Ω : ±(0.5) 0.32mV 0.32mV 0.4A 0.08mA	6.4mA/μs ±(10% + 15μs) 0-40.8A 1mA 00mA/μs hA/μs Ω(250W/16V) Ω(250W/80V) 250W/16V) 250W/80V) %set + 0.15) %set + 0.015) 0-80V 1.6mV	10ms ~ 30s 1μs / 1ms 0.001 ~ 0.28A/μs 0.001A/μs ±(10% + 15μs) 0-7.14A 0.2mA ±0.49 0.01 ~ 0.01 ±(10% 0.025Ω~100c 1.25Ω~5kΩ 1mS(35i 20 μS(35i 100Ω : ±(0.5%) 0~16V 0.32mV ±(0.025%set · 0.7A 0.14mA	±100ppm 0.01 ~ 2.8A/μs 0.01A/μs ±(10% + 15μs) 0~71.4A 2mA 6 F.S. 2.8A/μs 4/μs + 50μs) 2(350W/16V) 3350W/80V) 350W/80V) 350W/80V) 350W/80V) 500W/16V 00W/80V) 1.6mV - 0.025% F.S.)	10ms ~ 30s 1 μs / 1ms 0.16 ~ 40mA/μs 0.16mA/μs ±(10% + 15μs) 0~1.02A 0.05mA ±0.45 1.6 ~ 40 1.6m ±(10% 1.25Ω~5kΩ(50Ω~200kΩ(20μS(35i 0.5μS(35) 5kΩ ± (0.59) 200kΩ ± (0.55) 0~125V 2.5mV ±(0.025%set	± 100ppm 1.6 ~ 400mA, 1.6mA/μs ±(10% + 15μ 0~10.2A 0.5mA % F.S. 00mA/μs +50μs) 350W/125V) (350W/500V) 0w/125V) 0w/500V) 6set + 0.025) 0~500V 10mV + 0.025% F.S.)	

SPECI	FICATIONS										
		PEL-20	020B	PEL-2030B			PEL-2040B		PEL-2041B		
PROTECTIV	E	•									
Over Power	Protection										
	Range	1~10	02W	0.9~30.6W		1.25~255W		1.75~357W		1.75~357W	
	Resolution	0.5W		0.15W		1.25W		1.75W		1.75W	
	Accuracy	±(2%set +	0.25%F.S)	±(2%set + 0	0.25%F.S)	±(2%set +	0.25%F.S)	±(2%set +	- 0.25%F.S)	±(2%set +	0.25%F.S)
Over Curren	t Protection										
	Range	0.25~20.4A		0.0625~5.1A		0.5~40.8A		0.875~71.4A		0.125~10.2A	
	Resolution	0.05A		0.0125A		0.1A		0.175A		0.025A	
	Accuracy	±(2%set + 0.25%F.S)		±(2%set + 0.25%F.S)		±(2%set + 0.25%F.S)		±(2%set + 0.25%F.S)		±(2%set + 0.25%F.S)	
Over Voltage	e Protection										
	Range	1~81.6V		1~81.6V		1~81.6V		1~81.6V		2.5~510V	
	Resolution	0.2V		0.2V		0.2V		0.2V		1.25V	
	Accuracy	±(2%set + 0.25%F.S)		±(2%set + 0.25%F.S)		±(2%set + 0.25%F.S)		±(2%set + 0.25%F.S)		±(2%set + 0.25%F.S)	
	Over Temperature Protection	≒85℃		≒85°C			≒85°C		≒85°C		
Rated Power	r Protection	-									
	Value	110W		33W		275W		385W		385W	
	Accuracy	±5%set		±5%set		±5%set		±5%set		±5%set	
GENERAL											
SHORT CIR	CUIT										
	Current (CC)	≒2.2/2A	≒22/20A	≒5.5	/5A	≒4.4/4A	≒44/40A	≒7.7/7A	≒77/70A	≒1.1/1A	≒11/10A
	Voltage (CV)	≒ 0V	≒ 0V	≒ 0	V	≒ 0V	≒ 0V	≒ 0V	≒ 0V	≒ 0V	≒ 0V
	Resistance (CR)	≒3.75Ω	≒0.075Ω	≒15Ω	≒0.3Ω	≒1.875Ω	≒0.0375Ω	≒1.25Ω	≒0.025Ω	≒50Ω	≒1.25Ω
INPUT RESI	STANCE (LOAD OFF)	500kΩ (Typical)									
POWER SO	URCE	100-120Vac/ 200-240Vac (90-132Vac/ 180-250Vac), 47 ~ 63Hz									
WEIGHT		Approx. 3.8kg									
	NS & WEIGHT (PEL-2002B)			ox. 17.1kg (Full modu							
DIMENSIO	NS & WEIGHT (PEL-2004B)	435(W) x 200(H)	x 581 (D) mm; Appr	ox. 28.4kg (Full modu	ules)						

ORDERING INFORMATION

PEL-2020B

Dual Channel Module, (0~80V, 0~20A, 100W) x 2 Dual Channel Module, (1~80V, 0~5A, 30W)+(1~80V, 0~40A, 250W) PEL-2030B

PEL-2040B Single Channel Module, (0~80V, 0~70A, 350W) Single Channel Module, (0~500V, 0~10A, 350W)
4-Slot Programmable D.C. Electronic Load Mainframe
2-Slot Programmable D.C. Electronic Load Mainframe PEL-2041B PEL-2004B PEL-2002B

Note: Load module cannot be used without a mainframe

PEL-2002B User Manual x1, Power Cord x1, Panel Cover PEL-003 x1 PEL-2004B User Manual x1, Power Cord x1, Panel Cover PEL-003 x3

PEL-2020B/2030B/2040B/2041B Test Lead GTL-120 x1, Sense Lead GTL-121 x1

Specifications subject to change without notice.

EL-2000BGD1BH

PEL-001 GPIB Card

PEL-002 PEL-2000B Series Rack Mount Kit

GTL-248 GPIB Cable (2m) GTL-249 Frame Link Cable

GTL-246 USB Cable, USB 2.0 A-B TYPE CABLE, 4P

GTL-232 RS-232C Cable, 9-pin, F-F Type, null modem, 2000mm

