KIKUSUI

Full-Load Current of 100A at 0.3V!

High Speed-Large Current DC Electronic Load(50A/µs)

While the PLZ-4WL series succeeds to the superior operability of our conventional model of the PLZ4W series, the PLZ4WL series realizes the high speed rise and fall time (slew rate of 50A/µs.) in the range of low voltage with large current. The PLZ4WL offers six operation modes, and equips with various features such as sequence operation, switching operation, soft-start function, and time and voltage measurement. The PLZ4WL applies not only for the conventional load test of the CPU power supply, but also it can be applied to even faster current response test. In addition, the PLZ4WL is a space-saving design (about 50% less volume of the conventional model) that can save the facility space of the testing site, and it can be applied for the single cell testing of the large scale rechargeable battery.

Applications

- Test for the Low Voltage Power Supply of the CPU
- Discharge test for the large current rechargeable battery
- IV characteristic test of the solar battery
- Impedance test for the various type of rechargeable batteries, power supplies
- Test for the relays, switches
- Absorbing the surge of brushless motor
- Test for the prearcing time-current characteristic

Electronic Load
PLZ-4WL series

■ Lineup

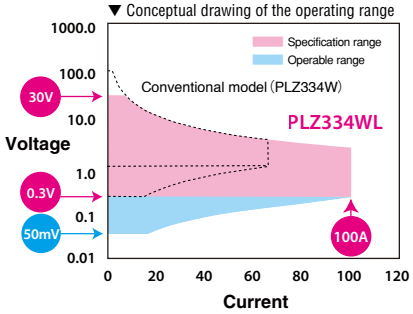
Model	Operation voltage	Current	Power
PLZ164WL	0.3V to 30V	50A	165W
PLZ334WL		100A	330W

■ Interface USB, GPIB, and RS-232C are equipped as standard.

Feature/Function

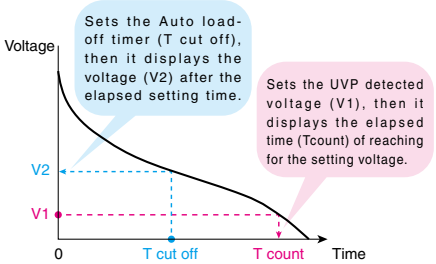
Realizing the low voltage operation

Possible to operate as low as 50mV by the input voltage. Even below the input voltage of 0.3V, this product can be used by reducing the current.



Convenient feature for the discharge testing

The Auto load-off timer and the Cut-off features can be applied to the discharge capacitance measurement of the rechargeable battery



Operation mode

Applied to the 6 operating modes (Constant Current, Constant Resistance, Constant Voltage, Constant Power, Constant Current + Constant Voltage, Constant Resistance + Constant Voltage)

Accurate low-rate discharge by the Low-range (1/100)

Each operation mode of the CC, CR, and CP has 3 ranges (H, M, L). The "L "range employs the scale of 1/100 which covers the range from the small to the large scale of the current.

Current setting resolution of the PLZ334WL

H Range	5mA
M Range	0.5mA
L Range	0. 05mA

Sequence function

The sequence mode can be set in 2 operation modes (Normal and Fast mode). The Fast mode can be set for the minimum step time of 25µs, and it can be synchronized with the external device by using the trigger input/output feature.

External analog control

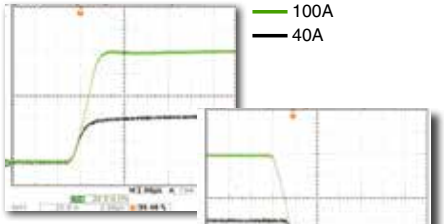
Not only the external control for the CC, CR, CP, and CV, but also it is capable to superimpose the current by the external input current on the present value of the CC setting. Moreover, it also can turn the LOAD ON/OFF.

Protection features

To ensure the safety, it equips the various protection features and activation of the alarm function. The alarm function can be output to the external source as an alarm output.
The fuse is used to cut-off the output for the protection feature of the reverse connection.

Fast Slew rate

Realize the slew rate of 50A/µs at 2.3V of the load input terminal voltage



▲Current rise time conversion: Approx. 2µs (PLZ334WL)

▲Current fall time conversion : Approx. 2µs(PLZ334WL)

Other features

For the switching operation, set-up memories (100), CC soft-start, slew rate setting (CC), response setting (2 levels for each CV and CR), Current monitor output, remote sensing, and more.

*Master-Slave parallel operation can not be configured on this model.

Option

■ Low inductance cable
[TL01-PLZ(50cm)]
[TL02-PLZ(1m)]
[TL03-PLZ(2m)]

▲ Low inductance cable

■ Rack mount accessories
[KRA150(millimeter size)]
[KRA3(inch size)]

■ Aplication Software
[Wavy for PLZ-4W]

The current waveform can be easily simulated by the PC. The measuring feature enables data logging.

Specifications

model			PLZ164WL	PLZ334WL
Rating	Operating voltage (DC)		0.3V to 30V Minimum operating voltage for the Switching mode(includes the value of voltage drop generated by the inductance component of wirings) increases approximately 40mV per 1A/µs of the slew rate setting.	
	Current		50A	100A
	Power		165W	330W
	Minimum start voltage *1		50mV(typ)	
Constant Current (CC) mode	Operating range	H	0A to 50A	0A to 100A
		M	0A to 5A	0A to 10A
		L	0A to 500mA	0A to 1A
	Setting range	H	0A to 52.5A	0A to 105A
		M	0A to 5.25A	0A to 10.5A
		L	0A to 525mA	0A to 1.05A
	Resolution	H	2mA	5mA
		M	0.2mA	0.5mA
		L	0.02mA	0.05mA
	Accuracy of setting	H,M,L	±(0.2% of set + 0.1% of f.s.*2) + Vin/150k*3	
	Input voltage variation *4	H,M,L	±(0.1% of set + 0.02% of f.s.*2)	
	Ripple	rms *5	4mA	8mA
		p-p *6	40mA	80mA
Constant Resistance (CR) mode	Operating range	H	165S to 3mS (6.06mΩ to 333Ω)	330S to 6mS (3.03mΩ to 166.7Ω)
		M	16.5S to 300µS (60.6mΩ to 3.33kΩ)	33.3S to 600µS (30.3mΩ to 1.667kΩ)
		L	1.65S to 30µS (606mΩ to 33.3kΩ)	3.3S to 60µS (303mΩ to 16.67kΩ)
	Setting range	H	173.25S to 0S (5.77mΩ to OPEN)	346.5S to 0S (2.886mΩ to OPEN)
		M	17.325S to 0S (57.7mΩ to OPEN)	34.65S to 0S (28.86mΩ to OPEN)
		L	1.7325S to 0S (577mΩ to OPEN)	3.465S to 0S (288.6mΩ to OPEN)
	Resolution	H	3mS	6mS
		M	300µS	600µS
		L	30µS	60µS
	Accuracy of setting *7	H,M,L	±(0.5% of set *8 + 0.5% of f.s.*2) + Vin/150k	
Constant Voltage (CV) mode	Operating range	H	0.3V to 30V	
		L	0.3V to 4V	
	Setting range	H	0V to 31.5V	
		L	0V to 4.2V	
	Resolution	H	2mV	
		L	200µV	
	Accuracy of setting		±(0.1% of set + 0.1% of f.s.)	
	Input current variation *9		12mV	
Constant Power (CP) mode	Operating range	H	16.5W to 165W	33W to 330W
		M	1.65W to 16.5W	3.3W to 33W
		L	0.165W to 1.65W	0.33W to 3.3W
	Setting range	H	0W to 173.25W	0W to 346.5W
		M	0W to 17.325W	0W to 34.65W
		L	0W to 1.7325W	0W to 3.465W
	Resolution	H	10mW	20mW
		M	1mW	2mW
		L	0.1mW	0.2mW
	Accuracy of setting	H,M,L	±(2.5% of f.s. *2)	
Voltmeter	Display	H	0.000V to 30.000V	
		L	0.0000V to 4.0000V	
	Accuracy		± (0.1% of rdg + 0.1% of f.s.)	
Ammeter	Display	H,M	0.000A to 50.000A	0.00A to 100.00A
		L	0.00mA to 500.00mA	0.0000A to 1.0000A
	Accuracy		± (0.2% of rdg + 0.3% of f.s.)	
Wattmeter	Display	H,M	0.00W to 165.00W	0.00W to 330.00W
		L*15	0.000W to 15.000W	0.000W to 30.000W
		L*16	0.0000W to 1.6500W	0.0000W to 3.3000W
Switching mode	Operation mode		CC/CR mode	
	Selectable frequency range		1Hz to 50kHz	
	Duty cycle setting		5% to 95% 1% step *10	
	Accuracy of frequency setting		±(0.5% of set)	
Slew rate	Selectable range (CC)	H	2.5mA/µs to 25A/µs	5mA/µs to 50A/µs
		M	250µA/µs to 2.5A/µs	500µA/µs to 5A/µs
		L	25µA/µs to 250mA/µs	50µA/µs to 500mA/µs
	Accuracy of setting *11		±(10% of set + 0.8µs)	
Soft start	Operation mode		CC mode	
	Selectable time range *12		Off, 100µs, 200µs, 500µs, 1000µs, 2ms, 5ms,10ms,20ms	
	Accuracy of setting		±(30% of set + 10µs)	
Response	Response speed		NORMAL, FAST	
Remote sensing	Sensing voltage that can be compensated		3 V for a single line	
Protection function	Overvoltage protection (OVP)		Turns off the load at 115 % of the rated voltage	
	Overcurrent protection (OCP)		Setting range 10% to 110% of the rated current Load off or limit selectable	
	Overpower protection (OPP)		Setting range 10% to 110% of the rated power Load off or limit selectable	
	Overheat protection (OHP)		Turns off the load when the heat sink temperature reaches 90 °C	
	Undervoltage protection (UVP)		Turns off the load when detected. Can be set in the range of 0.3 V to 30 V	
	Reverse connection protection (REV)		By diode and fuse. Turns off the load when an alarm occurs.	

model			PLZ164WL	PLZ334WL
Sequence function	Normal sequence			
	Operation mode		CC, CR, CV, CP	
	Maximum number of steps		256	
	Step execution time		1ms to 999h 59min	
	Resolution		1ms, 100ms, 1s, 10s, 1min	
	Fast sequence			
	Operation mode		CC, CR	
	Maximum number of steps		1024	
	Step execution time		25µs to 100ms	
	Resolution		25µs (25µs to 100µs)	
			100µs(100µs to 100ms)	
Other functions	Elapsed time display		Measures the time from load on to load off. On/Off selectable. Measures from 1 s up to 999 h 59 min 59 s.	
	Auto load off timer		Measures the time from load on to load off. Can be set in the range of 1 s to 999 h 59 min 59 s or off.	
Input /Output signal	J1 connector		26-pin MIL connector	
		EXT cont MODE	CC/CR/CP External Voltage Control, 0 to 100% of the rating of Range by 0 to 10V	
		EXT cont ADD	CC mode External Voltage Control, 0 to 100% of the Local setting value of the rating Range by 0 to ±10V, Adding up the value to the setting value of ExtCont.	
		EXT cont CV	CV mode External Voltage Control, 0 to 100% of the rating of Range by 0 to 10V	
		IMON	Current monitor output, 10Vf.s. (H/L range), 1Vf.s. (M range)	
		LOAD CONT INPUT	CMOS signal L level (or H level) Load On, Switchable to the logic level	
		RANGE CONT	External range switch input, 2 bit	
		ALARM INPUT	The alarm activates when the L level of CMOS signal is applied for more than 10µs. The internal circuit pulls up to 5V by 10kΩ	
		TRIG INPUT	When it is in the pause condition, the pause can be cancelled when the L level of CMOS signal is applied for more than 10µs. The internal circuit pulls up to 5V by 10kΩ	
		ALARM CLEAR INPUT	The alarm can be cleared when the L level of CMOS signal is applied for more than 100ms. The internal circuit pulls up to 5V by 10kΩ	
		LOAD ON STATUS	On when the load is on. Open collector by the photo coupler	
		RANGE STATUS	Range status output. 2bit	
		ALARM STATUS	On when the alarm is on(OVP、OCP、OPP、OHP、REV、UVP) or Turns on when the external alarm is applied	
		SHORT SIGNAL OUT	Relay contact output (DC30V/1A)	
	Front panel BNC connector			
		TRIG OUT	Outputs a pulse during sequence operation and switching operation.	
		IMON OUT	1V f.s(H/L range), 0.1V f.s(M range)Isolated to the internal common(connected to the chassis potential)	
Communication function	GPIB, RS-232C, and USB interfaces are equipped as standard.			
General Specifications	Input voltage range		100V AC to 240V AC (90V AC to 250V AC), Single phase	
	Input frequency range		47Hz to 63Hz	
	Power consumption		95VAmax	
	Inrush current *13		65Amax	
	Operating temperature range		0°C to 40°C	
	Operating humidity range		20% to 85% RH (without condensation)	
	Storage temperature range		-20°C to 70°C	
	Storage humidity range		90% RH or less (without condensation)	
	Isolation voltage		±500V	
	Insulation resistance	Primary - input terminal	500 VDC, 30 M or more (ambient humidity of 70% RH or less)	
		Primary - chassis	500 VDC, 30 M or more (ambient humidity of 70% RH or less)	
		Input terminal- chassis	500 VDC, 30 M or more(ambient humidity of 70% RH or less)	
	Withstand voltage	Primary - input terminal	No abnormalities at 1500 VAC for 1 minute.	
		Primary - chassis	No abnormalities at 1500 VAC for 1 minute.	
	Accessories		Setup guide×1pc.(Japanese,English),Quick reference(Japanese:1pc.,Englesh:1pc.),CD-ROM,Power cord×1pc.,Set of screws for the load input terminal×2sets(M8 bolts,nuts,and spring washers),Load input terminal cover×1piece,Screws for the Input terminal cover:2pcs.,Protection dummy plug for J1 terminal:1pc.,Connecting cable to the chassis:1pc.	
	Safety *14		Conforms to the requirements of the following directive and standard. Low Voltage Directive 2006/96/EC, EN61010-1:2001 Class I Pollution degree 2	
	Weight		Approx. 6.5kg	Approx. 8.0kg
	Dimensions (Max.)		214.5(8.45")W×124(155)(4.88")H×400(455)(15.75")Dmm	

▲ Rear panel
(Not available for the load input terminal on the rear panel)

*1 Minimum voltage at which the current starts flowing to the electronic load. At the load input terminal.
*2 In the M range, it applies for the full scale of the H range
*3 Vin : Input terminal voltage or the sensing voltage of the electronic load.
*4 When the input voltage is varied from 0.3V to 30V at a current of the rated power/30V
*5 Measurement frequency bandwidth : 10 Hz to 1MHz
*6 Measurement frequency bandwidth : 10 Hz to 20MHz
*7 Conversion rate of the input current. At the sensing terminal.
*8 set=Vin/Rset
*9 With respect to a change in the current of 10% to 100% of the rating at an input voltage of 0.3V (during remote sensing)
*10 The minimum time width is 2µs. Between 5kHz to 50kHz, the maximum duty cycle is limited by the minimum time width.
*11 Time to reach from 10% to 90% when the current is varied from 2% to 100% (20% to 100% in M range)
*12 Time to reach from 10% to 90% of the input current
*13 Approximately 35A for the input voltage of AC100 V
*14 This product is categorized in the "Class I".
The protective conductor terminal of this product must be connected to the ground.
The safety can not be guaranteed when it is not connected to the ground properly.
*15 In a mode other than CP mode
*16 In CP mode

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