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Programmable DC Electronic Load



Product No : TPL600W

Product Description

TPL8613 series is high performance programmable DC electronic load. Four basic functions and nine basic operation modes provides sufficient solutions wherever power sources need to be tested. Especially unique CPV and CPC modes greatly improved the functionality of constant power operation. The strong List Mode function, with Min. step 10ms and Max. step 99999s, allows users to set numbers of cycles at free and to link to other lists, facilitating complicated tests. Equipped with RS-232 interface for PC control, SCPI commands and Labview development platform, the TPL series is designed to provide high reliability, great performance and easy operation in research and production of aerospace, ship building, auto electronics, solar battery, fuel cell, etc.

- ★ 4 basic functions: CC, CV, CR, CP
- ★ 9 basic operation modes: CCL, CCH, CVL, CVH, CRL, CRM, CRH, CPV, CPC
- ★ 24-bit A/D converter and 16-bit D/A converter, 40kHz D/A conversion speed, high resolution & high speed
- ★ Hardware circuit for CR function, faster transient response and higher CR accuracy
- ★ Over load, over voltage, over current, over temperature and reverse voltage protections
- ★ High speed transient test function, max. test frequency 2kHz
- ★ List Mode function, Min. step 10ms, Max. step 99999s, free to set numbers of cycles, to be linked to other lists
- ★ Auxiliary function: short circuit test, battery discharge capacity test
- ★ Intelligent cooling system, ensure high stability during long-time operation under full load
- ★ Auto ON/OFF function
- ★ Rotary dial and digital keypad input
- ★ Save & recall function for frequently used setups
- ★ Standard RS-232 interface, optional USB interface
- ★ Support SCPI commands, support Labview

Model	8613C2	8613C3	8613C4	8613B2
Rated input (0°C~40°C)				
Voltage	0~150V	0~150V	0~150V	0~500V
Current	1mA~30A	1mA~60A	1mA~120A	1mA~30A
Power	600W	600W	600W	600W
MOV@FS current	0.75V	0.9V	1.6V	4.2V
Constant voltage mode (CV)				
Low range	0.1~30V	0.1~30V	0.1~30V	0.1~30V
Resolution	1mV	1mV	1mV	1mV
Accuracy	$\pm(0.05\%+0.02\%FS)$	$\pm(0.05\%+0.02\%FS)$	$\pm(0.05\%+0.02\%FS)$	$\pm(0.05\%+0.02\%FS)$
High range	0.1~150V	0.1~150V	0.1~150V	0.1~500V
Resolution	10mV	10mV	10mV	10mV
Accuracy	$\pm(0.05\%+0.025\%FS)$	$\pm(0.05\%+0.025\%FS)$	$\pm(0.05\%+0.025\%FS)$	$\pm(0.05\%+0.025\%FS)$
Constant current mode (CC)				
Low range	0~3A	0~6A	0~12A	0~3A
Resolution	1mA	1mA	1mA	1mA
Accuracy	$\pm(0.1\%+0.1\%FS)$	$\pm(0.1\%+0.1\%FS)$	$\pm(0.1\%+0.1\%FS)$	$\pm(0.1\%+0.1\%FS)$
High range	0~30A	0~60A	0~120A	0~30A
Resolution	10mA	10mA	10mA	10mA
Accuracy	$\pm(0.1\%+0.15\%FS)$	$\pm(0.1\%+0.15\%FS)$	$\pm(0.1\%+0.15\%FS)$	$\pm(0.1\%+0.15\%FS)$
Constant resistance mode (CR) (Input voltage /current\geq10%FS)				
Low range (VH CRL)	$\approx 0.03\sim 6\Omega$	$\approx 0.02\sim 3\Omega$	$\approx 0.015\sim 1.5\Omega$	$\approx 0.15\sim 18\Omega$
Resolution	100u Ω	50u Ω	25u Ω	300u Ω
Accuracy (Impedance)	$\pm(1\%+0.5\%FS)$	$\pm(1\%+0.5\%FS)$	$\pm(1\%+0.5\%FS)$	$\pm(2.5\%+2.5\%FS)$
Middle range (VH CRM)	$\approx 6\sim 600\Omega$	$\approx 3\sim 300\Omega$	$\approx 1.5\sim 150\Omega$	$\approx 18\sim 1800\Omega$
Resolution	2.7us	5.4us	10us	0.90us
Accuracy (Conductance)	$\pm(1\%+0.5\%FS)$	$\pm(1\%+0.5\%FS)$	$\pm(1\%+0.5\%FS)$	$\pm(5\%+2.5\%FS)$
High range (VH CRH)	$\approx 60\sim 4000\Omega$	$\approx 30\sim 4000\Omega$	$\approx 150\sim 4000\Omega$	$\approx 180\sim 4000\Omega$
Resolution	0.30us	0.20us	1.2us	0.10us
Accuracy (Conductance)	$\pm(5\%+5\%FS)$	$\pm(5\%+5\%FS)$	$\pm(5\%+5\%FS)$	$\pm(5\%+5\%FS)$

Low range (VL CRL)		≈0.025~1.12Ω	≈0.02~0.6Ω	≈0.015~0.3Ω	≈0.15~1.2Ω
Resolution		18uΩ	9.6uΩ	4.8uΩ	19uΩ
Accuracy (Impedance)		±(1%+0.5%FS)	±(1%+0.5%FS)	±(1%+0.5%FS)	±(2.5%+2.5%FS)
Medium range (VL CRM)		≈1.12~112Ω	≈0.6~60Ω	≈0.3~30Ω	≈1.2~120Ω
Resolution		15us	27us	54us	14us
Accuracy (Conductance)		±(5%+2.5%FS)	±(5%+2.5%FS)	±(5%+2.5%FS)	±(5%+2.5%FS)
High range (VL CRH)		≈11.2~2000Ω	≈6.0~2000Ω	≈3.0~2000Ω	≈12~2000Ω
Resolution		1.6us	3.0us	6.1us	1.5us
Accuracy (Conductance)		±(5%+2.5%FS)	±(5%+2.5%FS)	±(5%+2.5%FS)	±(5%+2.5%FS)
Constant power mode (CP) (Input voltage /current≥10%FS)					
Range		0~600W	0~600W	0~600W	0~600W
Resolution	P<100W	1mW	1mW	1mW	1mW
	P≥100W	10mW	10mW	10mW	10mW
Accuracy		±(1%+0.1%FS)	±(1%+0.1%FS)	±(1%+0.1%FS)	±(1%+0.1%FS)
Rated input (0°C~40°C)					
Voltage		0~150V	0~150V	0~150V	0~500V
Current		1mA~30A	1mA~60A	1mA~120A	1mA~30A
Power		600W	600W	600W	600W
Voltage measurement					
Low range		0~30V	0~30V	0~30V	0~30V
Resolution		1mV	1mV	1mV	1mV
Accuracy		±(0.05%+0.02%FS)	±(0.05%+0.02%FS)	±(0.05%+0.02%FS)	±(0.05%+0.02%FS)
High range		0~150V	0~150V	0~150V	0~500V
Resolution		10mV	10mV	10mV	10mV
Accuracy		±(0.05%+0.025%FS)	±(0.05%+0.025%FS)	±(0.05%+0.025%FS)	±(0.05%+0.025%FS)
Current measurement					
Low range		0~3A	0~6A	0~12A	0~3A
Resolution		1mA	1mA	1mA	1mA
Accuracy		±(0.1%+0.1%FS)	±(0.1%+0.1%FS)	±(0.1%+0.1%FS)	±(0.1%+0.1%FS)

High range		0~30A	0~60A	0~120A	0~30A
Resolution		1mA	1mA	10mA	1mA
Accuracy		$\pm(0.1\%+0.15\%FS)$	$\pm(0.1\%+0.15\%FS)$	$\pm(0.1\%+0.15\%FS)$	$\pm(0.1\%+0.15\%FS)$
Power measurement (Input voltage /current\geq10%FS)					
Range		0~600W	0~600W	0~600W	0~600W
Resolution	P<100W	1mW	1mW	1mW	1mW
	P \geq 100W	100mW	100mW	100mW	100mW
Accuracy		$\pm(1\%+0.1\%FS)$	$\pm(1\%+0.1\%FS)$	$\pm(1\%+0.1\%FS)$	$\pm(1\%+0.1\%FS)$
Current slew rate					
Range	CCH (/us)	0.1mA ~1.5A	0.1mA ~3A	0.1mA ~6A	0.1mA ~1.5A
	CCL (/us)	0.1mA ~0.15A	0.1mA ~0.33A	0.1mA ~0.6A	0.1mA ~0.15A
Resolution		0.1mA/us	0.1mA/us	0.1mA/us	0.1mA/us
Accuracy		3%+10us	3%+10us	3%+10us	3%+10us
Battery discharge					
Discharge time		1s~100h	1s~100h	1s~100h	1s~100h
Resolution		1s	1s	1s	1s
Accuracy		0.2%+1s	0.2%+1s	0.2%+1s	0.2%+1s
Battery capacity		3000Ah	6000Ah	12000Ah	3000Ah
Resolution		1mAh	1mAh	1mAh	1mAh
Accuracy		0.3%+0.01Ah	0.3%+0.01Ah	0.3%+0.01Ah	0.3%+0.01Ah
Discharge voltage range		0.1V~150V	0.1V~150V	0.1V~150V	0.1V~150V
Discharge current resolution		10mA	10mA	10mA	10mA
Short circuit					
CCL		3.6A	7.2A	14.6A	3.6A
CCH		33A	66A	132A	33A
CV		0V	0V	0V	0V
VH CRL		0.025 Ω	0.015 Ω	0.013 Ω	0.13 Ω
VH CRM		5.6 Ω	2.8 Ω	1.4 Ω	16 Ω
VH CRH		58 Ω	29 Ω	15 Ω	160 Ω
VL CRL		0.024 Ω	0.015 Ω	0.013 Ω	0.13 Ω
VL CRM		1.1 Ω	0.53 Ω	0.26 Ω	1.0 Ω

VL CRH	10Ω	5.3Ω	2.4Ω	10Ω
CPV	630W	630W	630W	630W
CPC	0W	0W	0W	0W
Rated input (0°C~40°C)				
Voltage	0~150V	0~150V	0~150V	0~500V
Current	1mA~30A	1mA~60A	1mA~120A	1mA~30A
Power	600W	600W	600W	600W
Max. slew rate				
Current	1.5A /us	3A /us	6A /us	0.75A /us
Voltage	0.2V/us	0.2V/us	0.2V/us	0.02V/us
Open circuit	≥20kΩ	≥20kΩ	≥20kΩ	≥20kΩ
Max. input level				
Current	33A	66A	132A	33A
Voltage	175V	175V	175V	550V
Ripple&Noise				
Current (rms/p-p)	3mA/30mA	6mA/60mA	12mA/120mA	5mA/50mA
Voltage (rms)	5mV	5mV	5mV	5mV
Transient operation				
Transient mode	Continuous, Pulse, Toggled			
Frequency range	0.01Hz~2kHz			
High/Low time	0~99999ms			
Resolution	250us			
Accuracy	0.2%+10us			
Rising/Falling time	250us~99999ms			
Resolution	250us			
Accuracy	0.2%+10us			
List Mode				
Step time	10ms~99999s			
Resolution	10ms			
Accuracy	0.2%+10us			
No. of step	1~50			
Cycle	0~65535			
Storage	8 Lists			
Expanded function	Chain			
Trigger input				

Trigger level	TTL falling edge			
Trigger width	pulse	≥20us		
General				
Protection	Over current, over voltage, over power, over temperature and reverse polarity protections			
Programming interface	USB or RS-232 interface, support SCPI commands, support Labview			
Operating environment	0°C~40°C, ≤85%RH			
Storage environment	-10°C~70°C, ≤70%RH			
Power source	AC110V/220V±10% selectable, 50/60Hz			
Accessories	Power cord x1, Operation manual x1, RS-232 cable x1			
Dimension	215x89x507mm	215x89x507mm	215x89x507mm	215x89x507mm
Weight	9kg	9kg	9kg	9kg

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