# PROGRAMMABLE DC ELECTRONIC LOAD
150W/300W/600W

## PPL/TPL SERIES

USB | RS-232 | Remote Sense | Labview | CE

### ► Introduction

PPL and TPL series are 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 PPL/TPL series are 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.

### ► Features

- 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
- High speed transient test function, max. test frequency 2kHz
- Over current, over voltage, over power, over temperature and reverse voltage protections
- 4.3-inch backlit Segment LCD display for PPL series and 122x32 backlit LCD display for TPL series
- High speed rotary dial and keypad input
- Auto ON/OFF function
- List Mode function, step 10ms-99999s, free to set numbers of cycles and to be linked to other lists
- Auxiliary functions: short circuit test, battery discharge capacity test
- Save & recall function for frequently used setups
- Intelligent cooling system, ensure high stability during long-time operation under full load
- Standard RS-232 interface, support SCPI commands, support Labview
- Optional RS-232 to USB cable

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## 150W/300W/600W

## ► Specifications

| | | | |
|---|---|---|---|
| Constant voltage mode (CV) | | | |
| Resolution | Low range | 1mV | 0.1~30V |
| | High range | 10mV | 0.10~FS |
| Accuracy | Low range | ±(0.05%+0.02%FS) | 0.1~30V |
| | High range | ±(0.05%+0.025%FS) | 0.10~FS |
| Constant current mode (CC) | | | |
| Resolution | Low range | 1mA | 0~10%FS |
| | High range | 10mA | 0~FS |
| Accuracy | Low range | ±(0.1%+0.1%FS) | 0~10%FS |
| | High range | ±(0.1%+0.15%FS) | 0~FS |
| Constant resistance mode (CR) (Input voltage /current≥10%FS) | | | |
| Range | VH | ≈0.015~4000Ω | |
| | VL | ≈0.015~2000Ω | |
| Constant power mode (CP) (Input voltage /current≥10%FS) | | | |
| Resolution | P<100W | 1mW | |
| | P≥100W | 10mW | |
| Accuracy | | ±(1%+0.1%FS) | |
| Voltage measurement | | | |
| Resolution | Low range | 1mV | 0~30V |
| | High range | 10mV | 0~FS |
| Accuracy | Low range | ±(0.05%+0.02%FS) | 0~30V |
| | High range | ±(0.05%+0.025%FS) | 0~FS |
| Current measurement | | | |
| Resolution | Low range | 1mA | 0~10%FS |
| | High range | 1mA | 0~FS<100A |
| | | 10mA | 0~FS≥100A |
| Accuracy | Low range | ±(0.1%+0.1%FS) | 0~10%FS |
| | High range | ±(0.1%+0.15%FS) | 0~FS |
| Power measurement (Input voltage /current≥10%FS) | | | |
| Resolution | P<100W | 1mW | |
| | P≥100W | 8610: 100mW | 8611: 10mW |
| | | 8612: 10mW | 8613: 100mW |
| Accuracy | | 1%+0.1%FS | |
| Current slew rate | | | |
| Range | CCH ( /us) | 0.1mA ~5%FS | |
| | CCL ( /us) | 0.1mA ~0.5%FS | |
| Resolution | | 0.1mA/us | |
| Accuracy | | 3%+10us | |
| Battery discharge | | | |
| Discharge time | | 1s~100h | |
| Battery capacity | | 100h x Imax. | |
| Discharge voltage range | | 0.1V~Vmax. | |

| | | | |
|---|---|---|---|
| Short circuit | | | |
| CCL | | 12%FS | |
| CCH | | 110%FS | |
| CV | | 0V | |
| CR | VH | ≈0.013~310Ω | |
| | VL | ≈0.015~20Ω | |
| CPV | | 105%FS | |
| CPC | | 0W | |
| Max. slew rate | | | |
| Current | | 5%FS /us | |
| Voltage | | 0.2V/us | FS=150V |
| | | 0.02V/us | FS=500V |
| Open circuit | | ≥20kΩ | |
| Max. input level | | | |
| Current | | 110%FS | |
| Voltage | | 110%FS | |
| Transient operation | | | |
| Transient mode | | Continuous, Pulse, Toggled | |
| Frequency range | | 0.01Hz~2kHz | |
| High/Low time | | 0~99999ms | |
| Rising/Falling time | | 250us~99999ms | |
| Resolution | | 250us | |
| List Mode | | | |
| Step time | | 10ms~99999s | |
| No. of steps | | 1~50 | |
| No. of cycles | | 0~65535 | |
| Storage | | 8 Lists | |
| Expanded function | | Chain | |
| Trigger input | | | |
| Trigger level | | TTL falling edge | |
| Trigger pulse width | | ≥20us | |
| General | | | |
| Protection | | OCP, OVP, OPP, OTP and reverse voltage protections | |
| Interface | | RS-232 interface, support SCPI commands, support Labview | |
| | | Optional RS-232 to USB cable | |
| Operating environment | | 0℃~40℃, ≤85%RH | |
| Storage environment | | -10℃~70℃, ≤70%RH | |
| Power source | | AC110V/220V±10% selectable, 50/60Hz | |
| Accessories | | Power cord x1, Operation manual x1, | |

## ► Selection Guide

| Model | 8610C | 8611C2 | 8612C2 | 8612C3 | 8612B1 | 8613C2 | 8613C3 | 8613C4 | 8613B2 |
|---|---|---|---|---|---|---|---|---|---|
| Rated input (0℃~40℃) | | | | | | | | | |
| Voltage | 0~150V | 0~150V | 0~150V | 0~150V | 0~500V | 0~150V | 0~150V | 0~150V | 0~500V |
| Current | 1mA~20A | 1mA~30A | 1mA~30A | 1mA~60A | 1mA~15A | 1mA~30A | 1mA~60A | 1mA~120A | 1mA~30A |
| Power | 150W | 150W | 300W | 300W | 300W | 600W | 600W | 600W | 600W |
| MOV@FS current | 1.0V | 1.5V | 0.82V | 1.2V | 3.8V | 0.75V | 0.9V | 1.6V | 4.2V |
| Ripple & Noise | | | | | | | | | |
| Current (rms/p-p) | 3mA/30mA | 3mA/30mA | 3mA/30mA | 6mA/60mA | 5mA/50mA | 3mA/30mA | 6mA/60mA | 12mA/120mA | 5mA/50mA |
| Voltage (rms) | 5mV | 5mV | 5mV | 5mV | 5mV | 5mV | 5mV | 5mV | 5mV |
| Dimension (WxHxD) | 215x89x412mm | | | | | 215x89x507mm | | | |
| Weight | 5.2kg | 5.2kg | 6.7kg | 6.7kg | 6.7kg | 9kg | 9kg | 9kg | 9kg |