# Z+ Series

## Programmable DC Power Supplies
## 200W/400W/600W/800W in 2U
## Built-in USB, RS-232 & RS-485 Interface

## Optional Interface:
## LAN
## IEEE488.2 SCPI (GPIB) Multi-Drop
## Isolated Analog Programming


TDK·Lambda

## Features Include:

- High Power Density 200W/400W/600W/800W in 2U: 3.5 Inch (89mm) height
- Wide Range Input (85-265Vac continuous)
- Active Power Factor Correction (0.99 typical)
- Output Voltage up to 100V, Current up to 72A
- Constant Voltage (CV)/(CC) Constant Current auto-crossover
- Built-in RS-232/RS-485 Interface Standard
- Global Commands for Serial RS-232/RS-485 Interface
- Auto-Re-Start / Safe-Start: user selectable
- Last-Setting Memory
- High Resolution 16 bit ADCs & DACs
- Low Ripple & Noise
- Front Panel Lock selectable from Front Panel or Software
- Reliable Encoders for Voltage and Current adjustment
- Parallel Operation with Active Current Sharing, for up to six identical units
- Advanced Parallel Master / Slave. Total Current is programmed and measured via the Master
- External Analog Programming and Monitoring (user selectable 0-5V & 0-10V)
- Reliable Modular and SMT Design
- 19" Rack Mount Capability for ATE and OEM applications
- Optional Interfaces
  Isolated Analog Programming and Monitoring Interface (0-5V/0-10V & 4-20mA)
  IEEE 488.2 SCPI (GPIB) Multi-Drop
  LAN
  LabView® and LabWindows® drivers
- Arbitrary functions for:
  Automotive or laser simulation / 4 Pre-Programmed Functions
- Fast Command Processing Time
- Output Sequencing
- Four-cell Memory Settings
- User Programmable Signal Pins

- Five Year Warranty
- Worldwide Safety Agency Approvals; CE Mark for LVD and EMC regulations

# Front Panel Description

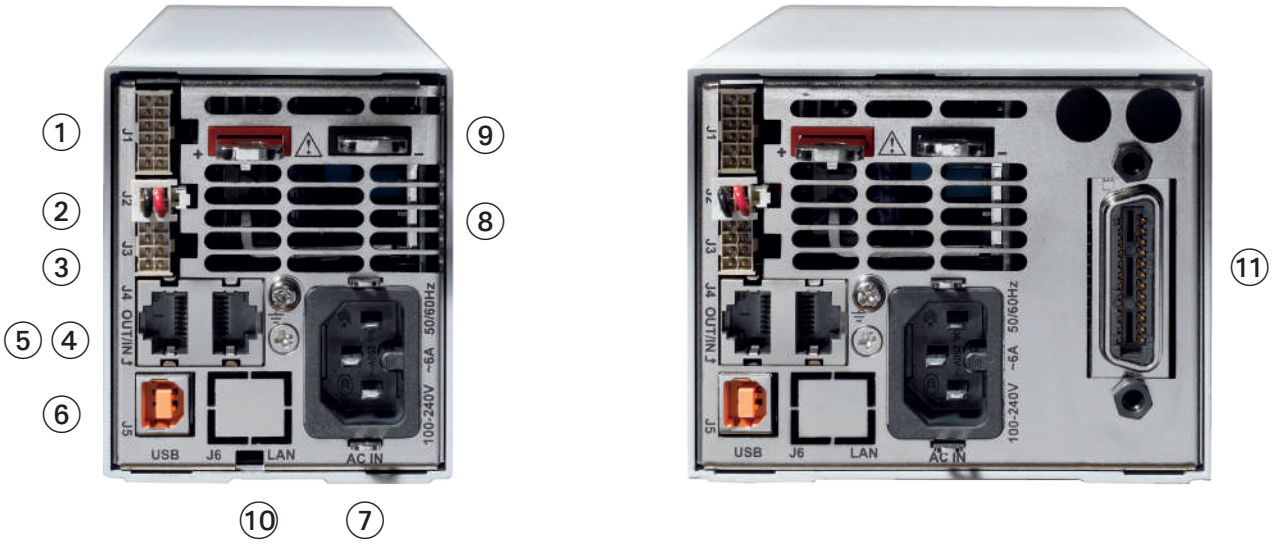

1. AC ON/OFF Switch
2. Air Intake allows zero stacking for maximum system flexibility and power density.*
3. Reliable encoder controls Output Voltage and power supply setting.
4. Volt Display shows Output Voltage and directly displays and power supply settings.
5. Reliable encoder controls Output Current, and power supply setting.
6. Current Display shows Output Current and power supply setting.
7. Function/Status LEDs:

- Alarm
- Fine Control
- Preview Settings
- Foldback Mode
- Remote Mode
- Output On

8. Pushbuttons allow flexible user configuration
   - Coarse and Fine adjustment of Output Voltage/Current and Advanced Parallel Master or Slave
   - Preview settings and set Voltage/Current with Output OFF, Front Panel Lockout
   - Set OVP, UVP, UVL Limits
   - Set Current Foldback
   - Local/Remote Mode and select Address and Baud Rate
   - Output ON/OFF and Auto-Start/Safe-Start Mode
   - Menu
9. Optional front panel output jacks (binding post style, Ø 4mm) for modules up to 60V: 24A Max
10. Optional front panel insulated output sockets (Ø 4mm) for modules up to 60V: 24A Max

* Zero stacking - side-by-side mounting of 6 units in a 19" Rack

# Rear Panel Description




1. Connector allows (Non-isolated) Analog Program and Monitor and other functions.
2. Remote/Local Output Voltage Sense Connections.
3. Signal Connector
4. RS-232/RS-485 INPUT Remote Serial Programming.
5. RS-485 OUTPUT to other $Z^{+}$ Power Supplies.
6. USB Interface
7. Wide-Range Input 85-265VAC continuous, 47/63Hz with Active Power Factor Correction (0.99 typical) AC Input Connector: IEC320 -C16.
8. Exhaust air exits at the back. Allows vertical stacking of units without any separation between units
9. Output Connections: Rugged Busbars for 6V up to 100V.
10. Optional Interface Position for LAN Interface.
11. Optional Interface Position for GPIB Interface (shown) or Isolated Analog Interface.

## Power Benchtop Parallel and Series Configurations

**Benchtop Power Supply**

Parallel operation - Master/Slave:

Active current sharing allows up to six identical units to be connected in an auto-parallel configuration for six times the output power.

In Advanced Parallel Master/Slave Mode, total current is programmed and reported by the Master, Up to six supplies act as one.

**Series operation**

Up to two units may be connected in series to increase the output voltage or to provide bipolar output.

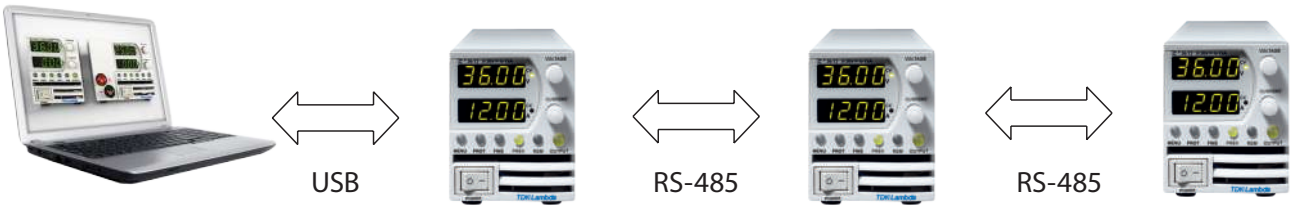
## Remote Programming via Built-in USB, RS-232 & RS-485 Interface

Standard Serial Interface allows daisy chain control of up to 31 power supplies on the same bus with built-in RS-232 & RS-485 Interface.

## Optional Interface: LAN & IEEE488.2 SCPI (GPIB)

**Multi-Drop**

Allows LAN/IEEE Master to control up to 31 slaves over RS-485 daisy-chain
Only the Master needs be equipped with LAN/IEEE Interface



## Applications

Z+ series power supplies have been designed to meet the demands of a wide variety of applications.

**Test and Measurement**

Built-in Last-Setting memory based on Flash Memory no battery or capacitor backup. Simplifies test design and requirements.

Built-in RS-232/RS-485 gives maximum system flexibility along with 0-5V and 0-10V, selectable analog programming.

Wide range of available inputs allows testing of many different devices.

**Semiconductor Burn-in**

Safe-Start mode ENABLED - to re-start at Output OFF to protect load.

Wide range input (85-265Vac) with Active Power Factor correction rides through input transients easily.

**Component Test**

High power density, zero stacking and single wire parallel operation, give maximum system flexibility.

**Laser Diode**

OVP is directly set on Voltage Display, assuring accurate protection settings.

Fast Constant Current response, no over shoot. Current Limit Fold Back assures load is protected from current surges.

**Heater Supplies**

Smooth, reliable encoders enhance front panel control.

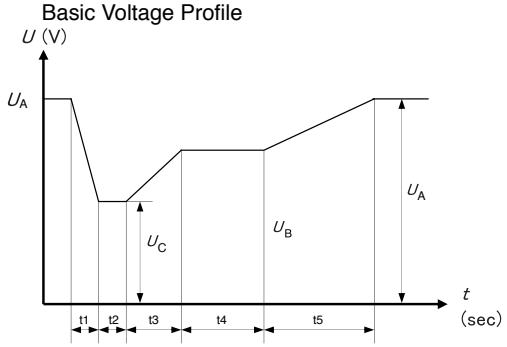
Remote analog programming is user selectable 0-5V or 0-10V.

**RF Amplifiers and Magnets**

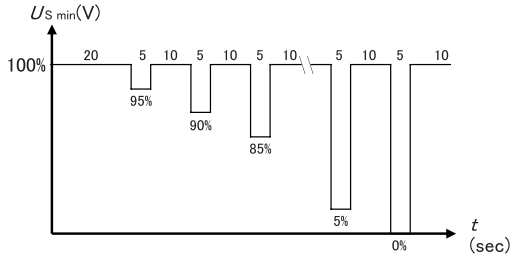
Robust design assures stable operation under a wide variety of loads. High linearity in Voltage & Current mode.

## Z+ Series Sequence Programming Applications

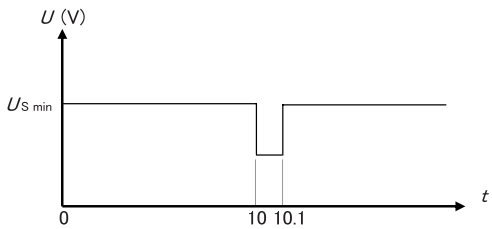
Basic Voltage Profile




Reset behaviour at voltage drop




Discontinuities in supply voltage
Momentary drop in supply voltage



## Options: (200W/400W/600W/800W)

**Front Panel Output**

Up to 60V Output Module

P/N: Z_ _ - _ _ - L

P/N: Z_ _ - _ _ - L2

Optional front panel output jacks (binding post style, (Ø 4mm) for modules up to 60V: 24A Max -L

Optional front panel insulated output sockets (Ø 4mm) for modules up to 60V: 24A Max -L2

**$Z^+$ Assemblies**

Dual Output Housing (for 105mm) 200W/400W/600W/800W

Triple Output Housing (for 70mm) 200W/400W/600W/800W

P/N: Z-NL200 (same p/n for both Dual & Triple Output Housing)

## 19" Rack Mounted to 4.8kW

Six units (70mm) can be assembled into 19-Inch rack/2U high
Four units (105mm) can be assembled into 19-Inch rack/2U high
to meet your configuration requirements.
In cases where the entire rack is not occupied with power units,
P/N: Z-BP for 70mm, P/N: Z-WBP for 105mm blank panels can be installed:
**P/N: Z-NL100**

**Power Modules Table**

| Module Type | 200W | 400W | 600W | 800W |
|---|---|---|---|---|
| 0~10V | 20A | 40A | 60A | 72A |
| 0~20V | 10A | 20A | 30A | 40A |
| 0~36V | 6A | 12A | 18A | 24A |
| 0~60V | 3.5A | 7A | 10A | 14A |
| 0~100V | 2A | 4A | 6A | 8A |
| 19" rack width | 1/6 width | 1/6 width | 1/6 width | 1/6 width |
| 19" rack width | 1/4 width | 1/4 width | 1/4 width | 1/4 width |

1/6 width

1/4 width

## Programming Options (Factory Installed)

**Digital Programming via IEEE Interface** **P/N: IEEE**

- IEEE 488.2 SCPI Compliant
- Program Voltage
- Measure Voltage
- Over Voltage setting and shutdown
- Error and Status Messages
- Program Current
- Measure Current
- Current Foldback shutdown
- **Multi-Drop**
- Allows IEEE Master to control up to 31 slaves over RS-485 daisy-chain
- Only the Master needs be equipped with IEEE Interface

**Isolated Analog Programming**

Four Channels to Program and Monitor Voltage and Current.
Isolation allows operation with floating references in harsh electrical environments.
Choose between programming with Voltage or Current.
Connection via removable terminal block: Phoenix MC1,5/8-ST-3.81.

- Voltage Programming, user-selectable 0-5V or 0-10V signal. **P/N: IS510**
  Power Supply Voltage and Current Programming Accuracy ±1%
  Power Supply Voltage and Current Monitoring Accuracy ±1.5%
- Current Programming with 4-20mA signal. **P/N: IS420**
  Power Supply Voltage and Current Programming Accuracy ±1%
  Power Supply Voltage and Current Monitoring Accuracy ±1.5%

**LAN Interface** **P/N: LAN**

- VISA & SCPI Compatible
- Address Viewable on Front Panel
- Fixed and Dynamic Addressing
- Compatible with most standard Networks
- TCP / UDP Socket Programming
- LAN Fault Indicators
- Auto-detects LAN Cross-over Cable
- Fast Startup

## AC Cord

| Region | Europe | Japan | North America | Israel |
|---|---|---|---|---|
| Output Power | 850W | 850W | 850W | 850W |
| AC Cords | 10A/250Vac L=2m | 15A/125Vac L=2m | 13A/125Vac L=2m | 10A/250Vac L=2m |
| Wall Plug | INT'L 7/VII | JIS C8303 | NEMA 5-15P | SI-32 |
| Power Supply Connector | IEC320-C15 | IEC320-C15 | IEC320-C15 | IEC320-C15 |
| |  |  |  |  |
| Part Number | P/N: Z-E | P/N: Z-J | P/N : Z-U | P/N: Z-I |

## Communication Cable

RS-232/RS-485 Cable is used to connect the power supply to the PC Controller

| Mode | RS-485 | RS-232 |
|---|---|---|
| PC Connector | DB-9F | DB-9F |
| Communication Cable | Shield Ground L=2m | Shield Ground L=2m |
| Power Supply Connector | EIA/TIA-568A (RJ-45) | EIA/TIA-568A (RJ-45) |
| P/N | Z/485-9 | Z/232-9 |

## Serial Link Cable*

Daisy-chain up to 31 $Z^+$ Series power supplies.

| Mode | Power Supply Connector | Communication Cable | P/N |
|---|---|---|---|
| RS-485 | EIA/TIA-568A (RJ-45) | Shield Ground | Z/RJ45 |

* Included with power supply

## Power Supply Identification / Accessories
## How to order

| Z | 10 - | 40- | - | - | |
|---|---|---|---|---|---|
| Series Name | Output Voltage (0~10V) | Output Current (0~40A) | Factory Options: | Output Jacks | AC cord Options: Region : |
| | | | IEEE<br>LAN<br>IS510<br>IS420 | <br>L<br>L2 | E - Europe<br>J - Japan<br>U - North America<br>I - Middle East<br>C - China |

| **Factory option** | **P/N** |
|---|---|
| USB Interface built-in Standard | - |
| RS-232/RS-485 Interface built-in Standard | - |
| GPIB Interface | IEEE |
| Voltage Programming Isolated Analog Interface | IS510 |
| Current Programming Isolated Analog Interface | IS420 |
| LAN Interface | LAN |
| Front panel output jacks (binding post style, Ø 4mm) for modules up to 60V or 24A Max | L |
| Front panel insulated output sockets (Ø 4mm) for modules up to 60V or 24A Max | L2 |

| Model | Output Voltage (VDC) | Output Current (A) | Output Power (W) |
|---|---|---|---|
| Z10-20 | 0~10 VDC | 0~20 | 200 |
| Z10-40 | | 0~40 | 400 |
| Z10-60 | | 0~60 | 600 |
| Z10-72 | | 0~72 | 720 |
| Z20-10 | 0~20 VDC | 0~10 | 200 |
| Z20-20 | | 0~20 | 400 |
| Z20-30 | | 0~30 | 600 |
| Z20-40 | | 0~40 | 800 |
| Z36-6 | 0~36 VDC | 0~6 | 216 |
| Z36-12 | | 0~12 | 432 |
| Z36-18 | | 0~18 | 648 |
| Z36-24 | | 0~24 | 864 |
| Z60-3.5 | 0~60 VDC | 0~3.5 | 210 |
| Z60-7 | | 0~7 | 420 |
| Z60-10 | | 0~10 | 600 |
| Z60-14 | | 0~14 | 840 |
| Z100-2 | 0~100VDC | 0~2 | 200 |
| Z100-4 | | 0~4 | 400 |
| Z100-6 | | 0~6 | 600 |
| Z100-8 | | 0~8 | 800 |

# 2.1 Z+200 Series Specifications

| MODEL | Z | 10-20 | 20-10 | 36-6 | 60-3.5 | 100-2 |
|---|---|---|---|---|---|---|
| 1. Rated output voltage(*1) | V | 10 | 20 | 36 | 60 | 100 |
| 2. Rated output current (*2) | A | 20 | 10 | 6 | 3.5 | 2 |
| 3. Rated output power | W | 200 | 200 | 216 | 210 | 200 |

| CONSTANT VOLTAGE MODE | | Z | 10-20 | 20-10 | 36-6 | 60-3.5 | 100-2 |
|---|---|---|---|---|---|---|---|
| 1. Max. Line regulation (*6) | | --- | 0.01% of rated output voltage+2mV | | | | |
| 2. Max. Load regulation (*7) | | --- | 0.01% of rated output voltage+2mV | | | | |
| 3. Ripple and noise (p-p, 20MHz) (*8) | | mV | 50 | 50 | 50 | 50 | 80 |
| 4. Ripple r.m.s. 5Hz~1MHz | | mV | 5 | 6 | 6 | 7 | 8 |
| 5. Temperature coefficient | | PPM/°C | 30PPM/°C from rated output voltage, following 30 minutes warm-up. | | | | |
| 6. Temperature stability | | --- | 0.02% of rated Vout over 8hrs. interval following 30 minutes warm-up. Constant line, load & temp. | | | | |
| 7. Warm-up drift | | --- | Less than 0.05% of rated output voltage+2mV over 30 minutes following power on. | | | | |
| 8. Remote sense compensation/wire | | V | 1 | 1 | 2 | 3 | 5 |
| 9. Up-prog. Response time, 0~Vomax.(*9) | | mS | 15 | 30 | 30 | 50 | 50 |
| 10. Down-prog. response time: | Full load (*9) | mS | 12 | 25 | 30 | 40 | 50 |
| | Time delay (*17) | | 210 | 250 | 320 | 380 | 1200 |
| | No load (*10) (*15)(*17) | | 40 | 65 | 85 | 100 | 250 |
| | No load (*10) (*16)(*17) | | 200 | 200 | 290 | 310 | 1100 |
| 11. Transient response time | | mS | Time for output voltage to recover within 0.5% of its rated output for a load change 10~90% of rated output current. Output set-point: 10~100%, Local sense. Less than 1mS, for models up to and including 100V | | | | |
| 12. Hold-up time (*19) | | --- | 15mSec Typical. | 16mSec Typical. | | | |

| CONSTANT CURRENT MODE | Z | 10-20 | 20-10 | 36-6 | 60-3.5 | 100-2 |
|---|---|---|---|---|---|---|
| 1. Max. Line regulation (*6) | --- | 0.01% of rated output current+2mA | | | | |
| 2. Max. Load regulation (*11) | --- | 0.01% of rated output current+5mA | | | | |
| 3. Load regulation thermal drift | --- | Less than 0.05% of rated output current over 30 minutes following load change. | | | | |
| 4. Ripple r.m.s. 5Hz~1MHz (*12) | mA | 25 | 15 | 8 | 4 | 3 |
| 5. Temperature coefficient | PPM/°C | 100PPM/°C from rated output current, following 30 minutes warm-up. | | | | |
| 6. Temperature stability | --- | 0.05% of rated Iout over 8hrs. interval following 30 minutes warm-up. Constant line, load & temperature. | | | | |
| 7. Warm-up drift | --- | Less than +/-0.1% of rated output current over 30 minutes following power on. | | | | |

| PROTECTIVE FUNCTIONS | Z | 10-20 | 20-10 | 36-6 | 60-3.5 | 100-2 |
|---|---|---|---|---|---|---|
| 1. Foldback protection | --- | Output shut-down when power supply change mode from CV to CC or CC to CV. User presetable. Reset by AC input recycle in autostart mode or by OUTPUT button or by rear panel ENABLE, or by communication port. | | | | |
| 2. Over-voltage protection (OVP) | --- | Inverter Shut down method. Reset by AC input recycle in autostart mode or by OUTPUT button or by rear panel ENABLE, or by communication port. | | | | |
| 3. Over -voltage trip point | V | 0.5~12 | 1~24 | 2~40 | 5~66 | 5~110 |
| 4. Output under voltage limit (UVL) | --- | Preset by front panel or communication port. Prevents from adjusting Vout below limit. Does not affect in analog programming. | | | | |
| 5. Output under voltage protection (UVP) | --- | Output shut-down when power supply output voltage goes below UVP programming. User presetable. Reset by AC input recycle in autostart mode or by OUTPUT button or by rear panel ENABLE, or by communication port. | | | | |
| 6. Over temperature protection | --- | User selectable, latched or non latched. | | | | |

| ANALOG PROGRAMMING AND MONITORING | | |
|---|---|---|
| 1. Vout voltage programming | --- | 0~100%, 0~5V or 0~10V, user selectable. Accuracy and linearity: +/-0.5% of rated Vout. |
| 2. Iout voltage programming (*13) | --- | 0~100%, 0~5V or 0~10V, user selectable. Accuracy and linearity: +/-1% of rated Iout. |
| 3. Vout resistor programming | --- | 0~100%, 0~5/10Kohm full scale, user selectable. Accuracy and linearity: +/-1% of rated Vout. |
| 4. Iout resistor programming (*13) | --- | 0~100%, 0~5/10Kohm full scale, user selectable. Accuracy and linearity: +/-1.5% of rated Iout. |
| 5. Shut Off (SO) control | --- | By electrical Voltage: 0~0.6V/4~15V or dry contact, user selectable logic. |
| 6. Output current monitor (*13) | --- | 0~5V or 0~10V, user selectable. Accuracy: +/-1%. |
| 7. Output voltage monitor | --- | 0~5V or 0~10V, user selectable. Accuracy: +/-1%. |
| 8. Power supply OK signal | --- | 4~5V-OK, 0V-Fail. 500ohm series resistance. |
| 9. Parallel operation (*20) | --- | Possible, up to 6 units in master/slave mode with single wire current balance connection. |
| 10. Series operation | --- | 2 identical units (with external diodes). |
| 11. CV/CC indicator | --- | Open collector. CC mode: On, CV mode: Off. Maximum voltage: 30V, maximum sink current: 10mA |
| 12. Interlock (ILC) control | --- | Enables/Disables the PS output by dry contact (Short: On, Open: Off, Source current: less than 0.5mA). Ena/Dis is activated by front panel. |
| 13. Local/Remote mode Control | --- | By electrical signal or Open/Short: 0~0.6V or short: Remote, 2~15V or open: Local |
| 14. Local/Remote mode Indicator | --- | Open collector (shunted by 36V zener). On (0~0.6V, 10mA sink current max.)-Remote. Off-Local (30V max.). |
| 15.Trigger out | --- | Maximum low level output =0.8V, Minimum high level output =3.8V, Maximum high level output =5V, Maximum source current =16mA, pulse =20μs Typical. |
| 16.Trigger in | --- | Maximum low level input =1.2V, Minimum high level input =3.5V, Maximum high level input =5V, Maximum sink current =16mA, positive edge, trigger: tw =10μs minimum, Tr/Tf =1μs maximum. |
| 17. Programmed signal 1 | --- | Open collector, maximum voltage 25V,maximum sink current 100mA. (Shunted by 27V zener) |
| 18. Programmed signal 2 | --- | Open collector, maximum voltage 25V,maximum sink current 100mA. (Shunted by 27V zener) |

**FRONT PANEL**

| | | |
|---|---|---|
| 1. Control functions | --- | Multiple options with 2 Encoders |
| | --- | Vout/Iout manual adjust |
| | --- | OVP/UVL/UVP manual adjust |
| | --- | Protection Functions - OVP, UVL,UVP, Foldback, OCP, INT, SO |
| | --- | Communication Functions - Selection of LAN,IEEE,RS232,RS485,USB |
| | --- | Communication Functions - Selection of Baud Rate, Address |
| | --- | Analog Control Functions - Selection Voltage/resistive programming, 5V/10V, 5K/10K programming |
| | --- | Analog Control Functions - Selection of Voltage/Current Monitoring 5V/10V, Output ON/OFF, Front Panel Lock. |
| 2. Display | --- | Vout: 4 digits, accuracy: 0.5% of rated output voltage+/-1 count. |
| | --- | Iout: 4 digits, accuracy: 0.5% of rated output current+/-1 count. |
| 3. Indications | --- | GREEN LEDs: FINE, MENU, PREV, PROT, REM, OUTPUT, CV, CC |
| | --- | RED LED: PROT (OVP, UVP, OTP, FOLD, AC FAIL). |
| 4. Function buttons | --- | FINE, MENU, PREV, PROT, REM, OUTPUT |

**PROGRAMMING AND READBACK (RS232/485,USB, Optional: IEEE, LAN)**

| | | |
|---|---|---|
| 1. Vout programming accuracy | --- | 0.05% of rated output voltage |
| 2. Iout programming accuracy (*13) | --- | 0.1% of actual +0.1% of rated output current |
| 3. Vout programming resolution | --- | 0.012% of full scale |
| 4. Iout programming resolution | --- | 0.012% of full scale |
| 5. Vout readback accuracy | --- | 0.05% of rated output voltage |
| 6. Iout readback accuracy (*13) | --- | 0.1% of actual +0.3% of rated output current |
| 7. Vout readback resolution | --- | 0.012% of full scale |
| 8. Iout readback resolution | --- | 0.012% of full scale |

| INPUT CHARACTERISTICS | Z | 10-20 | 20-10 | 36-6 | 60-3.5 | 100-2 |
|---|---|---|---|---|---|---|
| 1. Input voltage/freq. (*3) | --- | 85~265Vac continuous, 47~63Hz, single phase | | | | |
| 2. Maximum Input current 100/200VAC (*4) (*18) | --- | 2.65/1.31 | 2.62/1.29 | 2.76/1.37 | 2.69/1.33 | 2.55/1.26 |
| 3. Power Factor (Typ) | --- | >0.99 at 100Vac, >0.98 at 200Vac,100% load | | | | |
| 4. Efficiency (Typ) 100/200VAC (*4) (*18) | % | 76/77.5 | 77/79 | 79/80.5 | 79/80.5 | 79/81 |
| 5. Inrush current 100/200VAC (*5) | --- | Less than 15A/30A | | | | |

**ENVIRONMENTAL CONDITIONS**

| | | |
|---|---|---|
| 1. Operating temperature | --- | 0~50°C, 100% load. |
| 2. Storage temperature | --- | -20~85°C |
| 3. Operating humidity | % | 20~90% RH (no condensation). |
| 4. Storage humidity | % | 10~95% RH (no condensation). |
| 5. Altitude | --- | Maximum 3000m. Derate ambient temp above 2000m.<br>Operating: Maximum ambient temperature, From 2000m up to 3000m Ambient temperature 40°C. |

**SAFETY/EMC**

| | | | |
|---|---|---|---|
| 1. Applicable standards: | Safety | --- | UL61010-1, EN61010-1, IEC61010-1. Design to meet UL60950-1, EN60950-1<br>10V≤Vout≤60V: Output,J1,J2,J3,J4,USB,LAN,IEEE/ISOLATED Analog are Non Hazardous<br>Vout=100V:Output,J1,J2 are Hazardous J3,J4,USB, IEEE/ISOLATED Analog ,LAN are Non Hazardous |
| | EMC | --- | IEC/EN61326-1 (Built to meet EN55022/EN55024) |
| 2. Withstand voltage | | --- | 10≤Vout≤36V models: Input-Output&J1,J2,J3,J4,USB,LAN/IEEE/ISOLATED ANALOG: 4242VDC/1min; Input-Ground: 2828VDC/1min.<br>Output&J1,J2,J3,J4,USB,LAN/IEEE/ISOLATED ANALOG-Ground: 707VDC/1min.<br>60V,100V models: Input-Output&J1,J2: 4242VDC/1min; Input-J3,J4,USB,LAN/IEEE/ISOLATED Analog: 4242VDC/1min; Input-Ground: 2828VDC/1min.<br>Output&J1,J2- J3,J4,USB,LAN/IEEE/ISOLATED ANALOG :1910VDC/1min; Output&J1,J2-Ground: 1380VDC/1min.<br>J3, J4, USB/LAN/IEEE/ISOLATED ANALOG - Ground: 707VDC/1min; |
| 3. Insulation resistance | | --- | More than 100Mohm at 25°C, 70%RH. |
| 4. Conducted emission | | --- | IEC/EN61326-1 Industrial Location - B, FCC part 15-B, VCCI-B |
| 5. Radiated emission | | --- | IEC/EN61326-1 Industrial Location - A, FCC part 15-A, VCCI-A |

**MECHANICAL**

| | | | |
|---|---|---|---|
| 1. Cooling | | --- | Forced air cooling by internal fan. |
| 2. Weight | STANDARD | Kg | Less than 1.9Kg. |
| | WIDE BODY | Kg | Less than 2.4Kg. Wide body with Isolated analog or Binding post or IEEE. |
| 3. Dimensions (WxHxD) | STANDARD | mm | H: 83, W: 70, D: 350 (excluding bus bars, handles…). (Refer to Outline drawing). |
| | WIDE BODY | mm | H: 83, W: 105, D: 350 (excluding bus bars, handles…). (Refer to Outline drawing). |
| 4. Vibration | | --- | According to: IEC60068-2-64 |
| 5. Shock | | --- | Less than 20G, half sine, 11mS. Unit is unpacked. According to: IEC60068-2-27 |

**NOTES:**

*1: Minimum voltage is guaranteed to maximum 0.1% of rated output voltage.
*2: Minimum current is guaranteed to maximum 0.2% of rated output current.
*3: For cases where conformance to various safety standards (UL, IEC, etc…) is required, to be described as 100-240Vac (50/60Hz).
*4: Ta=25°C with rated output power.
*5: Not including EMI filter inrush current, less than 0.2mSec at cold start Ta=25°C
*6: At 85~132Vac or 170~265VAC, constant load.
*7: From No-Load to Full-Load, constant input voltage. Measured at the sensing point in Remote Sense.
*8: Measured with JEITA RC-9131A (1:1) probe.
*9: From 10% to 90% or 90% to 10% of Rated Output Voltage, with rated resistive load.
*10: From 90% to 10% of Rated Output Voltage.
*11: For load voltage change, equal to the unit voltage rating, constant input voltage.
*12: For 10V model the ripple is measured at 2V to rated output voltage and rated output current. For other models, the ripple is measured at 10~100%
of rated output voltage and rated output current.
*13: The Constant Current programming, readback and monitoring accuracy do not include the warm-up and Load regulation thermal drift.
*14: Measured with JEITA RC-9131A (1:1) probe.
*15: For cases where the time interval between each down programming is longer than Td (time delay).
*16: For cases where the time interval between each down programming is shorter than Td (time delay).
*17: Td typical Minimum time between consecutive down programming cycles.
*18: PS with Lan, IEEE, models decrease efficiency by 0.5% and increase input current by 0.5%.
PS with Isolated analog option decreases efficiency by 1.5% and increases input current by 1.5%.
*19: At rated output power.
*20: For Parallel operation more than 2 units 5% of total output current is requierd.

# 2.2 Z+400 Series Specifications

| MODEL | Z | 10-40 | 20-20 | 36-12 | 60-7 | 100-4 |
|---|---|---|---|---|---|---|
| 1. Rated output voltage(*1) | V | 10 | 20 | 36 | 60 | 100 |
| 2. Rated output current (*2) | A | 40 | 20 | 12 | 7 | 4 |
| 3. Rated output power | W | 400 | 400 | 432 | 420 | 400 |

| CONSTANT VOLTAGE MODE | Z | 10-40 | 20-20 | 36-12 | 60-7 | 100-4 |
|---|---|---|---|---|---|---|
| 1. Max. Line regulation (*6) | --- | 0.01% of rated output voltage+2mV | | | | |
| 2. Max. Load regulation (*7) | --- | 0.01% of rated output voltage+2mV | | | | |
| 3. Ripple and noise (p-p, 20MHz) (*8) | mV | 50 | 50 | 50 | 50 | 80 |
| 4. Ripple r.m.s. 5Hz~1MHz | mV | 5 | 6 | 6 | 7 | 8 |
| 5. Temperature coefficient | PPM/°C | 30PPM/°C from rated output voltage, following 30 minutes warm-up. | | | | |
| 6. Temperature stability | --- | 0.02% of rated Vout over 8hrs. interval following 30 minutes warm-up. Constant line, load & temp. | | | | |
| 7. Warm-up drift | --- | Less than 0.05% of rated output voltage+2mV over 30 minutes following power on. | | | | |
| 8. Remote sense compensation/wire | V | 1 | 1 | 2 | 3 | 5 |
| 9. Up-prog. Response time, 0~Vomax.(*9) | mS | 15 | 30 | 30 | 50 | 50 |
| 10. Down-prog. response time: Full load (*9) | mS | 10 | 10 | 15 | 30 | 50 |
| Time delay (*17) | mS | 210 | 250 | 320 | 380 | 1200 |
| No load (*10) (*15) (*17) | mS | 40 | 65 | 85 | 100 | 250 |
| No load (*10) (*16) (*17) | mS | 200 | 200 | 290 | 310 | 1100 |
| 11. Transient response time | mS | Time for output voltage to recover within 0.5% of its rated output for a load change 10~90% of rated output current. Output set-point: 10~100%, Local sense. Less than 1mS, for models up to and including 100V | | | | |
| 12. Hold-up time (*19) | --- | 15mSec Typical. | 16mSec Typical. | | | |

| CONSTANT CURRENT MODE | Z | 10-40 | 20-20 | 36-12 | 60-7 | 100-4 |
|---|---|---|---|---|---|---|
| 1. Max. Line regulation (*6) | --- | 0.01% of rated output current+2mA | | | | |
| 2. Max. Load regulation (*11) | --- | 0.01% of rated output current+5mA | | | | |
| 3. Load regulation thermal drift | --- | Less than 0.05% of rated output current over 30 minutes following load change. | | | | |
| 4. Ripple r.m.s. 5Hz~1MHz (*12) | mA | 70 | 40 | 15 | 8 | 3 |
| 5. Temperature coefficient | PPM/°C | 100PPM/°C from rated output current, following 30 minutes warm-up. | | | | |
| 6. Temperature stability | --- | 0.05% of rated Iout over 8hrs. interval following 30 minutes warm-up. Constant line, load & temperature. | | | | |
| 7. Warm-up drift | --- | Less than +/-0.1% of rated output current over 30 minutes following power on. | | | | |

| PROTECTIVE FUNCTIONS | Z | 10-40 | 20-20 | 36-12 | 60-7 | 100-4 |
|---|---|---|---|---|---|---|
| 1. Foldback protection | --- | Output shut-down when power supply change mode from CV to CC or CC to CV. User presetable. Reset by AC input recycle in autostart mode or by OUTPUT button or by rear panel ENABLE, or by communication port. | | | | |
| 2. Over-voltage protection (OVP) | --- | Inverter Shut down method. Reset by AC input recycle in autostart mode or by OUTPUT button or by rear panel ENABLE, or by communication port. | | | | |
| 3. Over - voltage trip point | V | 0.5~12 | 1~24 | 2~40 | 5~66 | 5~110 |
| 4. Output under voltage limit (UVL) | --- | Preset by front panel or communication port. Prevents from adjusting Vout below limit. Does not affect in analog programming. | | | | |
| 5. Output under voltage protection (UVP) | --- | Output shut-down when power supply output voltage goes below UVP programming. User presetable. Reset by AC input recycle in autostart mode or by OUTPUT button or by rear panel ENABLE, or by communication port. | | | | |
| 6. Over temperature protection | --- | User Selectable. Latched or non latched | | | | |

**ANALOG PROGRAMMING AND MONITORING**

| | | |
|---|---|---|
| 1. Vout voltage programming | --- | 0~100%, 0~5V or 0~10V, user selectable. Accuracy and linearity: +/-0.5% of rated Vout. |
| 2. Iout voltage programming (*13) | --- | 0~100%, 0~5V or 0~10V, user selectable. Accuracy and linearity: +/-1% of rated Iout. |
| 3. Vout resistor programming | --- | 0~100%, 0~5/10Kohm full scale, user selectable. Accuracy and linearity: +/-1% of rated Vout. |
| 4. Iout resistor programming (*13) | --- | 0~100%, 0~5/10Kohm full scale, user selectable. Accuracy and linearity: +/-1.5% of rated Iout. |
| 5. Shut Off (SO) control | --- | By electrical Voltage: 0~0.6V/4~15V or dry contact, user selectable logic. |
| 6. Output current monitor (*13) | --- | 0~5V or 0~10V, user selectable. Accuracy: +/-1%. |
| 7. Output voltage monitor | --- | 0~5V or 0~10V, user selectable. Accuracy: +/-1%. |
| 8. Power supply OK signal | --- | 4~5V-OK, 0V-Fail. 500ohm series resistance. |
| 9. Parallel operation (*21) | --- | Possible, up to 6 units in master/slave mode with single wire current balance connection. |
| 10. Series operation | --- | 2 identical units (with external diodes). |
| 11. CV/CC indicator | --- | Open collector. CC mode: On, CV mode: Off. Maximum voltage: 30V, maximum sink current: 10mA |
| 12. Interlock (ILC) control | --- | Enables/Disables the PS output by dry contact (Short: On, Open: Off, Source current: less than 0.5mA). Ena/Dis is activated by front panel. |
| 13. Local/Remote mode Control | --- | By electrical signal or Open/Short: 0~0.6V or short: Remote, 2~15V or open: Local |
| 14. Local/Remote mode Indicator | --- | Open collector (shunted by 36V zener). On (0~0.6V, 10mA sink current max.)-Remote. Off-Local (30V max.). |
| 15.Trigger out | --- | Maximum low level output =0.8V, Minimum high level output =3.8V, Maximum high level output =5V, Maximum source current =16mA, pulse =20µs Typical. |
| 16.Trigger in | --- | Maximum low level input =1.2V, Minimum high level input =3.5V, Maximum high level input =5V, Maximum sink current =16mA, positive edge, trigger: tw =10µs minimum, Tr/Tf =1µs maximum. |
| 17. Programmed signal 1 | --- | Open collector, maximum voltage 25V, maximum sink current 100mA. (Shunted by 27V zener) |
| 18. Programmed signal 2 | --- | Open collector, maximum voltage 25V, maximum sink current 100mA. (Shunted by 27V zener) |

**FRONT PANEL**

| | | |
|---|---|---|
| 1. Control functions | --- | Multiple options with 2 Encoders |
| | --- | Vout/Iout manual adjust |
| | --- | OVP/UVL /UVP manual adjust |
| | --- | Protection Functions - OVP, UVL, UVP, Foldback, OCP, INT, SO |
| | --- | Communication Functions - Selection of LAN,IEEE (*20), RS232,RS485,USB |
| | --- | Communication Functions - Selection of Baud Rate, Address |
| | --- | Analog Control Functions - Selection Voltage/resistive programming, 5V/10V, 5K/10K programming |
| | --- | Analog Control Functions - Selection of Voltage/Current Monitoring 5V/10V, Output ON/OFF, Front Panel Lock. |
| 2. Display | --- | Vout: 4 digits, accuracy: 0.5% of rated output voltage+/-1 count. |
| | --- | Iout: 4 digits, accuracy: 0.5% of rated output current+/-1 count. |
| 3. Indications | --- | GREEN LEDs: FINE, MENU, PREV, PROT, REM, OUTPUT, CV, CC |
| | --- | RED LED: PROT (OVP, UVP, OTP, FOLD, AC FAIL). |
| 4. Function buttons | --- | FINE, MENU, PREV, PROT, REM, OUTPUT |

**PROGRAMMING AND READBACK (RS232/485,USB, Optional: IEEE(*20), LAN)**

| | | |
|---|---|---|
| 1. Vout programming accuracy | --- | 0.05% of rated output voltage |
| 2. Iout programming accuracy (*13) | --- | 0.1% of actual +0.1% of rated output current |
| 3. Vout programming resolution | --- | 0.012% of full scale |
| 4. Iout programming resolution | --- | 0.012% of full scale |
| 5. Vout readback accuracy | --- | 0.05% of rated output voltage |
| 6. Iout readback accuracy (*13) | --- | 0.1% of actual +0.3% of rated output current |
| 7. Vout readback resolution | --- | 0.012% of full scale |
| 8. Iout readback resolution | --- | 0.012% of full scale |

| INPUT CHARACTERISTICS | Z | 10-40 | 20-20 | 36-12 | 60-7 | 100-4 |
|---|---|---|---|---|---|---|
| 1. Input voltage/freq. (*3) | --- | 85~265Vac continuous, 47~63Hz, single phase | | | | |
| 2. Maximum Input current 100/200VAC (*4) (*18) | --- | 5.05/2.47 | 4.98/2.45 | 5.25/2.57 | 5.10/2.50 | 4.80/2.37 |
| 3. Power Factor (Typ) | --- | 0.99 at 100/200Vac, 100% load | | | | |
| 4. Efficiency (Typ) 100/200VAC (*4) (*18) | % | 80/82 | 81/83 | 83/85 | 83/85 | 84/86 |
| 5. Inrush current (*5) | --- | Less than 25A | | | | |

**ENVIRONMENTAL CONDITIONS**

| | | |
|---|---|---|
| 1. Operating temperature | --- | 0~50°C, 100% load. |
| 2. Storage temperature | --- | -20~85°C |
| 3. Operating humidity | % | 20~90% RH (no condensation). |
| 4. Storage humidity | % | 10~95% RH (no condensation). |
| 5. Altitude | --- | Maximum 3000m. Derate ambient temp above 2000m.<br>Operating: Maximum ambient temperature, From 2000m up to 3000m Ambient temperature 40°C. |

**SAFETY/EMC**

| | | | |
|---|---|---|---|
| 1. Applicable standards: | Safety | --- | UL61010-1, EN61010-1, IEC61010-1. Design to meet UL60950-1, EN60950-1<br>10V≤Vout≤60V: Output,J1,J2,J3,J4,USB,LAN,IEEE/ISOLATED Analog are Non Hazardous<br>Vout=100V:Output,J1,J2 are Hazardous J3,J4,USB, IEEE/ISOLATED Analog ,LAN are Non Hazardous |
| | EMC | --- | IEC/EN61326-1 (Built to meet EN55022/EN55024) |
| 2. Withstand voltage | | --- | 10≤Vout≤36V models: Input-Output&J1,J2,J3,J4,USB,LAN/IEEE/ISOLATED ANALOG: 4242VDC/1min; Input-Ground: 2828VDC/1min.<br>Output&J1,J2,J3,J4,USB,LAN/IEEE/ISOLATED ANALOG-Ground: 707VDC/1min.<br>60V,100V models: Input-Output&J1,J2: 4242VDC/1min; Input-J3,J4,USB,LAN/IEEE/ISOLATED Analog: 4242VDC/1min; Input-Ground: 2828VDC/1min.<br>Output&J1,J2- J3,J4,USB,LAN/IEEE/ISOLATED ANALOG :1910VDC/1min; Output&J1,J2-Ground: 1380VDC/1min.<br>J3, J4, USB/LAN/IEEE/ISOLATED ANALOG - Ground: 707VDC/1min; |
| 3. Insulation resistance | | --- | More than 100Mohm at 25°C, 70%RH. |
| 4. Conducted emission | | --- | IEC/EN61326-1 Industrial Location - B, FCC part 15-B, VCCI-B |
| 5. Radiated emission | | --- | IEC/EN61326-1 Industrial Location - A, FCC part 15-A, VCCI-A |

**MECHANICAL**

| | | | |
|---|---|---|---|
| 1. Cooling | | --- | Forced air cooling by internal fan |
| 2. Weight | STANDARD | Kg | Less than 1.9Kg. |
| | WIDE BODY | Kg | Less than 2.4Kg. Wide body with Isolated analog or Binding post or IEEE |
| 3. Dimensions (WxHxD) | STANDARD | mm | H: 83, W: 70, D: 350 (excluding bus bars, handles…). (Refer to Outline drawing) |
| | WIDE BODY | mm | H: 83, W: 105, D: 350 (excluding bus bars, handles…). (Refer to Outline drawing) |
| 4. Vibration | | --- | According to: IEC60068-2-64 |
| 5. Shock | | --- | Less than 20G, half sine, 11mS. Unit is unpacked. According to: IEC60068-2-27 |

**NOTES:**

*1: Minimum voltage is guaranteed to maximum 0.1% of rated output voltage.
*2: Minimum current is guaranteed to maximum 0.2% of rated output current.
*3: For cases where conformance to various safety standards (UL, IEC, etc…) is required, to be described as 100-240Vac (50/60Hz).
*4: Ta=25°C with rated output power.
*5: Not including EMI filter inrush current, less than 0.2mSec.
*6: At 85~132Vac or 170~265VAC, constant load.
*7: From No-Load to Full-Load, constant input voltage. Measured at the sensing point in Remote Sense.
*8: Measured with JEITA RC-9131A (1:1) probe.
*9: From 10% to 90% or 90% to 10% of Rated Output Voltage, with rated resistive load.
*10: From 90% to 10% of Rated Output Voltage.
*11: For load voltage change, equal to the unit voltage rating, constant input voltage.
*12: For 10V model the ripple is measured at 2V to rated output voltage and rated output current. For other models, the ripple is measured at 10~100%
of rated output voltage and rated output current.
*13: The Constant Current programming, readback and monitoring accuracy do not include the warm-up and Load regulation thermal drift.
*14: Measured with JEITA RC-9131A (1:1) probe.
*15: For cases where the time interval between each down programming is longer than Td (time delay).
*16: For cases where the time interval between each down programming is shorter than Td (Time delay).
*17: Td typical Minimum time between consecutive down programming cycles.
*18: PS with Lan, IEEE, models decrease efficiency by 0.25% and increase input current by 0.25%.
PS with Isolated analog option decreases efficiency by 0.75% and increases input current by 0.75%.
*19: At rated output power.
*20: Max. ambient temperature for using IEEE is 45°C
*21: For Parallel operation more than 2 units 5% of total output current is requierd.

# 2.3 Z+600 Series Specifications

| MODEL | Z | 10-60 | 20-30 | 36-18 | 60-10 | 100-6 |
|---|---|---|---|---|---|---|
| 1. Rated output voltage(*1) | V | 10 | 20 | 36 | 60 | 100 |
| 2. Rated output current (*2) | A | 60 | 30 | 18 | 10 | 6 |
| 3. Rated output power | W | 600 | 600 | 648 | 600 | 600 |

| CONSTANT VOLTAGE MODE | | Z | 10-60 | 20-30 | 36-18 | 60-10 | 100-6 |
|---|---|---|---|---|---|---|---|
| 1. Max. Line regulation (*6) | | --- | 0.01% of rated output voltage+2mV | | | | |
| 2. Max. Load regulation (*7) | | --- | 0.01% of rated output voltage+2mV | | | | |
| 3. Ripple and noise (p-p, 20MHz) (*8) | | mV | 50 | 50 | 50 | 50 | 80 |
| 4. Ripple r.m.s. 5Hz~1MHz | | mV | 5 | 5 | 5 | 12 | 15 |
| 5. Temperature coefficient | | PPM/°C | 30PPM/°C from rated output voltage, following 30 minutes warm-up. | | | | |
| 6. Temperature stability | | --- | 0.05% of rated Vout over 8hrs. interval following 30 minutes warm-up. Constant line, load & temp. | | | | |
| 7. Warm-up drift | | --- | Less than 0.05% of rated output voltage+2mV over 30 minutes following power on. | | | | |
| 8. Remote sense compensation/wire | | V | 1 | 1 | 2 | 3 | 5 |
| 9. Up-prog. Response time, 0~Vomax.(*9) | | mS | 50 | 50 | 50 | 50 | 100 |
| 10. Down-prog. response time: | Full load (*9) | mS | 25 | 25 | 25 | 25 | 80 |
| | Time delay (*17) | | 285 | 425 | 450 | 570 | 1370 |
| | No load (*10) (*15)(*17) | | 65 | 110 | 155 | 175 | 375 |
| | No load (*10) (*16)(*17) | | 280 | 470 | 470 | 500 | 1200 |
| 11. Transient response time | | mS | Time for output voltage to recover within 0.5% of its rated output for a load change 10~90% of rated output current. Output set-point: 10~100%, Local sense. Less than 1mS, for models up to and including 100V | | | | |
| 12. Hold-up time (*18) | | --- | 15mSec Typical. | | 20mSec Typical. | | |

| CONSTANT CURRENT MODE | Z | 10-60 | 20-30 | 36-18 | 60-10 | 100-6 |
|---|---|---|---|---|---|---|
| 1. Max. Line regulation (*6) | --- | 0.01% of rated output current+2mA | | | | |
| 2. Max. Load regulation (*11) | --- | 0.01% of rated output current+5mA | | | | |
| 3. Load regulation thermal drift | --- | Less than 0.15% of rated output current over 30 minutes following load change. | | | | |
| 4. Ripple r.m.s. 5Hz~1MHz (*12) | mA | 150 | 75 | 25 | 8 | 5 |
| 5. Temperature coefficient | PPM/°C | 100PPM/°C from rated output current, following 30 minutes warm-up. | | | | |
| 6. Temperature stability | --- | 0.05% of rated Iout over 8hrs. interval following 30 minutes warm-up. Constant line, load & temperature. | | | | |
| 7. Warm-up drift | --- | 10V Model: Less than +/-0.3% of rated output current over 30 minutes following power on.<br>20V, 36V Model: Less than +/-0.15% of rated output current over 30 minutes following power on.<br>60V, 100V Models: Less than +/-0.1% of rated output current over 30 minutes following power on. | | | | |

| PROTECTIVE FUNCTIONS | Z | 10-60 | 20-30 | 36-18 | 60-10 | 100-6 |
|---|---|---|---|---|---|---|
| 1. Foldback protection | --- | Output shut-down when power supply change mode from CV to CC or CC to CV. User presetable.<br>Reset by AC input recycle in autostart mode or by OUTPUT button or by rear panel ENABLE, or by communication port. | | | | |
| 2. Over-voltage protection (OVP) | --- | Inverter Shut down method. Reset by AC input recycle in autostart mode or by OUTPUT button or by rear panel ENABLE, or by communication port. | | | | |
| 3. Over -voltage trip point | V | 0.5~12 | 1~24 | 2~40 | 5~66 | 5~110 |
| 4. Output under voltage limit (UVL) | --- | Preset by front panel or communication port. Prevents from adjusting Vout below limit. Does not affect in analog programming. | | | | |
| 5. Output under voltage protection (UVP) | --- | Output shut-down when power supply output voltage goes below UVP programming. User presetable.<br>Reset by AC input recycle in autostart mode or by OUTPUT button or by rear panel ENABLE, or by communication port. | | | | |
| 6. Over temperature protection | --- | User Selectable. Latched or non latched. | | | | |

| ANALOG PROGRAMMING AND MONITORING | | |
|---|---|---|
| 1. Vout voltage programming | --- | 0~100%, 0~5V or 0~10V, user selectable. Accuracy and linearity: +/-0.5% of rated Vout. |
| 2. Iout voltage programming (*13) | --- | 0~100%, 0~5V or 0~10V, user selectable. Accuracy and linearity: +/-1% of rated Iout. |
| 3. Vout resistor programming | --- | 0~100%, 0~5/10Kohm full scale, user selectable. Accuracy and linearity: +/-1% of rated Vout. |
| 4. Iout resistor programming (*13) | --- | 0~100%, 0~5/10Kohm full scale, user selectable. Accuracy and linearity: +/-1.5% of rated Iout. |
| 5. Shut Off (SO) control | --- | By electrical Voltage: 0~0.6V/4~15V or dry contact, user selectable logic. |
| 6. Output current monitor (*13) | --- | 0~5V or 0~10V, user selectable. Accuracy: +/-1%. |
| 7. Output voltage monitor | --- | 0~5V or 0~10V, user selectable. Accuracy: +/-1%. |
| 8. Power supply OK signal | --- | 4~5V-OK, 0V-Fail. 500ohm series resistance. |
| 9. Parallel operation (*20) | --- | Possible, up to 6 units in master/slave mode with single wire current balance connection. |
| 10. Series operation | --- | 2 identical units (with external diodes). |
| 11. CV/CC indicator | --- | Open collector. CC mode: On, CV mode: Off. Maximum voltage: 30V, maximum sink current: 10mA |
| 12. Interlock (ILC) control | --- | Enables/Disables the PS output by dry contact (Short: On, Open: Off, Source current: less than 0.5mA). Ena/Dis is activated by front panel. |
| 13. Local/Remote mode Control | --- | By electrical signal or Open/Short: 0~0.6V or short: Remote, 2~15V or open: Local |
| 14. Local/Remote mode Indicator | --- | Open collector (shunted by 36V zener). On (0~0.6V, 10mA sink current max.)-Remote. Off-Local (30V max.). |
| 15.Trigger out | --- | Maximum low level output =0.8V, Minimum high level output =3.8V, Maximum high level output =5V, Maximum source current =16mA, pulse =20μs Typical. |
| 16.Trigger in | --- | Maximum low level input =1.2V, Minimum high level input =3.5V, Maximum high level input =5V, Maximum sink current =16mA, positive edge, trigger: tw =10μs minimum, Tr/Tf =1μs maximum. |
| 17. Programmed signal 1 | --- | Open collector, maximum voltage 25V, maximum sink current 100mA. (Shunted by 27V zener) |
| 18. Programmed signal 2 | --- | Open collector, maximum voltage 25V, maximum sink current 100mA. (Shunted by 27V zener) |

**FRONT PANEL**

| | | |
|---|---|---|
| 1. Control functions | --- | Multiple options with 2 Encoders |
| | --- | Vout/Iout manual adjust |
| | --- | OVP/UVL /UVP manual adjust |
| | --- | Protection Functions - OVP, UVL, UVP, Foldback, OCP, INT, SO |
| | --- | Communication Functions - Selection of LAN,IEEE (*19), RS232,RS485,USB |
| | --- | Communication Functions - Selection of Baud Rate, Address |
| | --- | Analog Control Functions - Selection Voltage/resistive programming, 5V/10V, 5K/10K programming |
| | --- | Analog Control Functions - Selection of Voltage/Current Monitoring 5V/10V, Output ON/OFF, Front Panel Lock. |
| 2. Display | --- | Vout: 4 digits, accuracy: 0.5% of rated output voltage+/-1 count. |
| | --- | Iout: 4 digits, accuracy: 0.5% of rated output current+/-1 count. |
| 3. Indications | --- | GREEN LEDs: FINE, MENU, PREV, PROT, REM, OUTPUT, CV, CC |
| | --- | RED LED: PROT (OVP, UVP, OTP, FOLD, AC FAIL). |
| 4. Function buttons | --- | FINE, MENU, PREV, PROT, REM, OUTPUT |

**PROGRAMMING AND READBACK (RS232/485,USB, Optional: IEEE(*19), LAN)**

| | | |
|---|---|---|
| 1. Vout programming accuracy | --- | 0.05% of rated output voltage |
| 2. Iout programming accuracy (*13) | --- | 0.1% of actual +0.1% of rated output current |
| 3. Vout programming resolution | --- | 0.012% of full scale |
| 4. Iout programming resolution | --- | 0.012% of full scale |
| 5. Vout readback accuracy | --- | 0.05% of rated output voltage |
| 6. Iout readback accuracy (*13) | --- | 0.1% of actual +0.3% of rated output current |
| 7. Vout readback resolution | --- | 0.012% of full scale |
| 8. Iout readback resolution | --- | 0.012% of full scale |

| **INPUT CHARACTERISTICS** | | 10-72 | 20-40 | 36-24 | 60-14 | 100-8 |
|---|---|---|---|---|---|---|
| 1. Input voltage/freq. (*3) | --- | 85~265Vac continuous, 47~63Hz, single phase | | | | |
| 2. Maximum Input current 100/200VAC | --- | 8.9/4.40 | 9.60/4.70 | 9.40/4.60 | 10.00/4.90 | 9.05/4.60 |
| 3. Power Factor (Typ) | --- | 0.99 at 100/200Vac, 100% load | | | | |
| 4. Efficiency (Typ) 100/200VAC (*4) | % | 81/83 | 84/86 | 85/87 | 85/87 | 85/87 |
| 5. Inrush current (*5) | --- | Less than 25A | | | | |

**ENVIRONMENTAL CONDITIONS**

| | | |
|---|---|---|
| 1. Operating temperature | --- | 0~50°C, 100% load. |
| 2. Storage temperature | --- | -20~85°C |
| 3. Operating humidity | % | 20~90% RH (no condensation). |
| 4. Storage humidity | % | 10~95% RH (no condensation). |
| 5. Altitude | --- | Maximum 3000m. Derate ambient temp above 2000m.<br>Operating: Maximum ambient temperature, From 2000m up to 3000m Ambient temperature 40°C. |

**SAFETY/EMC**

| | | | |
|---|---|---|---|
| 1. Applicable standards: | Safety | --- | UL61010-1, EN61010-1, IEC61010-1. Design to meet UL60950-1, EN60950-1<br>10V≤Vout≤60V: Output,J1,J2,J3,J4,USB,LAN,IEEE/ISOLATED Analog are Non Hazardous<br>Vout=100V:Output,J1,J2 are Hazardous J3,J4,USB, IEEE/ISOLATED Analog ,LAN are Non Hazardous |
| | EMC | --- | IEC61326-1 (Built to meet EN55022/EN55024) |
| 2. Withstand voltage | | --- | 10≤Vout≤36V models: Input-Output&J1,J2,J3,J4,USB,LAN/IEEE/ISOLATED ANALOG: 4242VDC/1min; Input-Ground: 2828VDC/1min.<br>Output&J1,J2,J3,J4,USB,LAN/IEEE/ISOLATED ANALOG-Ground: 1000VDC/1min.<br>60V,100V models: Input-Output&J1,J2: 4242VDC/1min; Input-J3,J4,USB,LAN/IEEE/ISOLATED Analog: 4242VDC/1min; Input-Ground: 2828VDC/1min.<br>Output&J1,J2- J3,J4,USB,LAN/IEEE/ISOLATED ANALOG :1910VDC/1min; Output&J1,J2-Ground: 1380VDC/1min.<br>J3, J4, USB/LAN/IEEE/ISOLATED ANALOG - Ground: 1000VDC/1min; |
| 3. Insulation resistance | | --- | More than 100Mohm at 25°C, 70%RH. |
| 4. Conducted emission | | --- | IEC/EN61326-1 Industrial Location - B, FCC part 15-B, VCCI-B |
| 5. Radiated emission | | --- | IEC/EN61326-1 Industrial Location - A, FCC part 15-A, VCCI-A |
| 5. Radiated emission | | --- | EN55022B, FCC part 15-B, VCCI-B |

**MECHANICAL**

| | | | |
|---|---|---|---|
| 1. Cooling | | --- | Forced air cooling by internal fan. |
| 2. Weight | STANDARD | Kg | Less than 2.5Kg. |
| | WIDE BODY | | Less than 3.0Kg. Wide body with Isolated analog or Binding post or IEEE. |
| 3. Dimensions (WxHxD) | STANDARD | mm | H: 83, W: 70, D: 350 (excluding bus bars, handles…). (Refer to Outline drawing). |
| | WIDE BODY | | H: 83, W: 105, D: 350 (excluding bus bars, handles…). (Refer to Outline drawing). |
| 4. Vibration | | --- | According to:IEC60068-2-64 |
| 5. Shock | | --- | Less than 20G, half sine, 11mS. Unit is unpacked. According to: IEC600068-2-27 |

NOTES:
*1: Minimum voltage is guaranteed to maximum 0.1% of rated output voltage.
*2: Minimum current is guaranteed to maximum 0.2% of rated output current.
*3: For cases where conformance to various safety standards (UL, IEC, etc…) is required, to be described as 100-240Vac (50/60Hz).
*4: Ta=25°C with rated output power.
*5: Not including EMI filter inrush current, less than 0.2mSec.
*6: At 85~132Vac or 170~265VAC, constant load.
*7: From No-Load to Full-Load, constant input voltage. Measured at the sensing point in Remote Sense.
*8: Measured with JEITA RC-9131A (1:1) probe.
*9: From 10% to 90% or 90% to 10% of Rated Output Voltage, with rated resistive load.
*10: From 90% to 10% of Rated Output Voltage.
*11: For load voltage change, equal to the unit voltage rating, constant input voltage.
*12: For 10V model the ripple is measured at 2V to rated output voltage and rated output current. For other models, the ripple is measured at 10~100% of rated output voltage and rated output current.
*13: The Constant Current programming, readback and monitoring accuracy do not include the warm-up and Load regulation thermal drift.
*14: Measured with JEITA RC-9131A (1:1) probe.
*15: For cases where the time interval between each down programming is longer than Td (time delay).
*16: For cases where the time interval between each down programming is shorter than Td (time delay).
*17: Td typical (±20%) Minimum time between consecutive down programming cycles.
*18: PS with isolated analog option decreases efficiency by 0.5% and increases input current by 0.5%
*19: For Parallel operation more than 2 units 5% of toatal output current is requierd.

# 2.4 Z+800 Series Specifications

| MODEL | | Z | 10-72 | 20-40 | 36-24 | 60-14 | 100-8 |
|---|---|---|---|---|---|---|---|
| 1. Rated output voltage(*1) | | V | 10 | 20 | 36 | 60 | 100 |
| 2. Rated output current (*2)(*21) | Vin ≥ 100Vac, Ta ≤ 50°C | A | 72 | 40 | 24 | 14 | 8 |
| | 85Vac ≤ Vin < 100Vac, Ta ≤ 40°C | A | 72 | 40 | 24 | 14 | 8 |
| | 85Vac ≤ Vin < 100Vac, 40°C < Ta ≤ 50°C | A | 66 | 36 | 20 | 12.5 | 7.5 |
| 3. Rated output power | Vin ≥ 100Vac, Ta ≤ 50°C | W | 720 | 800 | 864 | 840 | 800 |
| | 85Vac ≤ Vin < 100Vac, Ta ≤ 40°C | W | 720 | 800 | 864 | 840 | 800 |
| | 85Vac ≤ Vin < 100Vac, 40°C < Ta ≤ 50°C | W | 660 | 720 | 720 | 750 | 750 |

| CONSTANT VOLTAGE MODE | | Z | 10-72 | 20-40 | 36-24 | 60-14 | 100-8 |
|---|---|---|---|---|---|---|---|
| 1. Max. Line regulation (*6) | | --- | 0.01% of rated output voltage+2mV | | | | |
| 2. Max. Load regulation (*7) | | --- | 0.01% of rated output voltage+2mV | | | | |
| 3. Ripple and noise (p-p, 20MHz) (*8) | | mV | 50 | 50 | 50 | 60 | 80 |
| 4. Ripple r.m.s. 5Hz~1MHz | | mV | 5 | 5 | 5 | 12 | 15 |
| 5. Temperature coefficient | | PPM/°C | 30PPM/°C from rated output voltage, following 30 minutes warm-up. | | | | |
| 6. Temperature stability | | --- | 0.05% of rated Vout over 8hrs. interval following 30 minutes warm-up. Constant line, load & temp. | | | | |
| 7. Warm-up drift | | --- | Less than 0.05% of rated output voltage+2mV over 30 minutes following power on. | | | | |
| 8. Remote sense compensation/wire | | V | 1 | 1 | 2 | 3 | 5 |
| 9. Up-prog. Response time, 0~Vomax.(*9) | | mS | 50 | 50 | 50 | 50 | 100 |
| 10. Down-prog. response time: | Full load (*9) | mS | 25 | 25 | 25 | 25 | 80 |
| | Time delay (*17) | | 285 | 425 | 450 | 570 | 1370 |
| | No load (*10) (*15) (*17) | | 65 | 110 | 155 | 175 | 375 |
| | No load (*10) (*16) (*17) | | 280 | 470 | 470 | 500 | 1200 |
| 11. Transient response time | | mS | Time for output voltage to recover within 0.5% of its rated output for a load change 10~90% of rated output current. Output set-point: 10~100%, Local sense. Less than 1mS, for models up to and including 100V | | | | |
| 12. Hold-up time (*18) | | --- | 10mSec Typical. Rated output power. | | | | |

| CONSTANT CURRENT MODE | Z | 10-72 | 20-40 | 36-24 | 60-14 | 100-8 |
|---|---|---|---|---|---|---|
| 1. Max. Line regulation (*6) | --- | 0.01% of rated output current+2mA | | | | |
| 2. Max. Load regulation (*11) | --- | 0.01% of rated output current+5mA | | | | |
| 3. Load regulation thermal drift | --- | For 10V: Less than 0.15% of rated output current over 30 minutes following load change.<br>For 20V ~ 100V: Less than 0.1% of rated output current over 30 minutes following load change. | | | | |
| 4. Ripple r.m.s. 5Hz~1MHz (*12) | mA | 180 | 100 | 31 | 28 | 12 |
| 5. Temperature coefficient | PPM/°C | 100PPM/°C from rated output current, following 30 minutes warm-up. | | | | |
| 6. Temperature stability | --- | 0.05% of rated Iout over 8hrs. interval following 30 minutes warm-up. Constant line, load & temperature. | | | | |
| 7. Warm-up drift | --- | 10V model: Less than +/-0.3%, 20V model: Less than +/-0.15%, 36V~100 models: Less than +/-0.1% of rated output current over 30 minutes following power on. | | | | |

| PROTECTIVE FUNCTIONS | Z | 10-72 | 20-40 | 36-24 | 60-14 | 100-8 |
|---|---|---|---|---|---|---|
| 1. Foldback protection | --- | Output shut-down when power supply change mode from CV to CC or CC to CV. User presetable.<br>Reset by AC input recycle in autostart mode or by OUTPUT button or by rear panel ENABLE, or by communication port. | | | | |
| 2. Over-voltage protection (OVP) | --- | Inverter Shut down method. Reset by AC input recycle in autostart mode or by OUTPUT button or by rear panel ENABLE, or by communication port. | | | | |
| 3. Over - voltage trip point | V | 0.5~12 | 1~24 | 2~40 | 5~66 | 5~110 |
| 4. Output under voltage limit (UVL) | --- | Preset by front panel or communication port. Prevents from adjusting Vout below limit. Does not affect in analog programming. | | | | |
| 5. Output under voltage protection (UVP) | --- | Output shut-down when power supply output voltage goes below UVP programming. User presetable.<br>Reset by AC input recycle in autostart mode or by OUTPUT button or by rear panel ENABLE, or by communication port. | | | | |
| 6. Over temperature protection | --- | User Selectable. Latched or non latched | | | | |

| ANALOG PROGRAMMING AND MONITORING | | |
|---|---|---|
| 1. Vout voltage programming | --- | 0~100%, 0~5V or 0~10V, user selectable. Accuracy and linearity: +/-0.5% of rated Vout. |
| 2. Iout voltage programming (*13) | --- | 0~100%, 0~5V or 0~10V, user selectable. Accuracy and linearity: +/-1% of rated Iout. |
| 3. Vout resistor programming | --- | 0~100%, 0~5/10Kohm full scale, user selectable. Accuracy and linearity: +/-1% of rated Vout. |
| 4. Iout resistor programming (*13) | --- | 0~100%, 0~5/10Kohm full scale, user selectable. Accuracy and linearity: +/-1.5% of rated Iout. |
| 5. Shut Off (SO) control | --- | By electrical Voltage: 0~0.6V/4~15V or dry contact, user selectable logic. |
| 6. Output current monitor (*13) | --- | 0~5V or 0~10V, user selectable. Accuracy: +/-1%. |
| 7. Output voltage monitor | --- | 0~5V or 0~10V, user selectable. Accuracy: +/-1%. |
| 8. Power supply OK signal | --- | 4~5V-OK, 0V-Fail. 500ohm series resistance. |
| 9. Parallel operation (*20) | --- | Possible, up to 6 units in master/slave mode with single wire current balance connection. |
| 10. Series operation | --- | 2 identical units (with external diodes). |
| 11. CV/CC indicator | --- | Open collector. CC mode: On, CV mode: Off. Maximum voltage: 30V, maximum sink current: 10mA |
| 12. Interlock (ILC) control | --- | Enables/Disables the PS output by dry contact (Short: On, Open: Off, Source current: less than 0.5mA). Ena/Dis is activated by front panel. |
| 13. Local/Remote mode Control | --- | By electrical signal or Open/Short: 0~0.6V or short: Remote, 2~15V or open: Local |
| 14. Local/Remote mode Indicator | --- | Open collector (shunted by 36V zener). On (0~0.6V, 10mA sink current max.)-Remote. Off-Local (30V max.). |
| 15.Trigger out | --- | Maximum low level output =0.8V, Minimum high level output =3.8V, Maximum high level output =5V, Maximum source current =16mA, pulse =20µs Typical. |
| 16.Trigger in | --- | Maximum low level input =1.2V, Minimum high level input =3.5V, Maximum high level input =5V, Maximum sink current =16mA, positive edge, trigger: tw =10µs minimum, Tr/Tf =1µs maximum. |
| 17. Programmed signal 1 | --- | Open collector, maximum voltage 25V, maximum sink current 100mA. (Shunted by 27V zener) |
| 18. Programmed signal 2 | --- | Open collector, maximum voltage 25V, maximum sink current 100mA. (Shunted by 27V zener) |

**FRONT PANEL**

| | | |
|---|---|---|
| 1. Control functions | --- | Multiple options with 2 Encoders |
| | --- | Vout/Iout manual adjust |
| | --- | OVP/UVL /UVP manual adjust |
| | --- | Protection Functions - OVP, UVL, UVP, Foldback, OCP, INT, SO |
| | --- | Communication Functions - Selection of LAN,IEEE (*19) ,RS232,RS485,USB |
| | --- | Communication Functions - Selection of Baud Rate, Address |
| | --- | Analog Control Functions - Selection Voltage/resistive programming, 5V/10V, 5K/10K programming |
| | --- | Analog Control Functions - Selection of Voltage/Current Monitoring 5V/10V, Output ON/OFF, Front Panel Lock. |

**FRONT PANEL**

| | | |
|---|---|---|
| 2. Display | --- | Vout: 4 digits, accuracy: 0.5% of rated output voltage+/-1 count. |
| | --- | Iout: 4 digits, accuracy: 0.5% of rated output current+/-1 count. |
| 3. Indications | --- | GREEN LEDs: FINE, MENU, PREV, PROT, REM, OUTPUT, CV, CC |
| | --- | RED LED: PROT (OVP, UVP, OTP, FOLD, AC FAIL). |
| 4. Function buttons | --- | FINE, MENU, PREV, PROT, REM, OUTPUT |

**PROGRAMMING AND READBACK (RS232/485,USB, Optional: IEEE(*20), LAN)**

| | | |
|---|---|---|
| 1. Vout programming accuracy | --- | 0.05% of rated output voltage |
| 2. Iout programming accuracy (*13) | --- | 0.1% of actual +0.1% of rated output current |
| 3. Vout programming resolution | --- | 0.012% of full scale |
| 4. Iout programming resolution | --- | 0.012% of full scale |
| 5. Vout readback accuracy | --- | 0.05% of rated output voltage |
| 6. Iout readback accuracy (*13) | --- | 0.1% of actual +0.3% of rated output current |
| 7. Vout readback resolution | --- | 0.012% of full scale |
| 8. Iout readback resolution | --- | 0.012% of full scale |

| **INPUT CHARACTERISTICS** | Z | 10-72 | 20-40 | 36-24 | 60-14 | 100-8 |
|---|---|---|---|---|---|---|
| 1. Input voltage/freq. (*3) | --- | 85~265Vac continuous, 47~63Hz, single phase | | | | |
| 2. Maximum Input current 100/200VAC (*4) | --- | 9.00/4.45 | 9.65/4.75 | 10.30/5.10 | 10.00/4.95 | 9.50/4.7 |
| 3. Power Factor (Typ) | --- | 0.99 at 100Vac, 100% load / 0.98 at 200Vac, 100% load | | | | |
| 4. Efficiency (Typ) 100/200VAC (*4) | % | 81/83 | 84/86 | 85/87 | 85/87 | 85/87 |
| 5. Inrush current (*5) | --- | Less than 30A | | | | |

**ENVIRONMENTAL CONDITIONS**

| | | | | | | |
|---|---|---|---|---|---|---|
| 1. Operating temperature | --- | 0~50°C, 100% load. | | | | |
| 2. Storage temperature | --- | -20~85°C | | | | |
| 3. Operating humidity | % | 20~90% RH (no condensation). | | | | |
| 4. Storage humidity | % | 10~95% RH (no condensation). | | | | |
| 5. Altitude | --- | Maximum 3000m. From 2000m up to 3000m, max. Ambient temperature 40°C and rated output current according to the table below: | | | | |
| | Z | 10-72 | 20-40 | 36-24 | 60-14 | 100-8 |
| Rated output current at 100≤Vin≤265Vac | A | 72 | 40 | 24 | 14 | 8 |
| Rated output current at 85≤Vin<100Vac | A | 66 | 36 | 20 | 12.5 | 7.5 |

**SAFETY/EMC**

| | | | |
|---|---|---|---|
| 1. Applicable standards: | Safety | --- | UL61010-1, EN61010-1, IEC61010-1. Design to meet UL60950-1, EN60950-1<br>10V≤Vout≤60V: Output,J1,J2,J3,J4,USB,LAN,IEEE/ISOLATED Analog are Non Hazardous<br>Vout=100V:Output,J1,J2 are Hazardous J3,J4,USB, IEEE/ISOLATED Analog ,LAN are Non Hazardous |
| | EMC | --- | IEC/EN61326-1 (Built to meet EN55022/EN55024) |
| 2. Withstand voltage | | --- | 10≤Vout≤36V models: Input-Output&J1,J2,J3,J4,USB,LAN/IEEE/ISOLATED ANALOG: 4242VDC/1min; Input-Ground: 2828VDC/1min. Output&J1,J2,J3,J4,USB,LAN/IEEE/ISOLATED ANALOG-Ground: 707VDC/1min.<br>60V,100V models: Input-Output&J1,J2: 4242VDC/1min; Input-J3,J4,USB,LAN/IEEE/ISOLATED Analog: 4242VDC/1min; Input-Ground: 2828VDC/1min. Output & J1,J2- J3,J4,USB,LAN/IEEE/ISOLATED ANALOG :1910VDC/1min; Output&J1,J2-Ground: 1380VDC/1min. J3, J4, USB/LAN/IEEE/ISOLATED ANALOG - Ground: 707VDC/1min; |
| 3. Insulation resistance | | --- | More than 100Mohm at 25°C, 70%RH. |
| 4. Conducted emission | | --- | IEC/EN61326-1 Industrial Location - B, FCC part 15-B, VCCI-B |
| 5. Radiated emission | | --- | IEC/EN61326-1 Industrial Location - A, FCC part 15-A, VCCI-A |

**MECHANICAL**

| | | | |
|---|---|---|---|
| 1. Cooling | | --- | Forced air cooling by internal fan |
| 2. Weight | STANDARD | Kg | Less than 2.1Kg. |
| | WIDE BODY | Kg | Less than 2.6Kg. Wide body with Isolated analog or Binding post or IEEE |
| 3. Dimensions (WxHxD) | STANDARD | mm | H: 83, W: 70, D: 350 (excluding bus bars, handles…). (Refer to Outline drawing) |
| | WIDE BODY | mm | H: 83, W: 105, D: 350 (excluding bus bars, handles…). (Refer to Outline drawing) |
| 4. Vibration | | --- | According to: IEC60068-2-64 |
| 5. Shock | | --- | Less than 20G, half sine, 11mS. Unit is unpacked. According to: IEC60068-2-27 |

**NOTES:**

*1: Minimum voltage is guaranteed to maximum 0.1% of rated output voltage.
*2: Minimum current is guaranteed to maximum 0.2% of rated output current.
*3: For cases where conformance to various safety standards (UL, IEC, etc…) is required, to be described as 100-240Vac (50/60Hz).
*4: Ta=25°C with rated output power.
*5: Not including EMI filter inrush current, less than 0.2mSec.
*6: At 85~132Vac or 170~265VAC, constant load.
*7: From No-Load to Full-Load, constant input voltage. Measured at the sensing point in Remote Sense.
*8: Measured with JEITA RC-9131A (1:1) probe.
*9: From 10% to 90% or 90% to 10% of Rated Output Voltage, with rated resistive load.
*10: From 90% to 10% of Rated Output Voltage.
*11: For load voltage change, equal to the unit voltage rating, constant input voltage.
*12: For 10V model the ripple is measured at 2V to rated output voltage and rated output current. For other models, the ripple is measured at 10~100% of rated output voltage and rated output current.
*13: The Constant Current programming, readback and monitoring accuracy do not include the warm-up and Load regulation thermal drift.
*14: Measured with JEITA RC-9131A (1:1) probe.
*15: For cases where the time interval between each down programming is longer than Td (time delay).
*16: For cases where the time interval between each down programming is shorter than Td (Time delay).
*17: Td typical Minimum time between consecutive down programming cycles.
*18: At rated output power.
*19: Max. ambient temperature for using IEEE is 45°C
*20: For Parallel operation more than 2 units 5% of toatal output current is requierd.
*21: Refer to Fig.2-1 below

| Model | $I_1$ (A) | $I_2$ (A) |
|---|---|---|
| Z10-72 | 72 | 66 |
| Z20-40 | 40 | 36 |
| Z36-24 | 24 | 20 |
| Z60-14 | 14 | 12.5 |
| Z100-8 | 8 | 7.5 |

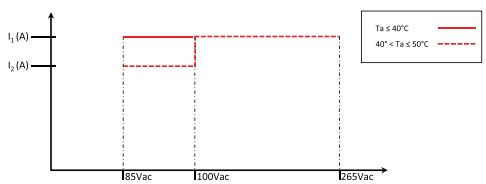
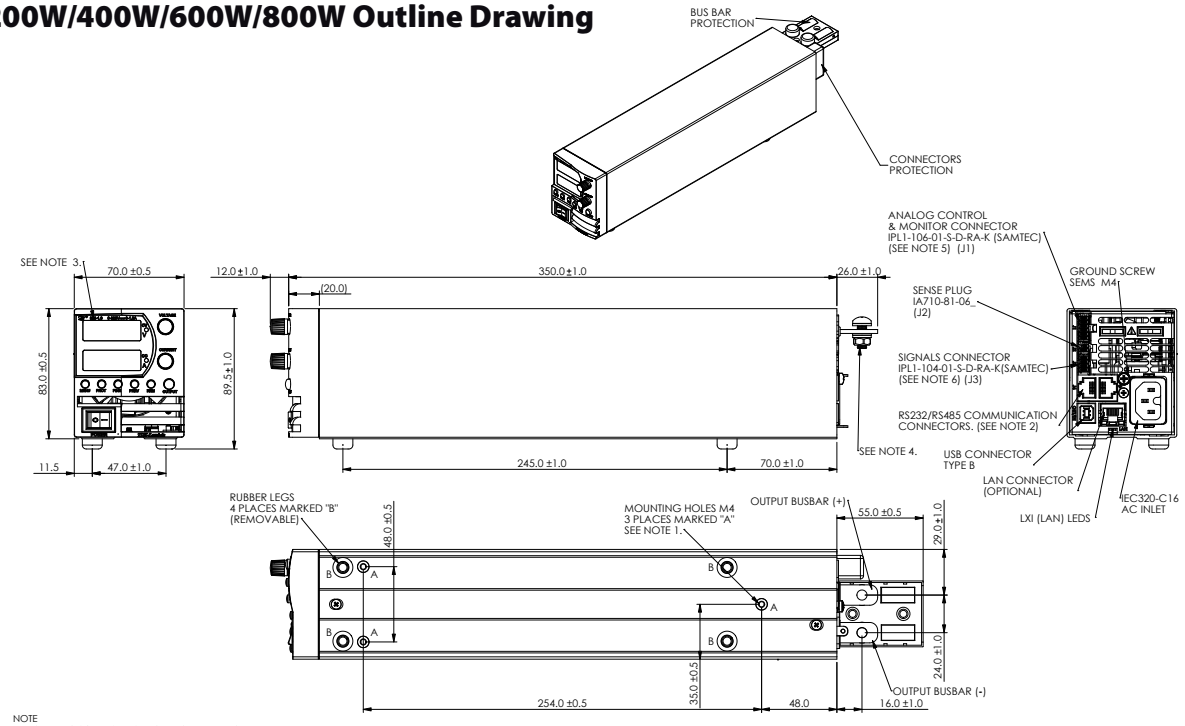


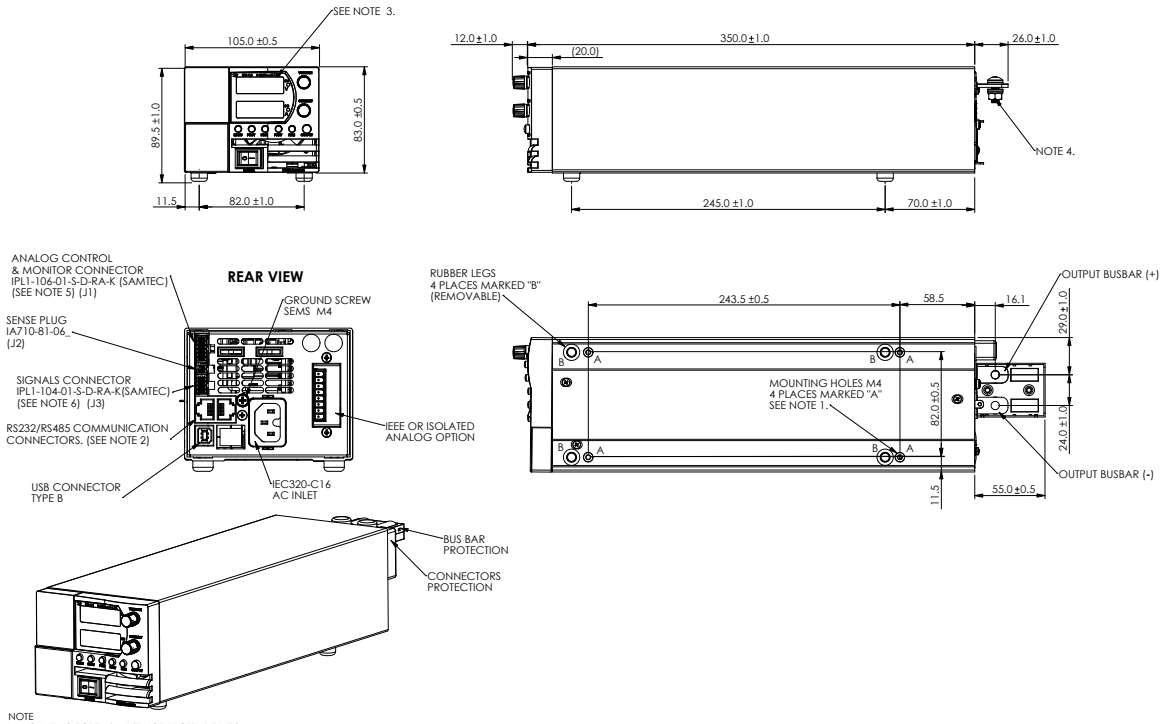

Fig. 2-1: Z+800 Rated Output Current Vs. Line Voltage and Ambient Temperature

## Z200W/400W/600W/800W Outline Drawing



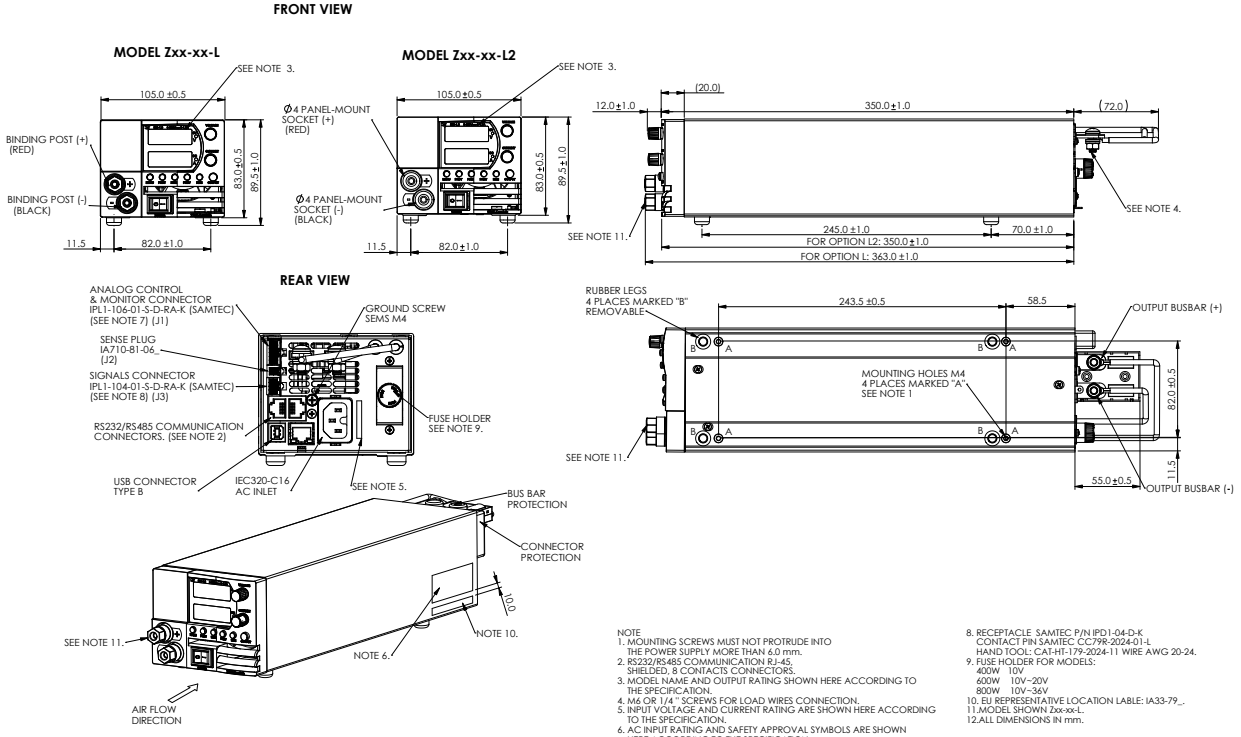

NOTE
1. MOUNTING SCREWS MUST NOT PROTRUDE INTO THE POWER SUPPLY MORE THAN 6.0 mm.
2. RS232/RS485 COMMUNICATION RJ-45, SHIELDED, 8 CONTACTS CONNECTORS.
3. MODEL NAME AND OUTPUT RATING SHOWN HERE ACCORDING TO THE SPECIFICATION.
4. M6 OR 1/4 " SCREWS FOR LOAD WIRES CONNECTION.
5. RECEPTACLE SAMTEC P/N IPD1-06-D-K
   CONTACT PIN SAMTEC CC79R-2024-01-L
   HAND TOOL: CAT-HT-179-2024-11 WIRE AWG 20-24.
6. RECEPTACLE SAMTEC P/N IPD1-04-D-K
   CONTACT PIN SAMTEC CC79R-2024-01-L
   HAND TOOL: CAT-HT-179-2024-11 WIRE AWG 20-24.

## Z200W/400W/600W/800W Optional IEEE, Isolated Analog Interface Outline Drawing



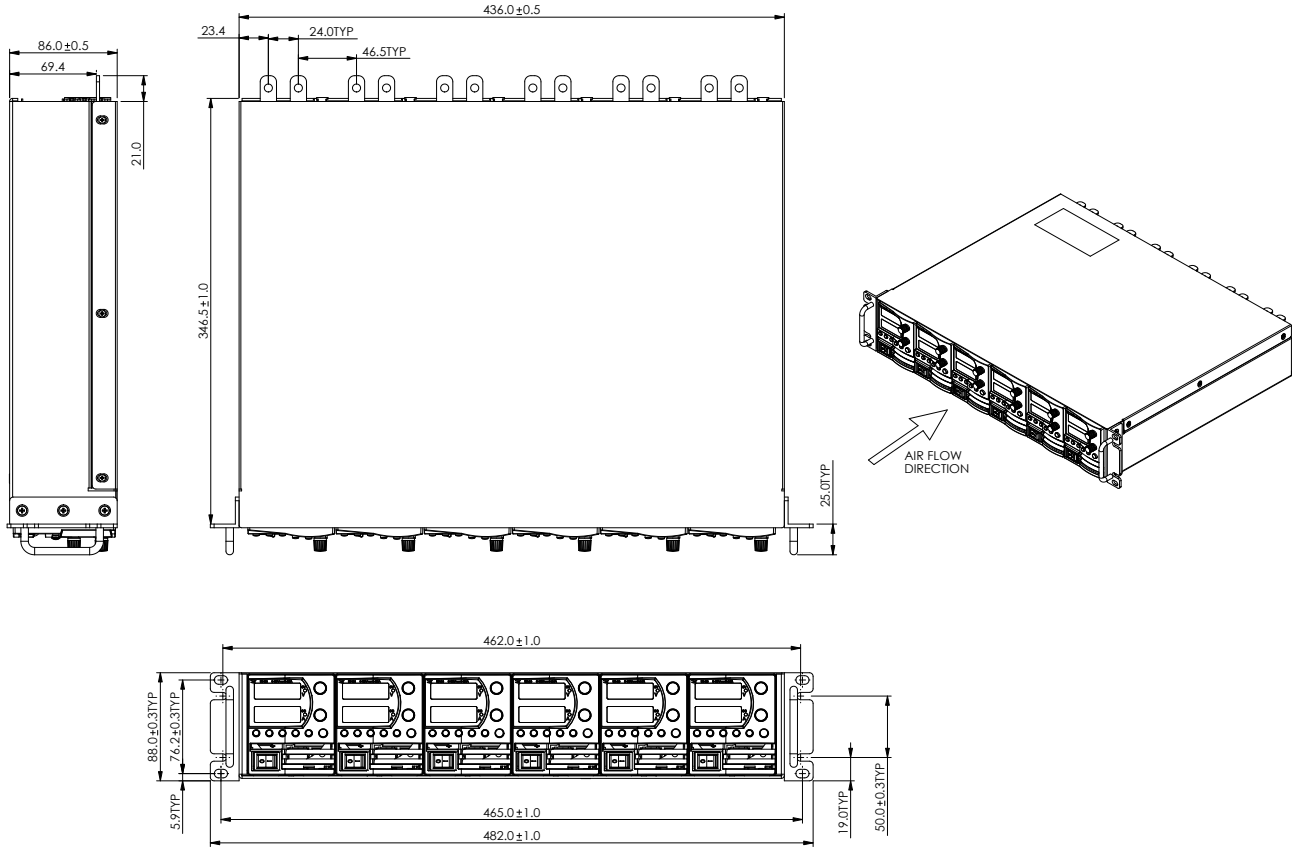

NOTE
1. MOUNTING SCREWS MUST NOT PROTRUDE INTO THE POWER SUPPLY MORE THAN 6.0 mm.
2. RS232/RS485 COMMUNICATION RJ-45, SHIELDED, 8 CONTACTS CONNECTORS.
3. MODEL NAME AND OUTPUT RATING SHOWN HERE ACCORDING TO THE SPECIFICATION.
4. M6 OR 1/4 " SCREWS FOR LOAD WIRES CONNECTION.
5. RECEPTACLE SAMTEC P/N IPD1-06-D-K
   CONTACT PIN SAMTEC CC79R-2024-01-L
   HAND TOOL: CAT-HT-179-2024-11 WIRE AWG 20-24.
6. RECEPTACLE SAMTEC P/N IPD1-04-D-K
   CONTACT PIN SAMTEC CC79R-2024-01-L
   HAND TOOL: CAT-HT-179-2024-11 WIRE AWG 20-24.

# Z200W/400W/600W/800W Front Panel Output Binding Post/Socket Outline Drawing L/L2




NOTE
1. MOUNTING SCREWS MUST NOT PROTRUDE INTO THE POWER SUPPLY MORE THAN 6.0 mm.
2. RS232/RS485 COMMUNICATION RJ-45, SHIELDED, 8 CONTACTS CONNECTORS.
3. MODEL NAME AND OUTPUT RATING SHOWN HERE ACCORDING TO THE SPECIFICATION.
4. M6 OR 1/4" SCREWS FOR LOAD WIRES CONNECTION.
5. INPUT VOLTAGE AND CURRENT RATING ARE SHOWN HERE ACCORDING TO THE SPECIFICATION.
6. AC INPUT RATING AND SAFETY APPROVAL SYMBOLS ARE SHOWN HERE ACCORDING TO THE SPECIFICATION.
7. RECEPTACLE SAMTEC P/N IPD1-06-D-K CONTACT PIN SAMTEC CC79R-2024-01-L HAND TOOL: CAT-HT-179-2024-11 WIRE AWG 20-24.
8. RECEPTACLE SAMTEC P/N IPD1-04-D-K CONTACT PIN SAMTEC CC79R-2024-01-L HAND TOOL: CAT-HT-179-2024-11 WIRE AWG 20-24.
9. FUSE HOLDER FOR MODELS:
   400W 10V
   600W 10V~20V
   800W 10V~36V
10. EU REPRESENTATIVE LOCATION LABLE: IA33-79_.
11. MODEL SHOWN Zxx-xx-L.
12. ALL DIMENSIONS IN mm.

## 19" Rack Housing for Z+200W/400W/600W/800W



# GLOBAL NETWORK

TDK·Lambda

## NORTH AMERICA

TDK-Lambda Americas Inc
405 Essex Rd. Neptune, NJ 07753
Tel: +1-732-922-9300 Fax: +1-732-922-1441
E-mail: sales@us.tdk-lambda.com
www.us.tdk-lambda.com/hp

## UK

TDK-Lambda UK Ltd.
Kingsley Avenue Ilfracombe, Devon
EX 34 8ES United Kingdom
Tel: +44-1271-856666 Fax: +44-1271-864894
E-mail: powersolutions@uk.tdk-lambda.com
www.uk.tdk-lambda.com

## FRANCE

TDK-Lambda France SAS
ZAC des Delaches
BP 1077 - Gometz le Chatel
91940 LES ULIS
Tel: +33 1 60 12 71 65
Fax: +33 1 60 12 71 66
E-mail: france@fr.tdk-lambda.com
www.fr.tdk-lambda.com

## GERMANY

TDK-Lambda Germany GmbH
Karl-Bold-Str.40,
D-77855 Achern, Germany
Tel: +49-7841-666-0 Fax: +49-7841-500-0
E-mail: info.germany@de.tdk-lambda.com
www.de.tdk-lambda.com

## AUSTRIA

TDK-Lambda Austria Sales Office
Aredstrasse 22,
A - 2544 Leobersdorf, Austria
Tel: +43-2256-65584 Fax: +43-2256-64512
E-mail: info.germany@de.tdk-lambda.com
www.de.tdk-lambda.com

## ITALY

TDK-Lambda Italy Sales Office
France Sas Succursale Italiana
Via dei Lavoratori 128/130
IT 20092 Cinisello Balsamo, Milano, Italy
Tel: +39-02-6129-3863 Fax: +39-02-6129-0900
E-mail: info.italia@it.tdk-lambda.com
www.it.tdk-lambda.com

## ISRAEL

TDK-Lambda Ltd.
Sales Office: Kibbutz Givat Hashlosha Tel-Aviv 4880000, Israel
Tel: +972-3-9024-333 Fax: +972-3-9024-777
Plant: 56 Haharoshet St.,
Karmiel Industrial Zone 2165158, Israel
Tel: +972-4-9887-491 Fax: +972- 4-9583-071
www.tdk-lambda.co.il E-mail: info@tdk-lambda.co.il

## JAPAN

TDK-Lambda Corporation
International Sales Divison
Nittetsu Bldg. 6F, 1-13-1 Nihonbashi,
Chuo-ku, Tokyo 103-0027, Japan
Tel: +81-3-5201-7175 Fax: +81-3-5201-7287
www.tdk-lambda.com

## CHINA

Shanghai Branch of Wuxi TDK-Lambda Electronic Co. Ltd.
28F, Xingyuan Technology Building No.418, Guiping Road,
Shanghai, China 200233
Tel: +86-21-6485-0777 Fax: +86-21-6485-0666
www. cn.tdk-lambda.com

Beijing Branch of Wuxi TDK-Lambda Electronic Co. Ltd.
Room 12B11-12B12, Unit 7 DACHENG SQUARE, No.28
Xuanwumenxi Street, Xuanwu District Beijing, 100053, CHINA
Tel: +86-10-6310-4872 Fax: +86-10-6310-4874
www. cn.tdk-lambda.com

Shenzhen Branch of Wuxi TDK-Lambda Electronics Co.Ltd.
Room 4302, Excellence Times Square Building,
4068 Yi Tian Road, Futian District,
Shenzhen, China 518048
Tel: +86 -755-83588261 Fax: +86 -755-83588260
www. cn.tdk-lambda.com

## KOREA

TDK-Lambda Corporation Seoul Office
8F Songnam Bldg, 1358-6, Seocho-Dong,
Seocho-Gu, Seoul, 137-862 KOREA
Tel: +82-2-3473-7051
Fax: +82-2-3472-9137
www.tdk-lambda.co.kr

## SINGAPORE

TDK-Lambda Singapore Pte.Ltd.
Blk 1008 Toa Payoh North # 07-01/03
Singapore 318996
Tel: +65-6251-7211 Fax: +65-6250-9171
www.tdk-lambda.com.sg

## INDIA

TDK-Lambda Bangalore Office
TDK - LAMBDA Singapore Pte Ltd (India Branch)
No.989, 1st Cross, 2nd Floor, 13th Main,
HAL 2nd Stage, Bangalore, Karnataka, India – 560 008
Tel: +91-80-43550 500
Fax: +91-80-43550 501
www.tdk-lambda.com.sg

## MALAYSIA

TDK-Lambda Malaysia Sdn. Bhd.
c/o TDK (Malaysia) Sdn Bhd
Lot 709, Nilai Industrial Estate 71800 Nilai
Negeri Sembilan, Malaysia
Tel: + 60 6-799 1130
Fax: + 60 6 799 3277
www.tdk-lambda.com.my

TDK

TDK-Lambda EMEA
www.emea.tdk-lambda.com

AD0814

*Innovating Reliable Power*