Z+ Series

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

Optional Interface:
LXI Compliant 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 75A
- 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
- Variable Fan Speed Control
- 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
- Compliant LAN
- LabView® and LabWindows® drivers
- Five Year Warranty
- Worldwide Safety Agency Approvals; CE Mark for LVD and EMC Regulations

- Arbitrary functions for:
  Automotive or Laser simulation / 4-6 preprogrammed functions
- Fast command processing time
- Output Sequencing
- Four cell memory Settings
- User Programmable signal pins.

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:

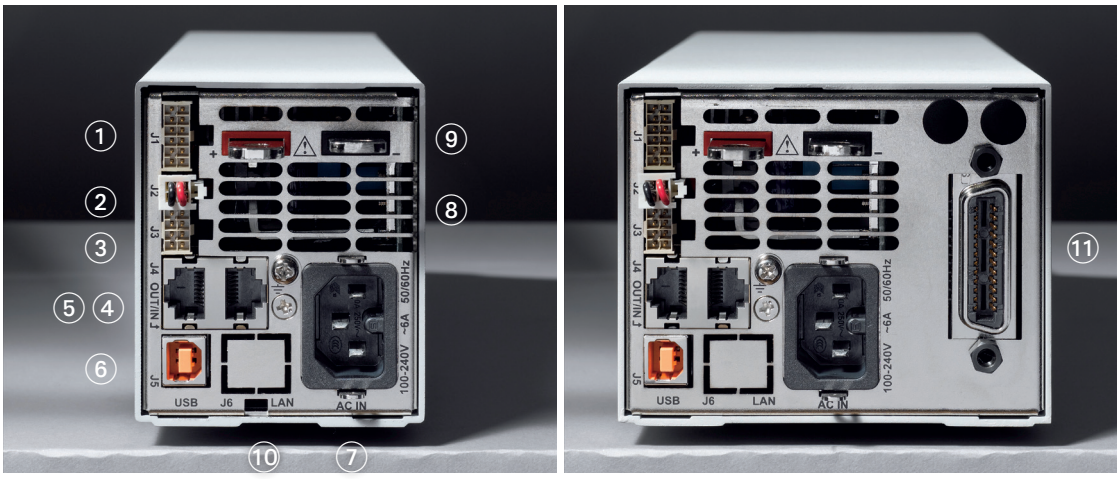
- Alarm
- Fine Control
- Preview Settings
- Foldback Mode
- Remote Mode
- Output On

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. Output Jacks Up to 60V output module up to 25A. Output current via front panel jacks

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 seperation between units
9. Output Connections: Rugged busbars for 6V up to 100V Output.
10. Optional Interface Position for LAN Interface (shown).
11. Optional Interface Position for GPIB Interface (shown).

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.

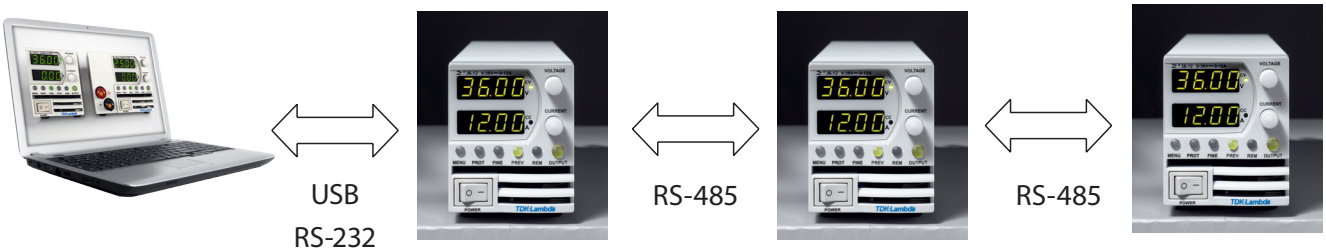
Remote Programming via Built-in USB, RS-232 & RS-485 Interface

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

Last-Setting memory based on flash memory no battery or capacitor backup. Simplifies test design and requiries

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

Heater Supplies

Smooth, reliable encoders enhance front panel control.

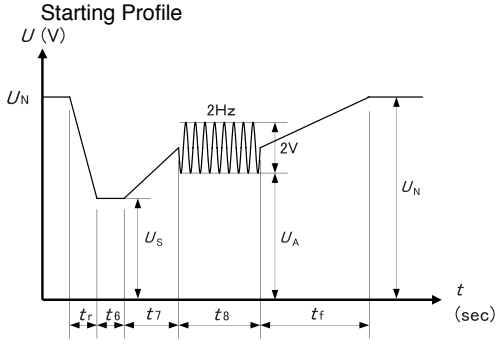
Remote analog programming is user selectable 0-5V or 0-10V.

RF Amplifiers and Magnets

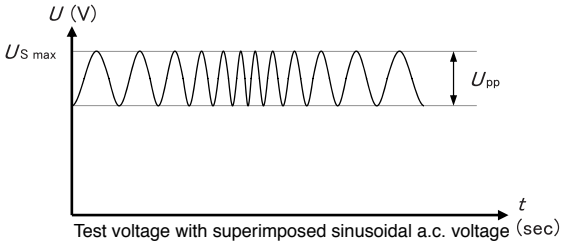
Robust design assures stable operation under a wide variety of loads. High linearity in voltage & current mode.

Z+ Series Sequence programming Applications: ISO 16750-2

Starting Profile

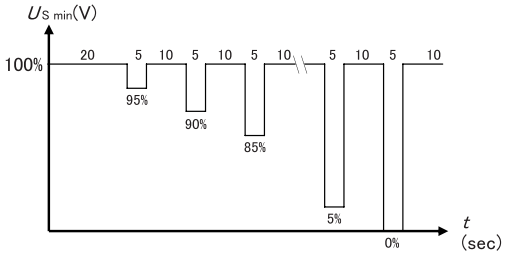


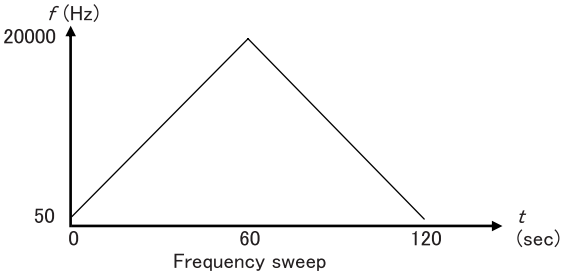
Superimposed alternating voltage



Test voltage with superimposed sinusoidal a.c. voltage

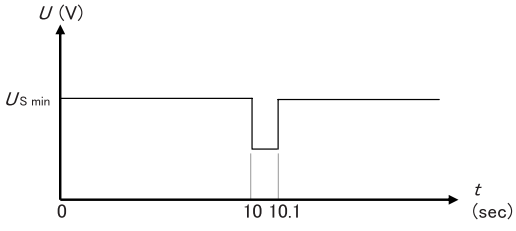
Reset behaviour at voltage drop



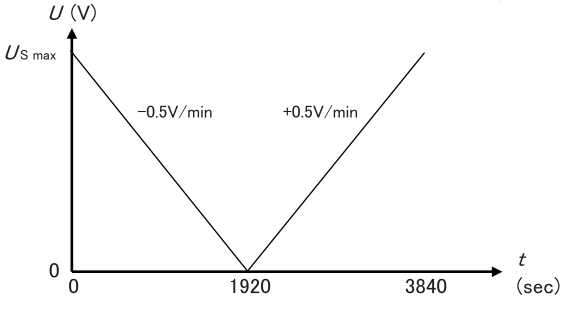


Frequency sweep

Discontinuities in supply voltage
Momentary drop in supply voltage



Slow decrease and increase of supply voltage



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

Front Panel Output Jacks

Up to 60V output module

P/N: Z_ _ - _ _ - L

Up to 25A Output current via front panel jacks

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 05mm blank panels can be installed:
P/N: Z-NL100

Power Modules Table

Module Type	200W	400W	600W	800W
0~10V	20A	40A	60A	75A
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

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 **Compliant to Class C** **P/N: LAN**

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

AC Cord

Region	Europe	United Kingdom	North America	Middle East
Output Power	850W	850W	850W	850W
AC Cords	10A/250Vac L=2m	10A/250Vac L=2m	13A/125Vac L=2m	10A/250Vac L=2m
Wall Plug	INT'L 7/VII	BS1363	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-GB	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	-		-		-	
			Factory Options:		Output Jacks	AC cord Options:		
Series	Output	Output		IEEE	L	Region:	E - Europe	
							GB - United Kingdom	
Name	Voltage	Current		LAN			U - North America	
	(0~10V)	(0~40A)		IS510			I - Middle East	
				IS420				

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 (Complies with LXI Class C)	LAN
Front Panel Output Jacks (60V or 25A max)	L

Model	Output Voltage (VDC)	Output Current (A)	Output Power (W)	
Z10-20	0~10 VDC	0~20	200	**Available**
Z10-40		0~40	400	
Z10-60		0~60	600	Coming Soon
Z10-75		0~75	750	
Z20-10	0~20 VDC	0~10	200	**Available**
Z20-20		0~20	400	
Z20-30		0~30	600	Coming Soon
Z20-40		0~40	800	
Z36-6	0~36 VDC	0~6	216	**Available**
Z36-12		0~12	432	
Z36-18		0~18	648	Coming Soon
Z36-24		0~24	864	
Z60-3.5	0~60 VDC	0~3.5	210	**Available**
Z60-7		0~7	420	
Z60-10		0~10	600	Coming Soon
Z60-14		0~14	840	
Z100-2	0~100VDC	0~2	200	**Available**
Z100-4		0~4	400	
Z100-6		0~6	600	Coming Soon
Z100-8		0~8	800	

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	20.00	10.00	6.00	3.50	2.00
3. Rated output power	W	200	200	216	210	200

CONSTANT VOLTAGE MODE		V	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	10	25	30	40	50
	Time delay (*17)		210	250	320	380	1200
	No load (*10) (*15)(*17)		35	65	85	100	250
	No load (*10) (*16)(*17)		190	200	290	310	900
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		---	15mSec Typical.	16mSec Typical. Rated output power			

CONSTANT CURRENT MODE	V	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	V	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 OUT 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 OUT 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. Reset by AC input recycle in autostart mode or by OUT 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/2~15V 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	---	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 = 2V, maximum source current = 8mA, minimum pulse = 10uS.
16. Trigger in	---	Maximum low level input voltage = 0.8V,minimum high level input votage = 2.0V, Maximum sink current = 8mA, 4uS minimum positive edge trigger
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	---	Mutiple 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 LED's: FINE, MENU, PREV, PROT, REM/LOC,OUT ON/OFF , CV, CC
	---	RED LED's: ALRM (OVP, UVP,OTP, FOLD, AC FAIL).
4. Function buttons	---	FINE, MENU, PREV, PROT, REM/LOC, OUT ON/OFF

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

Z+200 SERIES SPECIFICATIONS

INPUT CHARACTERISTICS	V	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 (*18)	---	2.65/1.29	2.61/1.27	2.75/1.35	2.67/1.31	2.53/1.24
3. Power Factor (Typ)	---	0.99 at 100/200Vac, 100% load				
4. Efficiency (Typ) 100/200VAC (*4) (*18)	%	75/78	76/78	78/80	78/80	79/81
5. Inrush current (*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. 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
	EMC	---	IEC61326-1 (Built to meet EN55022/EN55024)
2. Withstand voltage		---	Vout≤36V models: Input- Output,Communiction PORTS and connector J3: 4242VDC 1min, Input-Ground: 2828VDC 1min., 60V,100V models: Input-Output: 4242VDC 1min, Input- Communiction PORTS and J3: 4242VDC 1min, Hazard. Output- Communiction PORTS and J3:1910VDC 1min, Output-Ground: 1380VDC 1min, Input-Ground: 2828VDC 1min.
3. Insulation resistance		---	More than 100Mohm at 25°C, 70%RH.
4. Conducted emmision		---	EN55022B, FCC part 15-B, VCCI-B
5. Radiated emission		---	EN55022B, FCC part 15-B, VCCI-B

MECHANICAL		
1. Cooling	---	Forced air cooling by internal fan.
2. Weight	Kg	Less than 1.9Kg. Less than 2.4Kg. Wide body with Isolated analog or Binding post or IEEE.
3. Dimensions (WxHxD)	mm	H: 83, W: 70, D: 350 (excluding bus bars, handles…). (Refer to Outline drawing). H: 83, W: 105, D: 350 (excluding bus bars, handles…). (Refer to Outline drawing).
5. Shock	---	Less than 20G, half sine, 11mS. Unit is unpacked. According to: IEC600068-2-27 According to: IEC60068-2-64

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 (±20%) Minimum time between consecutive down programming cycles.
*18: PS with isolated analog option decreases efficiancy by 1% and increases input current by 1 %

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	V	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)		210	250	320	380	1200
No load (*10) (*15) (*17)		35	65	85	100	250
No load (*10) (*16) (*17)		190	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	---	15mSec Typical.	16mSec Typical. Rated output power.			

CONSTANT CURRENT MODE	V	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	V	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 OUT 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 OUT 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. Reset by AC input recycle in autostart mode or by OUT 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/2~15V 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	---	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 = 2V, maximum source current = 8mA, minimum pulse = 10uS.
16. Trigger in	---	Maximum low level input voltage = 0.8V,minimum high level input votage = 2.0V, Maximum sink current = 8mA, 4uS minimum positive edge trigger
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	---	Mutiple 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 LED's: FINE, MENU, PREV, PROT, REM/LOC,OUT ON/OFF , CV, CC
	---	RED LED's: ALRM (OVP,UVP, OTP, FOLD, AC FAIL).
4. Function buttons	---	FINE, MENU, PREV, PROT, REM/LOC, OUT ON/OFF

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

Z+400 SERIES SPECIFICATIONS

INPUT CHARACTERISTICS	V	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 (*18)	---	5.05/2.5	4.98/2.43	5.25/2.60	5.10/2.50	4.80/2.35
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. 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
	EMC	---	IEC61326-1 (Built to meet EN55022/EN55024)
2. Withstand voltage		---	Vout≤36V models: Input- Output,Communiction PORTS and connector J3: 4242VDC 1min, Input-Ground: 2828VDC 1min., 60V,100V models: Input-Output: 4242VDC 1min, Input- Communiction PORTS and J3: 4242VDC 1min, Hazard. Output- Communiction PORTS and J3:1910VDC 1min, Output-Ground: 1380VDC 1min, Input-Ground: 2828VDC 1min.
3. Insulation resistance		---	More than 100Mohm at 25°C, 70%RH.
4. Conducted emmision		---	EN55022B, FCC part 15-B, VCCI-B
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 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: 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 efficiancy by 1% and increases input current by 1 %

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		V	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	75	75	75	75	100
4. Ripple r.m.s. 5Hz~1MHz		mV	6.25	6.25	6.25	6.25	10
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	30	30	50	50
	Time delay (*17)	mS	260	310	400	475	1500
	No load (*10) (*15) (*17)		40	80	100	120	250
	No load (*10) (*16) (*17)		190	200	290	310	900
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		---	16mSec Typical. Rated output power.				

CONSTANT CURRENT MODE	V	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 0.05% of rated output current over 30 minutes following load change.				
4. Ripple r.m.s. 5Hz~1MHz (*12)	mA	75	45	22	12	4.5
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	---	Less than +/-0.1% of rated output current over 30 minutes following power on.				

PROTECTIVE FUNCTIONS	V	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. Reset by AC input recycle in autostart mode or by OUT 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 OUT 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. Reset by AC input recycle in autostart mode or by OUT 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/2~15V 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	---	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 = 2V, maximum source current = 8mA, minimum pulse = 10uS.
16. Trigger in	---	Maximum low level input voltage = 0.8V,minimum high level input votage = 2.0V, Maximum sink current = 8mA, 4uS minimum positive edge trigger
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	---	Mutiple 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 LED's: FINE, MENU, PREV, PROT, REM/LOC,OUT ON/OFF , CV, CC
	---	RED LED's: ALRM (OVP, UVP,OTP, FOLD, AC FAIL).
4. Function buttons	---	FINE, MENU, PREV, PROT, REM/LOC, OUT ON/OFF

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

Z+600 SERIES SPECIFICATIONS

INPUT CHARACTERISTICS	V	10-60	20-30	36-18	60-10	100-6
1.Input voltage/freq. (*3)	---	85~265Vac continuous, 47~63Hz, single phase				
2.Maximum Input current 100/200VAC	---	7.4/3.6	7.24/3.53	7.73/3.77	7.15/3.50	7.15/3.50
3.Power Factor (Typ)	---	0.99 at 100/200Vac, 100% load				
4.Efficiency (Typ) 100/200VAC (*4)	%	82/84	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. 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
	EMC	---	IEC61326-1 (Built to meet EN55022/EN55024)
2.Withstand voltage		---	Vout≤36V models: Input- Output,Communiction PORTS and connector J3: 4242VDC 1min, Input-Ground: 2828VDC 1min., 60V,100V models: Input-Output: 4242VDC 1min, Input- Communiction PORTS and J3: 4242VDC 1min, Hazard. Output- Communiction PORTS and J3:1910VDC 1min, Output-Ground: 1380VDC 1min, Input-Ground: 2828VDC 1min.
3.Insulation resistance		---	More than 100Mohm at 25°C, 70%RH.
4.Conducted emmision		---	EN55022B, FCC part 15-B, VCCI-B
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	Kg	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	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: 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 efficiancy by 1% and increases input current by 1 %

Z+800 SERIES SPECIFICATIONS

MODEL	Z	10-75	20-40	36-24	60-14	100-8
1. Rated output voltage(*1)	V	10	20	36	60	100
2. Rated output current (*2)	A	75	40	24	14	8
3. Rated output power	W	750	800	864	840	800

CONSTANT VOLTAGE MODE

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	75	75	75	75	100
4. Ripple r.m.s. 5Hz~1MHz	mV	6.25	6.25	6.25	6.25	10
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 (*4)	mS	10	30	30	50	50
Time delay (*17)	mS	260	310	400	475	1500
No load (*10) (*15) (*17)	mS	35	65	85	100	250
No load (*10) (*16) (*17)	mS	190	200	290	310	900
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	---	16mSec Typical. Rated output power.				

CONSTANT CURRENT MODE

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	75	45	22	12	4.5
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	---	Less than +/-0.1% of rated output current over 30 minutes following power on.				

PROTECTIVE FUNCTIONS

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 OUT 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 OUT 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. Reset by AC input recycle in autostart mode or by OUT 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/2~15V 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	---	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 = 2V, maximum source current = 8mA, minimum pulse = 10uS.
16. Trigger in	---	Maximum low level input voltage = 0.8V,minimum high level input votage = 2.0V, Maximum sink current = 8mA, 4uS minimum positive edge trigger
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	---	Mutiple 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 LED's: FINE, MENU, PREV, PROT, REM/LOC,OUT ON/OFF , CV, CC
		RED LED's: ALRM (OVP, UVP,OTP, FOLD, AC FAIL).
4. Function buttons		FINE, MENU, PREV, PROT, REM/LOC, OUT ON/OFF

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 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 rated output current
7.Vout readback resolution		0.012% of full scale
8.Iout readback resolution		0.012% of full scale

Z+800 SERIES SPECIFICATIONS

INPUT CHARACTERISTICS		10-75	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	---	9.25/4.50	9.65/4.70	10.30/5.02	10.00/4.90	9.5/4.65
3.Power Factor (Typ)	---	0.99 at 100/200Vac, 100% load				
4.Efficiency (Typ) 100/200VAC (*4)	%	80/82	82/84	84/85	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. Operating: Maximum ambient temperature, From 2000m up to 3000m Ambient temperature 40°C.

SAFETY/EMC

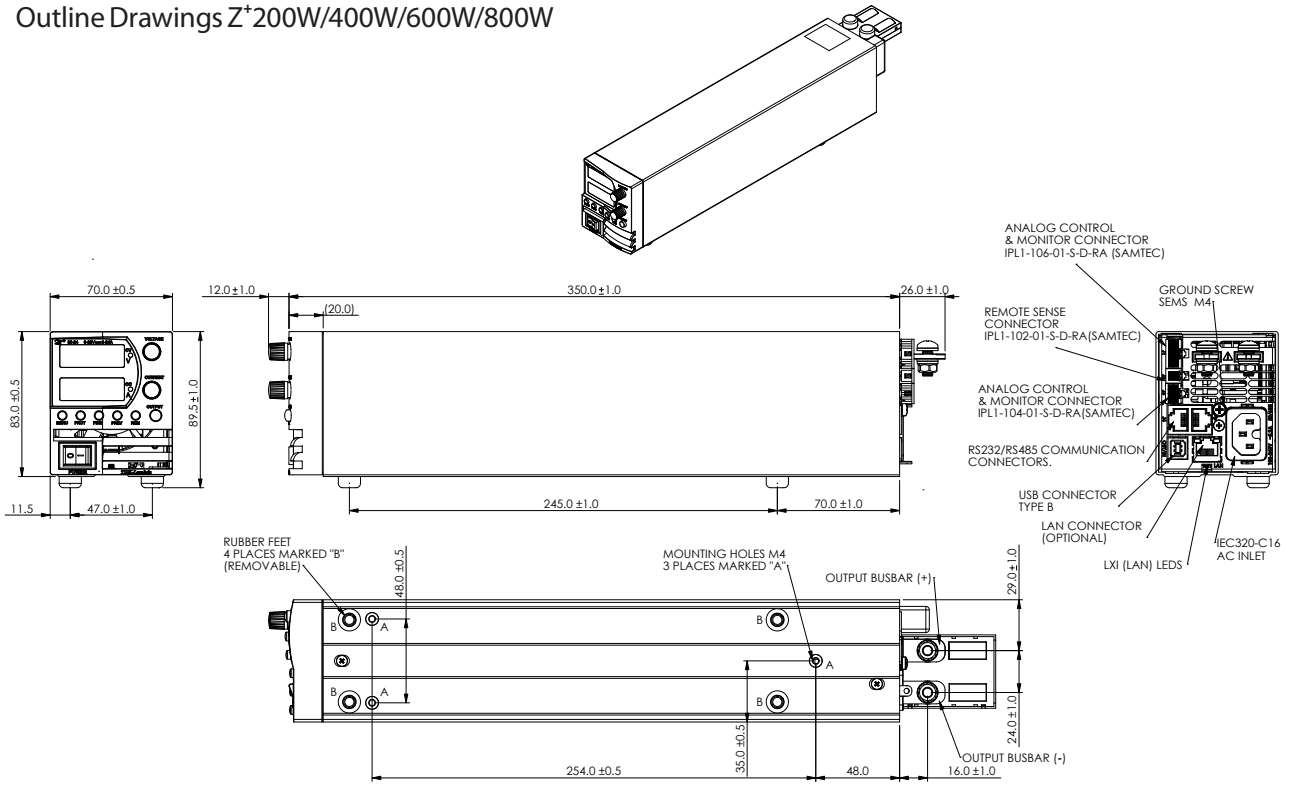
1.Applicable standards:	SAFETY	---	UL61010-1, EN61010-1, IEC61010-1. Design to meet UL60950-1, EN60950-1
	EMC	---	IEC61326-1 (Built to meet EN55022/EN55024)
2.Withstand voltage		---	Vout≤36V models: Input- Output,Communiction PORTS and connector J3: 4242VDC 1min, Input-Ground: 2828VDC 1min., 60V,100V models: Input-Output: 4242VDC 1min, Input- Communiction PORTS and J3: 4242VDC 1min, Hazard. Output- Communiction PORTS and J3:1910VDC 1min, Output-Ground: 1380VDC 1min, Input-Ground: 2828VDC 1min.
			Output-SELV:1910VDC 1min, Hazard. Output-Ground: 1380VDC 1min, Input-Ground: 2288VDC 1min.
3.Insulation resistance		---	More than 100Mohm at 25°C, 70%RH.
4.Conducted emmision		---	EN55022B, FCC part 15-B, VCCI-B
5.Radiated emission		---	EN55022B, FCC part 15-B, VCCI-B

MECHANICAL

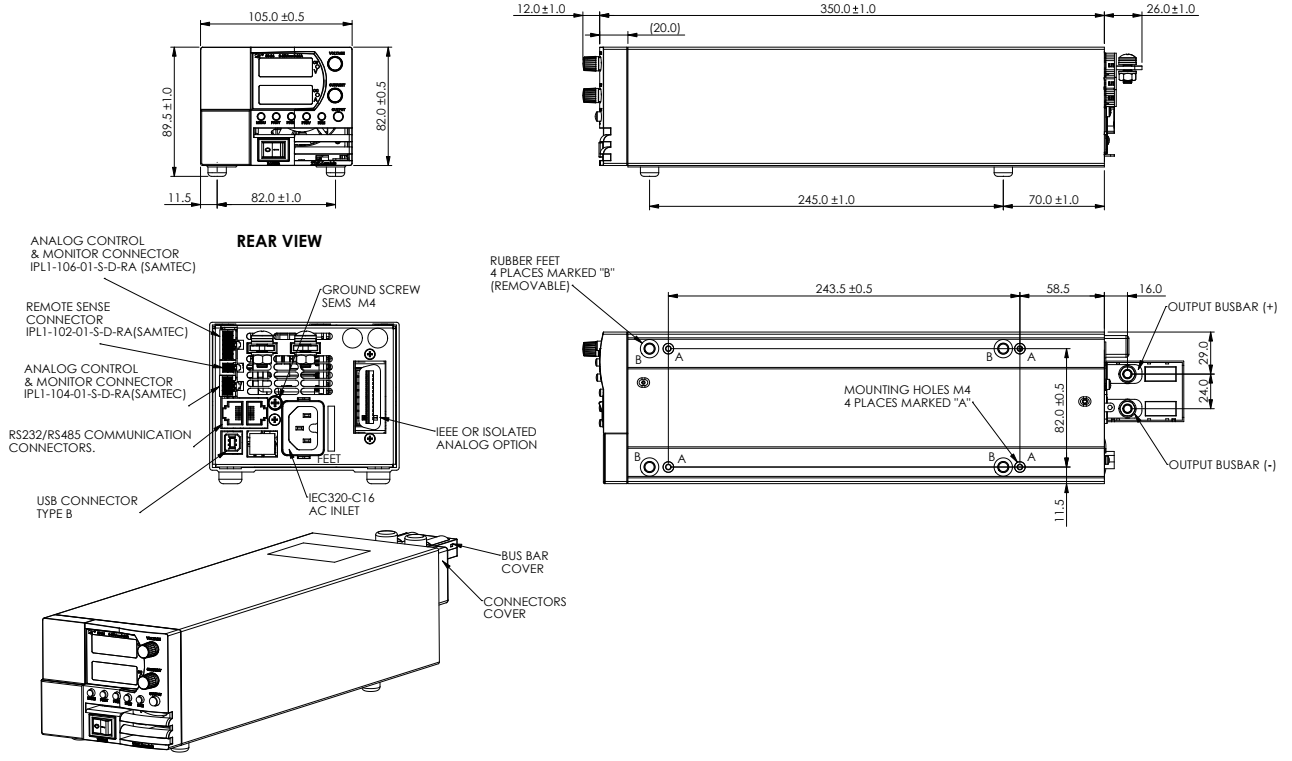
1.Cooling		---	Forced air cooling by internal fan.
2.Weight	STANDARD	Kg	Less than 2.5Kg.
	WIDE BODY		Less than 3.0Kg. Wide body with Isolated analog or Binding post or IEEE.
3.Dimensions (WxHxD)	STANDARD	mm	H: 83, W: 70, D: 350 (excluding bus bars, handles…). (Refer to Outline drawing).
	WIDE BODY		H: 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 efficiancy by 1% and increases input current by 1 %

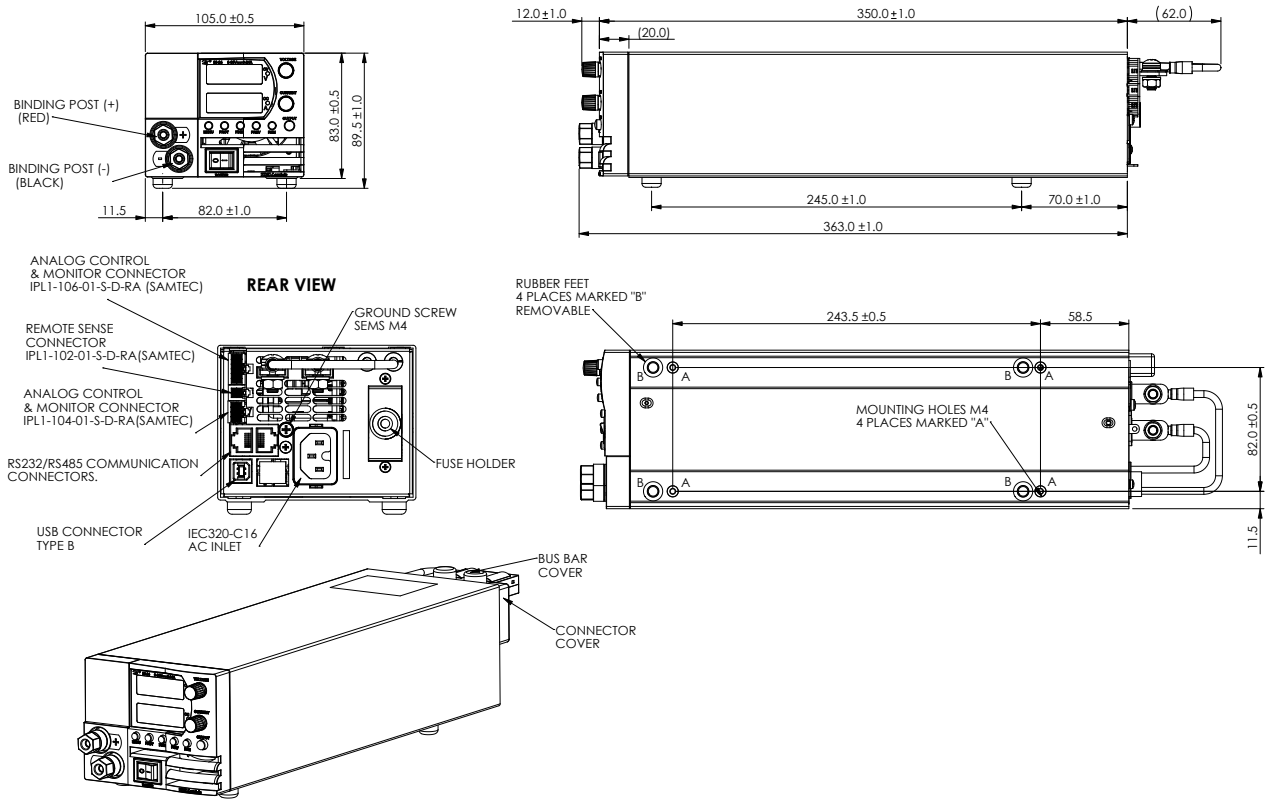
Outline Drawings Z+200W/400W/600W/800W



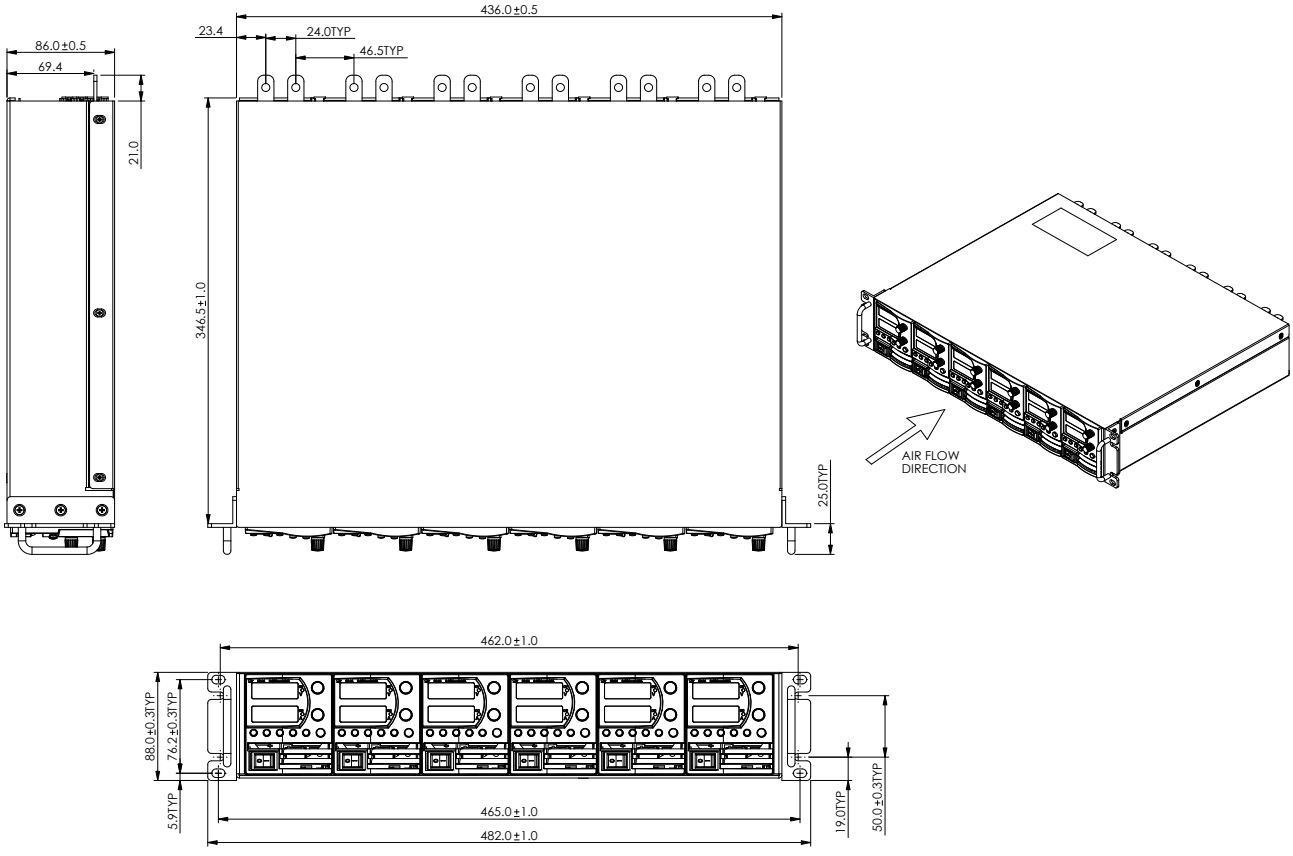
Z+200W/400W/600W/800W Optional IEEE, Isolated Analog Interface



Outline Drawings Z+200W/400W/600W/800W Front Panel Output Jacks



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



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