# imall

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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 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

### Compliant 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
   Foldback Mode
- Fine Control
   Remote Mode
- Preview Settings
   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 Output Jacks 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.

### **C** + 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



RS-232 RS-485 LAN IEEE













**TDK**·Lambda



### **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**

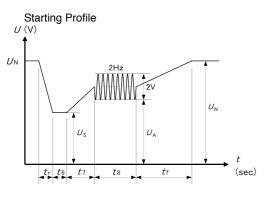
Smooth, reliable encoders enhance front panel control.

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

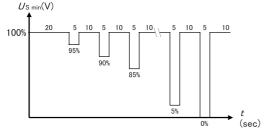
### **RF Amplifiers and Magnets**

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

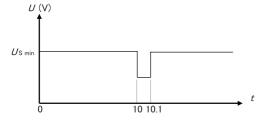
### Z<sup>+</sup> Series Sequence Programming Applications: ISO 16750-2



Reset behaviour at voltage drop



Discontinuities in supply voltage Momentary drop in supply voltage



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

**Front Panel Output Jacks** 

Up to 60V Output Module

P/N: Z\_\_-L



Up to 24A Output Current via Front Panel Jacks

### Z<sup>+</sup> 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





1/4 width

### **Programming Options (Factory Installed)**

Digital Programming via IEEE Int	erface	P/N: IEEE
<ul> <li>IEEE 488.2 SCPI Compliant</li> </ul>		
<ul> <li>Program Voltage</li> </ul>	<ul> <li>Program Current</li> </ul>	
Measure Voltage	<ul> <li>Measure Current</li> </ul>	
Over Voltage setting and shutdow	n • Current Foldback sh	nutdown
Error and Status Messages		
Multi-Drop		
Allows IEEE Master to control up to	o 31 slaves over RS-485 daisy-chair	า
Only the Master needs be equipped		
<ul> <li>Isolated Analog Programming</li> <li>Four Channels to Program and Monit</li> <li>Isolation allows operation with floating</li> <li>Choose between programming with</li> <li>Connection via removable terminal between supply Voltage and Curren</li> <li>Power Supply Voltage and Curren</li> <li>Current Programming with 4-20m</li> <li>Power Supply Voltage and Curren</li> </ul>	ng references in harsh electrical en Voltage or Current. Nock: Phoenix MC1,5/8-ST-3.81. able 0-5V or 0-10V signal. t Programming Accuracy ±1% t Monitoring Accuracy ±1.5% A signal. t Programming Accuracy ±1%	P/N: IS510 P/N: IS420
LAN Interface	Compliant to Class C	P/N: LAN

### LAN Interface

- Compliant to Class C
- Meets all LXI-C Requirements
- Address Viewable on Front Panel
- Fixed and Dynamic Addressing
- Compatible with most standard Networks
   Fast Startup
- TCP / UDP Socket Programming

### 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	IEC320-C15	IEC320-C15	IEC320-C15	IEC320-C15
Connector		<b>M</b>	Ŵ	
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<sup>+</sup> 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

- - VISA & SCPI Compatible
- LAN Fault Indicators
  Auto-detects LAN Cross-over Cable

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

Z	10 -	40-	-	-	
Series Name	Output Voltage (0~10V)	Output Current (0~40A)	Factory Options: IEEE LAN	Output Jacks	AC cord Options: Region : E - Europe J - Japan
			IS510 IS420	L	U - North America I - Middle East
Factory o	<b>ption</b> ace built-in Standarc	1	P/N		
RS-232/RS-485 Interface built-in Standard		-			
GPIB Interface		IEEE			
Voltage Programming Isolated Analog Interface		IS510			
	Current Programming Isolated Analog Interface				
LAN Interfa	ace (Complies with	Class C)	LAN		
Front Pane	el Output Jacks (60V	or 24A max)	L		

Model	Output Voltage (VDC)	Output Current (A)	Output Power (W)	
Z10-20		0~20	200	Available
Z10-40	0~10 VDC	0~40	400	Available
Z10-60	0~10 VDC	0~60	600	Coming Soon
Z10-72		0~72	720	Coming Soon
Z20-10		0~10	200	Available
Z20-20	0~20 VDC	0~20	400	Available
Z20-30	0~20 VDC	0~30	600	Coming Soon
Z20-40		0~40	800	Coming Soon
Z36-6		0~6	216	Available
Z36-12	0~36 VDC	0~12	432	Available
Z36-18	0~36 VDC	0~18	648	Coming Soon
Z36-24		0~24	864	Coming Soon
Z60-3.5		0~3.5	210	Available
Z60-7	0~60 VDC	0~7	420	Available
Z60-10	0~00 VDC	0~10	600	Coming Soon
Z60-14		0~14	840	Coming Soon
Z100-2		0~2	200	Available
Z100-4		0~4	400	Available
Z100-6	0~100VDC	0~6	600	Coming Soon
Z100-8		0~8	800	Coming Soon

### \_+

Z <sup>+</sup> 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
2. Rated output current (*2)	A	20	10	6	3.5	2
3. Rated output power	W	200	200	216	210	200
· ·	1					
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 volt	tage+2mV			
2. Max. Load regulation (*7)		0.01% of rated output volt	age+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		out voltage, following 30 mi			
6. Temperature stability			8hrs. interval following 30 m			
7. Warm-up drift			utput voltage+2mV over 3			1
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)		40	65	85	100	250
No load (*10) (*16)(*17)		200	200	290	310	1100
11. Transient response time	mS	output current. Output se	o recover within 0.5% of its i t-point: 10~100%, Local ser s up to and including 100V		nge 10~90% of rated	
12. Hold-up time		15mSec Typical.	16mSec Typical. Rated out	tput 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 cur	rent+2mA			
2. Max. Load regulation (*11)		0.01% of rated output cur				
3. Load regulation thermal drift		Less than 0.05% of rated o	utput current over 30 minu	ites 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 out	put current, following 30 m	ninutes warm-up.		
6. Temperature stability		0.05% of rated lout over 8	hrs. interval following 30 m	inutes warm-up. Constant	ine, load & temperature.	
7. Warm-up drift		Less than +/-0.1% of rated	output current over 30 mir	nutes following power on.		
		10.00	20.10	26.6	(0.2.5	100.0
PROTECTIVE FUNCTIONS	V	10-20	20-10	36-6	60-3.5	100-2
1. Foldback protection		Reset by AC input recycle	power supply change mode in autostart mode or by OU	T button or by rear panel E	NABLE, or by communicat	
2. Over-voltage protection (OVP)		communication port.	od. Reset by AC input recycl	e in autostart mode or by (	JUT button or by rear pan	el ENABLE, or by
3. Over -voltage trip point	v	0.5-12	1~24	2~40	5~66	5~110
4. Output under voltage limit (UVL)			mmunication port. Prevent			
5. Output under voltage protection (UVP)		"Output shut-down when	power supply output volta	ge goes below UVP progra		
6. Over temperature protection		or by OUT button or by re- User selectable, latched or	ar panel ENABLE, or by com r non latched.	munication port."		
ANALOG PROGRAMMING AND MONITORING						
1. Vout voltage programming		0~100%, 0~5V or 0~10V, u				
2. lout voltage programming (*13)			iser selectable. Accuracy an	d linearity: +/-0.5% of rate	Vout.	
3. Vout resistor programming		0~100%, 0~5V or 0~10V, u	iser selectable. Accuracy an			
4. lout resistor programming (*13)				d linearity: +/-1% of rated	out.	
		0~100%, 0~5/10Kohm ful	iser selectable. Accuracy an	d linearity: +/-1% of rated aracy and linearity: +/-1% c	out. f rated Vout.	
5. Shut-off (SO) control		0~100%, 0~5/10Kohm ful 0~100%, 0~5/10Kohm ful	iser selectable. Accuracy an scale, user selectable. Accu	d linearity: +/-1% of rated uracy and linearity: +/-1% o uracy and linearity: +/-1.5%	out. f rated Vout.	
5. Shut-off (SO) control 6. Output current monitor (*13)		0~100%, 0~5/10Kohm ful 0~100%, 0~5/10Kohm ful	ser selectable. Accuracy an scale, user selectable. Accu scale, user selectable. Accu scale, user selectable. Accu 5V/2~15V or dry contact, us	d linearity: +/-1% of rated uracy and linearity: +/-1% o uracy and linearity: +/-1.5%	out. f rated Vout.	
		0~100%, 0~5/10Kohm full 0~100%, 0~5/10Kohm full By electrical Voltage: 0~0.0	iser selectable. Accuracy an scale, user selectable. Accu scale, user selectable. Accu sCV2~15V or dry contact, us table. Accuracy: +/-1%.	d linearity: +/-1% of rated uracy and linearity: +/-1% o uracy and linearity: +/-1.5%	out. f rated Vout.	
6. Output current monitor (*13) 7. Output voltage monitor 8. Power supply OK signal	  	0~100%, 0~5/10Kohm full 0~100%, 0~5/10Kohm full By electrical Voltage: 0~0. 0~5V or 0~10V, user select 0~5V or 0~10V, user select 4~5V-OK, 0V-Fail. 500ohm	iser selectable. Accuracy an i scale, user selectable. Accu i scale, user selectable. Accu 6V/2~15V or dry contact, us table. Accuracy: +/-1%. table. Accuracy: +/-1%. n series resistance.	d linearity: +/-1% of rated uracy and linearity: +/-1% o uracy and linearity: +/-1.5% ser selectable logic.	out. f rated Vout. of rated lout.	
6. Output current monitor (*13) 7. Output voltage monitor 8. Power supply OK signal 9. Parallel operation (*19)		0~100%, 0~5/10Kohm full 0~100%, 0~5/10Kohm full By electrical Voltage: 0~0. 0~5V or 0~10V, user select 0~5V or 0~10V, user select 4~5V-OK, 0V-Fail. 500ohm	iser selectable. Accuracy an scale, user selectable. Accu scale, user selectable. Accu 6V/2~15V or dry contact, us table. Accuracy: +/-1%. table. Accuracy: +/-1%.	d linearity: +/-1% of rated uracy and linearity: +/-1% o uracy and linearity: +/-1.5% ser selectable logic.	out. f rated Vout. of rated lout.	
6. Output current monitor (*13) 7. Output voltage monitor 8. Power supply OK signal 9. Parallel operation (*19) 10. Series operation	   	0~100%, 0~5/10Kohm full 0~100%, 0~5/10Kohm full By electrical Voltage: 0~0. 0~5V or 0~10V, user select 0~5V or 0~10V, user select 4~5V-OK, 0V-Fail. 500ohm Possible, up to 6 units in ma 2 Identical units (with exte	iser selectable. Accuracy an i scale, user selectable. Accu- i scale, user selectable. Accu- i scale, user selectable. Accu- table. Accuracy: +/-1%. table. Accuracy: +/-1%. n series resistance. ister/slave mode with single- rmal diodes).	d linearity: +/-1% of rated Iracy and linearity: +/-1% c Iracy and linearity: +/-1.5% ser selectable logic. wire current balance connec	out. f rated Vout. of rated lout. tion.	
6. Output current monitor (*13) 7. Output voltage monitor 8. Power supply OK signal 9. Parallel operation (*19) 10. Series operation 11. CV/CC indicator	    	0~100%, 0~5/10Kohm ful 0~100%, 0~5/10Kohm ful By electrical Voltage: 0~0.1 0~5V or 0~10V, user select 0~5V or 0~10V, user select 0~5V or 0~10V, user select 4~5V-0K, 0V-Fail. 500ohm Possible, up to 6 units in ma 2 identical units (with exte Open collector. CC mode:	iser selectable. Accuracy an I scale, user selectable. Accu I scale, user selectable. Accu SV/2~15V or dry contact, us table. Accuracy: +/-1%. table. Accuracy: +/-1%. I series resistance. I ster/slave mode with single rmal diodes). On, CV mode: Off. Maximu	d linearity: +/-1% of rated iracy and linearity: +/-1% c iracy and linearity: +/-1.5% ier selectable logic. wire current balance connec m voltage: 30V, maximum	out. f rated Vout. of rated lout. tion. sink current: 10mA	
6. Output current monitor (*13) 7. Output voltage monitor 8. Power supply OK signal 9. Parallel operation (*19) 10. Series operation 11. CV/CC indicator 12. Interlock (ILC) control	      	0~100%, 0~5/10Kohm ful 0~100%, 0~5/10Kohm ful By electrical Voltage: 0~0.1 0~5V or 0~10V, user select 0~5V or 0~10V, user select 4~5V-OK, 0V-Fail. 500ohm Possible, up to 6 units in ma 2 identical units (with exte Open collector. CC mode: Enables/Disables the PS outpu	iser selectable. Accuracy an I scale, user selectable. Accu Scale, user selectable. Accu SV/2~15V or dry contact, us table. Accuracy: +/-1%. table. Accuracy: +/-1%. In series resistance. In series resistance. In series resistance. I ster/slave mode with single ernal diodes). On, CV mode: Off. Maximul t by dry contact (Short: On, Oper	d linearity: +/-1% of rated iracy and linearity: +/-1% c iracy and linearity: +/-1.5% ier selectable logic. wire current balance connec m voltage: 30V, maximum n: Off, Source current: less than (	out. f rated Vout. of rated lout. tion. sink current: 10mA .5mA). Ena/Dis is activated by	front panel.
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6. Output current monitor (*13) 7. Output voltage monitor 8. Power supply OK signal 9. Parallel operation (*19) 10. Series operation 11. CV/CC indicator 12. Interlock (ILC) control 13. Local/Remote mode Control 14. Local/Remote mode Indicator 15. Trigger out 16. Trigger in 17. Programmed signal 1 18. Programmed signal 2 FRONT PANEL FRONT PANEL		0100%, 05/10Kohm ful 0100%, 05/10Kohm ful By electrical Voltage: 00. 0-5V or 010V, user select 0-5V or 010V, user select 2-5V-0K, 0V-Fail. 500ohn Possible, up to 6 units in ma 2 identical units (with ext Open collector. CC mode: Enables/Disables the P5 outpu By electrical signal or Ope Open collector (shunted 1 Maximum low level outpu Maximum low level outpu Maximum low level input trigger: tw=10us minimur Open collector, maximum Open collector, maximum Multiple options with 2 Er Vout/lout manual adj Protection Functions - OVI Communication Function: Communication Functions Analog Control Functions Vout: 4 digits, accuracy: 0.	iser selectable. Accuracy an is cale, user selectable. Accuracy an is cale, user selectable. Accuracy is cale, user selectable. Accuracy is cale, user selectable. Accuracy table. Accuracy: +/-1%. table. Accuracy: +/-1%. is series resistance. is series resistance. is series resistance. is series resistance. Marking and the series of the series of the series of the series of the series of the series is development. Series of the series is series and the series of the series is series and the series is series and the series is series is series is series is series is series is series is series is series is selection of Baud Rate, A - Selection Voltage/resistive is the series is the series is the series is the series is the series is selection of Baud Rate, A - Selection Voltage/resistive is the series is the series	d linearity: +/-1% of rated linearity: +/-1.5% er selectable logic. wire current balance connect movelage: 30V, maximum moted 20V, maximum moted 20V, maximum moted 20V, maximum gh level input votage = 2.0 m. <pre>current 100mA. (Shunted current 100mA. (Shunted</pre>	out. f rated Vout. of rated lout. if rated lout. tion. Sink. current: 10mA SimA). Ena/Dis is activated by 1 in the Off-Local (30V max.) isource current = 8mA, pul V, Maximum sink current = by 27V zener) by 27V zener) by 27V zener) /10K programming	e =20us Typical. = 8mA, possitive edge

3. Indications		GREEN LED's: FINE, MENU, PREV, PROT, REM/LOC,OUT ON/OFF , CV, CC		
5. Indications		RED LED's: ALRM (OVP, UVP,OTP, FOLD, AC FAIL).		
4. Function buttons		ine, Menu, PREV, PROT, REM/LOC, OUT ON/OFF		
PROGRAMMING AND READBACK (RS232/485,USB, Op	tional: IEE	E, LAN)		
1. Vout programming accuracy		0.05% of rated output voltage		
2. lout programming accuracy (*13)		0.1% of actual +0.1% of rated output current		
3. Vout programming resolution		0.012% of full scale		
4. lout programming resolution		0.012% of full scale		
5. Vout readback accuracy		0.05% of rated output voltage		
6. lout readback accuracy (*13)		0.1% of actual +0.3% of rated output current		
7. Vout readback resolution		0.012% of full scale		
8. lout readback resolution		0.012% of full scale		

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### Z<sup>+</sup>200 SERIES SPECIFICATIONS

INPUT CHARACTERISTICS	V	10-20	20-10	36-6	60-3.5	100-2
1. Input voltage/freq. (*3)			85~265Va	ac continuous, 47~63Hz, sin	gle phase	
2. Maximum Input current 100/200VAC (*18)		2.65/1.30	2.61/1.28	2.71/1.34	2.68/1.32	2.54/1.26
3. Power Factor (Typ)		>0.99 at 100Vac, >0.98 at 200Vac,100% load				
4. Efficiency (Typ) 100/200VAC (*4) (*18)	%	76/78	77/79	80/82	79/81	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.

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SAFETY/EMC		
1. Applicable standards:	Safety	 UL61010-1, EN61010-1, IEC61010-1. Design to meet UL60950-1, EN60950-1 10V≤Vout≤60V: Output,J1,J2,J3,J4,USB,LAN,IEEE/ISOLATED Analog are Non Hazardous 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. Output&J1,2,J3,J4,USB,LAN/IEEE/ISOLATED ANALOG-Ground: 1000VDC/1min. 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: 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

#### MECHANICAL

		Forced air cooling by internal fan.
STANDARD	Kg	Less than 1.9Kg.
WIDE BODY	Kg	Less than 2.4Kg. Wide body with Isolated analog or Binding post or IEEE.
STANDARD		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).
		According to: IEC60068-2-64
		Less than 20G, half sine, 11mS. Unit is unpacked. According to: IEC600068-2-27
	WIDE BODY STANDARD	STANDARD Kg WIDE BODY Kg STANDARD mm WIDE BODY mm

#### NOTES

\*1: Minimum voltage is guaranteed to maximum 0.1% of rated output voltage.

Minimum current is guaranteed to maximum 0.2% of rated output current.
 Si 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 JETA 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 voltage and rated output voltage.

\*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 sorter than Td (time delay).
\*17: Td typical (±20%) Minimum time between consecutive down programming cycles.
\*18: PS with isolated analog option decreases efficiency by 1.5% and increases input current by 1.5%

\*19: For Parallel operation more than 2 units 5% of toatal output current is requierd.

### Z<sup>+</sup>400 SERIES SPECIFICATIONS

Z <sup>+</sup> 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 volt				
2. Max. Load regulation (*7)		0.01% of rated output volt		1	1	1
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		out voltage, following 30 mi			
6. Temperature stability				ninutes warm-up. Constant		
7. Warm-up drift		Less than 0.05% of rated o		0 minutes following power		1
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)		40	65	85	100	250
No load (*10) (*16) (*17)		200	200	290	310	1100
11. Transient response time	mS	output current. Output set	recover within 0.5% of its t-point: 10~100%, Local ser up to and including 100V	rated output for a load char nse.	nge 10~90% of rated	
12. Hold-up time		15mSec Typical.	16mSec Typical. Rated out	tput power.		
			,	1		
CONSTANT CURRENT MODE	V	10-40	20-20	36-12	60-7	100-4
1. Max. Line regulation (*6)		0.01% of rated output cur				
2. Max. Load regulation (*11)		0.01% of rated output cur				
3. Load regulation thermal drift			output current over 30 minu	ites following load change		
4. Ripple r.m.s. 5Hz~1MHz (*12)	mA	70	40	15	8	3
5. Temperature coefficient	PPM/°C		tput current, following 30 m			
6. Temperature stability				inutes warm-up. Constant I	ine. load & temperature	
7. Warm-up drift			output current over 30 mi		, ioua a temperature.	
		on a contracted		power on.		
PROTECTIVE FUNCTIONS	V	10-40	20-20	36-12	60-7	100-4
				e from CV to CC or CC to CV.		100 4
1. Foldback protection				IT button or by rear panel E		ion port
				le in autostart mode or by C		
2. Over-voltage protection (OVP)		or by communication port		le in autostart mode or by c	or button of by real pairs	CI LINADEL,
3. Over - voltage trip point	V	0.5-12	1~24	2~40	5~66	5~110
4. Output under voltage limit (UVL)				ts from adjusting Vout below		
				ge goes below UVP program		analog programming.
5. Output under voltage protection (UVP)				IT button or by rear panel E		ion port"
6. Over temperature protection		User Selectable. Latched o			NABLE, OF BY CONTINUNICAL	ion port.
o. Over temperature protection		Josef Selectable. Lateried o	n non lateneu			
ANALOG PROGRAMMING AND MONITORING						
1. Vout voltage programming		0~100% 0~5V or 0~10V	ser selectable Accuracy an	d linearity: +/-0.5% of rated	Vout	
2. lout voltage programming (*13)				id linearity: +/-1% of rated l		
3. Vout resistor programming				uracy and linearity: +/-1% of fated i		
4. lout resistor programming (*13)				uracy and linearity: +/-1.5%		
5. Shut-off (SO) control			6V/2~15V or dry contact, us		or futed fout.	
6. Output current monitor (*13)		0~5V or 0~10V, user select		Ser Selectuble logic.		
7. Output voltage monitor		0~5V or 0~10V, user select				
8. Power supply OK signal		4~5V-OK, 0V-Fail. 500ohm				
9. Parallel operation (*19)				gle wire current balance cor	nection.	
10. Series operation		2 identical units (with exte				
11. CV/CC indicator				m voltage: 30V, maximum s	ink current: 10mA	
12. Interlock (ILC) control				n, Open: Off, Source current:		activated by front panel.
13. Local/Remote mode Control				emote, 2~15V or open: Loca		
14. Local/Remote mode Indicator				0mA sink current max.)-Ren		
15.Trigger out				rel output = 2V, maximum s		
16.Trigger in		Maximum low level input	voltage = 0.8V,minimum hi	gh level input votage = 2.0		
		trigger: tw=10us minimun	n. TpLH, TpHL=1us maximui	m		-
17. Programmed signal 1				k current 100mA. (Shunted		
18. Programmed signal 2		Open collector, maximum	voltage 25V, maximum sin	k current 100mA. (Shunted	by 27V zener)	
FRONT PANEL						_
1. Control functions		Multiple options with 2 En	coders			
		Vout/lout manual adjust				-
		OVP/UVL /UVP manual ad				
			P, UVL, UVP, Foldback, OCP,			
			s - Selection of LAN, IEEE, RS			
			s - Selection of Baud Rate, A			
				e programming, 5V/10V, 5K		
				ent Monitoring 5V/10V, Out	put ON/OFF, Front Panel L	ock.
2. Display			5% of rated output voltage			_
			5% of rated output current-			
3. Indications			PREV, PROT, REM/LOC,OUT	UN/UFF, CV, CC		
A Function buttons		RED LED's: ALRM (OVP,UVP				
4. Function buttons		FINE, MENU, PREV, PROT, R	EIVI/LOC, OUT ON/OFF			
	41-1 I					
PROGRAMMING AND READBACK (RS232/485,USB, Op	tional: IEE	<u> </u>				
1. Vout programming accuracy		0.05% of rated output volt				
2. lout programming accuracy (*13)		0.1% of actual +0.1% of ra	tea output current			
3. Vout programming resolution		0.012% of full scale				
4. lout programming resolution		0.012% of full scale				
5. Vout readback accuracy		0.05% of rated output vol				
6. lout readback accuracy (*13)		0.1% of actual +0.3% of ra	tea output current			
7. Vout readback resolution		0.012% of full scale				
8. lout readback resolution		0.012% of full scale				
			. 12			

Z <sup>+</sup> 400 SERIES SPECIFICATIONS								
INPUT CHARACTERISTICS	V	10-40	20-20	36-12	60-7	100-4		
1. Input voltage/freq. (*3)			85~265V	ac continuous, 47~63Hz, sin	gle phase			
2. Maximum Input current 100/200VAC (*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% loa	d			
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℃.

#### SAFETY/EMC

SAFET Y/ENIC		
1. Applicable standards: Safety		 UL61010-1, EN61010-1, IEC61010-1. Design to meet UL60950-1, EN60950-1 10V≤Vout≤60V: Output,J1,J2,J3,J4,USB,LAN,IEEE/ISOLATED Analog are Non Hazardous 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		 10sVout<36V models: Input-Output&J1,J2,J3,J4,USB,LAN/IEEE/ISOLATED ANALOG: 4242VDC/1min; Input-Ground: 2828VDC/1min. Output&J1,2,J3,J4,USB,LAN/IEEE/ISOLATED ANALOG-Ground: 1000VDC/1min. 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: 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

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 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.

### Z<sup>+</sup>600 SERIES SPECIFICATIONS

Z <sup>+</sup> 600 SERIES SPECIFICATIONS						
NODEL	Z	10-60	20-30	36-18	60-10	100-6
. Rated output voltage(*1)	V	10	20	36	60	100
. Rated output current (*2)	A	60	30	18	10	6
. Rated output power	W	600	600	648	600	600
ONSTANT VOLTAGE MODE	V	10-60	20-30	36-18	60-10	100-6
. Max. Line regulation (*6)		0.01% of rated output volt		50-18	00-10	100-0
Max. Load regulation (*7)		0.01% of rated output volt	2			
Ripple and noise (p-p, 20MHz) (*8)	mV	75	75	75	75	100
. Ripple r.m.s. 5Hz~1MHz	mV	6.25	6.25	6.25	6.25	100
. Temperature coefficient	PPM/°C		out voltage, following 30 mi		0.25	10
. Temperature stability			Bhrs. interval following 30 m		t line load & temp	
. Warm-up drift			utput voltage+2mV over 30			
. Remote sense compensation/wire	V	1	1	2	3	5
Up-prog. Response time, 0~Vomax.(*9)	mS	50	50	50	50	100
D. Down-prog.response time: Full load (*9)	mS	25	25	25	25	80
Time delay (*17)		285	422	432	570	1370
No load (*10) (*15) (*17)	6	65	110	155	175	375
No load (*10) (*16) (*17)	mS	320	330	420	540	1900
		Time for output voltage to	recover within 0.5% of its i	rated output for a load cha	ange 10~90% of rated	
1. Transient response time	mS	output current. Output set	t-point: 10~100%, Local ser	ise.		
		Less than 1mS, for models	up to and including 100V			
2. Hold-up time		16mSec Typical. Rated out	tput power.			
DNSTANT CURRENT MODE	V	10-60	20-30	36-18	60-10	100-6
Max. Line regulation (*6)		0.01% of rated output curr				
Max. Load regulation (*11)		0.01% of rated output cur				
Load regulation thermal drift			utput current over 30 minu			
Ripple r.m.s. 5Hz~1MHz (*12)	mA	75	45	22	12	4.5
Temperature coefficient	PPM/°C		put current, following 30 m			
Temperature stability			hrs. interval following 30 m			
Warm-up drift		Less than +/-0.1% of rated	output current over 30 mir	nutes following power on.		
ROTECTIVE FUNCTIONS	V	10-60	20-30	36-18	60-10	100-6
Foldback protection			power supply change mode			
·			in autostart mode or by OU			
Over veltage protection (OVD)			od. Reset by AC input recycl	e in autostart mode or by	OUT button or by rear pan	iel ENABLE,
Over-voltage protection (OVP)		or by communication port				1
	V	0.5-12	1~24	2~40	5~66	5~110
Over -voltage trip point						
Over -voltage trip point			mmunication port. Prevent	s from adjusting Vout bel	ow limit. Does not affect in	analog programming.
Over -voltage trip point Output under voltage limit (UVL)		Output shut-down when p	ommunication port. Prevent	s from adjusting Vout belo ge goes below UVP progra	ow limit. Does not affect in mming.	
Over -voltage trip point Output under voltage limit (UVL) Output under voltage protection (UVP)		Output shut-down when p Reset by AC input recycle	ommunication port. Prevent power supply output voltag in autostart mode or by OU	s from adjusting Vout belo ge goes below UVP progra	ow limit. Does not affect in mming.	
Over-voltage protection (OVP) Over -voltage trip point Output under voltage limit (UVL) Output under voltage protection (UVP) Over temperature protection		Output shut-down when p	ommunication port. Prevent power supply output voltag in autostart mode or by OU	s from adjusting Vout belo ge goes below UVP progra	ow limit. Does not affect in mming.	
Over -voltage trip point Output under voltage limit (UVL) Output under voltage protection (UVP) Over temperature protection		Output shut-down when p Reset by AC input recycle	ommunication port. Prevent power supply output voltag in autostart mode or by OU	s from adjusting Vout belo ge goes below UVP progra	ow limit. Does not affect in mming.	
Over -voltage trip point Output under voltage limit (UVL) Output under voltage protection (UVP) Over temperature protection NALOG PROGRAMMING AND MONITORING		Output shut-down when p Reset by AC input recycle User selectable, latched or	mmunication port. Prevent power supply output voltag in autostart mode or by OU r non latched.	s from adjusting Vout bel je goes below UVP progra T button or by rear panel	ow limit. Does not affect in mming. ENABLE, or by communica	
Over -voltage trip point Output under voltage limit (UVL) Output under voltage protection (UVP) Over temperature protection NALOG PROGRAMMING AND MONITORING Vout voltage programming		Output shut-down when p Reset by AC input recycle User selectable, latched or 0~100%, 0~5V or 0~10V, u	mmunication port. Prevent power supply output voltag in autostart mode or by OU r non latched. sier selectable. Accuracy an	s from adjusting Vout bel ge goes below UVP progra T button or by rear panel d linearity: +/-0.5% of rate	ow limit. Does not affect in mming. ENABLE, or by communica ed Vout.	
Over -voltage trip point Output under voltage limit (UVL) Output under voltage protection (UVP) Over temperature protection NALOG PROGRAMMING AND MONITORING Vout voltage programming lout voltage programming (*13)		Output shut-down when p Reset by AC input recycle User selectable, latched or 0~100%, 0~5V or 0~10V, u 0~100%, 0~5V or 0~10V, u	mmunication port. Prevent power supply output voltag in autostart mode or by OU r non latched. user selectable. Accuracy an user selectable. Accuracy an	s from adjusting Vout bel- ge goes below UVP progra T button or by rear panel d linearity: +/-0.5% of rated d linearity: +/-1% of rated	w limit. Does not affect in mming. ENABLE, or by communica ed Vout. lout.	
Over -voltage trip point Output under voltage limit (UVL) Output under voltage protection (UVP) Over temperature protection NALOG PROGRAMMING AND MONITORING Vout voltage programming Iout voltage programming (*13) Vout resistor programming	   	Output shut-down when p Reset by AC input recycle i User selectable, latched or 0~100%, 0~5V or 0~10V, u 0~100%, 0~5V or 0~10V, u 0~100%, 0~5/10Kohm full	mmunication port. Prevent power supply output voltag in autostart mode or by OU r non latched. user selectable. Accuracy an user selectable. Accuracy an l scale, user selectable. Accu	s from adjusting Vout bek te goes below UVP progra T button or by rear panel d linearity: +/-0.5% of rated d linearity: +/-1% of rated tracy and linearity: +/-1%	w limit. Does not affect in mming. ENABLE, or by communica Vout. lout. of rated Vout.	
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Over -voltage trip point         Output under voltage limit (UVL)         Output under voltage protection (UVP)         Over temperature protection         NALOG PROGRAMMING AND MONITORING         Vout voltage programming         lout voltage programming         lout voltage programming         lout resistor programming         lout resistor programming         Shut-off (SO) control         Output current monitor (*13)	    	Output shut-down when p Reset by AC input recycle User selectable, latched or 0~100%, 0~5V or 0~10V, u 0~100%, 0~5V or 0~10V, u 0~100%, 0~5/10Kohm full By electrical Voltage: 0~0.0 0~5V or 0~10V, user select	mmunication port. Prevent power supply output voltag in autostart mode or by OU r non latched. user selectable. Accuracy an i scale, user selectable. Accu scale, user selectable. Accu scale, user selectable. Accu scale, user selectable. Accu scale, user selectable. Accu	s from adjusting Vout bele te goes below UVP progra T button or by rear panel d linearity: +/-0.5% of rated d linearity: +/-1% of rated uracy and linearity: +/-1.5% uracy and linearity: +/-1.5%	w limit. Does not affect in mming. ENABLE, or by communica Vout. lout. of rated Vout.	
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Over -voltage trip point         Output under voltage limit (UVL)         Output under voltage protection (UVP)         Over temperature protection         VALOG PROGRAMMING AND MONITORING         Vout voltage programming         lout voltage programming         lout voltage programming         lout voltage programming         lout resistor programming         lout voltage monitor         Power supply OK signal         Parallel operation (*19)         0. Series operation         . CV/CC indicator         2. Interlock (ILC) control         3. Local/Remote mode Control         4. Local/Remote mode Indicator         3. Trigger out         3. Trigger in         Programmed signal 1         8. Programmed signal 2		Output shut-down when p Reset by AC input recycle User selectable, latched or 0~100%, 0~5V or 0~10V, u 0~100%, 0~5V or 0~10V, u 0~100%, 0~5/10Kohm full 0~100%, 0~5/10Kohm full By electrical Voltage: 0~0.0 0~5V or 0~10V, user select 4~5V-OK, 0V-Fail. 500ohm Possible, up to 6 units in m 2 identical units (with exte Open collector. CC mode: Enables/Disables the PS or Ena/Dis is activated by fro By electrical signal or Ope Open collector (shunted b Maximum low level unput trigger; tw=10us minimum	mmunication port. Prevent power supply output voltag in autostart mode or by OU r non latched. user selectable. Accuracy an iscale, user selectable. Accur iscale, user selectable. Accur istable. Accur iscale, user selectable. Accur istable. Accur iscale, user selectable. Accur istable. Accur	s from adjusting Vout bel- e goes below UVP progra T button or by rear panel d linearity: +/-0.5% of rated at a straight straight straight straight racy and linearity: +/-1% irracy and linearity: +/	ow limit. Does not affect in mming. ENABLE, or by communica ed Vout. lout. of rated Vout. % of rated Vout. % of rated lout. %	tion port.
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Over -voltage trip point Output under voltage limit (UVL) Output under voltage protection (UVP) Over temperature protection <b>VALOG PROGRAMMING AND MONITORING</b> Vout voltage programming (*13) Vout voltage programming (*13) Vout resistor programming (*13) Shut-off (SO) control Output voltage monitor Power supply OK signal Parallel operation (*19) . Series operation . CV/CC indicator . Interlock (ILC) control . Local/Remote mode Control . Local/Remote mode Indicator . Trigger in . Programmed signal 1 . Programmed signal 2 <b>TONT PANEL</b> Control functions		Output shut-down when p Reset by AC input recycle User selectable, latched or 0~100%, 0~5V or 0~10V, u 0~100%, 0~5V or 0~10V, u 0~100%, 0~5/10Kohm full By electrical Voltage: 0~0. 0~5V or 0~10V, user select 0~5V or 0~10V, user select 0~10V, user s	mmunication port. Prevent power supply output voltag in autostart mode or by OU r non latched. user selectable. Accuracy an iser selectable. Accuracy an iser selectable. Accuracy an iseale, user selectable. Accu Sollage, user selectable. Accuracy iscale, user selectable. Accuracy: 40/2~15V or dry contact, us table. Accuracy: +/-1%. aster/slave mode with sing rmal diodes). On, CV mode: Off. Maximu utput by dry contact (Short nt panel. n/Short: 0~0.6V or short: Re y 36V zener). On (0~0.6V, 11 t = 0.8V, Minimum hin lem y 36V zener). On (0~0.6V, 11 t = 0.8V, Minimum hin lem y 36V zener). On (0~0.6V, 11 t = 0.8V, Minimum hin lem y voltage 25V, maximum sin voltage 25V, maximum sin	s from adjusting Vout bek e goes below UVP progra T button or by rear panel d linearity: +/-0.5% of rated inearity: +/-1% of rated rracy and linearity: +/-1% irracy and linearity: +/-1% er selectable logic. gle wire current balance co m voltage: 30V, maximum c 0n, Open: Off, Source cu emote, 2~15V or open: Loc DmA sink current max.)-Re el output = 2V, maximum gh level input votage = 2.1 m. k current 100mA. (Shunter k current 100mA. (Shunter h control and states) 232,R5485,USB ddress programming, 5V/10V, Oc +/-1 count.	w limit. Does not affect in mming. ENABLE, or by communica ed Vout. lout. of rated Vout. % of rated lout. %	tion port.
Over -voltage trip point Output under voltage limit (UVL) Output under voltage protection (UVP) Over temperature protection <b>VALOG PROGRAMMING AND MONITORING</b> Vout voltage programming lout voltage programming (*13) Vout resistor programming (*13) Shut-off (SO) control Output current monitor (*13) Output voltage monitor Power supply OK signal Parallel operation (*19) . Series operation . CV/CC indicator . Interlock (ILC) control . Local/Remote mode Control . Local/Remote mode Indicator . Trigger in . Programmed signal 1 . Programmed signal 2 CONT PANEL Control functions		Output shut-down when p Reset by AC input recycle User selectable, latched or 0~100%, 0~5V or 0~10V, u 0~100%, 0~5V or 0~10V, u 0~100%, 0~5/10Kohm full By electrical Voltage: 0~0. 0~5V or 0~10V, user select 4~5V-OK, 0V-Fail. 500ohm Possible, up to 6 units in m 2 identical units (with exte Open collector. CC mode: Enables/Disables the PS or Ena/Dis is activated by froi By electrical signal or Ope Open collector (shunted b Maximum low level input trigger: tw=10us minimum Open collector, maximum Open collector, maximum Mutiple options with 2 En- Vout/lout manual adjust OVP/UVL /UVP manual ad Protection Functions - OVI Communication Functions Analog Control Functions Analog Control Functions Analog Control Functions Analog Control Functions Analog Control Functions	mmunication port. Prevent power supply output voltag in autostart mode or by OU r non latched. user selectable. Accuracy an ser selectable. Accuracy an l scale, user selectable. Accu Sole, user selectable. Accu Sole, user selectable. Accu Sole, user selectable. Accuracy an l scale, user selectable. Accuracy able. Accuracy: +/-1%. table. Accuracy: +/-1%. n series resistance. master/slave mode with sing rmal diodes). On, CV mode: Off. Maximu utput by dry contact (Short nt panel. n/Short: 0~0.6V or short: Re y 36V zener). On (0~0.6V, 11 t = 0.8V, Minimum high lev voltage = 0.8V, maximum sin voltage 25V, maximum sin	s from adjusting Vout bek e goes below UVP progra T button or by rear panel d linearity: +/-0.5% of rated tracy and linearity: +/-1% of rated tracy and linearity: +/-1% er selectable logic.  le wire current balance cc m voltage: 30V, maximum : On, Open: Off, Source cu mote, 2~15V or open: Loc OmA sink current max.)-Re el output = 2V, maximum gh level input votage = 21 m. k current 100mA. (Shunter k current 100mA. (Shunter h contoring SV/10V, 5 ent Monitoring SV/10V, 5 ent Monitoring SV/10V, 5 ent Monitoring SV/10V, 5	w limit. Does not affect in mming. ENABLE, or by communica ed Vout. lout. of rated Vout. % of rated lout. %	tion port.
Over -voltage trip point Output under voltage limit (UVL) Output under voltage protection (UVP) Over temperature protection VALOG PROGRAMMING AND MONITORING Vout voltage programming Iout voltage programming (*13) Vout resistor programming (*13) Shut-off (SO) control Output current monitor (*13) Output voltage monitor Power supply OK signal Parallel operation (*19) Series operation . CV/CC indicator P. Interlock (ILC) control S. Local/Remote mode Control I. Local/Remote mode Indicator . Trigger in . Programmed signal 1 . Programmed signal 2 CONT PANEL Control functions Display		Output shut-down when p Reset by AC input recycle User selectable, latched or 0~100%, 0~5V or 0~10V, u 0~100%, 0~5V or 0~10V, u 0~100%, 0~5/10Kohm full By electrical Voltage: 0~0.0 0~5V or 0~10V, user select 4~5V-OK, 0V-Fail. 500ohm Possible, up to 6 units in m 2 identical units (with exte Open collector. CC mode: Enables/Disables the PS or Ena/Dis is activated by fro By electrical signal or Ope Open collector (shunted b Maximum low level input trigger: tw=10us minimum Open collector, maximum Open collector, maximum Mutiple options with 2 En. Vout/lout manual adjust OVP/UVL /UVP manual ad Protection Functions - OVI Communication Functions Analog Control Functions Analog Control Functions Analog Control Functions	mmunication port. Prevent power supply output voltag in autostart mode or by OU r non latched. ser selectable. Accuracy an iser selectable. Accuracy an iser selectable. Accuracy an iscale, user selectable. Accu Scale, user selectable. Accuracy an iscale, user selectable. Accuracy of table. Accuracy: +/-1%. table. Accuracy: +/-1%. table. Accuracy: +/-1%. aster/slave mode with sing ernal diodes). On, CV mode: Off. Maximu utput by dry contact (Short nt panel. n/Short: 0~0.6V or short: Re y 136 V zener). On (0~0.6V, 11 to -0.8V, minimum high lev voltage = 0.8V, maximum sin voltage 25V, maximum sin voltage 25V, maximum sin voltage 25V, maximum sin voltage 25V, maximum sin scoders just P, UVL, UVP, Foldback, OCP, I s - Selection of LAN, IEEE, RS, s - Selection of Baud Rate, A - Selection of Notage/Curre 5% of rated output voltage 5% of rated output voltage	s from adjusting Vout bek e goes below UVP progra T button or by rear panel d linearity: +/-0.5% of rated ad linearity: +/-1% of rated tracy and linearity: +/-1% er selectable logic. adjustrice current balance cc m voltage: 30V, maximum : On, Open: Off, Source cu mote, 2~15V or open: Loc OmA sink current max.)-Re el output = 2V, maximum gh level input votage = 21, m. k current 100mA. (Shunter k current 100mA. (Shunter) k current 100mA. (Shunter)	w limit. Does not affect in mming. ENABLE, or by communica ed Vout. lout. of rated Vout. % of rated lout. %	tion port.
Over -voltage trip point         Output under voltage limit (UVL)         Output under voltage protection (UVP)         Over temperature protection <b>VALOG PROGRAMMING AND MONITORING</b> Yout voltage programming (*13)         Vout voltage programming (*13)         Vout resistor programming (*13)         Shut-off (SO) control         Output voltage monitor         Porallel operation (*19)         2. Series operation         . CV/CC indicator         P. Interlock (ILC) control         3. Local/Remote mode Control         4. Local/Remote mode Indicator         3. Trigger in         Programmed signal 1         Programmed signal 2 <b>KONT PANEL</b> Control functions		Output shut-down when p Reset by AC input recycle i User selectable, latched or 0~100%, 0~5V or 0~10V, U 0~100%, 0~5V or 0~10V, U 0~100%, 0~5V or 0~10V, U 0~100%, 0~5/10Kohm full 0~100%, 0~5/10Kohm full By electrical Voltage: 0~0. 0~5V or 0~10V, user select 0~5V or 0~10V, user select 00000, 0~5V or 0~10V, user select 0000, 0~10V, user sele	mmunication port. Prevent power supply output voltag in autostart mode or by OU r non latched. user selectable. Accuracy an iser selectable. Accuracy an iser selectable. Accuracy an isele, user selectable. Accu scale, user selectable. Accu scale, user selectable. Accu stable. Accuracy: +/-1%. table. Accuracy: +/-1%. table. Accuracy: +/-1%. n series resistance. master/slave mode with sing ernal diodes). On, CV mode: Off. Maximu utput by dry contact (Short nt panel. n/Short: 0~0.6V or short: Re y 36V zener). On (0~0.6V, 11 t = 0.8V, Minimum high lev y 01tage 25V, maximum sin voltage 25V, maximum sin voltage 25V, maximum sin voltage 25V, maximum sin voltage 25V, maximum sin scale 25V, maximum sin voltage 25V, maxi	s from adjusting Vout bek e goes below UVP progra T button or by rear panel d linearity: +/-0.5% of rated ad linearity: +/-1% of rated tracy and linearity: +/-1% er selectable logic. adjustrice current balance cc m voltage: 30V, maximum : On, Open: Off, Source cu mote, 2~15V or open: Loc OmA sink current max.)-Re el output = 2V, maximum gh level input votage = 21, m. k current 100mA. (Shunter k current 100mA. (Shunter) k current 100mA. (Shunter)	w limit. Does not affect in mming. ENABLE, or by communica ed Vout. lout. of rated Vout. % of rated lout. %	tion port.
Over -voltage trip point         Output under voltage limit (UVL)         Output under voltage protection (UVP)         Over temperature protection         NALOG PROGRAMMING AND MONITORING         Vout voltage programming (*13)         Vout voltage programming (*13)         Vout resistor programming (*13)         Shut-off (SO) control         Output current monitor (*13)         Output voltage monitor         Parallel operation (*19)         D. Series operation         L. CV/CC indicator         P. Interlock (ILC) control         3. Local/Remote mode Control         4. Local/Remote mode Indicator         5.Trigger in         7. Programmed signal 1         8. Programmed signal 2         RONT PANEL         Control functions		Output shut-down when p Reset by AC input recycle User selectable, latched or 0~100%, 0~5V or 0~10V, u 0~100%, 0~5V or 0~10V, u 0~100%, 0~5/10Kohm full By electrical Voltage: 0~0.0 0~5V or 0~10V, user select 4~5V-OK, 0V-Fail. 500ohm Possible, up to 6 units in m 2 identical units (with exte Open collector. CC mode: Enables/Disables the PS or Ena/Dis is activated by fro By electrical signal or Ope Open collector (shunted b Maximum low level input trigger: tw=10us minimum Open collector, maximum Open collector, maximum Mutiple options with 2 En. Vout/lout manual adjust OVP/UVL /UVP manual ad Protection Functions - OVI Communication Functions Analog Control Functions Analog Control Functions Analog Control Functions	mmunication port. Prevent power supply output voltag in autostart mode or by OU r non latched. user selectable. Accuracy an iser selectable. Accuracy an iser selectable. Accuracy an isele, user selectable. Accu scale, user selectable. Accu scale, user selectable. Accu stable. Accuracy: +/-1%. table. Accuracy: +/-1%. table. Accuracy: +/-1%. n series resistance. master/slave mode with sing ernal diodes). On, CV mode: Off. Maximu utput by dry contact (Short nt panel. n/Short: 0~0.6V or short: Re y 36V zener). On (0~0.6V, 11 t = 0.8V, Minimum high lev y 01tage 25V, maximum sin voltage 25V, maximum sin voltage 25V, maximum sin voltage 25V, maximum sin voltage 25V, maximum sin scale 25V, maximum sin voltage 25V, maxi	s from adjusting Vout bek e goes below UVP progra T button or by rear panel d linearity: +/-0.5% of rated ad linearity: +/-1% of rated tracy and linearity: +/-1% er selectable logic. adjustrice current balance cc m voltage: 30V, maximum : On, Open: Off, Source cu mote, 2~15V or open: Loc OmA sink current max.)-Re el output = 2V, maximum gh level input votage = 21, m. k current 100mA. (Shunter k current 100mA. (Shunter) k current 100mA. (Shunter)	w limit. Does not affect in mming. ENABLE, or by communica ed Vout. lout. of rated Vout. % of rated lout. %	tion port.
Over -voltage trip point         Output under voltage limit (UVL)         Output under voltage protection (UVP)         Over temperature protection         NALOG PROGRAMMING AND MONITORING         Vout voltage programming (*13)         Vout voltage programming (*13)         Vout resistor programming (*13)         Shut-off (SO) control         Output current monitor (*13)         Output voltage monitor         Parallel operation (*19)         D. Series operation         1. CV/CC indicator         2. Interlock (ILC) control         3. Local/Remote mode Control         4. Local/Remote mode Indicator         5.Trigger in         7. Programmed signal 2         RONT PANEL         Control functions         Display         Indications         Function buttons		Output shut-down when p Reset by AC input recycle i User selectable, latched or 0~100%, 0~5V or 0~10V, u 0~100%, 0~5V or 0~10V, u 0~100%, 0~5V or 0~10V, u 0~100%, 0~5/10Kohm full 0~100%, 0~5/10Kohm full By electrical Voltage: 0~0. 0~5V or 0~10V, user select 0~5V or 0~10V, user select 000000000000000000000000000000000000	mmunication port. Prevent power supply output voltag in autostart mode or by OU r non latched. user selectable. Accuracy an iser selectable. Accuracy an iser selectable. Accuracy an isele, user selectable. Accu scale, user selectable. Accu scale, user selectable. Accu stable. Accuracy: +/-1%. table. Accuracy: +/-1%. table. Accuracy: +/-1%. n series resistance. master/slave mode with sing ernal diodes). On, CV mode: Off. Maximu utput by dry contact (Short nt panel. n/Short: 0~0.6V or short: Re y 36V zener). On (0~0.6V, 11 t = 0.8V, Minimum high lev y 01tage 25V, maximum sin voltage 25V, maximum sin voltage 25V, maximum sin voltage 25V, maximum sin voltage 25V, maximum sin scale 25V, maximum sin voltage 25V, maxi	s from adjusting Vout bek e goes below UVP progra T button or by rear panel d linearity: +/-0.5% of rated ad linearity: +/-1% of rated tracy and linearity: +/-1% er selectable logic. adjustrice current balance cc m voltage: 30V, maximum : On, Open: Off, Source cu mote, 2~15V or open: Loc OmA sink current max.)-Re el output = 2V, maximum gh level input votage = 21, m. k current 100mA. (Shunter k current 100mA. (Shunter) k current 100mA. (Shunter)	w limit. Does not affect in mming. ENABLE, or by communica ed Vout. lout. of rated Vout. % of rated lout. %	tion port.
Over -voltage trip point Output under voltage limit (UVL) Output under voltage protection (UVP) Over temperature protection <b>VALOG PROGRAMMING AND MONITORING</b> Vout voltage programming Vout voltage programming (*13) Vout resistor programming (*13) Shut-off (SO) control Output current monitor (*13) Output voltage monitor Power supply OK signal Parallel operation (*19) . Series operation . CV/CC indicator P. Interlock (ILC) control . Local/Remote mode Control . Local/Remote mode Indicator . Trigger in . Programmed signal 1 . Programmed signal 2 <b>RONT PANEL</b> Control functions Display Indications Function buttons <b>ROGRAMMING AND READBACK (R5232/485,USB, Op</b>		Output shut-down when p Reset by AC input recycle User selectable, latched or 0~100%, 0~5V or 0~10V, u 0~100%, 0~5V or 0~10V, u 0~100%, 0~5/10Kohm full By electrical Voltage: 0~0.V 0~5V or 0~10V, user select 0~5V or 0~10V, user select 0~10V, user select 0~5V or 0~10V, user select 0~5V or 0~	mmunication port. Prevent power supply output voltag in autostart mode or by OU r non latched. user selectable. Accuracy an iser selectable. Accuracy an iser selectable. Accuracy an iser selectable. Accuracy an iser selectable. Accuracy: an iser selectable. Accuracy: 4/1%. table. Accuracy: +/-1%. aster/slave mode with sing rmal diodes). On, CV mode: Off. Maximu utput by dry contact (Short nt panel. n/Short: 0~0.6V or short: Re y 36V zener). On (0~0.6V, 11 t = 0.8V, Minimum high leev y 36V zener). On (0~0.6V, 00 t = 0.8V, Minimum high leev y 36V zener). On (0~0.6V, 11 t = 0.8V, Minimum high n. TpLH,TpHL=1 us maximur voltage 25V, maximum sin voltage 25V, maximum sin voltage 25V, maximum sin zoders selection of LAN,IEEE,RS: s - Selection of Baud Rate, A - Selection of Voltage/Curre 5% of rated output vurrent- PREV, PROT, REM/LOC,OUT PREV, PROT, REM/LOC,OUT ON/OFF	s from adjusting Vout bek e goes below UVP progra T button or by rear panel d linearity: +/-0.5% of rated ad linearity: +/-1% of rated tracy and linearity: +/-1% er selectable logic. adjustrice current balance cc m voltage: 30V, maximum : On, Open: Off, Source cu mote, 2~15V or open: Loc OmA sink current max.)-Re el output = 2V, maximum gh level input votage = 21, m. k current 100mA. (Shunter k current 100mA. (Shunter) k current 100mA. (Shunter)	w limit. Does not affect in mming. ENABLE, or by communica ed Vout. lout. of rated Vout. % of rated lout. %	tion port.
Over -voltage trip point Output under voltage limit (UVL) Output under voltage protection (UVP) Over temperature protection VALOG PROGRAMMING AND MONITORING Vout voltage programming Iout voltage programming (*13) Vout resistor programming (*13) Shut-off (SO) control Output current monitor (*13) Output voltage monitor Power supply OK signal Parallel operation (*19) Series operation CV/CC indicator Programmed signal 1 Accal/Remote mode Control Local/Remote mode Indicator Trigger in Programmed signal 1 Programmed signal 2 CONT PANEL Control functions Display Display Indications Function buttons COGRAMMING AND READBACK (RS232/485,USB, Op Vout programming accuracy		Output shut-down when p Reset by AC input recycle User selectable, latched or 0~100%, 0~5V or 0~10V, u 0~100%, 0~5V or 0~10V, u 0~100%, 0~5/10Kohm full By electrical Voltage: 0~0. 0~5V or 0~10V, user select 4~5V-OK, 0V-Fail. 500ohm Possible, up to 6 units in m 2 identical units (with exte Open collector. CC mode: Enables/Disables the PS or Ena/Dis is activated by froi By electrical signal or Ope Open collector (shunted b Maximum low level outpu Maximum low level input trigger: tw=10us minimum Open collector, maximum Open collector, maximum Den collector, maximum Mutiple options with 2 Ene Vout/lout manual adjust OVP/UVL /UVP manual ad Protection Functions - OVI communication Functions Analog Control Functions An	mmunication port. Prevent power supply output voltag in autostart mode or by OU r non latched. isser selectable. Accuracy an isser selectable. Accuracy an l scale, user selectable. Accu Syl2~15V or dry contact, us table. Accuracy: +/-1%. table. Accuracy: +/-1%. table. Accuracy: +/-1%. n series resistance. master/slave mode with sing rmal diodes). On, CV mode: Off. Maximu utput by dry contact (Short nt panel. n/Short: 0~0.6V or short: Re y 36V zener). On (0~0.6V, 11 t = 0.8V, Minimum high lev voltage = 0.8V, minimum high lev voltage = 0.8V, minimum high lev voltage 25V, maximum sin voltage 25V, maximum sin voltage 25V, maximum sin zoders just P, UVL, UVP, Foldback, OCP, 1 - Selection of LAN, IEEE, RS. s - Selection of Baud Rate, A - Selection of Baud Rate, A - Selection of Baud Rate, A - Selection of Dayle/Carge/ S% of rated output voltage/ S% of rated output voltage S% of rated output current- PREV, PROT, REM/LOC, OUT P,OTP, FOLD, AC FAIL).	s from adjusting Vout bek e goes below UVP progra T button or by rear panel d linearity: +/-0.5% of rated ad linearity: +/-1% of rated tracy and linearity: +/-1% er selectable logic. adjustrice current balance cc m voltage: 30V, maximum : On, Open: Off, Source cu mote, 2~15V or open: Loc OmA sink current max.)-Re el output = 2V, maximum gh level input votage = 21, m. k current 100mA. (Shunter k current 100mA. (Shunter) k current 100mA. (Shunter)	w limit. Does not affect in mming. ENABLE, or by communica ed Vout. lout. of rated Vout. % of rated lout. %	tion port.
Over -voltage trip point Output under voltage limit (UVL) Output under voltage protection (UVP) Over temperature protection VALOG PROGRAMMING AND MONITORING Vout voltage programming (*13) Vout voltage programming (*13) Vout resistor programming (*13) Shut-off (SO) control Output voltage monitor Power supply OK signal Parallel operation (*19) 0. Series operation . CV/CC indicator 2. Interlock (ILC) control 3. Local/Remote mode Control 4. Local/Remote mode Indicator 5. Trigger out 5. Trigger in . Programmed signal 1 . Programmed signal 2 CONT PANEL Control functions Display Indications Function buttons COGRAMMING AND READBACK (RS232/485,USB, OP Vout programming accuracy Iout programming accuracy (*13)		Output shut-down when p Reset by AC input recycle User selectable, latched or 0~100%, 0~5V or 0~10V, u 0~100%, 0~5V or 0~10V, u 0~100%, 0~5/10Kohm full By electrical Voltage: 0~0.0 0~5V or 0~10V, user select 0~5V or 0~10V, user select 4~5V-OK, 0V-Fail. 500ohm Possible, up to 6 units in m 2 identical units (with exte Open collector. CC mode: Enables/Disables the PS or Ena/Dis is activated by foro By electrical signal or Ope Open collector (shunted b Maximum low level input trigger: tw=10us minimum Open collector, maximum Open collector, maximum Mutiple options with 2 En: Vout/lout manual adjust OVP/UVL /UVP manual adj Protection Functions - OVI Communication Functions Analog Control Functions Yout: 4 digits, accuracy: 0. Iout: 4 digits, accuracy: 0. GREEN LED's: FINE, MENU, RED LED's: FINE, MENU, RED LED's: ALRM (OVP, UV FINE, MENU, PREV, PROT, F E, LAN) 0.05% of rated output volt 0.1% of actual + 0.1% of rat	mmunication port. Prevent power supply output voltag in autostart mode or by OU r non latched. isser selectable. Accuracy an isser selectable. Accuracy an l scale, user selectable. Accu Syl2~15V or dry contact, us table. Accuracy: +/-1%. table. Accuracy: +/-1%. table. Accuracy: +/-1%. n series resistance. master/slave mode with sing rmal diodes). On, CV mode: Off. Maximu utput by dry contact (Short nt panel. n/Short: 0~0.6V or short: Re y 36V zener). On (0~0.6V, 11 t = 0.8V, Minimum high lev voltage = 0.8V, minimum high lev voltage = 0.8V, minimum high lev voltage 25V, maximum sin voltage 25V, maximum sin voltage 25V, maximum sin zoders just P, UVL, UVP, Foldback, OCP, 1 - Selection of LAN, IEEE, RS. s - Selection of Baud Rate, A - Selection of Baud Rate, A - Selection of Baud Rate, A - Selection of Dayle/Carge/ S% of rated output voltage/ S% of rated output voltage S% of rated output current- PREV, PROT, REM/LOC, OUT P,OTP, FOLD, AC FAIL).	s from adjusting Vout bek e goes below UVP progra T button or by rear panel d linearity: +/-0.5% of rated ad linearity: +/-1% of rated tracy and linearity: +/-1% er selectable logic. adjustrice current balance cc m voltage: 30V, maximum : On, Open: Off, Source cu mote, 2~15V or open: Loc OmA sink current max.)-Re el output = 2V, maximum gh level input votage = 21, m. k current 100mA. (Shunter k current 100mA. (Shunter) k current 100mA. (Shunter)	w limit. Does not affect in mming. ENABLE, or by communica ed Vout. lout. of rated Vout. % of rated lout. %	tion port.
Over -voltage trip point Output under voltage limit (UVL) Output under voltage protection (UVP) Over temperature protection <b>VALOG PROGRAMMING AND MONITORING</b> Vout voltage programming (*13) Vout voltage programming (*13) Vout resistor programming (*13) Shut-off (SO) control Output voltage monitor Power supply OK signal Parallel operation (*19) . Series operation . CV/CC indicator . Interlock (ILC) control . Local/Remote mode Control . Local/Remote mode Indicator . Trigger ut . Trigger in . Programmed signal 1 . Programmed signal 2 <b>ONT PANEL</b> Control functions Display Indications Function buttons <b>OGGRAMMING AND READBACK (R5232/485,USB, Op</b> Vout programming accuracy Vout programming accuracy Vout programming accuracy Vout programming resolution		Output shut-down when p Reset by AC input recycle i User selectable, latched or 0~100%, 0~5V or 0~10V, U 0~100%, 0~5V or 0~10V, U 0~100%, 0~5/10Kohm full 0~100%, 0~5/10Kohm full By electrical Voltage: 0~0. 0~5V or 0~10V, user select 0~5V or 0~10V, user select 0~10V, user select 0~5V or 0~10V, user select 0~5V or 0~10	mmunication port. Prevent power supply output voltag in autostart mode or by OU r non latched. isser selectable. Accuracy an isser selectable. Accuracy an l scale, user selectable. Accu Syl2~15V or dry contact, us table. Accuracy: +/-1%. table. Accuracy: +/-1%. table. Accuracy: +/-1%. n series resistance. master/slave mode with sing rmal diodes). On, CV mode: Off. Maximu utput by dry contact (Short nt panel. n/Short: 0~0.6V or short: Re y 36V zener). On (0~0.6V, 11 t = 0.8V, Minimum high lev voltage = 0.8V, minimum high lev voltage = 0.8V, minimum high lev voltage 25V, maximum sin voltage 25V, maximum sin voltage 25V, maximum sin zoders just P, UVL, UVP, Foldback, OCP, 1 - Selection of LAN, IEEE, RS. s - Selection of Baud Rate, A - Selection of Baud Rate, A - Selection of Baud Rate, A - Selection of Dayle/Carge/ S% of rated output voltage/ S% of rated output voltage S% of rated output current- PREV, PROT, REM/LOC, OUT P,OTP, FOLD, AC FAIL).	s from adjusting Vout bek e goes below UVP progra T button or by rear panel d linearity: +/-0.5% of rated ad linearity: +/-1% of rated tracy and linearity: +/-1% er selectable logic. adjustrice current balance cc m voltage: 30V, maximum : On, Open: Off, Source cu mote, 2~15V or open: Loc OmA sink current max.)-Re el output = 2V, maximum gh level input votage = 21, m. k current 100mA. (Shunter k current 100mA. (Shunter) k current 100mA. (Shunter)	w limit. Does not affect in mming. ENABLE, or by communica ed Vout. lout. of rated Vout. % of rated lout. %	tion port.
Over -voltage trip point Output under voltage limit (UVL) Output under voltage protection (UVP) Over temperature protection VALOG PROGRAMMING AND MONITORING Vout voltage programming (*13) Vout voltage programming (*13) Vout resistor programming (*13) Shut-off (SO) control Output current monitor (*13) Output voltage monitor Power supply OK signal Parallel operation (*19) . Series operation . CV/CC indicator P. Interlock (ILC) control . Local/Remote mode Control . Local/Remote mode Indicator . Trigger out . Programmed signal 1 . Programmed signal 2 RONT PANEL Control functions Display Indications Function buttons ROGRAMMING AND READBACK (R5232/485,USB, Op Vout programming accuracy (*13) Vout programming resolution		Output shut-down when p Reset by AC input recycle User selectable, latched or 0~100%, 0~5V or 0~10V, u 0~100%, 0~5V or 0~10V, u 0~100%, 0~5/10Kohm full By electrical Voltage: 0~0.V 0~5V or 0~10V, user select 0~5V or 0~10V, user select 1~5V OK, 0V-Fail. 500ohr possible, up to 6 units in minum 0pen collector, function 50V 00pen collector, maximum 0pen collecto	mmunication port. Prevent power supply output voltag in autostart mode or by OU r non latched. isser selectable. Accuracy an isser selectable. Accuracy an isser selectable. Accuracy an isser selectable. Accuracy an isser selectable. Accuracy ant isser selectable. Accuracy ant table. Accuracy: +/-1%. table. Accuracy: +/-1%. is series resistance. haster/slave mode with sing rmal diodes). On, CV mode: Off. Maximu utput by dry contact (Short nt panel. n/Short: 0~0.6V or short: Re y 36V zener). On (0~0.6V, 11 t = 0.8V, Minimum high lew y 36V zener). On (0~0.6V, 11 t = 0.8V, Minimum high n. TpLH,TpHL=1 us maximur voltage 25V, maximum sin voltage 25V, maximum sin voltage 25V, maximum sin zoders ijust p. UVL, UVP, Foldback, OCP, 1 - Selection of Voltage/resistiv Selection of Voltage/curret 5% of rated output current- PREV, PROT, REM/LOC,OUT PREV, PROT, REM/LOC,OUT PREV, PROT, REM/LOC,OUT p. TP, FOLD, AC FAIL).	s from adjusting Vout bek e goes below UVP progra T button or by rear panel d linearity: +/-0.5% of rated ad linearity: +/-1% of rated tracy and linearity: +/-1% er selectable logic. adjustrice current balance cc m voltage: 30V, maximum : On, Open: Off, Source cu mote, 2~15V or open: Loc OmA sink current max.)-Re el output = 2V, maximum gh level input votage = 21, m. k current 100mA. (Shunter k current 100mA. (Shunter) k current 100mA. (Shunter)	w limit. Does not affect in mming. ENABLE, or by communica ed Vout. lout. of rated Vout. % of rated lout. %	tion port.
Over -voltage trip point Output under voltage limit (UVL) Output under voltage protection (UVP) Over temperature protection NALOG PROGRAMMING AND MONITORING Vout voltage programming lout voltage programming (*13) Vout resistor programming (*13) Shut-off (SO) control Output current monitor (*13) Output voltage monitor Power supply OK signal Parallel operation (*19) Series operation CV/CC indicator 2. Interlock (ILC) control 3. Local/Remote mode Control 4. Local/Remote mode Indicator 5. Trigger out 5. Trigger in 7. Programmed signal 1 8. Programmed signal 2 CONT PANEL Control functions Display Display Indications Function buttons COGRAMMING AND READBACK (RS232/485,USB, Op Vout programming resolution Iout programming resolution Iout programming resolution Vout readback accuracy		Output shut-down when p Reset by AC input recycle User selectable, latched or 0~100%, 0~5V or 0~10V, u 0~100%, 0~5V or 0~10V, u 0~100%, 0~5/10Kohm full By electrical Voltage: 0~0. 0~5V or 0~10V, user select 4~5V-OK, 0V-Fail. 500ohm Possible, up to 6 units in m 2 identical units (with exte Open collector. CC mode: Enables/Disables the PS or Ena/Dis is activated by froi By electrical signal or Ope Open collector (shunted b Maximum low level outpu Maximum low level outpu Maximum low level outpu Maximum low level input trigger: tw=10us minimum Open collector, maximum Open collector, maximum Den collector, maximum Mutiple options with 2 En Vout/lout manual adjust OVP/UVL /UVP manual ad Protection Functions - OVI lout: 4 digits, accuracy: 0. Iout: 4 digits, 0. Iout: 4	mmunication port. Prevent power supply output voltag in autostart mode or by OU r non latched. isser selectable. Accuracy an isser selectable. Accuracy an l scale, user selectable. Accu Syl2~15V or dry contact, us table. Accuracy: +/-1%. table. Accuracy: +/-1%. n series resistance. master/slave mode with sing rmal diodes). On, CV mode: Off. Maximu utput by dry contact (Short nt panel. n/Short: 0~0.6V or short: Re y 36V zener). On (0~0.6V, 11 t = 0.8V, Minimum high lev voltage = 0.8V, maximum sin voltage 25V, maxi	s from adjusting Vout bek e goes below UVP progra T button or by rear panel d linearity: +/-0.5% of rated ad linearity: +/-1% of rated tracy and linearity: +/-1% er selectable logic. adjustrice current balance cc m voltage: 30V, maximum : On, Open: Off, Source cu mote, 2~15V or open: Loc OmA sink current max.)-Re el output = 2V, maximum gh level input votage = 21, m. k current 100mA. (Shunter k current 100mA. (Shunter) k current 100mA. (Shunter)	w limit. Does not affect in mming. ENABLE, or by communica ed Vout. lout. of rated Vout. % of rated lout. %	tion port.
. Over -voltage trip point . Output under voltage limit (UVL) . Output under voltage protection (UVP)		Output shut-down when p Reset by AC input recycle User selectable, latched or 0~100%, 0~5V or 0~10V, u 0~100%, 0~5V or 0~10V, u 0~100%, 0~5/10Kohm full By electrical Voltage: 0~0.V 0~5V or 0~10V, user select 0~5V or 0~10V, user select 1~5V OK, 0V-Fail. 500ohr possible, up to 6 units in minum 0pen collector, function 50V 00pen collector, maximum 0pen collecto	mmunication port. Prevent power supply output voltag in autostart mode or by OU r non latched. isser selectable. Accuracy an isser selectable. Accuracy an l scale, user selectable. Accu Syl2~15V or dry contact, us table. Accuracy: +/-1%. table. Accuracy: +/-1%. n series resistance. master/slave mode with sing rmal diodes). On, CV mode: Off. Maximu utput by dry contact (Short nt panel. n/Short: 0~0.6V or short: Re y 36V zener). On (0~0.6V, 11 t = 0.8V, Minimum high lev voltage = 0.8V, maximum sin voltage 25V, maxi	s from adjusting Vout bek e goes below UVP progra T button or by rear panel d linearity: +/-0.5% of rated ad linearity: +/-1% of rated tracy and linearity: +/-1% er selectable logic. adjustrice current balance cc m voltage: 30V, maximum : On, Open: Off, Source cu mote, 2~15V or open: Loc OmA sink current max.)-Re el output = 2V, maximum gh level input votage = 21, m. k current 100mA. (Shunter k current 100mA. (Shunter) k current 100mA. (Shunter)	w limit. Does not affect in mming. ENABLE, or by communica ed Vout. lout. of rated Vout. % of rated lout. %	tion port.

10-60	20-30 85~265Va	36-18 c continuous, 47~63Hz, sin	60-10	100-6
	85~265Va	c continuous 47~63Hz sin	alanhaca	
			igie priase	
7.4/3.6	7.24/3.53	7.73/3.77	7.15/3.50	7.15/3.50
	0.	.99 at 100/200Vac, 100% loa	ad	
82/84	84/86	85/87	85/87	85/87
		Less than 25A		
		0.	0.99 at 100/200Vac, 100% lo. 82/84 84/86 85/87	0.99 at 100/200Vac, 100% load 82/84 84/86 85/87 85/87

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:		 UL61010-1, EN61010-1, IEC61010-1. Design to meet UL60950-1, EN60950-1 10V≤Vout≤60V: Output,J1,J2,J3,J4,USB,LAN,IEEE/ISOLATED Analog are Non Hazardous 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. Output&J1,J2,J3,J4,USB,LAN/IEEE/ISOLATED ANALOG-Ground: 1000VDC/1min. 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: 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

MECHANICAL			
1. Cooling			Forced air cooling by internal fan.
2 Weinht	STANDARD	Kg	Less than 2.5Kg.
2. Weight	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).
S. DIMENSIONS (WXHXD)	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 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.

### Z<sup>+</sup>800 SERIES SPECIFICATIONS

Z <sup>*</sup> 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 ≥ 100VAC (*2)	A	72	40	24	14	8
3. Rated output current < 100VAC (*2)	A	66	36	20	12.5	7.5
4. Rated output power ≥ 100VAC	W	720	800	864	840	800
5. Rated output power < 100VAC	W	660	720	720	750	750
CONSTANT VOLTAGE MODE		1				
I. Max. Line regulation (*6)				6 of rated output voltage		
2. Max. Load regulation (*7)			0.019	6 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
. Temperature coefficient	PPM/°C	30PPM/°C from rated out	tput voltage, following 30	minutes warm-up.	•	
. Temperature stability			8hrs interval following 30		ant line, load & temp.	
. Warm-up drift			output voltage+2mV ove			-
3. Remote sense compensation/wire	V	1	1	2	3	5
9. Up-prog. Response time, 0~Vomax.(*9)	mS	50	50	50	50	100
	mS	25	25	25	25	80
	1115					
Time delay (*17)		285	422	432	570	1370
No load (*10) (*15) (*17)	mS	65	110	155	175	375
No load (*10) (*16) (*17)		320	330	420	540	1900
1. Transient response time	mS	output current. Output s	to recover within 0.5% of i et-point: 10~100%, Local Is up to and including 100	sense.	change 10~90% of rated	
2. Hold-up time		16mSec Typical. Rated o	utput power.			
CONSTANT CURRENT MODE						
. Max. Line regulation (*6)		0.01% of rated output cu				
. Max. Load regulation (*11)		0.01% of rated output cu				
. Load regulation thermal drift		Less than 0.05% of rated	output current over 30 m	inutes following load cha	nge.	
. Ripple r.m.s. 5Hz~1MHz (*12)	mA	75	45	22	12	4.5
. Temperature coefficient	PPM/°C		utput current, following 3			
. Temperature stability			8hrs. interval following 30		ant line. load & temperat	ure.
. Warm-up drift			d output current over 30			
		12C35 than +/ -0.170 01 fdte	a sarpar current over 50	minutes following power	011.	
		Output shut-down when	power supply change me	ode from CV to CC or CC t	n CV. User presetable	
. Foldback protection		Reset by AC input recycle	e in autostart mode or by	OUT button or by rear pai	nel ENABLE, or by commu	
2. Over-voltage protection (OVP)			eset by AC input recycle in autos			1
8. Over -voltage trip point	V	0.5-12	1~24	2~40	5~66	5~110
. Output under voltage limit (UVL)		Preset by front panel or con	nmunication port. Prevents f	rom adjusting Vout below lir	nit. Does not affect in analo	g programming.
		Output shut-down when	power supply output vol	tage goes below UVP pro	gramming.	
6. Output under voltage protection (UVP)			e in autostart mode or by			unication port.
5. Over temperature protection		User selectable, latched		, ,		
		loser selectusie, laterieu				
ANALOG PROGRAMMING AND MONITORING						
. Vout voltage programming		0 100% 0 51/ 0* 0 101/	user selectable. Accuracy	and linearity 1/0 EV/ of	atad Vaut	
2. lout voltage programming (*13)			user selectable. Accuracy	,		
3. Vout resistor programming			Ill scale, user selectable. A			
4. lout resistor programming (*13)		0~100%, 0~5/10Kohm fu	Ill scale, user selectable. A	ccuracy and linearity: +/-1	.5% of rated lout.	
5. Shut-off (SO) control		By electrical Voltage: 0~0	0.6V/2~15V or dry contact	user selectable logic.		
5. Output current monitor (*13)		0~5V or 0~10V, user sele	ctable. Accuracy: +/-1%.			
7. Output voltage monitor		0~5V or 0~10V, user sele				
B. Power supply OK signal		4~5V-OK, 0V-Fail. 500oh				
9. Parallel operation (*19)			master/slave mode with s	ingle wire current balance	connection	
		1		ingle wire cuffent balance	e connection.	
0. Series operation		2 identical units (with ex				
1. CV/CC indicator			: On, CV mode: Off. Maxir			
2. Interlock (ILC) control			tput by dry contact (Short: O			activated by front pan
3. Local/Remote mode Control			en/Short: 0~0.6V or short			
4. Local/Remote mode Indicator		Open collector (shunted	by 36V zener). On (0~0.6\	, 10mA sink current max.	-Remote. Off-Local (30V	max.).
5.Trigger out		Maximum low level outp	out = 0.8V, Minimum high	evel output = 2V, maxim	um source current = 8m/	A, pulse =20us Typica
			voltage = 0.8V,minimum hi			
6.Trigger in		trigger: tw=10us minimur	n. TpLH, TpHL=1 us maximu	n.		
7. Programmed signal 1			voltage 25V, maximum sin		by 27V zener)	
8. Programmed signal 2		Open collector, maximum	voltage 25V, maximum sin	k current 100mA. (Shunted	by 27V zener)	
					· · ·	
RONT PANEL		he are an an				
. Control functions		Mutiple options with 2 E				
		Vout/lout manual adjust				
		OVP/UVL/UVP manual ac				
			VP, UVL, UVP,Foldback, OC			
			ns - Selection of LAN,IEEE,			
			ns - Selection of Baud Rate			
			s - Selection Voltage/resis		/. 5K/10K programming	
			s - Selection of Voltage/Cu			anellock
Dienlau					Galpal ON/OFF, Front Pa	anei Lock.
2. Display			0.5% of rated output volta			
			0.5% of rated output curre			
3. Indications			J, PREV, PROT, REM/LOC,O	UT ON/OFF , CV, CC		
		RED LED's: ALRM (OVP, U				
I. Function buttons		FINE, MENU, PREV, PROT,	REM/LOC, OUT ON/OFF			
PROGRAMMING AND READBACK (RS232/485,USB, Op	tional: IEE	E, LAN)				
. Vout programming accuracy		0.05% of rated output vo	ltage			
2. lout programming accuracy (*13)		0.1% of rated output cur				
		join /o or raced output cur				

 1. Vout programming accuracy
 -- 0.05% of rated output voltage

 2. lout programming accuracy (\*13)
 -- 0.1% of rated output current

 3. Vout programming resolution
 -- 0.012% of full scale

 4. lout programming resolution
 -- 0.012% of full scale

 5. Vout readback accuracy
 -- 0.05% of rated output voltage

 6. lout readback accuracy
 -- 0.05% of rated output voltage

 7. Vout readback resolution
 0.012% of full scale

 8. lout readback resolution
 0.012% of full scale

### Z<sup>+</sup>800 SERIES SPECIFICATIONS

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)	χ.	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℃		
3. Operating humidity	7.	20~90% RH (no condensation).		
4. Storage humidity	X.	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.		

#### SAFFTY/FMC

J/II ETT/ENIC		
1. Applicable standards:	Safety	UL61010-1, EN61010-1, IEC61010-1. Design to meet UL60950-1, EN60950-1 10V≤Vout≤60V: Output,J1,J2,J3,J4,USB,LAN,IEEE/ISOLATED Analog are Non Hazardous 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. Output&J1,J2,J3,J4,USB,LAN/IEEE/ISOLATED ANALOG-Ground: 1000VDC/1min. 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: 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.	
13 Dimensions (WyHyD)	STANDARD		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.

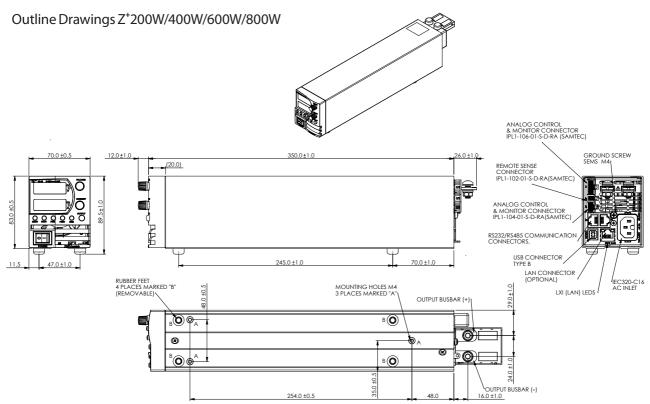
\*10: From 90% to 10% of Rated Output Voltage.
\*11: For load voltage change, equal to the unit voltage rating, constant input voltage.
\*12: For 10V model the ripple is measured at 2V to rated output voltage and rated output current. For other models, the ripple is measured at 10~100%

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.

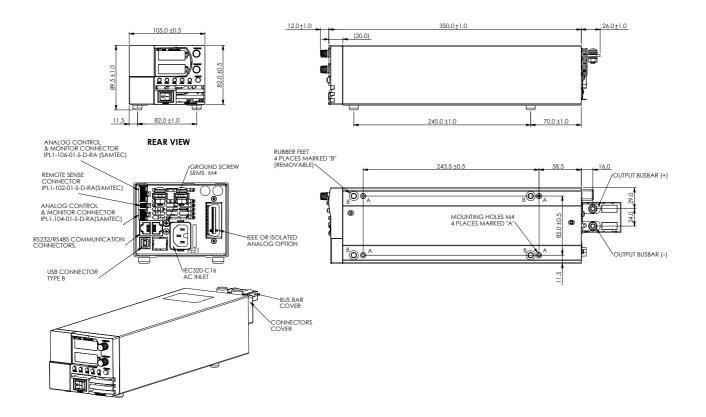
\*14: Measured with JEITA RC-9131A (1:1) probe.

\*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.

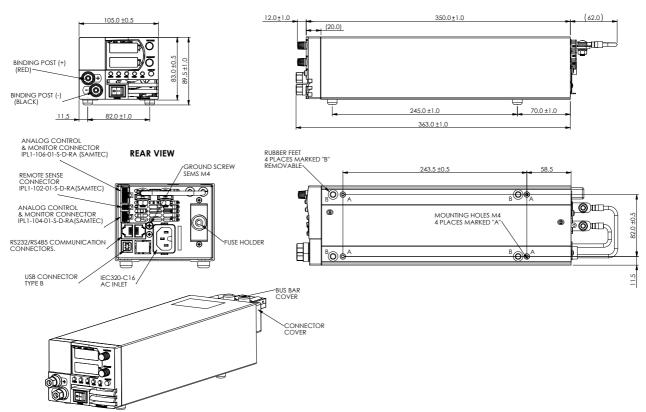
\*18: PS with isolated analog option decreases efficiency by 0.5% and increases input current by 0.5% \*19: For Parallel operation more than 2 units 5% of toatal output current is requierd.



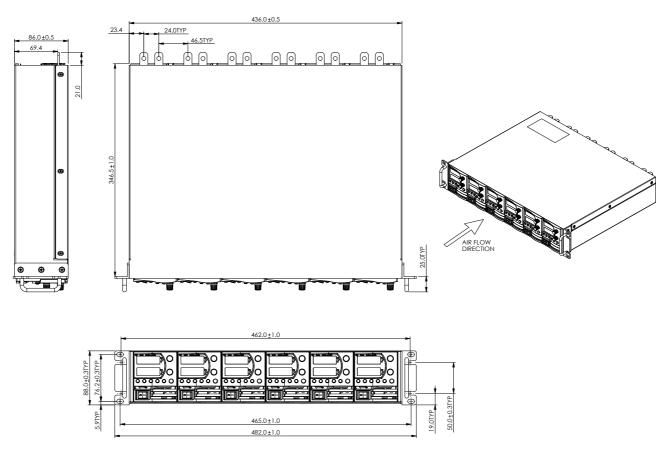
Z<sup>+</sup>200W/400W/600W/800W Optional IEEE, Isolated Analog Interface



### Outline Drawings Z<sup>+</sup>200W/400W/600W/800W Front Panel Output Jacks



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



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