

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

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



hivolt.de GmbH & Co. KG

Oehleckerring 40 D-22419 Hamburg · Germany ① +49 40 537122-0 ≧ +49 40 537122-99 info@hivolt.de · www.hivolt.de

TDK·Lambda

Features Include:

- High Power Density 200W/400W/600W/800W in 2U: 3.5 Inch (89mm) height
- Wide Range Input (85-265Vac continuous)
- Active Power Factor Correction (0.99 typical)
- Output Voltage up to 100V, Current up to 72A
- Constant Voltage (CV)/(CC) Constant Current auto-crossover
- Built-in RS-232/RS-485 Interface Standard
- Global Commands for Serial RS-232/RS-485 Interface
- Auto-Re-Start / Safe-Start: user selectable
- Last-Setting Memory
- High Resolution 16 bit ADCs & DACs
- Low Ripple & Noise
- Front Panel Lock selectable from Front Panel or Software
- Reliable Encoders for Voltage and Current adjustment
- Parallel Operation with Active Current Sharing, for up to six identical units
- Advanced Parallel Master / Slave. Total Current is programmed and measured via the Master
- External Analog Programming and Monitoring (user selectable 0-5V & 0-10V)
- Reliable Modular and SMT Design
- 19" Rack Mount Capability for ATE and OEM applications
- Optional Interfaces

Isolated Analog Programming and Monitoring Interface (0-5V/0-10V & 4-20mA) IEEE 488.2 SCPI (GPIB) Multi-Drop

LAN

LabView® and LabWindows® drivers

Arbitrary functions for:

Automotive or laser simulation / 4 Pre-Programmed Functions

- Fast Command Processing Time
- Output Sequencing
- Four-cell Memory Settings
- User Programmable Signal Pins
- Five Year Warranty
- Worldwide Safety Agency Approvals; CE Mark for LVD and EMC regulations



Front Panel Description







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

Remote Mode

- 7. Function/Status LEDs:
- Alarm
 Foldback Mode
- Fine Control
- 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

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

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

Rear Panel Description





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

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













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Applications

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

Test and Measurement

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

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

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

Semiconductor Burn-in

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

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

Component Test

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

Laser Diode

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

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

Heater Supplies

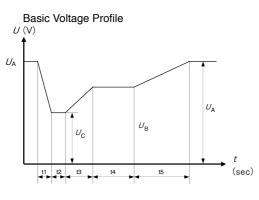
Smooth, reliable encoders enhance front panel control.

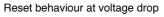
 $Remote analog \ programming \ is \ user \ selectable \ 0-5V \ or \ 0-10V.$

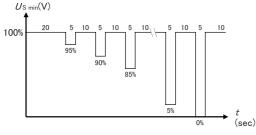
RF Amplifiers and Magnets

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

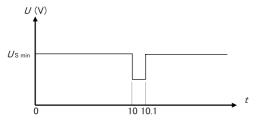
Z⁺ Series Sequence Programming Applications







Discontinuities in supply voltage Momentary drop in supply voltage



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

Front Panel Output Up to 60V Output Module

P/N: Z__-L





P/N: Z__-L2

Optional front panel output jacks (binding post style, (Ø 4mm) for modules up to 60V: 24A Max -L Optional front panel insulated output sockets (Ø 4mm) for modules up to 60V: 24A Max -L2

Z⁺ Assemblies

Dual Output Housing (for 105mm) 200W/400W/600W/800W Triple Output Housing (for 70mm) 200W/400W/600W/800W P/N: Z-NL200 (same p/n for both Dual & Triple Output Housing)



19" Rack Mounted to 4.8kW

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





Power Modules Table

200W	400W	600W	800W
20A	40A	60A	72A
10A	20A	30A	40A
6A	12A	18A	24A
3.5A	7A	10A	14A
2A	4A	6A	8A
1/6 width	1/6 width	1/6 width	1/6 width
1/4 width	1/4 width	1/4 width	1/4 width
	20A 10A 6A 3.5A 2A 1/6 width	20A 40A 10A 20A 6A 12A 3.5A 7A 2A 4A 1/6 width 1/6 width	20A40A60A10A20A30A6A12A18A3.5A7A10A2A4A6A1/6 width1/6 width1/6 width

1/6 width	35. 72. 80. 10. 10. 10. 10. 10. 10. 10. 10. 10. 1
	a 1 a . •



1/4 width

Programming Options (Factory Installed)

Digital Programming via IEEE InterfaceIEEE 488.2 SCPI Compliant	P/N:	IEEE
 Program Voltage Measure Voltage Over Voltage setting and shutdown Error and Status Messages Multi-Drop Allows IEEE Master to control up to 31 slaves of Only the Master needs be equipped with IEEE 		wn
 Isolated Analog Programming Four Channels to Program and Monitor Voltage a Isolation allows operation with floating reference Choose between programming with Voltage or Connection via removable terminal block: Phoen Voltage Programming, user-selectable 0-5V of Power Supply Voltage and Current Programm 	es in harsh electrical environi Current. ix MC1,5/8-ST-3.81. r 0-10V signal. P/N: ing Accuracy ±1%	ments. IS510
 Power Supply Voltage and Current Monitoring Current Programming with 4-20mA signal. Power Supply Voltage and Current Programm Power Supply Voltage and Current Monitoring 	P/N: ing Accuracy ±1%	IS420
LAN Interface	P/N:	LAN

- VISA & SCPI Compatible
- Address Viewable on Front Panel
- Fixed and Dynamic Addressing
- Auto-detects LAN Cross-over Cable
 Fast Startup

• LAN Fault Indicators

• TCP / UDP Socket Programming

Compatible with most standard Networks

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				
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

The Loss capite is abea to connect the power supply to the recontroller					
Mode	RS-485	RS-232			
PC Connector	DB-9F	DB-9F			
Communication Cable	Shield Ground L=2m	Shield Ground L=2m			
Power Supply Connector	EIA/TIA-568A (RJ-45)	EIA/TIA-568A (RJ-45)			
P/N	Z/485-9	Z/232-9			

Serial Link Cable*

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

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

* Included with power supply

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Power Supply Identification / Accessories How to order

Z	10 -	40-	-	-	
Series	Output Voltage	Output Current	Factory	Output	AC cord Options:
Name	(0~10V)	(0~40A)	Options:	Jacks	Region :
			IEEE		E - Europe
			LAN	L	J - Japan
			IS510	L2	U - North America
			IS420		I - Middle East
					C - China
Factory o	ption		P/N		
USB Interface built-in Standard		-			
RS-232/RS-485 Interface built-in Standard		-			
GPIB Interface		IEEE			
Voltage Programming Isolated Analog Interface		IS510			
Current Programming Isolated Analog Interface		IS420			
LAN Interface		LAN			
Front panel output jacks (binding post style, Ø 4m			ım)		
for module	es up to 60V or 24A l	Max		L	
	el insulated output s				
for module	es up to 60V or 24A l	Max		L2	

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

2.1 Z⁺200 Series Specifications

	DEL	Z	10-20	20-10	36-6	60-3.5	100-2
1. Rated output voltage(*1)		V	10	20	36	60	100
	out current (*2)	A	20	10	6	3.5	2
3. Rated ou	utput power	W	200	200	216	210	200
CONSTANT V	OLTAGE MODE	Z	10-20	20-10	36-6	60-3.5	100-2
1. Max. Line r	regulation (*6)			0.01%	of rated output voltage	ge+2mV	
2. Max. Load	regulation (*7)			0.01%	of rated output voltage	ge+2mV	
3. Ripple and nois	e (p-p, 20MHz) (*8)	mV	50	50	50	50	80
4. Ripple r.m	.s. 5Hz~1MHz	mV	5	6	6	7	8
5. Temperatu	ure coefficient	PPM/°C	30	PPM/°C from rated ou	utput voltage, followi	ng 30 minutes warm	-up.
6. Tempera	ture stability		0.02% of rated Ve	out over 8hrs. interval	following 30 minute	s warm-up. Constant	line, load & temp.
7. Warm	n-up drift		Less than	0.05% of rated output	t voltage+2mV over	30 minutes following	power on.
8. Remote sense o	compensation/wire	V	1	1	2	3	5
	e time, 0~Vomax.(*9)	mS	15	30	30	50	50
10. Down-prog. respo			12	25	30	40	50
	Time delay (*17)	mS	210	250	320	380	1200
	No load (*10) (*15)(*17)	IIIS	40	65	85	100	250
	No load (*10) (*16)(*17)		200	200	290	310	1100
11 Transient	response time	mS	Time for output volta	ige to recover within 0	0.5% of its rated outpu	It for a load change 1	0~90% of rated out
		1115		et-point: 10~100%, Lo			and including 100V
12. Hold-u	p time (*19)		15mSec Typical.		16mSee	c Typical.	
CONSTANT	URRENT MODE	Z	10-20	20-10	36-6	60-3.5	100-2
	regulation (*6)		10-20				100-2
					of rated output curre of rated output curre		
2. Max. Load regulation (*11) 3. Load regulation thermal drift			Loss tha	in 0.05% of rated out			d change
	4. Ripple r.m.s. 5Hz~1MHz (*12)		25	15			3
		mA PPM/°C		DPPM/°C from rated o		ing 30 minutes warn	
	5. Temperature coefficient 6. Temperature stability			over 8hrs. interval foll			
	n-up drift			an +/-0.1% of rated or			
	•						1
PROTECTIVE	E FUNCTIONS	Z	10-20	20-10	36-6	60-3.5	100-2
1. Foldbacl	k protection		Output shut-down when power supply change mode from CV to CC or CC to CV. User presetable. Reset by AC input recycle in autostart mode or by OUTPUT button or by rear panel ENABLE, or by communication			by communication po	
2. Over-voltage	protection (OVP)		Inverter Shut dow	n method. Reset by A rear panel El	C input recycle in aut NABLE, or by commu		UTPUT button or by
3. Over -volt	age trip point	V	0.5~12	1~24	2~40	5~66	5~110
4. Output under	voltage limit (UVL)		Preset by front panel or	communication port. Prev	ents from adjusting Vout b	pelow limit. Does not affe	t in analog programmi
5. Output under vol	tage protection (UVP)		Output shut-down when power supply output voltage goes below UVP programming. User presetable. Reset by AC input recycle in autostart mode or by OUTPUT button or by rear panel ENABLE, or by communication por				
6. Over temper	ature protection			User sele	ctable, latched or no	n latched.	
NALOG PROGRAMMING							
	e programming		0~100% 0	~5V or 0~10V, user se	lectable Accuracy an	d linearity: ±/-0.5% c	f rated Vout
	rogramming (*13)			~5V or 0~10V, user s			
	r programming			10Kohm full scale, us			
				10Kohm full scale, use			
4. lout resistor programming (*13)				lectrical Voltage: 0~0			
5. Shut Off	5. Shut Off (SO) control					curacy: +/-1%.	logici
				0~5V or 0~10			
6. Output curre	nt monitor (*13)					$curacy: \pm /-1\%$	
6. Output curre 7. Output vo	nt monitor (*13) Itage monitor			0~5V or 0~10	V, user selectable. Ac		
6. Output curre 7. Output vo 8. Power sup	nt monitor (*13) Itage monitor oply OK signal			0~5V or 0~10 4~5V-OK, 0	V, user selectable. Ac V-Fail. 500ohm serie	s resistance.	e connection.
6. Output curre 7. Output vo 8. Power sup 9. Parallel op	nt monitor (*13) Itage monitor oply OK signal peration (*20)			0~5V or 0~10 4~5V-OK, 0 to 6 units in master/s	V, user selectable. Ac IV-Fail. 500ohm serie lave mode with singl	s resistance. e wire current balanc	e connection.
6. Output curre 7. Output vo 8. Power sup 9. Parallel op 10. Series	nt monitor (*13) Itage monitor oply OK signal peration (*20) s operation		Possible, up	0~5V or 0~10 4~5V-OK, 0 to 6 units in master/s 2 identic	V, user selectable. Ac IV-Fail. 500ohm serie lave mode with singl al units (with externa	s resistance. e wire current balanc Il diodes).	
6. Output curre 7. Output vo 8. Power sup 9. Parallel op 10. Series 11. CV/CC	nt monitor (*13) Itage monitor opply OK signal peration (*20) coperation C indicator		Possible, up Open collector. C	0~5V or 0~10 4~5V-OK, 0 to 6 units in master/s 2 identic C mode: On, CV mod	V, user selectable. Ac V-Fail. 500ohm serie lave mode with singl al units (with externa e: Off. Maximum volt	s resistance. e wire current balanc al diodes). age: 30V, maximum	sink current: 10mA
6. Output curre 7. Output vo 8. Power sup 9. Parallel op 10. Series 11. CV/CC 12. Interlock	nt monitor (*13) Itage monitor opply OK signal operation (*20) operation C indicator < (ILC) control	 	Possible, up Open collector. C Enables/Disables the PS o	0~5V or 0~10 4~5V-OK, C to 6 units in master/s 2 identic C mode: On, CV mod utput by dry contact (Short:	V, user selectable. Ac V-Fail. 500ohm serie lave mode with singl cal units (with externa e: Off. Maximum volt On, Open: Off, Source curre	s resistance. e wire current balance al diodes). age: 30V, maximum nt: less than 0.5mA). Ena/D	sink current: 10mA s is activated by front pa
6. Output curre 7. Output vo 8. Power sup 9. Parallel og 10. Series 11. CV/CC 12. Interlock 13. Local/Remo	nt monitor (*13) Itage monitor opply OK signal peration (*20) coperation C indicator	 	Possible, up Open collector. C Enables/Disables the PS o By electr	0~5V or 0~10 4~5V-OK, C to 6 units in master/s 2 identic C mode: On, CV mod utput by dry contact (Short: ical signal or Open/S	V, user selectable. Ac V-Fail. 500ohm serie lave mode with singl al units (with externa e: Off. Maximum volt On, Open: Off, Source curre hort: 0~0.6V or short:	s resistance. e wire current balanc al diodes). rage: 30V, maximum nt: less than 0.5mA). Ena/D Remote, 2~15V or o	sink current: 10mA s is activated by front pa pen: Local
6. Output curre 7. Output vo 8. Power sup 9. Parallel op 10. Series 11. CV/C0 12. Interlock 13. Local/Remot 14. Local/Remot	nt monitor (*13) Itage monitor oply OK signal seration (*20) c indicator c (ILC) control ite mode Control		Possible, up Open collector. C Enables/Disables the PS o By electr Open collector (shur	0~5V or 0~10 4~5V-OK, C to 6 units in master/s 2 identic C mode: On, CV mod utput by dry contact (Short: ical signal or Open/S) nted by 36V zener). Or I output =0.8V, Minin	V, user selectable. Ac V-Fail. 500ohm serie lave mode with singl cal units (with externa e: Off. Maximum volt On, Open: Off. Source curre hort: 0–0.6V or short: h (0–0.6V, 10mA sink of hum high level output	s resistance. e wire current balance al diodes). rage: 30V, maximum nt: less than 0.5mA). Ena/D Remote, 2~15V or o current max.)-Remote t = 3.8V, Maximum h	sink current: 10mA s is activated by front pa pen: Local . Off-Local (30V ma
6. Output curre 7. Output vo 8. Power sup 9. Parallel op 10. Series 11. CV/CC 12. Interlock 13. Local/Remo 14. Local/Remot 15.Trig	nt monitor (*13) Itage monitor opply OK signal operation (*20) o operation C indicator C indicator C (ILC) control te mode Control ee mode Indicator		Possible, up Open collector. C Enables/Disables the PS o By electr Open collector (shur Maximum low leve Maximum low leve	0~5V or 0~10 4~5V-OK, C to 6 units in master/s 2 identic C mode: On, CV mod utput by dry contact (Short: ical signal or Open/S ited by 36V zener). Or l output =0.8V, Minin Maximum sourc vel input =1.2V, Minir	V, user selectable. Ac V-Fail. 500ohm serie lave mode with singl (al units (with externa e: Off. Maximum volt On, Open: Off, Source curre hort: 0~0.6V, 10mA sink of (0~0.6V, 10mA sink of umh high level outpu e current =16mA, pu mum high level input	s resistance. e wire current balance al diodes). (age: 30V, maximum nt: less than 0.5mA). Ena/D Remote, 2~15V or o current max.)-Remote t: = 3.8V, Maximum hi lse = 20µs Typical.	sink current: 10mA s is activated by front pa pen: Local . Off-Local (30V ma gh level output =5 gh level input =5V,
6. Output curre 7. Output vo 8. Power sup 9. Parallel op 10. Series 11. CV/C 12. Interlock 13. Local/Remot 14. Local/Remot 15.Trig 16.Tri	nt monitor (*13) Itage monitor opply OK signal operation (*20) operation C indicator c (ILC) control te mode Control te mode Indicator gger out gger in		Possible, up Open collector. C Enables/Disables the PS o By electr Open collector (shur Maximum low leve Maximum low leve Maximum low leve	0~5V or 0~10 4~5V-OK, C to 6 units in master/s 2 identic C mode: On, CV mod utput by dry contact (Short: ical signal or Open/SI ted by 36V zener). Or I output =0.8V, Minim Maximum sourc vel input = 1.2V, Minin :current =16mA, positi	V, user selectable. Ac V-Fail. 500ohm serie lave mode with singl al units (with externa e: Off. Maximum volb On, Open: Off, Source curre hort: 0~0.6V or short: 1 (0~0.6V, 10mA sink or num high level outpu e current =16mA, pu num high level input ve edge, trigger: tw =	s resistance. e wire current balance al diodes). (age: 30V, maximum nt: less than 0.5mA). Ena/D Remote, 2~15V or o current max.)-Remote ti = 3.8V, Maximum hi lse = 20µs Typical. = 3.5V, Maximum hig = 10µs minimum, Tr/T	sink current: 10mA s is activated by front par pen: Local . Off-Local (30V ma: gh level output =5V gh level input =5V, f =1µs maximum.
6. Output curre 7. Output vo 8. Power sup 9. Parallel op 10. Series 11. CV/CC 12. Interlock 13. Local/Remot 14. Local/Remot 15. Trig 16. Tri 17. Program	nt monitor (*13) Itage monitor opply OK signal coperation (*20) c indicator c (ILC) control the mode Control the mode Indicator oger out		Possible, up Open collector. C Enables/Disables the PS o By electr Open collector (shur Maximum low leve Maximum low leve Maximum sink c Open collector	0~5V or 0~10 4~5V-OK, C to 6 units in master/s 2 identic C mode: On, CV mod utput by dry contact (Short: ical signal or Open/S ited by 36V zener). Or l output =0.8V, Minin Maximum sourc vel input =1.2V, Minir	V, user selectable. Ac V-Fail. 500ohm serie lave mode with singl cal units (with externa e: Off. Maximum volt On, Open: Off, Source curre hort: 0~0.6V or short: n (0~0.6V, 10mA sink of num high level outpu e current =16mA, pu num high level input ve edge, trigger: tw= 5V,maximum sink cu	s resistance. e wire current baland al diodes). sage: 30V, maximum nt. less than 0.5mA). Ena/D Remote, 2~15V or o current max.)-Remote t = 3.8V, Maximum hi lse = 20µs Typical. = 3.5V, Maximum hig = 10µs minimum, Tr.T rrent 100mA. (Shunt	sink current: 10mA s is activated by front pa pen: Local . Off-Local (30V ma gh level output =5 gh level input =5V, $f = 1 \mu s$ maximum. ed by 27V zener)

FRONT PANEL

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

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

1 HOGHAMMINING AND READBACK (15252/465,658, 661	Ional. IEEE,					
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				
INPUT CHARACTERISTICS	Z	10-20	20-10	36-6	60-3.5	100-2
1. Input voltage/freq. (*3)		85~265Vac continuous, 47~63Hz, single phase				
2. Maximum Input current 100/200VAC (*4) (*18)		2.65/1.31	2.62/1.29	2.76/1.37	2.69/1.33	2.55/1.26
3. Power Factor (Typ)			>0.99 at 10	00Vac, >0.98 at 200Va	ac,100% load	
4. Efficiency (Typ) 100/200VAC (*4) (*18)	%	76/77.5	77/79	79/80.5	79/80.5	79/81
	1					

5. Inrush current 100/200VAC (*5)

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.
5. Altitude		Operating: Maximum ambient temperature, From 2000m up to 3000m Ambient temperature 40°C.

Less than 15A/30A

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		IEC/EN61326-1 (Built to meet EN55022/EN55024)		
2. Withstand voltage			10≤Vout≤36V models: Input-Output&J1,J2,J3,J4,USB,LAN/IEEE/ISOLATED ANALOG: 4242VDC/1min; Input-Ground: 2828VDC/1min. Output&J1,J2,J3,J4,USB,LAN/IEEE/ISOLATED ANALOG-Ground: 707VDC/1min. 60V,100V models: Input-Output&J1,J2: 4242VDC/1min; Input-J3,J4,USB,LAN/IEEE/ISOLATED Analog: 4242VDC/1min; Input-Ground: 2828VDC/1min. Output&J1,J2- J3,J4,USB,LAN/IEEE/ISOLATED ANALOG :1910VDC/1min; Output&J1,J2-Ground: 1380VDC/1min. J3, J4, USB/LAN/IEEE/ISOLATED ANALOG - Ground: 707VDC/1min;		
3. Insulation resistance	3. Insulation resistance		ulation 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		Less than 1.9Kg.				
2. Weight	WIDE BODY	Kg	Less than 2.4Kg. Wide body with Isolated analog or Binding post or IEEE.				
	STANDARD STANDARD		H: 83, W: 70, D: 350 (excluding bus bars, handles). (Refer to Outline drawing).				
3. Dimensions (WXHXD)	3. Dimensions (WxHxD) WIDE BODY mm		H: 83, W: 105, D: 350 (excluding bus bars, handles). (Refer to Outline drawing).				
4. Vib	4. Vibration		According to: IEC60068-2-64				
5. SI	hock		Less than 20G, half sine, 11mS. Unit is unpacked. According to: IEC60068-2-27				

NOTES:

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

- *2: Minimum current is guaranteed to maximum 0.2% of rated output current.
- *3: For cases where conformance to various safety standards (UL, IEC, etc...) is required, to be described as 100-240Vac (50/60Hz).
- *4: Ta=25°C with rated output power.
- *5: Not including EMI filter inrush current, less than 0.2mSec at cold start Ta=25°C
- *6: At 85~132Vac or 170~265VAC, constant load.
- *7: From No-Load to Full-Load, constant input voltage. Measured at the sensing point in Remote Sense.
- *8: Measured with JEITA RC-9131A (1:1) probe.
- *9: From 10% to 90% or 90% to 10% of Rated Output Voltage, with rated resistive load.

- *10: From 90% to 10% of Rated Output Voltage.
 *11: From 90% to 10% of Rated Output Voltage.
 *11: For load voltage change, equal to the unit voltage rating, constant input voltage.
 *12: For 10V model the ripple is measured at 2V to rated output voltage and rated output current. For other models, the ripple is measured at 10~100%
- of rated output voltage and rated output current.
- *13: The Constant Current programming, readback and monitoring accuracy do not include the warm-up and Load regulation thermal drift. *14: Measured with JEITA RC-9131A (1:1) probe.
- *15: For cases where the time interval between each down programming is longer than Td (time delay).
- *16: For cases where the time interval between each down programming is shorter than Td (time delay).
- *17: Td typical Minimum time between consecutive down programming cycles.
- *18: PS with Lan, IEEE, models decrease efficiency by 0.5% and increase input current by 0.5%.
 PS with Isolated analog option decreases efficiency by 1.5% and increases input current by 1.5%. *19: At rated output power.
- *20: For Parallel operation more than 2 units 5% of total output current is requierd.

2.2 Z⁺400 Series Specifications

MODEL	Z	10-40	20-20	36-12	60-7	100-4
1. Rated output voltage(*1)	V	10	20	36	60	100
2. Rated output current (*2)	A	40	20	12	7	4
Rated output power	W	400	400	432	420	400
CONSTANT VOLTAGE MODE	Z	10-40	20-20	36-12	60-7	100-4
1. Max. Line regulation (*6)		10 10		of rated output voltage		100 1
2. Max. Load regulation (*7)				of rated output voltage		
3. Ripple and noise (p-p, 20MHz) (*8)	mV	50	50	50	50	80
		5	6		50	8
4. Ripple r.m.s. 5Hz~1MHz	mV			6		-
5. Temperature coefficient	PPM/°C		PPM/°C from rated ou			
6. Temperature stability			out over 8hrs. interva			
7. Warm-up drift			0.05% of rated output			
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)	10	10	15	30	50
Time delay (*17)		210	250	320	380	1200
No load (*10) (*15) (*17)	mS	40	65	85	100	250
No load (*10) (*16) (*17)		200	200	290	310	1100
		Time for output volt	age to recover within ().5% of its rated outpu	t for a load change 10	0~90% of rated outr
11. Transient response time	mS		et-point: 10~100%, Lo			
12. Hold-up time (*19)		15mSec Typical.			Typical.	j
		i sinsee typical.		Tombe	- Typiculi	
CONSTANT CURRENT MODE	Z	10-40	20-20	36-12	60-7	100-4
1. Max. Line regulation (*6)			0.01%	of rated output curre	nt+2mA	
2. Max. Load regulation (*11)			0.01%	of rated output curre	nt+5mA	
3. Load regulation thermal drift		Less tha	n 0.05% of rated out			d change.
4. Ripple r.m.s. 5Hz~1MHz (*12)	mA	70	40	15	8	3
5. Temperature coefficient	PPM/°C		DPPM/°C from rated o		-	
6. Temperature stability			over 8hrs. interval foll			
7. Warm-up drift			an +/-0.1% of rated o			
7. Walli-up ullt		Less the	an +/-0.1% of fateu of	atput current over 50	minutes following p	Jower on.
PROTECTIVE FUNCTIONS	Z	10-40	20-20	36-12	60-7	100-4
1 Foldback protection		Output sh	ut-down when power sup	ply change mode from C	V to CC or CC to CV. Use	er presetable.
1. Foldback protection			أبياه ومناقب ومعرفه والمراجع والمراجع			
		Reset by AC input rec	ycle in autostart mode of	by OUTPUT button or by	rear panel ENABLE, or c	by communication port
2. Over-voltage protection (OVP)			n method. Reset by A	C input recycle in aut	ostart mode or by O	
		Inverter Shut dow	n method. Reset by A rear panel El	C input recycle in aut NABLE, or by commu	ostart mode or by O nication port.	UTPUT button or b
3. Over - voltage trip point	V	Inverter Shut dow 0.5~12	n method. Reset by A rear panel El 1~24	C input recycle in aut NABLE, or by commu 2~40	ostart mode or by O nication port. 5~66	UTPUT button or b
		Inverter Shut dow 0.5~12	n method. Reset by A rear panel El 1~24 el or communication	C input recycle in aut NABLE, or by commu 2~40 port. Prevents from a	ostart mode or by O nication port. 5~66 djusting Vout below	UTPUT button or b
3. Over - voltage trip point	V	Inverter Shut dow 0.5~12 Preset by front pan	n method. Reset by A rear panel El 1~24 el or communication ir	C input recycle in aut NABLE, or by commu 2~40 port. Prevents from a n analog programmir	ostart mode or by O nication port. 5~66 djusting Vout below g.	UTPUT button or b 5~110 limit. Does not affe
3. Over - voltage trip point	V	Inverter Shut dow 0.5~12 Preset by front pan Output shut-down	n method. Reset by A rear panel El 1~24 el or communication ir when power supply o	C input recycle in au NABLE, or by commu 2~40 port. Prevents from a n analog programmir putput voltage goes b	ostart mode or by O nication port. 5~66 djusting Vout below g. elow UVP programm	UTPUT button or b 5~110 limit. Does not affe
3. Over - voltage trip point 4. Output under voltage limit (UVL) 5. Output under voltage protection (UVP)	V	Inverter Shut dow 0.5~12 Preset by front pan Output shut-down	n method. Reset by A rear panel El 1~24 el or communication in when power supply o rcle in autostart mode or	C input recycle in aut NABLE, or by commu 2~40 port. Prevents from a n analog programmir putput voltage goes b by OUTPUT button or b	ostart mode or by O nication port. 5~66 djusting Vout below ig. elow UVP programm y rear panel ENABLE, or	UTPUT button or b 5~110 limit. Does not affe
3. Over - voltage trip point 4. Output under voltage limit (UVL)	V	Inverter Shut dow 0.5~12 Preset by front pan Output shut-down	n method. Reset by A rear panel El 1~24 el or communication in when power supply o rcle in autostart mode or	C input recycle in au NABLE, or by commu 2~40 port. Prevents from a n analog programmir putput voltage goes b	ostart mode or by O nication port. 5~66 djusting Vout below ig. elow UVP programm y rear panel ENABLE, or	UTPUT button or b 5~110 limit. Does not affe
3. Over - voltage trip point 4. Output under voltage limit (UVL) 5. Output under voltage protection (UVP) 6. Over temperature protection	V	Inverter Shut dow 0.5~12 Preset by front pan Output shut-down	n method. Reset by A rear panel El 1~24 el or communication in when power supply o rcle in autostart mode or	C input recycle in aut NABLE, or by commu 2~40 port. Prevents from a n analog programmir putput voltage goes b by OUTPUT button or b	ostart mode or by O nication port. 5~66 djusting Vout below ig. elow UVP programm y rear panel ENABLE, or	UTPUT button or b 5~110 limit. Does not aff
3. Over - voltage trip point 4. Output under voltage limit (UVL) 5. Output under voltage protection (UVP) 6. Over temperature protection ALOG PROGRAMMING AND MONITORING	V	Inverter Shut dow 0.5~12 Preset by front pan Output shut-down Reset by AC input recy	n method. Reset by A rear panel El 1~24 el or communication ir when power supply rcle in autostart mode or User Sele	C input recycle in au NABLE, or by commu 2~40 port. Prevents from a n analog programmir putput voltage goes b by OUTPUT button or b ectable. Latched or no	ostart mode or by O nication port. 5~66 djusting Vout below ig. elow UVP programm y rear panel ENABLE, or on latched	UTPUT button or t 5~110 limit. Does not aff ing. User presetable by communication pr
3. Over - voltage trip point 4. Output under voltage limit (UVL) 5. Output under voltage protection (UVP) 6. Over temperature protection ALOG PROGRAMMING AND MONITORING 1. Vout voltage programming	V	Inverter Shut dow 0.5~12 Preset by front pan Output shut-down Reset by AC input recy 0~100%, 0-	n method. Reset by A rear panel El 1~24 el or communication ir n when power supply rcle in autostart mode or User Sele ~5V or 0~10V, user se	C input recycle in au NABLE, or by commu 2~40 port. Prevents from a n analog programmir poutput voltage goes b by OUTPUT button or b ectable. Latched or no lectable. Accuracy an	ostart mode or by O nication port. 5~66 djusting Vout below g. elow UVP programm y rear panel ENABLE, or on latched d linearity: +/-0.5% d	UTPUT button or t 5~110 limit. Does not aff ing. User presetable by communication pr of rated Vout.
3. Over - voltage trip point 4. Output under voltage limit (UVL) 5. Output under voltage protection (UVP) 6. Over temperature protection ALOG PROGRAMMING AND MONITORING 1. Vout voltage programming 2. lout voltage programming (*13)	V 	Inverter Shut dow 0.5~12 Preset by front pan Output shut-down Reset by AC input recy 0~100%, 0 0~100%, 0	n method. Reset by A rear panel El 1~24 el or communication in when power supply ckle in autostart mode or User Sele ~5V or 0~10V, user se 0~5V or 0~10V, user se	C input recycle in aut NABLE, or by commu 2~40 port. Prevents from a nanalog programmir poutput voltage goes b by OUTPUT button or b totable. Latched or no lectable. Accuracy an electable. Accuracy a	ostart mode or by O nication port. 5~66 djusting Vout below g. elow UVP programmi y rear panel ENABLE, or on latched d linearity: +/-0.5% o nd linearity: +/-1% o	UTPUT button or t 5~110 limit. Does not aff ing. User presetable by communication pr of rated Vout. f rated lout.
3. Over - voltage trip point 4. Output under voltage limit (UVL) 5. Output under voltage protection (UVP) 6. Over temperature protection ALOG PROGRAMMING AND MONITORING 1. Vout voltage programming 2. lout voltage programming (*13) 3. Vout resistor programming	V 	Inverter Shut dow 0.5~12 Preset by front pan Output shut-down Reset by AC input recy 0~100%, 0 0~100%, 0~5/	n method. Reset by A rear panel El 1~24 el or communication in when power supply cde in autostart mode or User Sele -5V or 0~10V, user se 0~5V or 0~10V, user se 10Kohm full scale, us	C input recycle in au NABLE, or by commu 2~40 port. Prevents from a nanalog programmir putput voltage goes b by OUTPUT button or b cctable. Latched or no lectable. Accuracy an electable. Accuracy a er selectable. Accuracy	costart mode or by O nication port. 5~66 djusting Vout below ig. elow UVP programmi y rear panel ENABLE, or in latched d linearity: +/-0.5% o nd linearity: +/-1% o cy and linearity: +/-1% o	UTPUT button or t 5~110 limit. Does not aff ing. User presetable by communication pr of rated Vout. f rated lout. % of rated Vout.
3. Over - voltage trip point 4. Output under voltage limit (UVL) 5. Output under voltage protection (UVP) 6. Over temperature protection ALOG PROGRAMMING AND MONITORING 1. Vout voltage programming 2. lout voltage programming (*13) 3. Vout resistor programming 4. lout resistor programming (*13)	V 	Inverter Shut dow 0.5~12 Preset by front pan Output shut-down Reset by AC input recy 0~100%, 0 0~100%, 0~5/ 0~100%, 0~5/	n method. Reset by A rear panel El 1~24 el or communication in when power supply cde in autostart mode or User Sele ~5V or 0~10V, user se >-5V or 0~10V, user se 10Kohm full scale, use 10Kohm full scale, use	C input recycle in au NABLE, or by commu 2~40 port. Prevents from a n analog programmir poutput voltage goes b by OUTPUT button or b cctable. Latched or no lectable. Accuracy an electable. Accuracy a er selectable. Accuracy er selectable. Accuracy	ostart mode or by O nication port. 5~66 djusting Vout below g. elow UVP programmi y rear panel ENABLE, or nn latched d linearity: +/-0.5% of nd linearity: +/-1% o cy and linearity: +/-1 y and linearity: +/-1	UTPUT button or k 5~110 limit. Does not aff ing. User presetable by communication p of rated Vout. frated lout. % of rated Vout. 5% of rated lout.
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	 Multiple options with 2 Encoders				
	 Vout/lout manual adjust				
	 OVP/UVL /UVP manual adjust				
1. Control functions	 Protection Functions - OVP, UVL, UVP, Foldback, OCP, INT, SO				
1. Control functions	 Communication Functions - Selection of LAN,IEEE (*20), RS232,RS485,USB				
	 Communication Functions - Selection of Baud Rate, Address				
	 Analog Control Functions - Selection Voltage/resistive programming, 5V/10V, 5K/10K programm				
	 Analog Control Functions - Selection of Voltage/Current Monitoring 5V/10V, Output ON/OFF, Front Pan				
2 Display	 Vout: 4 digits, accuracy: 0.5% of rated output voltage+/-1 count.				
2. Display	 lout: 4 digits, accuracy: 0.5% of rated output current+/-1 count.				
3. Indications	 GREEN LEDs: FINE, MENU, PREV, PROT, REM, OUTPUT, CV, CC				
5. Illuications	 RED LED: PROT (OVP, UVP, OTP, FOLD, AC FAIL).				
4. Function buttons	 FINE, MENU, PREV, PROT, REM, OUTPUT				

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

		===)) =:)					
1. Vout programming accuracy			0.05% of rated output voltage				
2. 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 vo	ltage		
6. lout readback accuracy (*13)			0.1% of act	ual +0.3% of rated ou	tput current		
7. Vout readback resolution		0.012% of full scale					
8. lout readback resolution		0.012% of full scale					
INPUT CHARACTERISTICS	Z	10-40	20-20	36-12	60-7	100-4	
1. Input voltage/freq. (*3)			85~265Vac o	ontinuous, 47~63Hz,	single phase		
2. Maximum Input current 100/200VAC (*4) (*18)		5.05/2.47 4.98/2.45 5.25/2.57 5.10/2.50 4.80/2.37					
3. Power Factor (Typ)		0.99 at 100/200Vac, 100% load					
4. Efficiency (Typ) 100/200VAC (*4) (*18)	%	80/82	81/83	83/85	83/85	84/86	
5. Inrush current (*5)				Less than 25A			

ENVIRONMENTAL CONDITIONS

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

SAFETY/EMC

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		IEC/EN61326-1 (Built to meet EN55022/EN55024)			
2. Withstand voltage		10≤Vout≤36V models: Input-Output&J.J.2,J3,J4,USB,LAN/IEEE/ISOLATED ANALOG: 4242VDC/1min; Input-Ground: 2828VDC/1min. Output&J1,J2,J3,J4,USB,LAN/IEEE/ISOLATED ANALOG-Ground: 707VDC/1min. 60V,100V models: Input-Output&J1,J2: 4242VDC/1min; Input-J3,J4,USB,LAN/IEEE/ISOLATED Analog: 4242VDC/1min; Input-Ground: 2828VDC/1min. Output&J1,J2- J3,J4,USB,LAN/IEEE/ISOLATED ANALOG :1910VDC/1min; Output&J1,J2-Ground: 1380VDC/1min. J3, J4, USB/LAN/IEEE/ISOLATED ANALOG - Ground: 707VDC/1min;			
3. Insulation resistance		More than 100Mohm at 25°C, 70%RH.			
		IEC/EN61326-1 Industrial Location - B, FCC part 15-B, VCCI-B			
		IEC/EN61326-1 Industrial Location - A, FCC part 15-A, VCCI-A			
	,	EMC			

MECHANICAL

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

NOTES:

*2: Minimum current is guaranteed to maximum 0.2% of rated output current.

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

^{*1:} Minimum voltage is guaranteed to maximum 0.1% of rated output voltage.

TDK·Lambda _____

2.3 Z⁺600 Series Specifications

MODEL		-					
		Z	10-60	20-30	36-18	60-10	100-6
1. Rated output volta	V · · ·		10	20	36	60 10	100
2. Rated output curre		A W	60	30 600	18 648	600	6 600
3. Rated output po	Jwer	VV	600	600	040	600	000
CONSTANT VOLTAGE	MODE	Z	10-60	20-30	36-18	60-10	100-6
1. Max. Line regulati	on (*6)			0.01% 0	of rated output voltad	ge+2mV	
2. Max. Load regulati	on (*7)			0.01% (of rated output voltage	ge+2mV	
3. Ripple and noise (p-p, 2		mV	50	50	50	50	80
4. Ripple r.m.s. 5Hz~	·1MHz	mV	5	5	5	12	15
5. Temperature coef		PPM/°C	30	PPM/°C from rated ou	itput voltage, followi	ng 30 minutes warm-	·up.
6. Temperature sta	bility			out over 8hrs. interval			
7. Warm-up dri			Less than	0.05% of rated outpu	t voltage+2mV over	30 minutes following	power on.
8. Remote sense compen	sation/wire	V	1	1	2	3	5
9. Up-prog. Response time,	0~Vomax.(*9)	mS	50	50	50	50	100
10. Down-prog. response tim	ne: Full load (*9)		25	25	25	25	80
	Time delay (*17)	mS	285	425	450	570	1370
Nol	oad (*10) (*15)(*17)	1115	65	110	155	175	375
Nol	oad (*10) (*16)(*17)		280	470	470	500	1200
11. Transient response	so timo	mS	Time for output volta	age to recover within 0	.5% of its rated outpu	it for a load change 10	~90% of rated outpu
TT: Transient respons	se unie	1115	current. Output s	et-point: 10~100%, Lo	cal sense. Less than 1r	mS, for models up to a	nd including 100V
12. Hold-up time ((*18)		15mSec	Typical.		20mSec Typical.	
		-	10.50	20.20	26.40	60.40	100.5
CONSTANT CURRENT		Z	10-60	20-30	36-18	60-10	100-6
1. Max. Line regulati					of rated output curre		
2. Max. Load regulation					of rated output current		
3. Load regulation the				n 0.15% of rated outp		inutes following load	
4. Ripple r.m.s. 5Hz~1N		mA	150	75	25	8	5
5. Temperature coef		PPM/°C		OPPM/°C from rated o			
6. Temperature sta	bility			over 8hrs. interval foll	¥		
7. Warm-up dri	ft		20V, 36V Model:	ess than +/-0.3% of ra Less than +/-0.15% o s: Less than +/-0.1% o	f rated output curren	t over 30 minutes fol	lowing power on.
PROTECTIVE FUNC	TIONS	Z	10-60	20-30	36-18	60-10	100-6
1. Foldback protec	tion			own when power supp			
				cle in autostart mode or n method. Reset by A	,	<u> </u>	, , , , , , , , , , , , , , , , , , , ,
Over-voltage protect	ion (OVP)		Inverter shut down		VABLE, or by commu		JIPOT bullon of by
3. Over -voltage trip	noint	V	0.5~12	1~24	2~40	5~66	5~110
4. Output under voltage				communication port. Prev			
5. Output under voltage pro			Output shut-dow	n when power supply o	output voltage goes b	elow UVP programmir	
6. Over temperature p	rotection		Output shut-down when power supply output voltage goes below UVP programming. User presetable. Reset by AC input recycle in autostart mode or by OUTPUT button or by rear panel ENABLE, or by communication po				
				User Sele	ctable. Latched or no	on latched.	
	NUTODING			User Sele	ctable. Latched or no	n latched.	
			0.100% 0				by communication por
1. Vout voltage progra	amming			~5V or 0~10V, user se	ectable. Accuracy an	d linearity: +/-0.5% o	f rated Vout.
1. Vout voltage progra 2. lout voltage programi	amming ming (*13)		0~100%, 0	~5V or 0~10V, user se)~5V or 0~10V, user se	ectable. Accuracy an electable. Accuracy a	d linearity: +/-0.5% o nd linearity: +/-1% of	f rated Vout.
1. Vout voltage progra 2. lout voltage program 3. Vout resistor progra	amming ming (*13) amming		0~100%, 0 0~100%, 0~5/	~5V or 0~10V, user se)~5V or 0~10V, user s 10Kohm full scale, us	ectable. Accuracy an electable. Accuracy a er selectable. Accurac	d linearity: +/-0.5% o nd linearity: +/-1% of cy and linearity: +/-19	y communication poor f rated Vout. rated lout. 6 of rated Vout.
1. Vout voltage progra 2. lout voltage program 3. Vout resistor progra 4. lout resistor program	amming ming (*13) amming ming (*13)		0~100%, 0 0~100%, 0~5/ 0~100%, 0~5/1	~5V or 0~10V, user se)~5V or 0~10V, user se 10Kohm full scale, use 10Kohm full scale, use	lectable. Accuracy an electable. Accuracy a er selectable. Accurac er selectable. Accurac	d linearity: +/-0.5% o nd linearity: +/-1% of cy and linearity: +/-19 y and linearity: +/-1.5	oy communication por f rated Vout. rated lout. 6 of rated Vout. 9% of rated lout.
1. Vout voltage program 2. lout voltage program 3. Vout resistor progra 4. lout resistor program 5. Shut Off (SO) co	amming ming (*13) amming ming (*13) ntrol		0~100%, 0 0~100%, 0~5/ 0~100%, 0~5/1	~5V or 0~10V, user se)~5V or 0~10V, user se 10Kohm full scale, use 10Kohm full scale, use lectrical Voltage: 0~0	ectable. Accuracy an electable. Accuracy a er selectable. Accurac r selectable. Accurac .6V/4~15V or dry con	d linearity: +/-0.5% o nd linearity: +/-1% of cy and linearity: +/-19 y and linearity: +/-1.5 ttact, user selectable l	oy communication por f rated Vout. rated lout. 6 of rated Vout. 9% of rated lout.
2. lout voltage program 3. Vout resistor progra 4. lout resistor program 5. Shut Off (SO) co 6. Output current mon	amming ming (*13) amming ming (*13) ontrol itor (*13)	 	0~100%, 0 0~100%, 0~5/ 0~100%, 0~5/1	-5V or 0~10V, user se)~5V or 0~10V, user s 10Kohm full scale, us 10Kohm full scale, us 10Kohm full scale, use 10Kohm full scale scale 10Kohm full scale sc	lectable. Accuracy an electable. Accuracy a r selectable. Accuracy r selectable. Accurac 6V/4~15V or dry con V, user selectable. Ac	d linearity: +/-0.5% o nd linearity: +/-1% of cy and linearity: +/-1% y and linearity: +/-15 tact, user selectable l curacy: +/-1%.	oy communication por f rated Vout. rated lout. 6 of rated Vout. 9% of rated lout.
1. Vout voltage program 2. lout voltage program 3. Vout resistor program 4. lout resistor program 5. Shut Off (SO) co 6. Output current mon 7. Output voltage m	amming ming (*13) amming ming (*13) ontrol itor (*13) ionitor		0~100%, 0 0~100%, 0~5/ 0~100%, 0~5/1	-5V or 0~10V, user se 5~5V or 0~10V, user se 10Kohm full scale, use 10Kohm	lectable. Accuracy an electable. Accuracy a er selectable. Accuracy r selectable. Accurac .6V/4~15V or dry con V, user selectable. Ac V, user selectable. Ac	d linearity: +/-0.5% o nd linearity: +/-1% of cy and linearity: +/-1. y and linearity: +/-1.5 ttact, user selectable l curacy: +/-1%. curacy: +/-1%.	oy communication por f rated Vout. rated lout. 6 of rated Vout. 9% of rated lout.
1. Vout voltage program 2. lout voltage program 3. Vout resistor program 4. lout resistor program 5. Shut Off (SO) co 6. Output current mon 7. Output voltage m 8. Power supply OK	amming ming (*13) amming (*13) ontrol itor (*13) oonitor signal		0~100%, 0 0~100%, 0~5/ 0~100%, 0~5/ By e	-5V or 0~10V, user se >-5V or 0~10V, user se 10Kohm full scale, use 10Kohm	lectable. Accuracy an electable. Accuracy a er selectable. Accuracy r selectable. Accurac .6V/4~15V or dry com V, user selectable. Ac V, user selectable. Ac V-Fail. 500ohm serie:	d linearity: +/-0.5% o nd linearity: +/-1% of cy and linearity: +/-1. y and linearity: +/-1.5 itact, user selectable l curacy: +/-1%. curacy: +/-1%. s resistance.	f rated Vout. rated lout. 6 of rated Vout. 9 of rated Vout. 9 of rated lout. 9 of rated lout.
1. Vout voltage program 2. lout voltage program 3. Vout resistor program 4. lout resistor program 5. Shut Off (SO) co 6. Output current mon 7. Output voltage m 8. Power supply OK 9. Parallel operatior	amming ming (*13) amming ming (*13) ontrol itor (*13) onitor signal n (*20)		0~100%, 0 0~100%, 0~5/ 0~100%, 0~5/ By e	-5V or 0~10V, user se >-5V or 0~10V, user si 10Kohm full scale, use 10Kohm full scale, user 10Kohm	lectable. Accuracy an electable. Accuracy a er selectable. Accuracy er selectable. Accuracy 6V/4~15V or dry con V, user selectable. Ac V, user selectable. Ac V-Fail. 500ohm serie ave mode with single	d linearity: +/-0.5% o nd linearity: +/-1% of cy and linearity: +/-19 y and linearity: +/-1.5 ttact, user selectable l curacy: +/-1%. curacy: +/-1%. s resistance. e wire current balance	f rated Vout. rated lout. 6 of rated Vout. 9 of rated Vout. 9 of rated lout. 9 of rated lout.
1. Vout voltage program 2. lout voltage program 3. Vout resistor program 4. lout resistor program 5. Shut Off (SO) co 6. Output current mon 7. Output voltage m 8. Power supply OK 9. Parallel operation 10. Series operat	amming ming (*13) amming ming (*13) itor (*13) ionitor signal n (*20) ion		0~100%, (0~100%, 0~5/ 0~100%, 0~5/ By e Possible, up	-5V or 0~10V, user se >-5V or 0~10V, user se 10Kohm full scale, use 10Kohm full scale, user 10Kohm f	lectable. Accuracy an electable. Accuracy a er selectable. Accuracy er selectable. Accuracy (6V/4~15V or dry con V, user selectable. Ac VV-Fail. 500ohm serie: ave mode with singl al units (with externa	d linearity: +/-0.5% o nd linearity: +/-1% of cy and linearity: +/-1% y and linearity: +/-1.5 ttact, user selectable l curacy: +/-1%. curacy: +/-1%. s resistance. e wire current balance al diodes).	f rated Vout. rated lout. 6 of rated Vout. % of rated Vout. iogic. e connection.
1. Vout voltage program 2. lout voltage program 3. Vout resistor program 4. lout resistor program 5. Shut Off (SO) co 6. Output current mon 7. Output voltage m 8. Power supply OK 9. Parallel operatior	amming ming (*13) amming ming (*13) ontrol itor (*13) ononitor signal n (*20) ion tor		0~100%, C 0~100%, 0~5/ 0~100%, 0~5/ By e Possible, up Open collector. C	-5V or 0~10V, user se -5V or 0~10V, user se 10Kohm full scale, use 10Kohm f	lectable. Accuracy an electable. Accuracy a r selectable. Accuracy r selectable. Accurac 6V/4~15V or dry con V, user selectable. Ac V, user selectable. Ac V-Fail. 500ohm serie: lave mode with single al units (with externa e: Off. Maximum volt act (Short: On, Open: C	d linearity: +/-0.5% o nd linearity: +/-1% of cy and linearity: +/-1% y and linearity: +/-1% tact, user selectable l curacy: +/-1%. curacy: +/-1%. s resistance. e wire current balance al diodes). age: 30V, maximum s Dff, Source current: less	f rated Vout. rated lout. 6 of rated Vout. 9% of rated Vout. 9% of rated lout. 9% of
1. Vout voltage program 2. lout voltage program 3. Vout resistor program 4. lout resistor program 5. Shut Off (SO) co 6. Output current mon 7. Output voltage m 8. Power supply OK 9. Parallel operatior 10. Series operat 11. CV/CC indica 12. Interlock (ILC) co	amming ming (*13) amming (*13) ontrol itor (*13) oonitor signal n (*20) ion tor ontrol		0~100%, C 0~100%, 0~5/ 0~100%, 0-5/ By e Possible, up Open collector. C Enables/Disables the	-5V or 0~10V, user se >-5V or 0~10V, user si 10Kohm full scale, use I0Kohm full scale, use I0Kohm full scale, use I0Cohm	lectable. Accuracy an electable. Accuracy a er selectable. Accuracy r selectable. Accuracy (av) a selectable. Accuracy (b) a selectable. Ac (v) aser selectable. Ac (v) as (v) as (v) as (v) (v) as (v) (v) (v) as (v) (v) (v) (v) (v) (v) (v) (v) (v) (v)	d linearity: +/-0.5% o nd linearity: +/-1% of cy and linearity: +/-1% y and linearity: +/-1.5 ttact, user selectable I curacy: +/-1%. curacy: +/-1%. s resistance. e wire current balance. a diodes). age: 30V, maximum s Dff, Source current: less tel.	f rated Vout. rated lout. 6 of rated Vout. 9 of rated Vout. 9 of rated lout. 9
1. Vout voltage program 2. lout voltage program 3. Vout resistor program 4. lout resistor program 5. Shut Off (SO) co 6. Output current mon 7. Output voltage m 8. Power supply OK 9. Parallel operatior 10. Series operat 11. CV/CC indica 12. Interlock (ILC) co 13. Local/Remote mod	amming ming (*13) amming (*13) ontrol itor (*13) ononitor signal n (*20) ion tor ontrol e Control		0~100%, C 0~100%, O~5/ 0~100%, O-5/ By e Possible, up Open collector. C Enables/Disables the By electr	-5V or 0~10V, user se >-5V or 0~10V, user si 10Kohm full scale, use 10Kohm	lectable. Accuracy an electable. Accuracy a er selectable. Accuracy er selectable. Accuracy (4)	d linearity: +/-0.5% o nd linearity: +/-1% of cy and linearity: +/-1% y and linearity: +/-1.5 ttact, user selectable l curacy: +/-1%. curacy: +/-1%. s resistance. e wire current balance al diodes). age: 30V, maximum s Off, Source current: less rel. Remote, 2~15V or op	f rated Vout. f rated lout. 6 of rated lout. 9 of rated Vout. 9 of rated lout. 9 of rated lout.
1. Vout voltage program 2. lout voltage program 3. Vout resistor program 4. lout resistor program 5. Shut Off (SO) co 6. Output current mon 7. Output voltage m 8. Power supply OK 9. Parallel operatior 10. Series operat 11. CV/CC indica 12. Interlock (ILC) c 13. Local/Remote mod 14. Local/Remote mode	amming ming (*13) amming (*13) ontrol itor (*13) ononitor signal n (*20) ion tor ontrol e Control e Indicator		0~100%, C 0~100%, 0~5/ 0~100%, 0~5/ By e Possible, up Open collector. C Enables/Disables the By electr Open collector (shu	-5V or 0~10V, user se >-5V or 0~10V, user si 10Kohm full scale, use I0Kohm full scale, use I0Kohm full scale, use I0Cohm	lectable. Accuracy an electable. Accuracy a er selectable. Accuracy for selectable. Accuracy ar selectable. Accuracy (Juser selectable. Ac V, user selectable. Ac V-Fail. 5000hm serie: lave mode with single al units (with externa e: Off. Maximum volt act (Short: On, Open: activated by front par nort: 0~0.6V or short: (0~0.6V, 10mA sink c	d linearity: +/-0.5% o nd linearity: +/-1% of cy and linearity: +/-1% y and linearity: +/-1.5 ttact, user selectable l curacy: +/-1%. curacy: +/-1%. s resistance. e wire current balance al diodes). age: 30V, maximum s Off, Source current: less tel. Remote, 2~15V or op current max.)-Remote.	f rated Vout. rated lout. 6 of rated lout. 6% of rated Vout. 9% of rated lout. 10% of rat
1. Vout voltage program 2. lout voltage program 3. Vout resistor program 4. lout resistor program 5. Shut Off (SO) co 6. Output current mon 7. Output voltage m 8. Power supply OK 9. Parallel operatior 10. Series operat 11. CV/CC indica 12. Interlock (ILC) co 13. Local/Remote mod 14. Local/Remote mode 15.Trigger out	amming ming (*13) amming (*13) ontrol itor (*13) ononitor signal n (*20) ion tor ontrol e Control e Indicator		0~100%, C 0~100%, O~5/ 0~100%, O~5/ By e Possible, up Open collector. C Enables/Disables the By electr Open collector (shu Maximum low leve Maximum low leve	-5V or 0~10V, user se)~5V or 0~10V, user se 10Kohm full scale, us 10Kohm full scale, use 10Kohm f	lectable. Accuracy an electable. Accuracy a er selectable. Accuracy ar selectable. Accuracy (6V/4~15V or dry con V, user selectable. Ac V, G, US S, S, S	d linearity: +/-0.5% o nd linearity: +/-1% of cy and linearity: +/-1% y and linearity: +/-1.5 ttact, user selectable l curacy: +/-1%. curacy: +/-1%. s resistance. e wire current balance al diodes). age: 30V, maximum s off, Source current: less rel. Remote, 2~15V or op current max.)-Remote. t = 3.8V, Maximum hij lse = 20µs Typical. = 3.5V, Maximum hij	f rated Vout. rated lout. 6 of rated Vout. 6 of rated Vout. 9 of rated Vout. 9 of rated lout. 9
1. Vout voltage program 2. lout voltage program 3. Vout resistor program 4. lout resistor program 5. Shut Off (SO) co 6. Output current mon 7. Output voltage m 8. Power supply OK 9. Parallel operatior 10. Series operat 11. CV/CC indica 12. Interlock (ILC) c 13. Local/Remote mod 14. Local/Remote mode	amming ming (*13) amming ming (*13) nontrol itor (*13) nonitor signal n (*20) ion tor ontrol e Control e Indicator t		0~100%, C 0~100%, O~5/ 0~100%, O~5/ By e Possible, up Open collector. C Enables/Disables the By electr Open collector (shu Maximum low leve Maximum low leve	-5V or 0~10V, user se >-5V or 0~10V, user si 10Kohm full scale, use 10Kohm	lectable. Accuracy an electable. Accuracy a er selectable. Accuracy for selectable. Accuracy ar selectable. Accuracy (50/4~15V or dry con V, user selectable. Ac V-Fail. 5000hm serie: lave mode with single al units (with externa e: Off. Maximum volt act (Short: On, Open: G activated by front par nort: 0~0.6V or short: (0~0.6V, 10mA sink c um high level output e current =16mA, put num high level input we edge, trigger: tw=	d linearity: +/-0.5% o nd linearity: +/-1% of cy and linearity: +/-1% y and linearity: +/-1.5 ttact, user selectable l curacy: +/-1%. curacy: +/-1%. s resistance. e wire current balance al diodes). age: 30V, maximum s off, Source current: less tel. Remote, 2~15V or op current max.)-Remote. t = 3.8V, Maximum hig lse =20µs Typical. := 3.5V, Maximum hig =10µs minimum, T/TH	f rated Vout. rated lout. 6 of rated Vout. 6 of rated Vout. 9 of rated Vout. 9 of rated lout. 9

FRONT PANEL

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

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

1. Vout programming accuracy	 0.05% of rated output voltage						
2. 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 act	ual +0.3% of rated ou	tput current			
7. Vout readback resolution		0.012% of full scale					
8. lout readback resolution	 0.012% of full scale						
INPUT CHARACTERISTICS	10-72	20-40	36-24	60-14	100-8		

INPUT CHARACTERISTICS		10-72	20-40	30-24	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)	X.	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	X.	20~90% RH (no condensation).					
4. Storage humidity	1.	10~95% RH (no condensation).					
5. Altitude		Maximum 3000m. Derate ambient temp above 2000m.					
5. Altitude		Operating: Maximum ambient temperature, From 2000m up to 3000m Ambient temperature 40°C.					

SAFETY/EMC

			UL61010-1, EN61010-1, IEC61010-1. Design to meet UL60950-1, EN60950-1				
1. Applicable standards:	Safety		10V <vout<60v: analog="" are="" hazardous<="" isolated="" non="" output,j1,j2,j3,j4,usb,lan,ieee="" td=""></vout<60v:>				
			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)				
			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.				
2. Withstar	nd voltage		60V,100V models: Input-Output&J1,J2: 4242VDC/1min; Input-J3,J4,USB,LAN/IEEE/ISOLATED Analog: 4242VDC/1min; Input-Ground: 2828VDC/1min				
3. Insulation resistance			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;				
			More than 100Mohm at 25°C, 70%RH.				
4. Conducte	4. Conducted emission		IEC/EN61326-1 Industrial Location - B, FCC part 15-B, VCCI-B				
5. Radiated	d 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 WIDE BODY	STANDARD	Ka	Less than 2.5Kg.				
	WIDE BODY	Kg	Less than 3.0Kg. 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).				
3. Dimensions (WxHxD) WIDE B	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.

*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: FS 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.

^{*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.

2.4 Z⁺800 Series Specifications

1 D-											
1 D-	MODEL	Z	10-72	20-40	36-24	60-14	100-8				
1. 60	ated output voltage(*1)	V	10	20	36	60	100				
2. Rated output	Vin ≥ 100Vac, Ta ≤ 50°C	Α	72	40	24	14	8				
current (*2)(*21)	85 Vac \leq Vin $<$ 100Vac, Ta \leq 40°C	A	72	40	24	14	8				
	$85Vac \le Vin < 100Vac, 40^{\circ}C < Ta \le 50^{\circ}C$	A	66	36	20	12.5	7.5				
3. Rated output	$Vin \ge 100Vac, Ta \le 50^{\circ}C$	W	720	800	864	840	800				
power	$85Vac \le Vin < 100Vac, Ta \le 40^{\circ}C$ $85Vac \le Vin < 100Vac, 40^{\circ}C < Ta \le 50^{\circ}C$	W	720 660	800 720	864 720	840 750	800				
	$ 85 \text{ vac} \le \text{ vin} < 100 \text{ vac}, 40 \text{ C} < 18 \le 50 \text{ C} $	VV	000	/20	720	/50	/50				
CON	ISTANT VOLTAGE MODE	Z	10-72	20-40	36-24	60-14	100-8				
1. M	Nax. Line regulation (*6)			0.01% c	of rated output voltage	ge+2mV					
	lax. Load regulation (*7)			0.01% c	of rated output voltage						
	and noise (p-p, 20MHz) (*8)	mV	50	50 5	50 5	60	80				
	Ripple r.m.s. 5Hz~1MHz	mV	5	12	15						
	emperature coefficient	PPM/°C	M/°C <u>30PPM/°C from rated output voltage</u> , following 30 minutes warm- 0.05% of rated Vout over 8hrs. interval following 30 minutes warm-up. Constant								
6.	Temperature stability 7. Warm-up drift			0.05% of rated outpu							
8 Remot	te sense compensation/wire	 V	1	1	2		5				
	. Response time, 0~Vomax.(*9)	mS	50	50	50	50	100				
	og. response time: Full load (*9)	1115	25	25	25	25	80				
	Time delay (*17)	6	285	425	450	570	1370				
	No load (*10) (*15) (*17)	mS	65	110	155	175	375				
	No load (*10) (*16) (*17)		280	470	470	500	1200				
11 7	Transient response time	mS		age to recover within 0							
	•	-	current. Output s	et-point: 10~100%, Lo			nd including 100V				
1.	2. Hold-up time (*18)			10mSec	Typical. Rated output	it power.					
CON	STANT CURRENT MODE	Z	10-72	20-40	36-24	60-14	100-8				
	Aax. Line regulation (*6)		10-72		of rated output curre		100-0				
	ax. Load regulation (*11)				of rated output current						
			For 10V: Les	s than 0.15% of rated			load change.				
3. LOa	d regulation thermal drift			: Less than 0.1% of rat							
4. Ripp	ole r.m.s. 5Hz~1MHz (*12)	mA	180	100	31	28	12				
	emperature coefficient	PPM/°C		0PPM/°C from rated o							
6.	Temperature stability			over 8hrs. interval foll							
	7. Warm-up drift		10V model: Less than +/-0.3%, 20V model: Less than +/-0.15%, 36V~100 models: Less than +/-0.1% of rated output current over 30 minutes following power on.								
PRO	OTECTIVE FUNCTIONS	Z	10-72	20-40	36-24	60-14	100-8				
		Output shut-down when power supply change mode from CV to CC or CC to CV. User p									
1.	. Foldback protection			wn when power supp cle in autostart mode or			User presetable.				
	. Foldback protection r-voltage protection (OVP)		Reset by AC input recy	cle in autostart mode or n method. Reset by A	by OUTPUT button or by CITPUT button or by C input recycle in aut	rear panel ENABLE, or b ostart mode or by Ol	User presetable. by communication poi				
2. Over			Reset by AC input recy	cle in autostart mode or n method. Reset by A	by OUTPUT button or by	rear panel ENABLE, or b ostart mode or by Ol	User presetable. by communication poi				
2. Over 3. O	r-voltage protection (OVP)		Reset by AC input recy Inverter Shut dow 0.5~12	rcle in autostart mode or n method. Reset by A rear panel El 1~24 el or communication	by OUTPUT button or by C input recycle in aut VABLE, or by commu 2~40	y rear panel ENABLE, or b ostart mode or by Ol nication port. 5~66 djusting Vout below	User presetable. by communication por JTPUT button or by 5~110				
2. Over 3. O 4. Outpu 5. Output u	r-voltage protection (OVP) Over - voltage trip point ut under voltage limit (UVL) under voltage protection (UVP)	 V	Reset by AC input recy Inverter Shut dow 0.5~12 Preset by front pan Output shut-dowr	rcle in autostart mode or n method. Reset by A rear panel Et 1~24 el or communication ir when power supply o cle in autostart mode or	by OUTPUT button or by C input recycle in aut VABLE, or by commun 2~40 port. Prevents from a a analog programmin jutput voltage goes b by OUTPUT button or b	y rear panel ENABLE, or b ostart mode or by Ol nication port. 5~66 djusting Vout below g. elow UVP programmi y rear panel ENABLE, or l	User presetable. by communication poi JTPUT button or by 5~110 limit. Does not affer ng. User presetable.				
2. Over 3. O 4. Outpu 5. Output u	r-voltage protection (OVP) Over - voltage trip point ut under voltage limit (UVL)	 V	Reset by AC input recy Inverter Shut dow 0.5~12 Preset by front pan Output shut-dowr	rcle in autostart mode or n method. Reset by A rear panel Et 1~24 el or communication ir when power supply o cle in autostart mode or	by OUTPUT button or by C input recycle in aut VABLE, or by commun 2~40 port. Prevents from a a analog programmin putput voltage goes b	y rear panel ENABLE, or b ostart mode or by Ol nication port. 5~66 djusting Vout below g. elow UVP programmi y rear panel ENABLE, or l	User presetable. by communication point JTPUT button or by 5~110 limit. Does not affer ng. User presetable				
2. Over 3. O 4. Outpu 5. Output u 6. Ove	r-voltage protection (OVP) Over - voltage trip point ut under voltage limit (UVL) under voltage protection (UVP) er temperature protection	 V 	Reset by AC input recy Inverter Shut dow 0.5~12 Preset by front pan Output shut-dowr	rcle in autostart mode or n method. Reset by A rear panel Et 1~24 el or communication ir when power supply o cle in autostart mode or	by OUTPUT button or by C input recycle in aut VABLE, or by commun 2~40 port. Prevents from a a analog programmin jutput voltage goes b by OUTPUT button or b	y rear panel ENABLE, or b ostart mode or by Ol nication port. 5~66 djusting Vout below g. elow UVP programmi y rear panel ENABLE, or l	User presetable. by communication point JTPUT button or by 5~110 limit. Does not affer ng. User presetable				
2. Over 3. C 4. Output 5. Output u 6. Ove	r-voltage protection (OVP) Over - voltage trip point ut under voltage limit (UVL) under voltage protection (UVP) er temperature protection MMING AND MONITORING	 V 	Reset by AC input recy Inverter Shut dow 0.5~12 Preset by front pan Output shut-dowr Reset by AC input recy	rcle in autostart mode or n method. Reset by A rear panel El 1~24 el or communication ir when power supply o cle in autostart mode or User Sele	by OUTPUT button or by C input recycle in aut VABLE, or by commun 2~40 port. Prevents from a analog programmin butput voltage goes b by OUTPUT button or by ctable. Latched or no	y rear panel ENABLE, or b ostart mode or by Ol nication port. 5~66 djusting Vout below I g. elow UVP programmi y rear panel ENABLE, or I n latched	User presetable. by communication po JTPUT button or by 5~110 limit. Does not affe ng. User presetable by communication po				
2. Over 3. O 4. Output 5. Output u 6. Ove ANALOG PROGRAI 1. Voi	r-voltage protection (OVP) Over - voltage trip point ut under voltage limit (UVL) under voltage protection (UVP) er temperature protection MMING AND MONITORING ut voltage programming	 	Reset by AC input recy Inverter Shut dow 0.5~12 Preset by front pan Output shut-dowr Reset by AC input recy 0~100%, 0-	rcle in autostart mode or n method. Reset by A rear panel Ef 1~24 el or communication ir when power supply c cle in autostart mode or User Sele ~5V or 0~10V, user sel	by OUTPUT button or by C input recycle in aut VABLE, or by commun 2~40 port. Prevents from a analog programmin putput voltage goes b by OUTPUT button or by ctable. Latched or no	y rear panel ENABLE, or b ostart mode or by Ol nication port. 5~66 djusting Vout below I g. elow UVP programmi y rear panel ENABLE, or I n latched d linearity: +/-0.5% o	User presetable. by communication po JTPUT button or by 5~110 limit. Does not affe ng. User presetable by communication po f rated Vout.				
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FRONT PANEL

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

FRONT PANEL

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

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

1. Vout programming accuracy			0.05% of rated output voltage							
2. lout programming accuracy (*13)			0.1% of act	ual +0.1% of rated ou	tput 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 vo	ltage					
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						
INPUT CHARACTERISTICS	Z	10-72	20-40	36-24	60-14	100-8				
1. Input voltage/freq. (*3)			85~265Vac o	continuous, 47~63Hz	single phase					
2. Maximum Input current 100/200VAC (*4)		9.00/4.45	9.65/4.75	10.30/5.10	10.00/4.95	9.50/4.7				
3. Power Factor (Typ)		0.99 at 100Vac, 100% load / 0.98 at 200Vac, 100% load								
4. Efficiency (Typ) 100/200VAC (*4)	%	81/83	84/86	85/87	85/87	85/87				
5. Inrush current (*5)				Less than 30A						

ENVIRONMENTAL CONDITIONS

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

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

MECHANICAL

1. Cooling			Forced air cooling by internal fan				
2.14/2:244	STANDARD	Kg	Less than 2.1Kg.				
2. Weight	WIDE BODY	BODY Kg Less than 2.6Kg. Wide body with Isolated analog or Binding post or IEEE					
3 Dimensions (W/vHvD)	STANDARD	mm	H: 83, W: 70, D: 350 (excluding bus bars, handles). (Refer to Outline drawing)				
3. 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. SI	hock		Less than 20G, half sine, 11mS. Unit is unpacked. According to: IEC60068-2-27				

NOTES:

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

*2: Minimum current is guaranteed to maximum 0.2% of rated output current.

*3: For cases where conformance to various safety standards (UL, IEC, etc...) is required, to be described as 100-240Vac (50/60Hz).

*4: Ta=25°C with rated output power.

*5: Not including EMI filter inrush current, less than 0.2mSec.

*6: At 85~132Vac or 170~265VAC, constant load.

From No-Load to Full-Load, constant input voltage. Measured at the sensing point in Remote Sense. Measured with JEITA RC-9131A (1:1) probe. *7:

*8:

*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.

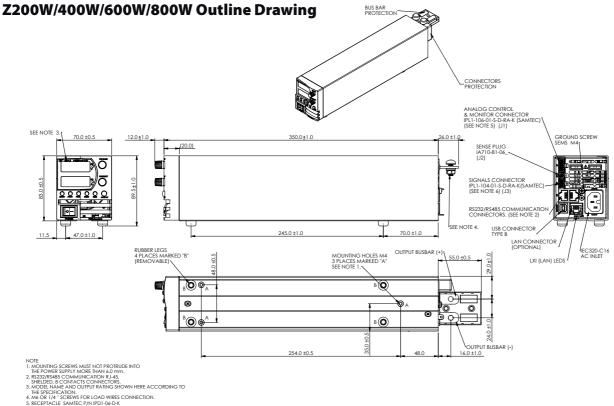
*13: The Constant Current programming, readback and monitoring accuracy do not include the warm-up and Load regulation thermal drift. *14: Measured with JEITA RC-9131A (1:1) probe.

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*15: For cases where the time interval between each down programming is longer than Td (time delay). *16: For cases where the time interval between each down programming is shorter than Td (Time delay).

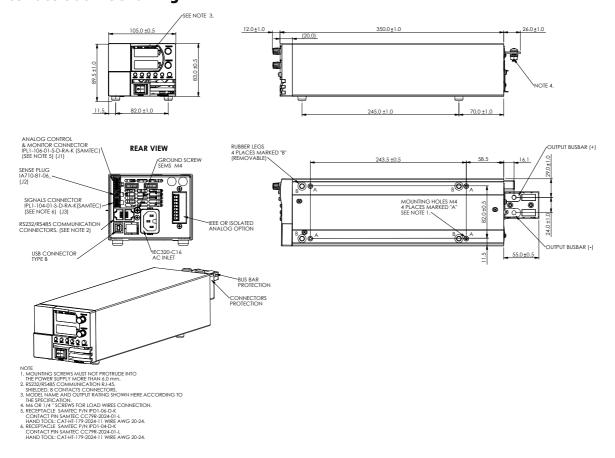
- *17: Td typical Minimum time between consecutive down programming cycles.
- *18: At rated output power.
- *19: Max. ambient temperature for using IEEE is 45°C

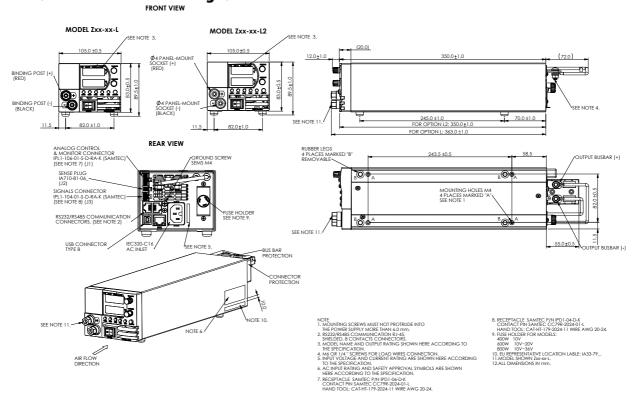
					85Vac	100Vac	265Vac	<i>,</i>	
Fig. 2-1: Z^{+} 800 Rated Output Current Vs. Line Voltage and Ambient Temp	erature							→	
*21: Refer to Fig.2-1 below	Z60-14 Z100-8	14 8	12.5 7.5						
current is requierd.	Z20-40 Z36-24	40 24	20	I ₂ (A)	-		ĻL		
*20: For Parallel operation more than 2 units 5% of toatal output	Z10-72	72	66	I ₁ (A)	-	<u> </u>		40" < Ta ≤ 50°C	
*20. For Develled an event on the 2 Junite F0/ of the stall suct as the	Model	1 (A)	1 ₂ (A)					Ta < 40°C	



- 4. M6 UK 1/4 SURTING TOK LOND MINES CONTRECING SRECEFTACLE SAMTEC PN (NPD)-06-D-K CONTACT PIN SAMTEC CC798-2024-01-L HAND TOOL: CATH-179-2024-11 WIRE AWG 20-24. 6. RECEPTACLE SAMTEC PN (NPD)-04-D-K CONTACT PIN SAMTEC CC798-2024-01-L HAND TOOL: CATH-179-2024-11 WIRE AWG 20-24.

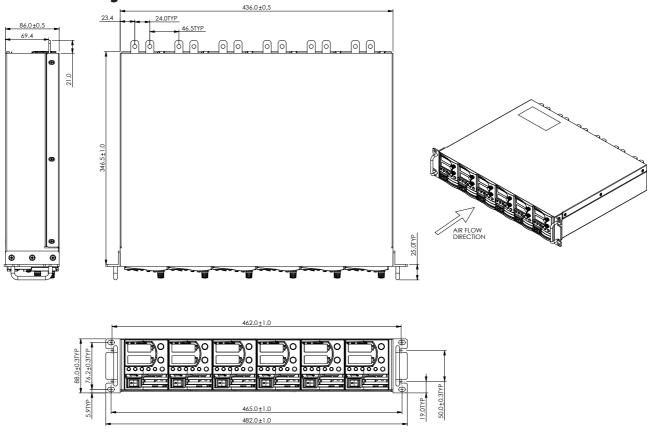
Z200W/400W/600W/800W Optional IEEE, Isolated Analog **Interface Outline Drawing**





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

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



GLOBAL NETWORK

TDK[.]Lambda

NORTH AMERICA

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

UK

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

FRANCE

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

GERMANY

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

AUSTRIA

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

ITALY

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

ISRAEL

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

JAPAN

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



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

CHINA

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

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

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

KOREA

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

SINGAPORE

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

INDIA

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

MALAYSIA

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

Local Distribution

hivolt.de GmbH & Co. KG

Oehleckerring 40 D-22419 Hamburg • Germany Tel: +49 40 537122-0 Fax: +49 40 537122-99 info@hivolt.de • www.hivolt.de