

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

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



TDK-Lambda

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 650V, Current up to 5A
- Constant Voltage (CV)/(CC) Constant Current auto-crossover
- Built-in RS-232/RS-485 Interface Standard
- Global Commands for Serial RS-232/RS-485 Interface
- Auto-Re-Start / Safe-Start: user selectable
- Last-Setting Memory
- High Resolution 16 bit ADCs & DACs
- · Low Ripple & Noise
- Front Panel Lock selectable from Front Panel or Software
- · Reliable Encoders for Voltage and Current adjustment
- · Parallel Operation with Active Current Sharing, for up to six identical units
- · Advanced Parallel Master / Slave. Total Current is programmed and measured via the Master
- External Analog Programming and Monitoring (user selectable 0-5V & 0-10V)
- · Reliable Modular and SMT Design
- 19" Rack Mount Capability for ATE and OEM applications
- · Optional Interfaces

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

LAN

LabView® and LabWindows® drivers

• Arbitrary functions for:

Automotive or laser simulation / 4 Pre-Programmed Functions

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





Front Panel Description







- 1. AC ON/OFF Switch
- 2. Air Intake allows zero stacking for maximum system flexibility and power density.*
- 3. Reliable encoder controls Output Voltage and power supply setting.
- 4. Volt Display shows Output Voltage and directly displays and power supply settings.
- 5. Reliable encoder controls Output Current, and power supply setting.
- 6. Current Display shows Output Current and power supply setting.
- 7. Function/Status LEDs:
- AlarmFine ControlPreview SettingsFoldback ModeRemote ModeOutput On
- 8. Pushbuttons allow flexible user configuration
- Coarse and Fine adjustment of Output Voltage/Current and Advanced Parallel Master or Slave
- Preview settings and set Voltage/Current with Output OFF, Front Panel Lockout
- · Set OVP, UVP, UVL Limits
- Set Current Foldback
- Local/Remote Mode and select Address and Baud Rate
- Output ON/OFF and Auto-Start/Safe-Start Mode
- Menu
- 9. Optional front panel insulated output sockets (Ø 4mm) for modules up to 650V: 5A Max
- * Zero stacking side-by-side mounting of 6 units in a 19" Rack

3

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:
 - MALE CONNECTOR (IC 2,5/4-G-5,08, PHOENIX CONTACT).
 - FEMALE PLUG (IC 2,5/4-ST-5,08, PHOENIX CONTACT).
- 10. Optional Interface Position for LAN Interface.
- 11. Optional Interface Position for GPIB Interface (shown) or Isolated Analog Interface.



***** Power Benchtop Parallel and Series Configurations

Benchtop Power Supply

Parallel operation - Master/Slave:

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

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



Series operation

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

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

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

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

Multi-Drop

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













Applications

 Z^{\dagger} 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

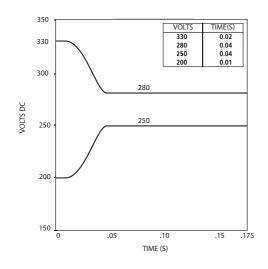
Smooth, reliable encoders enhance front panel control. Remote analog programming is user selectable 0-5V or 0-10V.

RF Amplifiers and Magnets

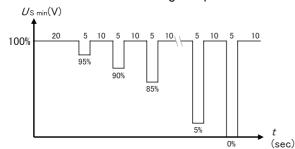
Robust design assures stable operation under a wide variety of loads. High linearity in Voltage & Current mode.

Z⁺ Series Sequence Programming Applications:

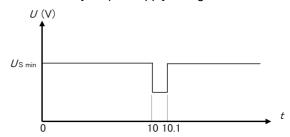
MILITARY STANDARD 704E Testing



Reset behaviour at voltage drop



Discontinuities in supply voltage Momentary drop in supply voltage



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

Front Panel insulated Output sockets

Up to 650V Output Module

P/N: Z__--_L2



Optional front panel insulated output sockets (Ø 4mm) for modules up to 650V: 5A 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)w





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
0~160V	1.3A	2.6A	4A	5A
0~320V	0.65A	1.3A	2A	2.5A
0~650V	0.32A	0.64A	1A	1.25A
19" rack width	1/6 width	1/6 width	1/6 width	1/6 width
19" rack width	1/4 width	1/4 width	1/4 width	1/4 width





Programming Options (Factory Installed)

Digital Programming via IEEE Interface

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

Isolated Analog Programming

Four Channels to Program and Monitor Voltage and Current.

Isolation allows operation with floating references in harsh electrical environments.

Choose between programming with Voltage or Current.

Connection via removable terminal block: Phoenix MC1,5/8-ST-3.81.

Voltage Programming, user-selectable 0-5V or 0-10V signal.
 Power Supply Voltage and Current Programming Accuracy ±1%
 Power Supply Voltage and Current Monitoring Accuracy ±1.5%

Current Programming with 4-20mA signal.
 Power Supply Voltage and Current Programming Accuracy ±1%
 Power Supply Voltage and Current Monitoring Accuracy ±1.5%

LAN Interface P/N: LAN

VISA & SCPI Compatible

Address Viewable on Front Panel

Fixed and Dynamic Addressing

Compatible with most standard Networks

- TCP / UDP Socket Programming
- LAN Fault Indicators

Program Current

Measure Current

Current Foldback shutdown

Auto-detects LAN Cross-over Cable

P/N: IEEE

P/N: IS510

P/N: IS420

• Fast Startup

AC Cord

Region	Europe	Japan	North America	Israel
Output Power	850W	850W	850W	850W
AC Cords	10A/250Vac L=2m	15A/125Vac L=2m	13A/125Vac L=2m	10A/250Vac L=2m
Wall Plug	INT'L 7/VII	JIS C8303	NEMA 5-15P	SI-32
Power Supply	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

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

Serial Link Cable*

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

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

^{*} Included with power supply

Power Supply Identification / Accessories How to order

Z	650 -	1.25-		-	
Series	Output Voltage	Output Current	•	Output	AC cord Options:
Name	(0~650V)	(0~1.25A)	Options:	Jack	Region :
			IEEE		E - Europe
			LAN		J - Japan
			IS510	L2	U - North America
			IS420		I - Middle East
					C - China

L2

812

Factory option
USB Interface built-in Standard
RS-232/RS-485 Interface built-in Standard
GPIB Interface
Voltage Programming Isolated Analog Interface
Current Programming Isolated Analog Interface
LAN Interface
LAN
Front panel insulated output sockets (Ø 4mm)

Front panel insulated output sockets (Ø 4mm) for modules up to 650V or 5A Max

Z650-1.25

Model	Output Voltage (VDC)	Output Current (A)	Output Power (W)
Z160-1.3		0~1.3	208
Z160-2.6	0 160 VDC	0~2.6	416
Z160-4	0~160 VDC	0~4	640
Z160-5		0~5	800
Z320-0.65	0~320 VDC	0~0.65	208
Z320-1.3		0~1.3	416
Z320-2	0~320 VDC	0~2	640
Z320-2.5		0~2.5	800
Z375-2.2	0~375VDC	0~2.2	825
Z650-0.32		0~0.32	208
Z650-0.64	0 650,400	0~0.64	416
Z650-1	0~650 VDC	0~1	650

0~1.25



Z⁺200 Series Specifications

MODEL		Z	160-1.3	320-0.65	650-0.32	
1. Rated output voltage(*1)		V	160	320	650	
2. Rated output current (*2)	Α	1.3	0.65	0.32		
3. Rated output power		W	208	208	208	
smared output power			200			
CONSTANT VOLTAGE MODE		Z	160-13	320-0.65	650-0.32	
1. Max. Line regulation (*6)			100 15	0.01% of rated output voltage	030 0.32	
2. Max. Load regulation (*7)				0.01% of rated output voltage	-	
3. Ripple and noise (p-p, 20MHz) (*14)	mV	100	150	250		
4. Ripple and noise (p-p, 20M12) (14)		mV	100	25	60	
5. Temperature coefficient		PPM/°C		rated output voltage, following 30 r		
6. Temperature stability				interval following 30 minutes warm		
7. Warm-up drift				ated output voltage over 30 minute	, , , , , , , , , , , , , , , , , , ,	
8. Remote sense compensation/wire		V	5	5	5	
9. Up-prog. Response time, 0~Vomax.(*9	·,	mS	110	170	170	
10. Down-prog. response time:	Full load (*9)	mS	180	270	270	
	No load (*10)	S	2	2.5	3	
11. Transient response time		mS		ver within 0.5% of its rated output fo output set-point: 10~100%, Local se		
12. Hold-up time (*19)			16mSec	Typical.	15mSec Typical.	
ap unite (12)			Tombec			
CONSTANT CURRENT MODE		Z	160-1.3	320-0.65	650-0.32	
			100-1.3	0.02% of rated output current	050-0.52	
1. Max. Line regulation (*6)			0.000/ -f1		0.150/ of roted	
2. Max. Load regulation (*11)				output current	0.15% of rated output current	
3. Load regulation thermal drift				ted output current over 30 minutes		
4. Ripple r.m.s. 5Hz~1MHz (*12) (*14)		mA	1.2	0.8	0.5	
5. Temperature coefficient		PPM/°C		rated output current, following 30		
6. Temperature stability					. Constant line, load & temperature.	
7. Warm-up drift			Less than +/-0.1% of	rated output current over 30 minut	es following power on.	
PROTECTIVE FUNCTIONS		Z	160-1.3	320-0.65	650-0.32	
1. Foldback protection			Output shut-down when power supply change mode from CV to CC or CC to CV. User presetable Reset by AC input recycle in autostart mode or by OUTPUT button or by rear panel ENABLE, or by			
2. Over-voltage protection (OVP)				communication port. by AC input recycle in autostart menter in the second seco	ode or by OUTPUT button or by rear	
2 Over veltage trip point		V	5~176	5~353	5~717	
3. Over -voltage trip point		V			,	
4. Output under voltage limit (UVL)			Preset by front panel or communication port. Prevents from adjusting Vout below limit. Does not affect in analog programming.			
5. Output under voltage protection (UVI	P)		Output shut-down when power supply output voltage goes below UVP programming. User presetable. Reset by AC input recycle in autostart mode or by OUTPUT button or by rear panel ENABLE, or by communication port.			
6. Over temperature protection			U	lser selectable, latched or non latch	ed.	
ANALOG DROCDAMMING AND MONIT	ODING					
ANALOG PROGRAMMING AND MONITO	OKING		0.1000/ 0.51/ 0.53/			
1. Vout voltage programming				user selectable. Accuracy and linea		
2. lout voltage programming (*13)				/, user selectable. Accuracy and line		
3. Vout resistor programming				cale, user selectable. Accuracy and		
4. lout resistor programming (*13)				cale, user selectable. Accuracy and I		
5. Shut Off (SO) control				ge: 0~0.6V/4~15V or dry contact, u		
6. Output current monitor (*13)				or 0~10V, user selectable. Accuracy		
7. Output voltage monitor			0~5V	or 0~10V, user selectable. Accuracy	: +/-1%.	
8. Power supply OK signal			4~5	SV-OK, 0V-Fail. 500ohm series resist	ance.	
9. Parallel operation (*8)			Possible, up to 6 units in m	naster/slave mode with single wire o	current balance connection.	
10. Series operation				identical units (with external diode		
11. CV/CC indicator				CV mode: Off. Maximum voltage: 30		
12. Interlock (ILC) control					nan 0.5mA). Ena/Dis is activated by front panel.	
13. Local/Remote mode Control				Open/Short: 0~0.6V or short: Remot		
14. Local/Remote mode Indicator			, ,		: max.)-Remote. Off-Local (30V max.).	
15.Trigger out			Maximum low level output =0.8\	/, Minimum high level output =3.8V m source current =16mA, pulse =20	/, Maximum high level output =5V,	
16.Trigger in			Maximum low level input =1.2	V, Minimum high level input =3.5V, A, positive edge, trigger: tw =10µs n	, Maximum high level input =5V,	
17. Programmed signal 1			 	oltage 25V,maximum sink current 10		
18. Programmed signal 2			 	oltage 25 V, maximum sink current 10		
				Tage 23 Villaminani Sink Current IV	John (Strained by 27 v Zeriel)	
EDON'T DANIEL						
FRONT PANEL				Ad let also and the second		
			1	Multiple options with 2 Encoders		
				Vout/lout manual adjust		
			_	OVP/UVL/UVP manual adjust		
1. Control functions				Functions - OVP, UVL, UVP, Foldback,		
				unctions - Selection of LAN,IEEE (*1		
			Communica	ation Functions - Selection of Baud I	Rate, Address	
				ection Voltage/resistive programmir		
					ng, 5V/10V, 5K/10K programming OV, Output ON/OFF, Front Panel Lock	

_____ 10 -



FRONT PANEL								
2. Display					accuracy: 0.5% of rated output vol			
z. Display					accuracy: 0.5% of rated output cur			
3. Indications					s: FINE, MENU, PREV, PROT, REM, OL			
				RED LED: PROT (OVP, UVP, OTP, FOLD, AC FAIL).				
4. Function buttons				F	INE, MENU, PREV, PROT, REM, OUTP	UT		
PROGRAMMING AND REA	DBACK (RS2	32/485,USB, Op	tional: IEEE(*17), LAN)				
1. Vout programming accur					of actual + 0.05% of rated output	voltage		
2. lout programming accura	acy (*13)			0.2% of rated output current				
3. Vout programming resol	ution				0.012% of full scale			
4. lout programming resolu	ıtion				0.012% of full scale			
5. Vout readback accuracy					of actual + 0.05% of rated output			
6. lout readback accuracy (0.19	6 of actual +0.3% of rated output cเ	urrent		
7. Vout readback resolution	1				0.012% of full scale			
8. lout readback resolution					0.012% of full scale			
INPUT CHARACTERISTICS			Z	160-1.3	320-0.65	650-0.32		
1. Input voltage/freq. (*3)				85~2	65Vac continuous, 47~63Hz, single	phase		
2. Maximum Input current	100/200VAC	(*4) (*15)		2.64/1.30	2.64/1.30	2.64/1.30		
3. Power Factor (Typ)				>0.	99 at 100Vac, >0.98 at 200Vac,100%	load		
4. Efficiency (Typ) 100/200\	/AC (*4) (*15)	%	79/81	79/81	79/81		
5. Inrush current 100/200V/	AC (*5)							
ENVIRONMENTAL CONDIT	IONC		•					
	IONS	-	T	T	0.50% 100% 1			
1. Operating temperature				0 30 C, 100 / 0 10 da.				
2. Storage temperature			%					
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						·		
SAFETY/EMIC				UL61010 1 EN610		50050 1 EN60050 1		
1. Applicable standards:		Safety						
1. Applicable standards.		EMC		160V≤Vout≤650V: Output,J1,J2 are Hazardous. J3,J4,USB, IEEE/ISOLATED Analog ,LAN are Non Hazardous IEC/EN61326-1 (Built to meet EN55022/EN55024)				
		2			Hazardous; J3, J4, USB, LAN, IEEE/ISO			
2.Interface classification						E/ISOLATED ANALOG are Non Hazardous		
						/ISOLATED ANALOG are Hazardous		
				160≤Vout≤320V models:	Input-Output&J1,J2: 2970VDC/1min; Input	ut-Ground: 2828VDC/1min.		
					1min; Output&J1,J2- J3,J4,USB,LAN/IEEE/I			
						ATDE ANALOG Input-Ground: 707VDC/1min.		
3. Withstand voltage					Output&J1,J2: 3704VDC/1min; Input-Gro			
					1min; Output&J1,J2- J3,J4,USB,LAN/IEEE/			
				Input-J3,J4,USB,LAN/IEEE/ISOLATED ANALOG: 4242VDC/1min;				
4. Insulation resistance		-			N/IEEE/ISOLATDE ANALOG Input-Ground: Nore than 100Mohm at 25°C, 70%R			
5. Conducted emission				More than 100Mohm at 25°C, 70%kH. IEC/EN61326-1 Industrial Location - B, FCC part 15-B, VCCI-B				
6. Radiated emission				IEC/EN61326-1 Industrial Location - B, FCC part 15-B, VCCI-B				
			1	120, 2110132	austria. Escation 7,7 ec pari			
MECHANICAL 1. Cooling			T		Forced air cooling by inter! f			
1. Cooling	СТЛ	NDARD	Kg		Forced air cooling by internal fan. Less than 1.9Kg.			
2. Weight		DE BODY	Kg	l ess than	2.4Kg. Wide body with Isolated ana	ilog or IEEE.		
		NDARD	mm		xcluding bus bars, handles). (Ref			
3. Dimensions (WxHxD)		DE BODY	mm		excluding bus bars, handles). (Re			
4. Vibration					According to: IEC60068-2-64			
r charle			i e	1 th 20C 1 If .	11C	l:		

5. Shock

- *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).

Less than 20G, half sine, 11mS. Unit is unpacked. According to: IEC60068-2-27

- *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: For parallel operation up to 4 units, 5% of total output current is required.
- For parallel operation more than 4 units, 20% of total output current is required. *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: 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 10:1 probe.
- *15: P.S with Lan, IEEE, models decrease efficiency by 0.5% and increase input current by 0.5%. P.S with Isolated analog option decreases efficiency by 1.5% and increases input current by 1.5%.
- *16: At rated output power.
- *17: Max. ambient temperature for using IEEE is 45°C.



Z⁺400 Series Specifications

MODEL	Z	160-2.6	320-1.3	650-0.64
1. Rated output voltage(*1)	V	160-2.6	320-1.3	650
2. Rated output voitage(1)	A	2.6	1.3	0.64
3. Rated output power	W	416	416	416
CONSTANT VOLTAGE MODE	Z	160-2.6	320-1.3	650-0.64
1. Max. Line regulation (*6)			0.01% of rated output voltage	
2. Max. Load regulation (*7)			0.01% of rated output voltage	
3. Ripple and noise (p-p, 20MHz) (*14)	mV	100	150	250
4. Ripple r.m.s. 5Hz~1MHz (*14)	mV	10	25	60
5. Temperature coefficient	PPM/°C		ated output voltage, following 30 i	
5. Temperature stability			interval following 30 minutes warm	
7. Warm-up drift			ited output voltage over 30 minute	T .
3. Remote sense compensation/wire 9. Up-prog. Response time, 0~Vomax.(*9)	V mS	5 80	5 150	5 150
10. Down-prog. response time: Full load (*9)	mS	100	150	150
No load (*10)	S S	2	2.5	3
			thin 0.5% of its rated output for a load c	<u> </u>
11. Transient response time	mS		set-point: 10~100%, Local sense. Less t	
12. Hold-up time (*19)			Typical.	15mSec Typical.
			71	7
CONSTANT CURRENT MODE	Z	160-2.6	320-1.3	650-0.64
1. Max. Line regulation (*6)			0.02% of rated output current	
2. Max. Load regulation (*11)			0.09% of rated output current	
3. Load regulation thermal drift			ed output current over 30 minutes	
4. Ripple r.m.s. 5Hz~1MHz (*12) (*14)	mA	1.5	1	0.6
5. Temperature coefficient	PPM/°C		rated output current, following 30	
5. Temperature stability			rval following 30 minutes warm-up	
7. Warm-up drift		Less than +/-0.1% of i	rated output current over 30 minut	es following power on.
DOOTE STILL FLINGTIONS		460.06	20042	550.051
PROTECTIVE FUNCTIONS	Z	160-2.6	320-1.3	650-0.64
1. Foldback protection			ower supply change mode from CV to CC mode or by OUTPUT button or by rear pa	
			et by AC input recycle in autostart	
2. Over-voltage protection (OVP)			oanel ENABLE, or by communicatio	
3. Over -voltage trip point	V	5~176	5~353	5~717
4. Output under voltage limit (UVL)			port. Prevents from adjusting Vout below limit	1
		, .	er supply output voltage goes below UVP	
5. Output under voltage protection (UVP)			mode or by OUTPUT button or by rear pa	
6. Over temperature protection			ser selectable, latched or non latch	
			er supply output voltage goes below UVP	
5. Output under voltage protection (UVP)			mode or by OUTPUT button or by rear pa	
6. Over temperature protection		U	ser Selectable. Latched or non latch	ned
ANALOG PROGRAMMING AND MONITORING				
1. Vout voltage programming			user selectable. Accuracy and linea	
2. lout voltage programming (*13)			, user selectable. Accuracy and line	
3. Vout resistor programming			cale, user selectable. Accuracy and	
4. lout resistor programming (*13)			ale, user selectable. Accuracy and I	,
5. Shut Off (SO) control 6. Output current monitor (*13)		· ·	ge: 0~0.6V/4~15V or dry contact, u or 0~10V, user selectable. Accuracy	
7. Output current monitor (*13)			or 0~10V, user selectable. Accuracy	-
3. Power supply OK signal			V-OK, 0V-Fail. 500ohm series resist	
9. Parallel operation (*8)			aster/slave mode with single wire	
10. Series operation			identical units (with external diode	
11. CV/CC indicator			V mode: Off. Maximum voltage: 30	
12. Interlock (ILC) control			act (Short: On, Open: Off, Source current: less th	
			Open/Short: 0~0.6V or short: Remo	
13. Local/Remote mode Control				
		Open collector (shunted by 36V ze	ener). On (0~0.6V, 10mA sink current	max., memore. On Local (504 max.
14. Local/Remote mode Indicator		Open collector (shunted by 36V ze	ner). On (0~0.6V, 10mA sink current /, Minimum high level output =3.8\	
14. Local/Remote mode Indicator		Open collector (shunted by 36V zee Maximum low level output =0.8\		, Maximum high level output =5
14. Local/Remote mode Indicator 15.Trigger out		Open collector (shunted by 36V ze Maximum low level output =0.8\ Maximur	, Minimum high level output =3.8\	/, Maximum high level output =5 μs Typical.
14. Local/Remote mode Indicator 15. Trigger out 16. Trigger in		Open collector (shunted by 36V ze Maximum low level output =0.8\ Maximur Maximum low level input =1.2 Maximum sink current =16m	/, Minimum high level output =3.8\ n source current =16mA, pulse =20 V, Minimum high level input =3.5V, s, positive edge, trigger: tw =10µs r	/, Maximum high level output =5 µs Typical. Maximum high level input =5V, ninimum, Tr/Tf =1µs maximum.
14. Local/Remote mode Indicator 15. Trigger out 16. Trigger in 17. Programmed signal 1		Open collector (shunted by 36V ze Maximum low level output =0.8\ Maximur Maximum low level input =1.2 Maximum sink current =16m/ Open collector, maximum vo	/, Minimum high level output =3.8\ n source current =16mA, pulse =20 V, Minimum high level input =3.5V, n, positive edge, trigger: tw =10µs r Itage 25V, maximum sink current 1	/, Maximum high level output =5 μs Typical. Maximum high level input =5V, ninimum, Tr/Tf =1μs maximum. 00mA. (Shunted by 27V zener)
4. Local/Remote mode Indicator 15. Trigger out 16. Trigger in 17. Programmed signal 1		Open collector (shunted by 36V ze Maximum low level output =0.8\ Maximur Maximum low level input =1.2 Maximum sink current =16m/ Open collector, maximum vo	/, Minimum high level output =3.8\ n source current =16mA, pulse =20 V, Minimum high level input =3.5V, s, positive edge, trigger: tw =10µs r	/, Maximum high level output =5 μs Typical. Maximum high level input =5V, ninimum, Tr/Tf =1μs maximum. 00mA. (Shunted by 27V zener)
14. Local/Remote mode Indicator 15. Trigger out 16. Trigger in 17. Programmed signal 1 18. Programmed signal 2		Open collector (shunted by 36V ze Maximum low level output =0.8\ Maximur Maximum low level input =1.2 Maximum sink current =16m/ Open collector, maximum vo	/, Minimum high level output =3.8\ n source current =16mA, pulse =20 V, Minimum high level input =3.5V, n, positive edge, trigger: tw =10µs r Itage 25V, maximum sink current 1	/, Maximum high level output =5 μs Typical. Maximum high level input =5V, ninimum, Tr/Tf =1μs maximum. 00mA. (Shunted by 27V zener)
14. Local/Remote mode Indicator 15. Trigger out 16. Trigger in 17. Programmed signal 1 18. Programmed signal 2		Open collector (shunted by 36V ze Maximum low level output =0.8\ Maximur Maximum low level input =1.2 Maximum sink current =16m/ Open collector, maximum vo	/, Minimum high level output =3.8\ n source current =16mA, pulse =20 V, Minimum high level input =3.5V, n, positive edge, trigger: tw =10µs r ltage 25V, maximum sink current 1 ltage 25V, maximum sink current 1	/, Maximum high level output =5 μs Typical. Maximum high level input =5V, ninimum, Tr/Tf =1 μs maximum. 00mA. (Shunted by 27V zener) 00mA. (Shunted by 27V zener)
14. Local/Remote mode Indicator 15. Trigger out 16. Trigger in 17. Programmed signal 1 18. Programmed signal 2		Open collector (shunted by 36V ze Maximum low level output =0.8\ Maximur Maximum low level input =1.2 Maximum sink current =16m/ Open collector, maximum vo	/, Minimum high level output =3.8\n source current =16mA, pulse =20\text{V, Minimum high level input =3.5V, to positive edge, trigger: tw =10\text{µs r =10\text{Us r = 10}\text{V, maximum sink current 1} tage 25V, maximum sink current 1 Multiple options with 2 Encoders	/, Maximum high level output =5 μs Typical. Maximum high level input =5V, ninimum, Tr/Tf =1 μs maximum. 00mA. (Shunted by 27V zener) 00mA. (Shunted by 27V zener)
14. Local/Remote mode Indicator 15. Trigger out 16. Trigger in 17. Programmed signal 1 18. Programmed signal 2		Open collector (shunted by 36V ze Maximum low level output =0.8\ Maximur Maximum low level input =1.2 Maximum sink current =16m/ Open collector, maximum vo	/, Minimum high level output =3.8\n source current =16mA, pulse =20\text{V, Minimum high level input =3.5V, } to, positive edge, trigger: tw =10µs r ltage 25V, maximum sink current 1 ltage 25V, maximum sink current 1 Multiple options with 2 Encoders Vout/lout manual adjust	/, Maximum high level output =5 μs Typical. Maximum high level input =5V, ninimum, Tr/Tf =1 μs maximum. 00mA. (Shunted by 27V zener) 00mA. (Shunted by 27V zener)
14. Local/Remote mode Indicator 15. Trigger out 16. Trigger in 17. Programmed signal 1 18. Programmed signal 2		Open collector (shunted by 36V ze Maximum low level output =0.8\ Maximum Maximum low level input =1.2 Maximum sink current =16m/ Open collector, maximum vo Open collector, maximum vo	/, Minimum high level output =3.8\n source current =16mA, pulse =20\text{V, Minimum high level input =3.5V,} \text{A, positive edge, trigger: tw =10\text{µs r} ltage 25V, maximum sink current 1 ltage 25V, maximum sink current 1 ltage 25V, maximum sink current 1 \text{Vout/lout manual adjust} OVP/UVL /UVP manual adjust	/, Maximum high level output =5 µs Typical. Maximum high level input =5V, ninimum, Tr/Tf =1 μs maximum. 00mA. (Shunted by 27V zener) 00mA. (Shunted by 27V zener)
14. Local/Remote mode Indicator 15. Trigger out 16. Trigger in 17. Programmed signal 1 18. Programmed signal 2 FRONT PANEL		Open collector (shunted by 36V ze Maximum low level output =0.8\ Maximum Maximum low level input =1.2 Maximum sink current =16m/ Open collector, maximum vo Open collector, maximum vo	/, Minimum high level output =3.8\n source current =16mA, pulse =20\text{V, Minimum high level input =3.5V,} \text{A, positive edge, trigger: tw =10\text{µs r} ltage 25V, maximum sink current 1 ltage 25V, maximum sink current 1 ltage 25V, maximum sink current 1 Multiple options with 2 Encoders Vout/lout manual adjust OVP/UVL /UVP manual adjust curctions - OVP, UVL, UVP, Foldback	/, Maximum high level output =5 µs Typical. Maximum high level input =5V, ninimum, Tr/Tf =1 μs maximum. 00mA. (Shunted by 27V zener) 00mA. (Shunted by 27V zener)
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 1. Control functions		Open collector (shunted by 36V ze Maximum low level output =0.8\ Maximum Maximum low level input =1.2 Maximum sink current =16m/ Open collector, maximum vo Open collector, maximum vo Protection F	/, Minimum high level output = 3.8\n source current = 16mA, pulse = 20 Minimum high level input = 3.5 positive edge, trigger: tw = 10\text{µs} rigger: tw = 10\text{µs} ritage 25 maximum sink current 1 ltage 25 maximum sink current 1 Multiple options with 2 Encoders Vout/lout manual adjust OVP/UVL /UVP manual adjust functions - OVP, UVL, UVP, Foldback inctions - Selection of LAN,IEEE (*2)	/, Maximum high level output =5 µs Typical. Maximum high level input =5V, ninimum, Tr/Tf =1µs maximum. 00mA. (Shunted by 27V zener) 00mA. (Shunted by 27V zener) , OCP, INT, SO 0), RS232,RS485,USB
14. Local/Remote mode Indicator 15. Trigger out 16. Trigger in 17. Programmed signal 1 18. Programmed signal 2 FRONT PANEL		Open collector (shunted by 36V ze Maximum low level output =0.8\ Maximum Maximum low level input =1.2 Maximum sink current =16m Open collector, maximum vo Open collector, maximum vo Protection F Communication Fu	/, Minimum high level output =3.8\n source current =16mA, pulse =20\text{V, Minimum high level input =3.5V,} \text{A, positive edge, trigger: tw =10\text{µs r} ltage 25V, maximum sink current 1 ltage 25V, maximum sink current 1 ltage 25V, maximum sink current 1 Multiple options with 2 Encoders Vout/lout manual adjust OVP/UVL /UVP manual adjust curctions - OVP, UVL, UVP, Foldback	/, Maximum high level output =5 µs Typical. Maximum high level input =5V, ninimum, Tr/Tf =1 µs maximum. 00mA. (Shunted by 27V zener) 00mA. (Shunted by 27V zener) , OCP, INT, SO D), RS232,RS485,USB Rate, Address

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FRONT PANEL	
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
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(*17), LAN)					
1. Vout programming accuracy		0.05% of actual + 0.05% of rated output voltage			
2. lout programming accuracy (*13)		0.2% 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 actual + 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	160-2.6	320-1.3	650-0.64	
1. Input voltage/freq. (*3)		85~265Vac continuous, 47~63Hz, single phase			
2. Maximum Input current 100/200VAC (*4) (*15)		5/2.44	5/2.44	5/2.44	
3. Power Factor (Typ)		0.99 at 100/200Vac,100% load			
4. Efficiency (Typ) 100/200VAC (*4) (*15)	%	84/86	84/86	84/86	
5. Inrush current 100/200VAC (*5)		Less than 25A			

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

SAFETY/EMC				
1. Applicable standards:	Safety		UL61010-1, EN61010-1, IEC61010-1. Built to meet UL60950-1, EN60950-1 160V≤Vout≤650V: Output,J1,J2 are Hazardous. J3,J4,USB, IEEE/ISOLATED Analog ,LAN are Non Hazardous	
	EMC		IEC/EN61326-1 (Built to meet EN55022/EN55024)	
			Output floating: Output, J1, J2 are Hazardous; J3, J4, USB, LAN, IEEE/ISOLATED ANALOG are Non Hazardous	
2.Interface classification			Vout≤400V, +Output grounded: Output, J1, J2 are Hazardous; J3, J4, USB, LAN, IEEE/ISOLATED ANALOG are Non Hazardous	
			Vout>400V, +Output grounded: Output, J1, J2, J3, J4, USB, LAN, IEEE/ISOLATED ANALOG are Hazardous	
3. Withstand voltage			160≤Vout≤320V models: Input-Output&J1,J2: 2970VDC/1min; Input-Ground: 2828VDC/1min. Output&J1,J2,-Ground: 2000VDC/1min; Output&J1,J2- J3,J4,USB,LAN/IEEE/ISOLATED ANALOG: 3200VDC/1min; Input-J3,J4,USB,LAN/IEEE/ISOLATED ANALOG: 424VDC/1min; J3,J4,USB,LAN/IEEE/ISOLATED ANALOG Input-Ground: 707VDC/1min. 650V model: Input-Output&J1,J2: 3704VDC/1min; Input-Ground: 2828VDC/1min. Output&J1,J2,-Ground: 2780VDC/1min; Output&J1,J2- J3,J4,USB,LAN/IEEE/ISOLATED ANALOG: 4242VDC/1min; Input-J3,J4,USB,LAN/IEEE/ISOLATED ANALOG: 4242VDC/1min. J3,J4,USB,LAN/IEEE/ISOLATDE ANALOG Input-Ground: 707VDC/1min.	
4. Insulation resistance			More than 100Mohm at 25°C, 70%RH.	
5. Conducted emission			IEC/EN61326-1 Industrial Location - B, FCC part 15-B, VCCI-B	
6. Radiated emission			IEC/EN61326-1 Industrial Location - A, FCC part 15-A, VCCI-A	

MECHANICAL					
1. Cooling	1. Cooling		Forced air cooling by internal fan.		
STANDARD		Kg	Less than 1.9Kg.		
2. Weight	2. Weight WIDE BODY		Less than 2.4Kg. Wide body with Isolated analog or IEEE.		
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	bration According to: IEC60068-2-64		According to: IEC60068-2-64		
5. Shock			Less than 20G, half sine, 11mS. Unit is unpacked. According to: IEC60068-2-27		

- *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: For parallel operation up to 4 units, 5% of total output current is required.
- For parallel operation more than 4 units, 20% of total output current is required.
- *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: 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 10:1 probe.
 *15: P.S with Lan, IEEE, models decrease efficiency by 0.25% and increase input current by 0.25%.
 P.S with Isolated analog option decreases efficiency by 0.75% and increases input current by 0.75%.
- *16: At rated output power.
- *17: Max. ambient temperature for using IEEE is 45°C.



Z⁺600 Series Specifications

OUTPUT RATING	Z	160-4	320-2	650-1	
1.Rated output voltage (*1)	V	160	320	650	
2.Rated output current (*2)	Α	4.0 2.0		1.00	
3.Rated output power at 100≤Vin≤265Vac, Ta ≤ 50°c	W	640			
Smarca output porter at 100_1111_2051ac/ ta 250 c		0.0	0.0	650	
CONSTANT VOLTAGE MODE	Z	160-4	320-2	650-1	
1. Max. Line regulation (*6)		100 1	0.01% of rated output voltage	050 1	
2. Max. Load regulation (*7)			0.01% of rated output voltage		
3. Ripple and noise (p-p, 20MHz) (*14) (*17)	mV	100	150	250	
		100	30	60	
4. Ripple r.m.s. 5Hz~1MHz (*14) (*17) 5. Temperature coefficient	mV PPM/°C		rated output voltage, following 30		
•					
6. Temperature stability			interval following 30 minutes warn		
7. Warm-up drift			ated output voltage over 30 minute		
8. Remote sense compensation/wire	V	5	5	5	
9. Up-prog. Response time, 0~Vomax.(*9)	mS	55	75	75	
10. Down-prog. response time: Full load (*9)	mS	65	85	85	
No load (*10)	S	2	2.5	3	
		Time for output voltage to recov	er within 0.5% of its rated output f	or a load change 10~90% of rated	
11. Transient response time	mS		utput set-point: 10~100%, Local se		
12 Hold up time (*15)			<u> </u>		
12. Hold-up time (*15)		1 iomsec	Typical.	14mSec Typical.	
CONCTANT CURRENT MORE	7	160.4	220.2	(50.1	
CONSTANT CURRENT MODE	Z	160-4	320-2	650-1	
1. Max. Line regulation (*6)			0.02% of rated output current		
2. Max. Load regulation (*11)			0.09% of rated output current		
3. Load regulation thermal drift			ed output current over 30 minutes	tollowing load change.	
4. Ripple r.m.s. 5Hz~1MHz (*12) (*14)	mA	2	1.5	1	
5. Temperature coefficient	PPM/°C		rated output current, following 30		
6. Temperature stability		0.05% of rated lout over 8hrs. inte	rval following 30 minutes warm-up	. Constant line, load & temperature.	
7. Warm-up drift		Less than +/-0.1% of rated output current over 30 minutes following power on.			
PROTECTIVE FUNCTIONS	Z	160-4	320-2	650-1	
			er supply change mode from CV to		
1. Foldback protection		Reset by AC input recycle in au	itostart mode or by OUTPUT butto	n or by rear panel ENABLE, or by	
			communication port.		
2. Over-voltage protection (OVP)				ode or by OUTPUT button or by rear	
2. over voltage protection (over)		pa	nel ENABLE, or by communication	port.	
3. Over -voltage trip point	V	5~176 5~353 5~717			
4. Output under voltage limit (UVL)		Preset by front panel or commun	ication port. Prevents from adjustir	ng Vout below limit. Does not affect	
4. Output under voltage limit (OVL)			in analog programming.		
		Output shut-down when power s	upply output voltage goes below l	JVP programming. User presetable.	
5. Output under voltage protection (UVP)		Reset by AC input recycle in au	utostart mode or by OUTPUT butto	n or by rear panel ENABLE, or by	
			communication port.		
6. Over temperature protection		U	ser selectable, latched or non latch	ed.	
ANALOG PROGRAMMING AND MONITORING					
1. Vout voltage programming		0~100% 0~5V or 0~10V	user selectable. Accuracy and lines	erity: ±/-0.5% of rated Vout	
			/, user selectable. Accuracy and line		
2. lout voltage programming (*13)					
3. Vout resistor programming			cale, user selectable. Accuracy and		
4. lout resistor programming (*13)			cale, user selectable. Accuracy and		
5. Shut Off (SO) control			ge: 0~0.6V/4~15V or dry contact, u		
6. Output current monitor (*13)			or 0~10V, user selectable. Accuracy		
7. Output voltage monitor			or 0~10V, user selectable. Accuracy		
8. Power supply OK signal			V-OK, 0V-Fail. 500ohm series resist		
9. Parallel operation (*8)			naster/slave mode with single wire		
10. Series operation			identical units (with external diod		
11. CV/CC indicator			CV mode: Off. Maximum voltage: 3		
12. Interlock (ILC) control		1 / /		han 0.5mA). Ena/Dis is activated by front panel.	
13. Local/Remote mode Control			Open/Short: 0~0.6V or short: Remo		
14. Local/Remote mode Indicator		Open collector (shunted by 36V ze	ner). On (0~0.6V, 10mA sink current	max.)-Remote. Off-Local (30V max.).	
15 Trigger out				/, Maximum high level output =5V,	
15.Trigger out		Maximur	m source current =16mA, pulse =20)μs Typical.	
16 Triagar in		Maximum low level input =1.2	V, Minimum high level input =3.5V	, Maximum high level input =5V.	
16.Trigger in			A, positive edge, trigger: tw =10μs ι		
17. Programmed signal 1					
18. Programmed signal 2			oltage 25V,maximum sink current 1		
		, , , , , , , , , , , , , , , , , , , ,	J. ,		
EDONT DANIEL					
FRONT PANEL			Modelin Landon College College		
			Multiple options with 2 Encoders	i	
		1	Vout/lout manual adjust		
			OVP/UVL/UVP manual adjust	OCD INIT CO	
1. Control functions			Functions - OVP, UVL, UVP, Foldback		
			unctions - Selection of LAN,IEEE (*1		
1		Communication Functions - Selection of Baud Rate, Address			

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.
2. Display	 lout: 4 digits, accuracy: 0.5% of rated output current+/-1 count.
2 Indications	 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

1. Vout programming accuracy		0.05%	of actual + 0.05% of rated output v	/oltage		
2. lout programming accuracy (*13)			0.2% 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 actual + 0.05% of rated output v	/oltage		
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	160-4	320-2	650-1		
1. Input voltage/freq. (*3)		85~26	55Vac continuous, 47~63Hz, single	phase		
2. Maximum Input current 100/200VAC (*4)		7.5/3.7	7.5/3.7	7.6/3.75		
3. Power Factor (Typ)		>0.99 at 100Vac, >0.98 at 200Vac,100% load				
4. Efficiency (Typ) 100/200VAC (*4)	%	86.5/88.5 87/88.5 86.5/88.5				
5. Inrush current 100/200VAC (*5)		Less than 30A				

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

SAFETY/EMC		
1. Applicable standards:	Safety	 UL61010-1, EN61010-1, IEC61010-1. Built to meet UL60950-1, EN60950-1 160V≤Vout≤650V: Output,J1,J2 are Hazardous. J3,J4,USB, IEEE/ISOLATED Analog ,LAN are Non Hazardous
	EMC	 IEC/EN61326-1 (Built to meet EN55022/EN55024)
		Output floating: Output, J1, J2 are Hazardous; J3, J4, USB, LAN, IEEE/ISOLATED ANALOG are Non Hazardous
2.Interface classification		Vout≤400V, +Output grounded: Output, J1, J2 are Hazardous; J3, J4, USB, LAN, IEEE/ISOLATED ANALOG are Non Hazardous
		Vout>400V, +Output grounded: Output, J1, J2, J3, J4, USB, LAN, IEEE/ISOLATED ANALOG are Hazardous
3. Withstand voltage		160≤Vout≤320V models: Input-Output&J1,J2: 2970VDC/1min; Input-Ground: 2828VDC/1min.
		Output&J1,J2,-Ground: 2000VDC/1min; Output&J1,J2- J3,J4,USB,LAN/IEEE/ISOLATED ANALOG: 3200VDC/1min;
		Input-J3,J4,USB,LAN/IEEE/ISOLATED ANALOG: 4242VDC/1min; J3,J4,USB,LAN/IEEE/ISOLATDE ANALOG Input-Ground: 707VDC/1min.
		 650V model: Input-Output&J1,J2: 3704VDC/1min; Input-Ground: 2828VDC/1min.
		Output&J1,J2,-Ground: 2780VDC/1min; Output&J1,J2- J3,J4,USB,LAN/IEEE/ISOLATED ANALOG :4244VDC/1min;
		Input-J3,J4,USB,LAN/IEEE/ISOLATED ANALOG: 4242VDC/1min;
		J3,J4,USB,LAN/IEEE/ISOLATDE ANALOG Input-Ground: 707VDC/1min.
4. Insulation resistance		 More than 100Mohm at 25°C, 70%RH.
5. Conducted emission		 IEC/EN61326-1 Industrial Location - B, FCC part 15-B, VCCI-B
6. Radiated emission		 IEC/EN61326-1 Industrial Location - A, FCC part 15-A, VCCI-A

MECHANICAL							
1. Cooling			Forced air cooling by internal fan.				
STANDARD STANDARD		Kg	Less than 2Kg				
2. Weight	WIDE BODY		Less than 2.5Kg. Wide body with isolated analog or IEEE				
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	1. Vibration According to: IEC60068-2-64		According to: IEC60068-2-64				
5. Shock			Less than 20G, half sine, 11mS. Unit is unpacked. According to: IEC60068-2-27				

- *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 For Parallel operation up to 4 units, 5% of total output current is required.
 - For Parallel operation more than 4 units, 20% of total output current is requierd.
- *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: 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 10:1 probe.
- *15:At rated output power.
- *16 Max. ambient temperature for using IEEE is 45°C. *17: start in low ambient temp. (0°C), 1 min. warm up is required



12. Hold-up time (*15)

Z⁺800 Series Specifications

OUTPUT RATING	Z	160-5	320-2.5	375-2.2	650-1.25
1.Rated output voltage (*1)	V	160	320	375	650
2.Rated output current (*2) at 100≤Vin≤265Vac, Ta ≤ 50°c	А	5.0	2.5	2.2	1.25
Rated output current (*2) at 85≤Vin<100Vac, Ta ≤ 40°c		5.0	2.5	2.2	1.25
Rated output current (*2) at 85≤Vin<100Vac, 40°c < Ta ≤ 50°c		4.7	2.35	2.0	1.15
B.Rated output power at 100≤Vin≤265Vac, Ta ≤ 50°c		800	800	825	812.5
Rated output power at 85≤Vin<100Vac, Ta ≤ 40°c	W	800	800	825	812.5
Rated output power at 85≤Vin<100Vac, 40°c < Ta ≤ 50°c		752	752	750	747.5

CONSTANT VOLTAGE MODE Z			160-5	320-2.5	375-2.2	650-1.25
1. Max. Line regulation (*6)			0	0.01% of rated output voltage		
2. Max. Load regulation (*7)			0	.01% of rated output volta	ge	
3. Ripple and noise (p-p, 20MHz) (*14) (**	17)	mV	100	150	150	250
4. Ripple r.m.s. 5Hz~1MHz (*14) (*17)		mV	10	30	30	60
5. Temperature coefficient		PPM/°C	30PPM/°C from rated output voltage, following 30 minutes warm-up.			
6. Temperature stability	0.02% of rated Vout over 8hrs. interval following 30 minutes warm-up. Constant line, load &				stant line, load & temp.	
7. Warm-up drift Less than 0.05% of rated output voltage over 30 minutes following power on				ng power on.		
8. Remote sense compensation/wire		V	5	5	5	5
9. Up-prog. Response time, 0~Vomax.(*9)		mS	45	55	55	55
10. Down-prog. response time:	Full load (*9)	mS	55	65	65	65
	No load (*10)	S	2	2.5	2.5	3
11. Transient response time		mS		e to recover within 0.5% of current. Output set-point: 1		

CONSTANT CURRENT MODE	Z	160-5	320-2.5	375-2.2	650-1.25	
1. Max. Line regulation (*6)			0.02% of rated	output current		
2. Max. Load regulation (*11)			0.09% of rated output current			
3. Load regulation thermal drift		Less than 0.05% of rated output current over 30 minutes following load change.				
4. Ripple r.m.s. 5Hz~1MHz (*12) (*14)	mA	2 1.5 1.5 1				
5. Temperature coefficient	PPM/°C	100PPM/°C from rated output current, following 30 minutes warm-up.				
6. Temperature stability		0.05% of rated lout over 8hrs. interval following 30 minutes warm-up. Constant line, load & temperature.				
7. Warm-up drift		Less than +/-0.1% of rated output current over 30 minutes following power on.				

11.5msec Typical.

13msec Typical.

PROTECTIVE FUNCTIONS	Z	160-5	320-2.5	375-2.2	650-1.25
			nen power supply change r		
1. Foldback protection		Reset by AC input rec	ycle in autostart mode or b	y OUTPUT button or by re	ar panel ENABLE, or by
			communic	ation port.	
2. Over-voltage protection (OVP)		Inverter Shut down method. Reset by AC input recycle in autostart mode or by OUTPUT button or by rear panel ENABLE, or by communication port.			
3. Over -voltage trip point	V	5~176	5~353	5~413	5~717
4. Output under voltage limit (UVL)		Preset by front panel or o	communication port. Preve in analog pı	nts from adjusting Vout be ogramming.	elow limit. Does not affect
5. Output under voltage protection (UVP)			n power supply output volt ycle in autostart mode or b communic		
6. Over temperature protection			User selectable, late	thed or non latched.	

ANALOG PROGRAMMING AND MONITORING	
1. Vout voltage programming	 0~100%, 0~5V or 0~10V, user selectable. Accuracy and linearity: +/-0.5% of rated Vout.
2. lout voltage programming (*13)	 0~100%, 0~5V or 0~10V, user selectable. Accuracy and linearity: +/-1% of rated lout.
3. Vout resistor programming	 0~100%, 0~5/10Kohm full scale, user selectable. Accuracy and linearity: +/-1% of rated Vout.
4. lout resistor programming (*13)	 0~100%, 0~5/10Kohm full scale, user selectable. Accuracy and linearity: +/-1.5% of rated lout.
5. Shut Off (SO) control	 By electrical Voltage: 0~0.6V/4~15V or dry contact, user selectable logic.
6. Output current monitor (*13)	 0~5V or 0~10V, user selectable. Accuracy: +/-1%.
7. Output voltage monitor	 0~5V or 0~10V, user selectable. Accuracy: +/-1%.
8. Power supply OK signal	 4~5V-OK, 0V-Fail. 500ohm series resistance.
9. Parallel operation (*8)	 Possible, up to 6 units in master/slave mode with single wire current balance connection.
10. Series operation	 2 identical units (with external diodes). 650VDC MAX. From chassis to ground
11. CV/CC indicator	 Open collector. CC mode: On, CV mode: Off. Maximum voltage: 30V, maximum sink current: 10mA
12. Interlock (ILC) control	 Enables/Disables the PS output by dry contact (Short: On, Open: Off, Source current: less than 0.5mA). Ena/Dis is activated by front panel.
13. Local/Remote mode Control	 By electrical signal or Open/Short: 0~0.6V or short: Remote, 2~15V or open: Local
14. Local/Remote mode Indicator	 Open collector (shunted by 36V zener). On (0~0.6V, 10mA sink current max.)-Remote. Off-Local (30V max.).
15.Trigger out	 Maximum low level output =0.8V, Minimum high level output =3.8V, Maximum high level output =5V, Maximum source current =16mA, pulse =20µs Typical.
16 Trigger in	Maximum low level input =1.2V, Minimum high level input =3.5V, Maximum high level input =5V,
16.Trigger in	 Maximum sink current =16mA, positive edge, trigger: tw =10μs minimum, Tr/Tf =1μs maximum.
17. Programmed signal 1	 Open collector, maximum voltage 25V, maximum sink current 100mA. (Shunted by 27V zener)
18. Programmed signal 2	 Open collector, maximum voltage 25V, maximum sink current 100mA. (Shunted by 27V zener)

- 16 -

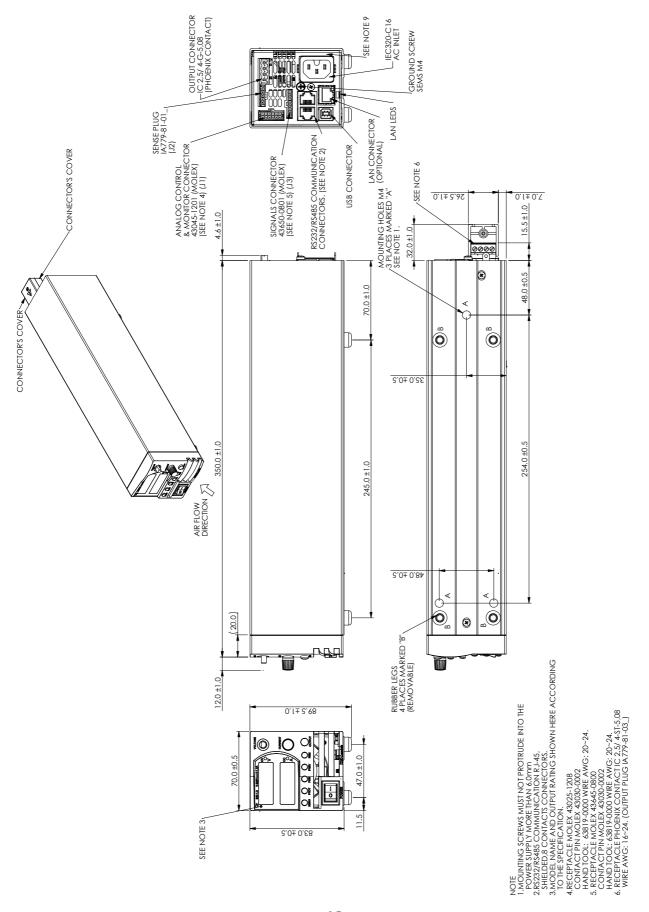


FRONT PANEL							
THOMTTANEE					Multiple options with 2 Encoders		
			Vout/lout manual adjust				
				OVP/UVL/UVP manual adjust			
1. Control functions			Pr	rotection Functions - OVP, UVL, UVP, Foldback, OCP, INT, SO			
			Communication Functions - Selection of LAN,IEEE (*16),RS232,RS485,USB				
			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.			
			lout: 4 digits, accuracy: 0.5% of rated output current+/-1 count.				
3. Indications			GREEN LEDs: FINE, MENU, PREV, PROT, REM, OUTPUT, CV, CC RED LED: PROT (OVP, UVP, OTP, FOLD, AC FAIL).				
4. Function buttons			RED LED: PROT (OVP, UVP, OTP, FOLD, AC FAIL). FINE, MENU, PREV, PROT, REM, OUTPUT				
4. Function buttons					FINE, MIENO, FREV, FROI, REM, OUTFOI		
PROGRAMMING AND READ	DBACK (RS2:	32/485,USB, O	otional: IEEE	(*16), LAN)			
1. Vout programming accura					0.05% of actual + 0.05% of rated output voltage		
2. lout programming accuracy (*13)			0.2% of rated output current				
3. Vout programming resolu				0.012% of full scale			
4. lout programming resolu	tion			0.012% of full scale			
5. Vout readback accuracy 6. lout readback accuracy (*	*12\			0.05% of actual + 0.05% of rated output voltage			
7. Vout readback resolution				0.1% of actual +0.3% of rated output current 0.012% of full scale			
8. lout readback resolution				0.012% of full scale			
				160.5			
INPUT CHARACTERISTICS			Z	160-5	320-2.5 375-2.2 650-1.25		
1. Input voltage/freq. (*3)	100/2001/46	(* 4)		0.25/4.61	85~265Vac continuous, 47~63Hz, single phase		
2. Maximum Input current 1 3. Power Factor (Typ)	100/200VAC	(*4)		9.35/4.61	9.35/4.59 9.58/4.7 9.44/4.64		
4. Efficiency (Typ) 100/200V	IAC (*4\		%	0.99 at 100Vac, 0.98 at 200Vac, 100% load 86.5/88.5 86.5/89 87.5/89.5 87/89			
5. Inrush current 100/200VA			90	00.3/00.3	60.3/69 67.3/69.3 67/69 Less than 30A		
J. IIII usii cuitetti 100/2007A	10 (3)				Less triair Joh		
ENVIRONMENTAL CONDITI	IONS						
1. Operating temperature				0~50°C, 100% load.			
2. Storage temperature				-20~85℃			
3. Operating humidity			%	20~90% RH (no condensation).			
4. Storage humidity			%	10~95% RH (no condensation).			
5. Altitude				Operating: Maximum	Maximum 3000m. Derate ambient temp above 2000m. ambient temperature, From 2000m up to 3000m Ambient temperature 40		
SAFETY/EMC				Operating, Maximum	rambient temperature, from 2000m up to 3000m Ambient temperature 40		
		Safotu			0-1, EN61010-1, IEC61010-1. Built to meet UL60950-1, EN60950-1		
1. Applicable standards:		Safety		160V≤Vout≤650V: Output, 11, J2 are Hazardous. J3, J4, USB, IEEE/ISOLATED Analog, LAN are Non H			
		EMC		IEC/EN61326-1 (Built to meet EN55022/EN55024)			
·			0				
2 lates of an also of Country					t, J1, J2 are Hazardous; J3, J4, USB, LAN, IEEE/ISOLATED ANALOG are Non Hazard		
2.Interface classification				Vout≤400V, +Output ground	t, J1, J2 are Hazardous; J3, J4, USB, LAN, IEEE/ISOLATED ANALOG are Non Hazard ded: Output, J1, J2 are Hazardous; J3, J4, USB, LAN, IEEE/ISOLATED ANALOG are Non Haza		
2.Interface classification				Vout≤400V, +Output ground Vout>400V, +Output gro	t, J1, J2 are Hazardous; J3, J4, USB, LAN, IEEE/ISOLATED ANALOG are Non Hazard ded: Output, J1, J2 are Hazardous; J3, J4, USB, LAN, IEEE/ISOLATED ANALOG are Non Haza rounded: Output, J1, J2, J3, J4, USB, LAN, IEEE/ISOLATED ANALOG are Hazar		
2.Interface classification				Vout≤400V, +Output ground Vout>400V, +Output ground 160≤Vout≤320	t, J1, J2 are Hazardous; J3, J4, USB, LAN, IEEE/ISOLATED ANALOG are Non Hazard ded: Output, J1, J2 are Hazardous; J3, J4, USB, LAN, IEEE/ISOLATED ANALOG are Non Haza		
2.Interface classification				Vout≤400V, +Output ground Vout>400V, +Output ground 160≤Vout≤320 Output&J1,J2,-Ground: Input-J3,J4,USB,LAN/IEEE/ISOL	t, J1, J2 are Hazardous; J3, J4, USB, LAN, IEEE/ISOLATED ANALOG are Non Hazard ded: Output, J1, J2 are Hazardous; J3, J4, USB, LAN, IEEE/ISOLATED ANALOG are Non Hazar rounded: Output, J1, J2, J3, J4, USB, LAN, IEEE/ISOLATED ANALOG are Hazarr (0V models: Input-Output&J1, J2: 2970VDC/1min; Input-Ground: 2828VDC/1min; 12000VDC/1min; Output&J1, J2: J3, J4, USB, LAN/IEEE/ISOLATED ANALOG: 3200VDC/1min LATED ANALOG: 424VDC/1min; J3, J4, USB, LAN/IEEE/ISOLATED ANALOG input-Ground: 707VDC/		
2.Interface classification 3. Withstand voltage				Vouts400V, +Output ground Vout>400V, +Output gro 160≤Vouts32(Output&J1,J2,-Ground: Input-J3,J4,USB,LAN/IEEE/ISOL 375≤Vout≤650V model:	t, J1, J2 are Hazardous; J3, J4, USB, LAN, IEEE/ISOLATED ANALOG are Non Hazard ded: Output, J1, J2 are Hazardous; J3, J4, USB, LAN, IEEE/ISOLATED ANALOG are Non Hazar rounded: Output, J1, J2, J3, J4, USB, LAN, IEEE/ISOLATED ANALOG are Hazarr (IV) models: Input-Output&11, J2: 2970 VDC/1 mir. Input-Ground: 2828 VDC/1 min: 2000 VDC/1 min; Output&11, J2: 3J,4, USB, LAN/IEEE/ISOLATED ANALOG: 3200 VDC/1 min: ALTED ANALOG: 3200 VDC/1 min; Output&1, J2: ALTED ANALOG: 3200 VDC/1 min; Output&1, J2: ALTED ANALOG: MODE		
				Vouts400V, +Output ground Vout>400V, +Output ground 160≤Vout≤32(Output&J1,J2,-Ground: Input-J3,J4,USB,LAN/IEEE/ISOL 375≤Vout≤650V model: Output	t, J1, J2 are Hazardous; J3, J4, USB, LAN, IEEE/ISOLATED ANALOG are Non Hazard ded: Output, J1, J2 are Hazardous; J3, J4, USB, LAN, IEEE/ISOLATED ANALOG are Non Hazar rounded: Output, J1, J2, J3, J4, USB, LAN, IEEE/ISOLATED ANALOG are Hazarr (0V models: Input-Output&J1, J2: 2970VDC/1min; Input-Ground: 2828VDC/1min; 12000VDC/1min; Output&J1, J2: J3, J4, USB, LAN/IEEE/ISOLATED ANALOG: 3200VDC/1min LATED ANALOG: 424VDC/1min; J3, J4, USB, LAN/IEEE/ISOLATED ANALOG input-Ground: 707VDC/		
				Vout≤400V, +Output ground Vout>400V, +Output ground 160sVouts32(Output&J1,J2,-Ground: Input-J3,J4,USB,LAN/IEE/ISOL 375≤Vout≤650V model: Outpu	t, J1, J2 are Hazardous; J3, J4, USB, LAN, IEEE/ISOLATED ANALOG are Non Hazard ded: Output, J1, J2 are Hazardous; J3, J4, USB, LAN, IEEE/ISOLATED ANALOG are Non Hazar rounded: Output, J1, J2, J3, J4, USB, LAN, IEEE/ISOLATED ANALOG are Hazarr (10V models: Input-Output&J1, J2: 2970VDC/1min; Input-Ground: 2828VDC/1min; 2000VDC/1min; Output&J1, J2: J3, J4, USB, LAN/IEEE/ISOLATED ANALOG: 3200VDC/1min LATED ANALOG: 4242VDC/1min; J3, J4, USB, LAN/IEEE/ISOLATDE ANALOG Input-Ground: 707VDC/1 input-Output&J1, J2: 3704VDC/1min; Input-Ground: 2828VDC/1min t&J1, J2-Ground: 2154VDC/1min for 375VDC, 2780VDC/1min for 65VDC; J1tput&J1, J2-J3, J4, USB, LAN/IEEE/ISOLATED ANALOG: 4244VDC/1min; Input-Ground: 1074VDC/1min; Input-J3, J4, USB, LAN/IEEE/ISOLATED ANALOG: 4244VDC/1min; Input-J3, J4, USB, LAN/IEEE/ISOLATED ANALOG: 4242VDC/1min;		
3. Withstand voltage				Vout≤400V, +Output ground Vout>400V, +Output ground 160sVouts32(Output&J1,J2,-Ground: Input-J3,J4,USB,LAN/IEE/ISOL 375≤Vout≤650V model: Outpu	t, J1, J2 are Hazardous; J3, J4, USB, LAN, IEEE/ISOLATED ANALOG are Non Hazard ded: Output, J1, J2 are Hazardous; J3, J4, USB, LAN, IEEE/ISOLATED ANALOG are Non Hazar rounded: Output, J1, J2, J3, J4, USB, LAN, IEEE/ISOLATED ANALOG are Non Hazar rounded: Output, J1, J2, J3, J4, USB, LAN, IEEE/ISOLATED ANALOG are Hazar rown more representation of the properties of the pro		
Withstand voltage Insulation resistance				Vout≤400V, +Output ground Vout>400V, +Output ground 160≤Vouts3Z Output&I1,12, -Ground: Input-I3, J4,USB, LAN/IEEE/ISOL 375≤Vout≤650V model: Outpu Ou	t, J1, J2 are Hazardous; J3, J4, USB, LAN, IEEE/ISOLATED ANALOG are Non Hazard ded: Output, J1, J2 are Hazardous; J3, J4, USB, LAN, IEEE/ISOLATED ANALOG are Non Hazar rounded: Output, J1, J2, J3, J4, USB, LAN, IEEE/ISOLATED ANALOG are Non Hazar rounded: Output, J1, J2, J3, J4, USB, LAN, IEEE/ISOLATED ANALOG are Hazarr lov models: Input-Output&J1, J2: 2970VDC/1min; Input-Ground: 2828VDC/1min: 1: 2000VDC/1min; Output&J1, J2: 3J4, USB, LAN/IEEE/ISOLATED ANALOG: 3200VDC/1min: LATED ANALOG: 4242VDC/1min; J3, J4, USB, LAN/IEEE/ISOLATED ANALOG: Input-Ground: 2828VDC/1min: 1x8J1, J2, Ground: 2154VDC/1min; 3704VDC/1min; Input-Ground: 2828VDC/1min: 1x8J1, J2, Ground: 2154VDC/1min; Input-Ground: 2154VDC/1min; Input-Ground: 2154VDC/1min; Input-Ground: 2154VDC/1min; Input-Ground: 2154VDC/1min; Input-J3, J4, USB, LAN/IEEE/ISOLATED ANALOG: 4242VDC/1min; 3J4, USB, LAN/IEEE/ISOLATED ANALOG: 4242VDC/1min. More than 100Mohm at 25°C, 70%GH.		
Withstand voltage Insulation resistance Conducted emission				Vout≤400V, +Output grund Vout>400V, +Output grund 106Vouts30; Output&I1,J2, Ground: Input-J3,J4,USB,LAN/IEEE/ISOL 375≤Vout≤650V model: Outpu Ou	t, J1, J2 are Hazardous; J3, J4, USB, LAN, IEEE/ISOLATED ANALOG are Non Hazard ded: Output, J1, J2 are Hazardous; J3, J4, USB, LAN, IEEE/ISOLATED ANALOG are Non Hazardounded: Output, J1, J2, J3, J4, USB, LAN, IEEE/ISOLATED ANALOG are Non Hazar rounded: Output, J1, J2, J3, J4, USB, LAN, IEEE/ISOLATED ANALOG are Hazarr iov models: Input-Output&I1, J2: 2970VDC/1min; Input-Ground: 2828VDC/1min; Is: 2000VDC/1min; Output&I1, J2: 3J4, USB, LAN/IEEE/ISOLATED ANALOG: 3200VDC/1min; Input-Ground: 707VDC/Imput-Output&I1, J2: Input-Output&I1, J2: 3704VDC/1min; Input-Ground: 2828VDC/1min; Istal. J1, J2-Ground: 2154VDC/1min; Istal. J1, J2-Ground: 2154VDC/1min; Input-Ground: 254VDC/1min; Input-Ground: 254VDC/1min; Input-J3, J4, USB, LAN/IEEE/ISOLATED ANALOG: 4244VDC/1min; Input-J3, J4, USB, LAN/IEEE/ISOLATED ANALOG: 1424VDC/1min; Input-Ground: 707VDC/1min. More than 100Mohm at 25°C, 70%RH. IC/EN61326-1 Industrial Location - B, FCC part 15-B, VCCI-B		
Withstand voltage Insulation resistance				Vout≤400V, +Output grund Vout>400V, +Output grund 106Vouts30; Output&I1,J2, Ground: Input-J3,J4,USB,LAN/IEEE/ISOL 375≤Vout≤650V model: Outpu Ou	t, J1, J2 are Hazardous; J3, J4, USB, LAN, IEEE/ISOLATED ANALOG are Non Hazard ded: Output, J1, J2 are Hazardous; J3, J4, USB, LAN, IEEE/ISOLATED ANALOG are Non Hazar rounded: Output, J1, J2, J3, J4, USB, LAN, IEEE/ISOLATED ANALOG are Non Hazar rounded: Output, J1, J2, J3, J4, USB, LAN, IEEE/ISOLATED ANALOG are Hazarr lov models: Input-Output&J1, J2: 2970VDC/1min; Input-Ground: 2828VDC/1min: 1: 2000VDC/1min; Output&J1, J2: 3J4, USB, LAN/IEEE/ISOLATED ANALOG: 3200VDC/1min: LATED ANALOG: 4242VDC/1min; J3, J4, USB, LAN/IEEE/ISOLATED ANALOG: Input-Ground: 2828VDC/1min: 1x8J1, J2, Ground: 2154VDC/1min; 3704VDC/1min; Input-Ground: 2828VDC/1min: 1x8J1, J2, Ground: 2154VDC/1min; Input-Ground: 2154VDC/1min; Input-Ground: 2154VDC/1min; Input-Ground: 2154VDC/1min; Input-Ground: 2154VDC/1min; Input-J3, J4, USB, LAN/IEEE/ISOLATED ANALOG: 4242VDC/1min; 3J4, USB, LAN/IEEE/ISOLATED ANALOG: 4242VDC/1min. More than 100Mohm at 25°C, 70%GH.		
Withstand voltage Insulation resistance Conducted emission				Vout≤400V, +Output grund Vout>400V, +Output grund 106Vouts30; Output&I1,J2, Ground: Input-J3,J4,USB,LAN/IEEE/ISOL 375≤Vout≤650V model: Outpu Ou	t, J1, J2 are Hazardous; J3, J4, USB, LAN, IEEE/ISOLATED ANALOG are Non Hazard ded: Output, J1, J2 are Hazardous; J3, J4, USB, LAN, IEEE/ISOLATED ANALOG are Non Hazardounded: Output, J1, J2, J3, J4, USB, LAN, IEEE/ISOLATED ANALOG are Non Hazar rounded: Output, J1, J2, J3, J4, USB, LAN, IEEE/ISOLATED ANALOG are Hazarr iov models: Input-Output&I1, J2: 2970VDC/1min; Input-Ground: 2828VDC/1min; Is: 2000VDC/1min; Output&I1, J2: 3J4, USB, LAN/IEEE/ISOLATED ANALOG: 3200VDC/1min; Input-Ground: 707VDC/Imput-Output&I1, J2: Input-Output&I1, J2: 3704VDC/1min; Input-Ground: 2828VDC/1min; Istal. J1, J2-Ground: 2154VDC/1min; Istal. J1, J2-Ground: 2154VDC/1min; Input-Ground: 254VDC/1min; Input-Ground: 254VDC/1min; Input-J3, J4, USB, LAN/IEEE/ISOLATED ANALOG: 4244VDC/1min; Input-J3, J4, USB, LAN/IEEE/ISOLATED ANALOG: 1424VDC/1min; Input-Ground: 707VDC/1min. More than 100Mohm at 25°C, 70%RH. IC/EN61326-1 Industrial Location - B, FCC part 15-B, VCCI-B		
Withstand voltage Insulation resistance Conducted emission Radiated emission				Vout≤400V, +Output grund Vout>400V, +Output grund 106Vouts30; Output&I1,J2, Ground: Input-J3,J4,USB,LAN/IEEE/ISOL 375≤Vout≤650V model: Outpu Ou	t, J1, J2 are Hazardous; J3, J4, USB, LAN, IEEE/ISOLATED ANALOG are Non Hazard ded: Output, J1, J2 are Hazardous; J3, J4, USB, LAN, IEEE/ISOLATED ANALOG are Non Hazardounded: Output, J1, J2, J3, J4, USB, LAN, IEEE/ISOLATED ANALOG are Non Hazar rounded: Output, J1, J2, J3, J4, USB, LAN, IEEE/ISOLATED ANALOG are Hazarr iov models: Input-Output&I1, J2: 2970VDC/1min; Input-Ground: 2828VDC/1min; Is: 2000VDC/1min; Output&I1, J2: 3J4, USB, LAN/IEEE/ISOLATED ANALOG: 3200VDC/1min; Input-Ground: 707VDC/Imput-Output&I1, J2: Input-Output&I1, J2: 3704VDC/1min; Input-Ground: 2828VDC/1min; Istal. J1, J2-Ground: 2154VDC/1min; Istal. J1, J2-Ground: 2154VDC/1min; Input-Ground: 254VDC/1min; Input-Ground: 254VDC/1min; Input-J3, J4, USB, LAN/IEEE/ISOLATED ANALOG: 4244VDC/1min; Input-J3, J4, USB, LAN/IEEE/ISOLATED ANALOG: 1424VDC/1min; Input-Ground: 707VDC/1min. More than 100Mohm at 25°C, 70%RH. IC/EN61326-1 Industrial Location - B, FCC part 15-B, VCCI-B		
Withstand voltage Insulation resistance Conducted emission Radiated emission MECHANICAL Cooling	STA	NDARD		Vout≤400V, +Output grund Vout>400V, +Output grund 106Vouts30; Output&I1,J2, Ground: Input-J3,J4,USB,LAN/IEEE/ISOL 375≤Vout≤650V model: Outpu Ou	t, J1, J2 are Hazardous; J3, J4, USB, LAN, IEEE/ISOLATED ANALOG are Non Hazard ded: Output, J1, J2 are Hazardous; J3, J4, USB, LAN, IEEE/ISOLATED ANALOG are Non Hazardounded: Output, J1, J2, J3, J4, USB, LAN, IEEE/ISOLATED ANALOG are Non Hazar rounded: Output, J1, J2, J3, J4, USB, LAN, IEEE/ISOLATED ANALOG are Hazar iov models: Input-Output&J1,J2: 2970VDC/1min; Input-Ground: 2828VDC/1min: 1: 2000VDC/1min; Output&J1,J2: J3,J4,USB,LAN/IEEE/ISOLATED ANALOG: 3200VDC/1min: Input-Ground: 0: 2000VDC/1min; J3,J4,USB,LAN/IEEE/ISOLATED ANALOG: 10: 1nput-Ground: 2828VDC/1min: 1: 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1.		
Withstand voltage Insulation resistance Conducted emission Radiated emission MECHANICAL		NDARD E BODY	 Kg	Vout≤400V, +Output ground Vout>400V, +Output ground 160≤Vout≤30, Output&11,2, <ground. 375≤vout≤650v="" ieee="" input-j3,="" isol="" j4,="" lan="" model:="" ou<="" output="" td="" usb,=""><td>t, J1, J2 are Hazardous; J3, J4, USB, LAN, IEEE/ISOLATED ANALOG are Non Hazard ded: Output, J1, J2 are Hazardous; J3, J4, USB, LAN, IEEE/ISOLATED ANALOG are Non Hazardounded: Output, J1, J2, J3, J4, USB, LAN, IEEE/ISOLATED ANALOG are Non Hazardounded: Output, J1, J2, J3, J4, USB, LAN, IEEE/ISOLATED ANALOG are Hazardov models: Input-Output&J1,J2: 2970VDC/1min; Input-Ground: 2828VDC/1min: 1:2000VDC/1min; Output&J1,J2: J3,J4,USB,LAN/IEEE/ISOLATED ANALOG: 3200VDC/1min: Input-Ground: 2828VDC/1min: Input-Output&J1,J2: 3704VDC/1min; Input-Ground: 2828VDC/1min: It&J1,J2-Ground: 2154VDC/1min for 375VDC, 2780VDC/1min for 65VDC; Itput&J1,J2: J3,J4,USB,LAN/IEEE/ISOLATED ANALOG: 4244VDC/1min; Input-J3,J4,USB,LAN/IEEE/ISOLATED ANALOG: 4242VDC/1min; 3,J4,USB,LAN/IEEE/ISOLATED ANALOG: 4242VDC/1min: More than 100Mohm at 25°C, 70%RH. IC/EN61326-1 Industrial Location - B, FCC part 15-B, VCCI-B C/EN61326-1 Industrial Location - A, FCC part 15-A, VCCI-A</td></ground.>	t, J1, J2 are Hazardous; J3, J4, USB, LAN, IEEE/ISOLATED ANALOG are Non Hazard ded: Output, J1, J2 are Hazardous; J3, J4, USB, LAN, IEEE/ISOLATED ANALOG are Non Hazardounded: Output, J1, J2, J3, J4, USB, LAN, IEEE/ISOLATED ANALOG are Non Hazardounded: Output, J1, J2, J3, J4, USB, LAN, IEEE/ISOLATED ANALOG are Hazardov models: Input-Output&J1,J2: 2970VDC/1min; Input-Ground: 2828VDC/1min: 1:2000VDC/1min; Output&J1,J2: J3,J4,USB,LAN/IEEE/ISOLATED ANALOG: 3200VDC/1min: Input-Ground: 2828VDC/1min: Input-Output&J1,J2: 3704VDC/1min; Input-Ground: 2828VDC/1min: It&J1,J2-Ground: 2154VDC/1min for 375VDC, 2780VDC/1min for 65VDC; Itput&J1,J2: J3,J4,USB,LAN/IEEE/ISOLATED ANALOG: 4244VDC/1min; Input-J3,J4,USB,LAN/IEEE/ISOLATED ANALOG: 4242VDC/1min; 3,J4,USB,LAN/IEEE/ISOLATED ANALOG: 4242VDC/1min: More than 100Mohm at 25°C, 70%RH. IC/EN61326-1 Industrial Location - B, FCC part 15-B, VCCI-B C/EN61326-1 Industrial Location - A, FCC part 15-A, VCCI-A		
3. Withstand voltage 4. Insulation resistance 5. Conducted emission 6. Radiated emission MECHANICAL 1. Cooling 2. Weight	WID			Vout≤400V, +Output ground Vout>400V, +Output ground 160×Vout≤302 Output&11,2,-Ground Input-J3,J4,USB,LAN/IEEE/ISOL 375≤Vout≤650V model: Output Ou	t, J1, J2 are Hazardous; J3, J4, USB, LAN, IEEE/ISOLATED ANALOG are Non Hazard ded: Output, J1, J2 are Hazardous; J3, J4, USB, LAN, IEEE/ISOLATED ANALOG are Non Hazardounded: Output, J1, J2, J3, J4, USB, LAN, IEEE/ISOLATED ANALOG are Non Hazardounded: Output, J1, J2, J3, J4, USB, LAN, IEEE/ISOLATED ANALOG are Hazardov models: Input-Output&J1, J2: 2970VDC/1min; Input-Ground: 2828VDC/1min; I: 2000VDC/1min; Output&J1, J2: 3J4, USB, LAN/IEEE/ISOLATED ANALOG: 3200VDC/1min; Input-Ground: 707VDC/Imput-Output&J1, J2: Input-Output&J1, J2: 3704VDC/1min; Input-Ground: 2828VDC/1min; IsdJ1, J2, Ground: 2154VDC/1min; IsdJ1, J2, Ground: 2154VDC/1min; Input-Ground: 2828VDC/1min; Input-J3, J4, USB, LAN/IEEE/ISOLATED ANALOG: 4242VDC/1min; J3, J4, USB, LAN/IEEE/ISOLATED ANALOG: 4242VDC/1min; J4, USB, LAN/IEEE/ISOLATED ANALOG: Have Ground: 707VDC/1min. More than 100Mohm at 25°C, 70%RH. IC/EN61326-1 Industrial Location - B, FCC part 15-B, VCCI-B C/EN61326-1 Industrial Location - A, FCC part 15-A, VCCI-A		
Withstand voltage Insulation resistance Conducted emission Radiated emission MECHANICAL Cooling	WID STAI	E BODY	 Kg Kg	Vout≤400V, +Output ground Vout>400V, +Output ground 160×Vout≤31, 12, -Ground: Input-13,14USB,LAN/IEEE/ISOL 375≤Vout≤650V model: Output Ou J3, IEC	t, J1, J2 are Hazardous; J3, J4, USB, LAN, IEEE/ISOLATED ANALOG are Non Hazard ded: Output, J1, J2 are Hazardous; J3, J4, USB, LAN, IEEE/ISOLATED ANALOG are Non Hazardounded: Output, J1, J2, J3, J4, USB, LAN, IEEE/ISOLATED ANALOG are Non Hazar rounded: Output, J1, J2, J3, J4, USB, LAN, IEEE/ISOLATED ANALOG are Hazard (VI) models: Input-Output&I1, J2: 2970VDC/1min; Input-Ground: 2828VDC/1min; I: 2000VDC/1min; Output&I1, J2: 3J4, USB, LAN/IEEE/ISOLATED ANALOG :3200VDC/1min; Input-Ground: 707VDC/Imput-Output&I1, J2: Input-Output&I1, J2: 3704VDC/1min; Input-Ground: 2828VDC/1min; Istal, J1, 2-Ground: 2154VDC/1min for 375VDC, 2780VDC/1min for 65VDC; Itput&J1, J2- J3, J4, USB, LAN/IEEE/ISOLATED ANALOG :4244VDC/1min; Input-J3, J4, USB, LAN/IEEE/ISOLATED ANALOG :4242VDC/1min; Input-J3, J4, USB, LAN/IEEE/ISOLATED ANALOG :1900 TO		
3. Withstand voltage 4. Insulation resistance 5. Conducted emission 6. Radiated emission MECHANICAL 1. Cooling 2. Weight	WID STAI	E BODY NDARD	 Kg Kg mm	Vout≤400V, +Output ground Vout>400V, +Output ground 160×Vout≤31, 12, -Ground: Input-13,14USB,LAN/IEEE/ISOL 375≤Vout≤650V model: Output Ou J3, IEC	t, J1, J2 are Hazardous; J3, J4, USB, LAN, IEEE/ISOLATED ANALOG are Non Hazard ded: Output, J1, J2 are Hazardous; J3, J4, USB, LAN, IEEE/ISOLATED ANALOG are Non Hazardounded: Output, J1, J2, J3, J4, USB, LAN, IEEE/ISOLATED ANALOG are Non Hazardounded: Output, J1, J2, J3, J4, USB, LAN, IEEE/ISOLATED ANALOG are Hazardov models: Input-Output&I1, J2: 2970VDC/1min; Input-Ground: 2828VDC/1min; I2: 2000VDC/1min; Output&I1, J2: 31, J4, USB, LAN/IEEE/ISOLATED ANALOG: 3200VDC/1min; IAJ, J4, USB, LAN/IEEE/ISOLATED ANALOG Input-Ground: 707VDC/1minchoutput&I1, J2: Input-Output&I1, J2: 3704VDC/1min; Input-Ground: 2828VDC/1min; Input-Ground: 2828VDC/1min; Input-J2-13, J4, USB, LAN/IEEE/ISOLATED ANALOG: 4244VDC/1min; Input-J3, J4, USB, LAN/IEEE/ISOLATED ANALOG Input-Ground: 707VDC/1min; Input-J3, J4, USB, LAN/IEEE/ISOLATED ANALOG Input-Ground: 707VDC/1min; Input-J3, J4, USB, LAN/IEEE/ISOLATED ANALOG: 1000-Ground: 707VDC/1min; Input-J3, J4, USB, LAN/IEEE/ISOLATED ANALOG Input-Ground: 707VDC/1min; Input-Ground: 707VDC/1min		

- *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 For Parallel operation up to 4 units, 5% of total output current is required.
- For Parallel operation more than 4 units, 20% of total output current is requierd. *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.

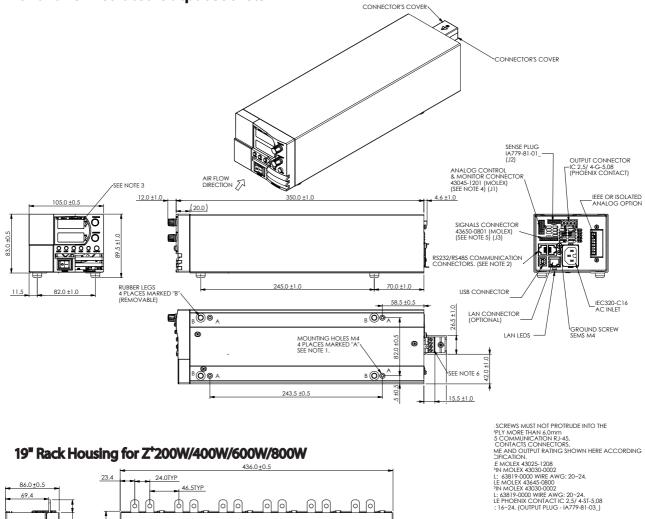
- *11: For load voltage change, equal to the unit voltage rating, constant input voltage.
 *12: Ripple is measured at 10~100% of rated output voltage and rated output current.
 *13: The Constant Current programming, readback and monitoring accuracy do not include the warm-up and Load regulation thermal drift.
- *14: Measured with 10:1 probe.
- *15:At rated output power.
- *16 Max. ambient temperature for using IEEE is 45°C.
- *17: start in low ambient temp. (0°C), 1 min. warm up is required

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

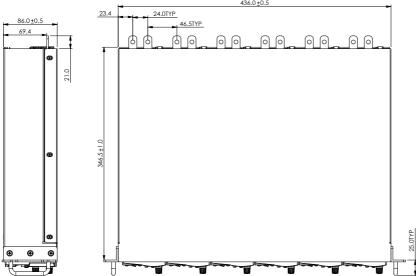


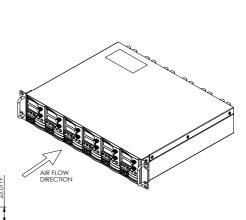


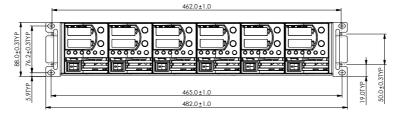
2.7 Z200W/400W/600W/800W Optional IEEE, Isolated Analog Interface, **Front Panel insulated Output sockets**



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







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