New! 800V, 1000V, 1250V and 1500V models - 10kW/15kW

Genesy

**Programmable DC Power Supplies** 10kW/15kW in 3U Built in RS-232 & RS-485 Interface **Advanced Parallel Operation** 

**Optional Interfaces:** LXI Compliant LAN **GPIB (IEEE 488.2 & SCPI Compliant)** Isolated Analog Program/Monitor



Genesys™ Family

GEN H 750W Half-Rack

GEN 1U 750W/1500W/2400W Full-Rack

GEN 2U 3.3kW/5kW

GEN 3U 10kW/15kW

TDK·Lambda

www.us.tdk-lambda.com/hp

The Genesys<sup>™</sup> family of programmable power supplies sets a new standard for flexible, reliable, AC/DC power systems in OEM, Industrial and Laboratory applications.

### Features include:

- High Power Density 10kW/15kW in 3U package
- High Output Current up to 1000ADC
- Wide Range of popular worldwide 3Φ AC inputs, (208VAC, 400VAC, 480VAC)
- Power Factor 0.88 (Passive PFC on all AC Inputs)
- Output Voltage up to 1500V; Output Current up to 1000A
- Built-in RS-232/RS-485 Interface Standard
- Last Setting Memory; Front Panel Lockout
- "Advanced Parallel" configuration reports total system current (up to four identical units)
- Global Commands for Serial RS-232/RS-485 Interface
- Continuous Encoders for Voltage and Current Adjustment
- Independent Remote ON/OFF and Remote ENABLE/DISABLE
- Reliable Modular and SMT Design
- 19" Rack Mounted for ATE and OEM Applications, zero-stack
- Optional Interfaces

Compliant LAN (Class C)

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

- LabView<sup>™</sup> and LabWindows<sup>™</sup> Software Drivers
- Worldwide Safety Agency Approvals; UL Recognized and CE Mark for LVD and EMC Regulation (208VAC, 400VAC and select 480VAC models)
- Five Year Warranty





# **Applications**

**Genesys<sup>TM</sup>** power supplies are designed for demanding applications.

**Test & Measurement** systems using GPIB control save significant costs by incorporating the optional IEEE Multi-Drop Interface (IEMD) in the Master unit. Then up to 30 Slave units may be used with the standard RS-485 Multi-Drop-interface.

**Automated System** designers will appreciate new, standard, remote programming features such as Global commands. Also, new high-speed status monitoring is available for the RS-485 bus as well as the optional LAN (LXI compliant) Interface.

**Industrial & Military** high power systems can be configured with up to four identical units in parallel (up to 60kW). No space is required above or below each power supply (zero stack). The Master unit can be configured by the user to report the total Output current of the combined system. Applications include Heaters, Magnets and Laser Diodes.

Aerospace & Satellite Testing systems use the complete Genesys™ Family: <u>1U</u>-750W Half-Rack, <u>1U</u>-750W/ 1.5kW/2.4kW Full-Rack, <u>2U</u>-3.3kW/5kW Full-Rack and <u>3U</u>-10kW/15kW Full-Rack. All are identical in Front Panel, Rear Panel Analog and Digital Interface Commands. A wide variety of Outputs (voltage and current) allows testing of many different user configurations.

**Component Device Testing** is simplified because of the many user-friendly control options in the Analog and Digital interfaces. Lamps, capacitors, motors and actuators are typical devices tested.

**Medical Imaging and Treatment** systems require reliable power. Modular construction, SMT and thoroughly proven designs assure continuous performance at full rated power.

**Semiconductor Processing & Burn-in** equipment designers appreciate the wide variety of worldwide AC Inputs and Outputs from which to select, depending on application. Selectable Safe-Start and Auto Re-Start protects loads and process integrity. Typical applications include Magnets, Filaments and Heaters.

## **Front Panel Description**



- 1. AC ON/OFF Switch
- 2. Air Intake allows zero stacking for maximum system flexibility and power density.
- 3. Continuous encoder controls Output Voltage, Address, OVP and UVL settings.
- 4. Voltage Display shows Output Voltage and directly displays OVP, UVL and Address settings.
- 5. Continuous encoder controls Output Current, sets Baud rate and Advanced Parallel mode.
- 6. Current Display shows Output Current and displays Baud rate. Displays total current in Parallel Master/Slave Mode.
- 7. Function/Status LEDs:
  - Alarm
- Fine Control
- Preview Settings

- Foldback Mode
- Remote Mode
- Output On
- 8. Pushbuttons allow flexible user configuration
  - Coarse and Fine adjustment of Output Voltage/Output Current and Advanced Parallel Master or Slave select.
  - Preview Settings and set Voltage/Current with Output OFF, Front Panel Lock.
  - Parallel Master/Slave (Basic and Advanced).
  - Set OVP and UVL Limits.
  - Set Current Foldback Protection.
  - Go to Local Mode and select Address and Baud rate.
  - Output ON/OFF and Safe-Start/Auto Re-Start mode.

# **Rear Panel Description**



- 1. Remote/Local Output Voltage Sense Connections.
- 2. DIP Switches select 0-5V or 0-10V Programming and other functions.
- 3. DB25 (Female) connector allows Analog Program and Monitor (non-isolated) and other functions.
- 4. RS-485 OUT to other Genesys<sup>™</sup> Power Supplies.
- 5. RS-232/RS-485 IN Remote Serial Programming.
- 6. Output Connectors: Rugged 2 hole busbars (shown) for models < 30V Output, single hole busbars for 30V to 300V Output, and threaded-stud terminals for models > 300V Output.
- 7. Exit air assures reliable operation when zero stacked.
- 8. Input Terminals L1, L2, L3, and Ground (threaded studs).
- 9. Optional Interface Position for LAN (LXI Class C), GPIB (IEEE 488.2 SCPI) or Isolated Analog Interface.

### LAN Interface complies with LXI Class C Specification

Genesvs <sup>™</sup>	211	10VW	Specif	ications
Genesvs	3U	IUKVV	Specia	ICalions

1.0 MODEL	GEN	7.5-1000	10-1000	12.5-800	20-500	25-400	30-333	40-250	50-200	60-167	80-125	100-100	125-80	
1.Rated Output Voltage	VDC	7.5	10	12.5	20	25	30	40	50	60	80	100	125	Т
Rated Output Current	ADC	1000	1000	800	500	400	333	250	200	167	125	100	80	Т
3.Rated Output Power	kW	0.75	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	Т
Efficiency (min) at low AC line, 100% Rated Load	%	77						83						
					C	ontact Fa	ctory for c	ther mod	els					
.1 CONSTANT VOLTAGE MODE (CV) . Max. Line Reg (0.1% - Vor ≤ 30V; 0.01% - 30V < Vor ≤	1	I												Т
00V; 0.05% - 600V < Vor ≤ 1500V)	mV	7.5	10	12.5	20	25	30	4	5	6	8	10	12.5	L
. Max. Load Reg (0.1% - Vor ≤ 30V; 0.02% - 30V < Vor ≤ 00V; 0.1% - 600V < Vor ≤ 1500V)	mV	7.5	10	12.5	20	25	30	8	10	12	16	20	25	
. Ripple, rms, 5Hz~1MHz, CV (*1)	mV	20	20	20	20	20	20	20	20	20	25	25	25	t
Output Noise, p-p, (20MHz), CV (*1)	mV	60	60	60	60	60	60	60	75	75	100	100	125	╀
i.Remote Sense Compensation / Wire	V	1	1	1	1	1	1.5	2	3	3	4	5	5	t
. Temperature Stability											Temperatu			t
Temperature Coefficient	ppm / °C			f Vo Rate				-р (		,				t
. Up-Prog. Response Time, 0 ~ Vomax, full-load	ms				-,			100						t
. Up-Prog. Response Time, 0~Vomax, no-load	ms							50						t
Transient Response Time (CV mode) (*2)	ms							s than 3						╁
, , , , , , , , , , , , , , , , , , , ,	1110	l						o tricir o						_
2 CONSTANT CURRENT MODE (CC)		ı												_
Max. Line Reg. (0.1% - lor ≥ 333A; 0.050% - 17A < lor < 33A; 0.15% - lor < 17A)	mA	1000	1000	800	500	400	333	125	100	83.5	62.5	50	40	
Max. Load Reg (0.1% - lor ≥ 333A; 0.075% - 17A ≤ lor <	mA	1000	1000	800	500	400	333	188	150	125	94	75	60	T
33A; 0.2% - Ior < 17A) (*3) . Ripple rms, 5Hz~1MHz, CC	mA	5300	4000	2560	1000	640	444	250	160	67	50	40	32	+
. Temperature Stability											Temperatu		52	╁
, ,	ppm/°C			f Io Rated		מוווז טט ווווח	ute wattii	up (CONS	ant LINE,	, Luau &	remperatu	10)		+
. Temperature Coefficient	I bbill/.C	± 300 (±	0.03% 0	i io naleo	1) / 0									_
3 PROTECTIVE FUNCTIONS														_
. OCP	%	0 ~ 100												L
. OCP type		Constan	t current											Γ
B. Foldback Protection (FOLD)		Output s	shutdown	Manual r	eset by fr	ont panel	OUT but	on or Dig	ital comn	nunicatior	n, user-sel	ectable		Т
Foldback Response Time	S	Less tha	an 1 (Min	= 0.25 / N	1ax = 25 /	Default =	= 0.25); Se	ettable via	"FBD" c	ommand				Ť
i. OVP type												l commuino	ation	Ť
6. OVP Programming Accuracy	%		Vo(rated)	.,	,		,,		,		9 9			t
OVP Trip Point	V			(rated) - f	or Vor ≤ 6	00V; 10%	6 to 105%	of Vo(rate	ed) - 600'	V < Vor ≤	1500V; Sh	nall always b	oe greater	t
	V				efault = $1$			`						L
B. OVP Response Time	ms				begin to	drop) for \	Vor ≤ 600'	V; Less th	an 2.0 (f	or Output	t to begin to	o drop) for		
). Max. OVP Reset Time			Vor ≤ 150	f switch tu	0)									╀
10. Over-Temperature Protection (OTP)	S	_ `					( +!·	I	/I - 4 - I I	0-4	-l- / I I-I-A	-ll- Al -	! - \	╀
											ode / Uniato	ched: Auto-r	noae)	╀
11. Phase-Loss Protection		res, pov	ver supply	Shuldow	n (Latche	u: Sale-II	lode / Uni	atched: A	uto-mode	е)				_
1.4 REMOTE ANALOG CONTROLS & SIGNALS														
I. Vout Voltage Programming		0 ~ 5V or												
2. Iout Voltage Programming	0~100%,	0 ~ 5V or	0 ~ 10V, ι	iser-selec	table, Acc	uracy & I	Linearity:	± 1% of lo	o(rated)					Т
3. Vout Resistor Programming	0~100%,	0 ~ 5/10kc	ohm full-s	cale, user	-selectabl	e, Accura	cy & Line	arity: ± 1°	% of Vo(r	ated)				Ť
1. lout Resistor Programming	0~100%.	0 ~ 5/10kc	ohm full-s	cale, user	-selectabl	e. Accura	cv & Line	aritv: ± 1°	% of lo(ra	ated)				Ť
5. Shut-Off (SO) Control (rear panel)											(user-sele	ctable logic	1	t
5. Output Current Monitor		0 ~ 10V, A						n. Open -	- LIV, OIK	011 - 010	(4001 0010	otable logic,		╁
7. Output Voltage Monitor	+				. , .									╀
	+	0 ~ 10V, A			. , , .									╀
3. Power Supply OK (PS_OK) Signal	+	High = OK						0 0 0		ala ara				╀
9. CV/CC Signal		High (4 ~ 5									t = 10mA			+
0. Enable/Disable		ct; Open =								б۷				1
1. Remote/Local Selection		lemote or I												Ļ
2. Remote/Local Signal	Signals o	perating m	node; Ope	en collecto	or: Local =	Open (N	/lax voltag	e = 30V),	Remote	= On (Ma	ax sink cur	rent = 10m/	۹)	L
.5 FRONT PANEL														
.Control Functions	Vout/ Iout	manual a	djust by s	eparate e	ncoders (	coarse a	nd fine ad	justment	selectabl	le)				Γ
	OVP/UVL	. manual a	djust by \	/oltage Ac	ljust enco	der, Fron	t Panel Lo	ck/Unloc	k					Г
		selection b		-	-									Г
		FF, Output						Control (C	CV to CC	), Go-to-L	ocal			Г
		RS-485, IE				, .			,					H
									200 (hv o	urrent ad	ljust encod	er)		$\vdash$
											-	/		$\vdash$
	Advanced	aranor N					# OI C	J.AVO UITIL	C (U (U +)	, 5 – Glav	· · · · · · · · · · · · · · · · · · ·			۲
<sup>p</sup> Dienlav	Advanced Voltage: 4	L diaite An	curacy: +	0.5% of \		_ i oouiit								$\vdash$
2.Display	Voltage: 4	digits, Ac	,		` ,	1 count								ŀ
2.Display	Voltage: 4 Current: 4	digits, Ac	curacy: ±	0.5% of I	o(rated) ±		or at load	(Remote	sense)					╀
	Voltage: 4 Current: 4 Voltmeter	l digits, Ac displays v	curacy: ±	0.5% of I power su	o(rated) ±	al sense)								1
	Voltage: 4 Current: 4 Voltmeter Green LE	digits, Ac	curacy: ± oltage at /IEW, FO	0.5% of I power su LD, REM	o(rated) ± pply (Local /LOCAL, (	al sense) OUT ON/								
3.Indications	Voltage: 4 Current: 4 Voltmeter Green LE	digits, Ac displays v	curacy: ± oltage at /IEW, FO	0.5% of I power su LD, REM	o(rated) ± pply (Local /LOCAL, (	al sense) OUT ON/								<u> </u>
3.Indications  1.6 DIGITAL PROGRAMMING & READBACK	Voltage: 4 Current: 4 Voltmeter Green LE Red LED:	digits, Ac displays v	curacy: ± /oltage at /IEW, FO VP, OTP,	0.5% of I power su LD, REM FOLD, AC	o(rated) ± pply (Local /LOCAL, (	al sense) OUT ON/								L
B.Indications  1.6 DIGITAL PROGRAMMING & READBACK  1. Vout Programming Accuracy	Voltage: 4 Current: 4 Voltmeter Green LE Red LED: ± 0.5% of	digits, Ac displays v D's: PREV ALRM (O	ccuracy: ± /oltage at /IEW, FO IVP, OTP,	0.5% of I power su LD, REM FOLD, AC	o(rated) ± pply (Local /LOCAL, (C) FAIL, EN	al sense) DUT ON/ IA, SO)	OFF, CV/	CC, FINE		ent for Io ;	≥187.5A			<u> </u>
B.Indications  1.6 DIGITAL PROGRAMMING & READBACK  1. Vout Programming Accuracy  2. Iout Programming Accuracy	Voltage: 4 Current: 4 Voltmeter Green LE Red LED: ± 0.5% of	digits, Ac displays v D's: PREV ALRM (O	ccuracy: ± /oltage at /IEW, FO IVP, OTP,	0.5% of I power su LD, REM FOLD, AC	o(rated) ± pply (Local /LOCAL, (C) FAIL, EN	al sense) DUT ON/ IA, SO)	OFF, CV/	CC, FINE		ent for lo	≥187.5A			<u> </u>
3.Indications  1.6 DIGITAL PROGRAMMING & READBACK  1. Vout Programming Accuracy  2. Iout Programming Accuracy  3. Vout Programming Resolution	Voltage: 4 Current: 4 Voltmeter Green LE Red LED:  ± 0.5% of ± 0.5% of 0.02% of	digits, Ac displays v D's: PREV ALRM (O rated Out rated Out Vo(rated)	ccuracy: ± /oltage at /IEW, FO IVP, OTP,	0.5% of I power su LD, REM FOLD, AC	o(rated) ± pply (Local /LOCAL, (C) FAIL, EN	al sense) DUT ON/ IA, SO)	OFF, CV/	CC, FINE		ent for lo	≥187.5A			I
B.Indications  1.6 DIGITAL PROGRAMMING & READBACK  1. Vout Programming Accuracy  2. Iout Programming Accuracy  3. Vout Programming Resolution  4. Iout Programming Resolution	Voltage: 4 Current: 4 Voltmeter Green LE Red LED:  ± 0.5% of ± 0.5% of 0.02% of 0.04% of	I digits, Ac displays v D's: PREV ALRM (O rated Out rated Out Vo(rated) Io(rated)	ccuracy: ± voltage at VIEW, FO VP, OTP, tput voltage	0.5% of I power su LD, REM FOLD, AC	o(rated) ± pply (Local, (Local, EN) C FAIL, EN	al sense) DUT ON/ IA, SO)	OFF, CV/	CC, FINE		ent for lo	≥187.5A			
2. Display  2. Display  3. Indications  1. 6 DIGITAL PROGRAMMING & READBACK  1. Vout Programming Accuracy  2. Iout Programming Accuracy  3. Vout Programming Resolution  4. Iout Programming Resolution  5. Vout Readback Accuracy  5. Iout Readback Accuracy	Voltage: 4 Current: 4 Voltmeter Green LE Red LED:  ± 0.5% of ± 0.5% of 0.02% of 0.04% of ± (0.1% of	I digits, Ac displays v D's: PREV ALRM (O rated Out rated Out Vo(rated) Io(rated) of Vo(actual	ccuracy: ± voltage at VIEW, FO VP, OTP, tput voltage tput curre	0.5% of I power su LD, REM FOLD, AC ge nt for unit	o(rated) ± pply (Local, (Local, E) FAIL, E) s with lo <	al sense) DUT ON/ IA, SO)	OFF, CV/	CC, FINE		ent for Io :	≥187.5A			
B.Indications  1.6 DIGITAL PROGRAMMING & READBACK  1. Vout Programming Accuracy 2. lout Programming Accuracy 3. Vout Programming Resolution 4. lout Programming Resolution 5. Vout Readback Accuracy 6. lout Readback Accuracy	Voltage: 4 Current: 4 Voltmeter Green LE Red LED:  ± 0.5% of 0.02% of 0.04% of ± (0.1% of ± (0.1% of	I digits, Ac displays v D's: PREV ALRM (O  rated Out rated Out Vo(rated) Io(rated) of Vo(actual folactual	ccuracy: ± voltage at VIEW, FO VP, OTP, tput voltage tput curre	0.5% of I power su LD, REM FOLD, AC ge nt for unit	o(rated) ± pply (Local, (Local, E) FAIL, E) s with lo <	al sense) DUT ON/ IA, SO)	OFF, CV/	CC, FINE		ent for Io ;	≥187.5A			
B.Indications  1.6 DIGITAL PROGRAMMING & READBACK  1. Vout Programming Accuracy  2. Iout Programming Accuracy  3. Vout Programming Resolution  1. Iout Programming Resolution  5. Vout Readback Accuracy  5. Iout Readback Accuracy  7. Vout Readback Resolution	Voltage: 4 Current: 4 Voltmeter Green LE Red LED:  ± 0.5% of 0.02% of 0.04% of ± (0.1% of 0.02% of 0.02% of	I digits, Ac displays v D's: PREV ALRM (O rated Out rated Out Vo(rated) Io(rated) of Vo(actual Vo(rated) Vo(rated)	ccuracy: ± voltage at VIEW, FO VP, OTP, tput voltage tput curre	0.5% of I power su LD, REM FOLD, AC ge nt for unit	o(rated) ± pply (Local, (Local, E) FAIL, E) s with lo <	al sense) DUT ON/ IA, SO)	OFF, CV/	CC, FINE		ent for lo	≥187.5A			
B.Indications  1.6 DIGITAL PROGRAMMING & READBACK  1. Vout Programming Accuracy 2. lout Programming Accuracy 3. Vout Programming Resolution 4. lout Programming Resolution 5. Vout Readback Accuracy 6. lout Readback Accuracy 7. Vout Readback Resolution 8. lout Readback Resolution 8. lout Readback Resolution 8. lout Readback Resolution 8. lout Readback Resolution	Voltage: 4 Current: 4 Voltmeter Green LE Red LED:  ± 0.5% of ± 0.5% of 0.02% of 0.04% of ± (0.1% of 0.02% of 0.02% of 0.02% of	digits, Ac displays v D's: PREV ALRM (O rated Out rated Out vo(rated) lo(rated) of Vo(actual Vo(rated) lo(rated) lo(rated) lo(rated) lo(rated) lo(rated) lo(rated) lo(rated) lo(rated)	ccuracy: ± coltage at voltage at VIEW, FO NP, OTP, otput voltage at voltage a	0.5% of I power su LD, REM FOLD, AC  ge nt for unit  of Vo(rate	o(rated) ± do (rated) to (rated) to (rated) to (rated) to (rated) (rat	al sense) DUT ON/ NA, SO)	OFF, CV/ ± 0.7% of	rated Ou	tput curre	ent for lo ;	≥187.5A			
B.Indications  1.6 DIGITAL PROGRAMMING & READBACK  1. Vout Programming Accuracy  2. Iout Programming Accuracy  3. Vout Programming Resolution  1. Iout Programming Resolution  5. Vout Readback Accuracy  5. Iout Readback Accuracy  7. Vout Readback Resolution	Voltage: 4 Current: 4 Voltmeter Green LE Red LED:  ± 0.5% of ± 0.5% of 0.02% of 0.04% of ± (0.11% of ± (0.11% of 0.02% of 0.02% of 0.02% of 0.02% of	I digits, Ac displays v D's: PREV ALRM (O rated Out rated Out Vo(rated) Io(rated) of Vo(actual Vo(rated) Vo(rated)	ccuracy: ±curacy: ±cu	0.5% of I power su LD, REM FOLD, AC  ge nt for unit  of Vo(rate of Io(rate)	o(rated) ± do (rated) to (rated)	al sense) DUT ON/ NA, SO) : 187.5A;	OFF, CV// ± 0.7% of	rated Ou	tput curre		≥187.5A			

<sup>\*1.</sup> Ripple and Noise at Vo(rated) and rated Load, Ta = 25C and nominal AC input, per EIJ R9002A.

\*2. Time for the Output voltage to recover within 2% of rating for a load current change of 50~100% or 100-50% of lo(rated).

\*3 .From 20% - 100% for models with lor < 17A.

All specifications subject to change without notice.

Genesvs<sup>™</sup> 3U 10kW Specifications

1.0 MODEL	GEN	150-66	200-50	250-40	300-33	400-25	500-20	600-17	800-12.5	1000-10	1250-8	1500-6.7	
1.Rated Output Voltage	VDC	150	200	250	300	400	500	600	800*	1000*	1250*	1500*	
2.Rated Output Current	ADC	66	50	40	33	25	20	17	12.5	10	8.0	6.7	╀
3.Rated Output Power	kW	9.9	10.0	10.0	9.9	10.0	10.0	10.2	10.0	10.0	10.0	10.0	╀
4.Efficiency (min) at low AC line, 100% Rated Load	%	<u> </u>			83 Cont	act Factor	ry for othe	r modole		9	3.5		╀
1.1 CONSTANT VOLTAGE MODE (CV)	<u> </u>				Cont	act ractor	ry ioi otile	THOUEIS					÷
1. Max. Line Reg (0.1% - Vor ≤ 30V; 0.01% - 30V < Vor ≤ 600V; 0.05% - 600V < Vor ≤ 1500V)	mV	15	20	25	30	40	50	60	400	500	625	750	$\perp$
2. Max. Load Reg (0.1% - Vor ≤ 30V; 0.02% - 30V < Vor ≤ 600V; 0.1% - 600V < Vor ≤ 1500V)	mV	30	40	50	60	80	100	120	800	1000	1250	1500	L
3. Ripple, r.m.s, 5Hz~1MHz, CV (*1) 4. Output Noise, p-p (20MHz), CV (*1)	mV mV	25 150	35 175	35 200	60 200	60 300	60 350	60 350	700	100 800	120 1000	140 1400	╀
5.Remote Sense Compensation / Wire	V	5	5	5	5	5	5	5	5	5	5	5	十
6. Temperature Stability		-								Load & Te			t
7. Temperature Coefficient	ppm / °C	± 200 (	0.02% of	Vo Rated									Ţ
8. Up-Prog. Response Time, 0~Vomax, full-load	mS				100				<u> </u>	17			╀
9. Up-Prog. Response Time, 0~Vomax, no load 10. Transient Response Time (CV mode) (*2)	mS mS	-			50 Less than	3				Less ti			╀
, , , , , , , , , , , , , , , , , , ,	1110				Less man	3			<u> </u>	Less ii	iiaii i		
1.2 CONSTANT CURRENT MODE (CC)  1. Max. Line Reg. (0.1% - Ior ≥ 333A; 0.050% - 17A < Ior <	1												$\top$
333A; 0.15% - lor < 17A) 2. Max. Load Reg (0.1% - lor > 333A; 0.075% - 17A < lor <	mA	33	25	20	17	13	10	9	19	15	12	10	$\downarrow$
333A; 0.2% - lor < 17A) (*3)	mA	50	38	30	25	19	15	13	25	20	15	14	$\downarrow$
3. Ripple rms, 5Hz~1MHz, CC 4. Temperature Stability	mA 	26 + 0.05°	20 4 of lo Ba	16	13 8 hours of	10 tor 30 min	8	7	15	10 Load & Ter	6 mperature)	4	+
4. Temperature Stability 5. Temperature Coefficient	ppm / °C	-		lo Rated)		iei 30 Mil	iule warm	up (cons	nant Line,	Load & Ter	nperature)		+
1.3 PROTECTIVE FUNCTIONS	1 PP111 / U	000 (	/0 UI										_
1. OCP	%	0 ~ 100											Т
2. OCP type			nt curren	t									$^{\dagger}$
3. Foldback Protection (FOLD)					I reset by	front pane	el OUT bu	itton or Dig	gital comn	nunication,	user-selec	table	İ
4. Foldback Response Time	S	Less th	an 1 (Mir	n = 0.25 /	Max = 25	/ Default :	= 0.25); S	ettable via	a "FBD" co	mmand			T
5. OVP type		-			al reset by	AC On/C	Off recycle	, OUT but	ton, Remo	ote Analog	or Digital c	omm.	I
6. OVP Programming Accuracy	%		Vo(rated										
7. OVP Trip Point	V	than 10	5% of Vo	(setting);	Default =	105% of \	/o(rated).	,				always be	gre
8. OVP response time	mS	600V <	Vor ≤ 15	00V.		arop) for	Vor ≤ 600	IV; Less tr	nan 2.0 (fo	or Output to	begin to a	rop) for	
9. Max. OVP reset time 10. Over-Temperature Protection (OTP)	S	<del></del>		off switch			·fa anavat	na lavala	/1 atalaad	Cofo / Unit	atabadı A.ıı		╀
11. Phase-Loss Protection								ilatched: A		Safe / Unla	alcried: Aut	0)	╁
1.4 REMOTE ANALOG CONTROLS & SIGNALS	1	100, po	iroi oupp	iy oriatao	(20.0	ou. ou.o .		ilatorio ai 7	tato mode	·/			_
Vout Voltage Programming	0~100%	0 ~ 5V or	0 ~ 10V	user-sele	ctable Ac	curacy &	Linearity:	± 1% of V	/o(rated)				Т
2. lout Voltage Programming								± 1% of lo					十
3. Vout resistor programming								arity ± 1%		ed)			T
4. Iout Resistor Programming							,	arity ± 1%		,			Γ
5. Shut-Off (SO) Control (rear panel)								ct : Open	= ENA, SI	hort = DIS	(user-selec	table logic)	1
6. Output Current Monitor					lo(rated),								╀
7. Output Voltage Monitor 8. Power Supply OK (PS_OK) Signal					Vo(rated), m series i								╀
9. CV/CC Signal	-							(0 ~ 0 4V	) May sin	k current =	10mA		╁
10. Enable/Disable								Disable co			TOTILA		十
11. Remote/Local Selection	Selects F	Remote or	Local op	eration by	/ voltage:	0 ~ 0.6V =	Local /	2 ~ 15V =	Remote	-			十
12. Remote/Local Signal										= On (Max	sink currer	nt = 10mA)	土
1.5 FRONT PANEL													
1.Control Functions	Vout/ Iout	manual a	adjust by	separate	encoders	(coarse a	and fine a	djustment	selectable	e)			T
								ock/Unloc	k				L
			, ,	,	encoder. #								L
	1				,	, ,		,	CV to CC)	, Go-to-Loc	al		$\vdash$
				,	AN selecti	-			200 (by a	irrant adius	t anaadar)		H
	1									urrent adjus Slave = Sla			$\vdash$
2.Display					f Vo(rated)			ro unil	(3 (0 4),	J + O = O	(3)		+
• •	1 -	-	-		lo(rated)								
2 Indications								d (Remote					Ĺ
3.Indications					M/LOCAL, IC FAIL, E		/UPF, UV	OO, FINE	-				
1.6 DIGITAL PROGRAMMING & READBACK	1	, , :-											_
11/11/20	± 0.5% o			-	ito wilth 1	. 1075*	. 0.70/	f rotad O	itorit a	nt for let	0754		+
· · · ·	1 + 11 5% 0			ent for un	us with lo	< 187.5A;	± U./% 0	rated Ou	uput curre	nt for lo ≥1	07.5A		+
2. Iout Programming Accuracy	-												+
Iout Programming Accuracy     Vout Programming Resolution	0.02% of												
Lout Programming Accuracy     Vout Programming Resolution     Iout Programming Resolution	0.02% of 0.04% of	lo(rated)	al) + 0.29	6 of Vo(ra	ted))								$^{+}$
Lout Programming Accuracy     Vout Programming Resolution     Iout Programming Resolution     Vout Readback Accuracy	0.02% of 0.04% of ± (0.1% of	lo(rated) of Vo(actu											Ŧ
2. lout Programming Accuracy 3. Vout Programming Resolution 4. lout Programming Resolution 5. Vout Readback Accuracy 6. lout Readback Accuracy	0.02% of 0.04% of ± (0.1% of ± (0.1% of	lo(rated) of Vo(actu of Vo(actu	al) + 0.49										F
1. Vout Programming Accuracy 2. lout Programming Accuracy 3. Vout Programming Resolution 4. lout Programming Resolution 5. Vout Readback Accuracy 6. lout Readback Accuracy 7. Vout Readback Resolution 8. lout Readback Resolution 8. lout Readback Resolution	0.02% of 0.04% of ± (0.1% of	lo(rated) of Vo(actu of Vo(actu Vo(rated)	al) + 0.49										
Lout Programming Accuracy     Vout Programming Resolution     Iout Programming Resolution     Vout Readback Accuracy     Iout Readback Accuracy     Vout Readback Resolution	0.02% of 0.04% of ± (0.1% of ± (0.1% of 0.02% of 0.02% of	lo(rated) of Vo(actu of Vo(actu Vo(rated) lo(rated)	al) + 0.49	% of Vo(ra	ited))	E L <u>i</u> mit an	nd supply	Inhibit turr	ning On)				

<sup>\*800</sup>V - 1500V models (10kW) only available with 400VA and 480VAC input. For 208VAC Input models please contact the factory.

\*1. Ripple and Noise at Vo(rated) and rated Load, Ta = 25C and nominal AC input. per EIJ R8002A

\*2. Time for the Output voltage to recover within 2% of rating for a load current change of 50~100% or 100~50% of lo(rated).

\*3. From 20% - 100% for models with lor < 17A.

All specifications subject to change without notice.

ConceveTM	211	15 LW	<b>Specifications</b>
Genesys	JU	IOKVV	Specifications

		1												15kW
1.0 MODEL	GEN	N/A	N/A	N/A	N/A	N/A	30-500		50-300			100-150		X
1.Rated Output Voltage	VDC ADC						30*	40*	50*	60	80	100	125	X
2.Rated Output Current     3.Rated Output Power	kW						500 15.0	375 15.0	300 15.0	250 15.0	187.5 15.0	150 15.0	120 15.0	X
	%						15.0	15.0	15.0	88	13.0	15.0	15.0	X
4.Efficiency (min) at low AC line, 100% Rated Load	70						actory for o	ther mod	ماد	88				X
1.1 CONSTANT VOLTAGE MODE (CV)						ornaci i a	actory for c	outer mod	613					^
1. Max. Line Reg (0.1% - Vor ≤ 30V; 0.01% - 30V < Vor <	T	I												Τ
600V; 0.05% - 600V < Vor ≤ 1500V)	mV						30	4	5	6	8	10	12.5	Х
2. Max. Load Reg (0.1% - Vor ≤ 30V; 0.02% - 30V < Vor ≤	mV						30	8	10	12	16	20	25	Х
600V; 0.1% - 600V < Vor ≤ 1500V)	IIIV						30	0	10	12	10	20	25	
3. Ripple, rms, 5Hz~1MHz, CV (*1)	mV						20	20	20	20	25	25	25	Х
4. Output Noise, p-p, (20MHz), CV (*1)	mV						60	60	75	75	100	100	125	X
5.Remote Sense Compensation / Wire	V						1.5	2	3	3	4	5	5	X
6. Temperature Stability						tter 30 m	inute warm	n up (cons	stant Line	e, Load &	Temperatu	ıre)		X
7. Temperature Coefficient  8. Up-Prog. Response Time, 0 ~ Vomax, full-load	ppm / °C	± 200 (:	± 0.02% o	of Vo(rated	a))) / °C			100						X
9. Up-Prog. Response Time, 0~Vomax, no load	ms ms							100 50						X
10. Transient Response Time (CV mode) (*2)	ms							s than 3						X
, , , ,	1113						Los	is triair o						^_
1.2 CONSTANT CURRENT MODE (CC)	I A						500	075	004	405	- 0.4	75		T v
1. Max. Line Reg. (0.1% - Ior ≥ 333A; 0.050% - Ior < 333A)	mA .						500	375	334	125	94	75	60	X
2. Max. Load Reg (0.1% - lor ≥ 333A; 0.075% - 25A ≤ lor < 333A; 0.2% - lor < 25A) (*3)	mA						500	375	334	188	141	113	90	X
3. Ripple, rms, 5Hz~1MHz, CC	mA						350	200	150	100	100	100	50	Х
4. Temperature Stability											Temperatu			X
5. Temperature Coefficient	ppm/°C		± 0.03% c					j. (22.10			. ,	,		X
1.3 PROTECTIVE FUNCTIONS				,										-
1. OCP	%	0 ~ 100	)											Х
2. OCP type	70	-	nt current											T X
3. Foldback Protection (FOLD)				: Manual	reset by f	ront pane	l OUT but	ton or DIc	ital comr	nunicatio	n, user-sel	ectable		X
Foldback Response Time	S						= 0.25); Se							X
5. OVP type	<u> </u>										og or Digita	l commun	ication	X
6. OVP Programming Accuracy	%		f Vo(rated)		,				,		-gg			X
7. OVP Trip Point	V				l) - for Vor	· ≤ 600V;	10% to 10	5% of Vo(	rated) - 6	600V < V	or ≤ 1500V	; Shall alwa	ays be	Х
7. OVF IIIp FOIR	_ v						05% of Vo							1^
8. OVP Response Time	ms				begin to	drop) for	Vor ≤ 600	V; Less th	an 2.0 (f	or Output	t to begin to	o drop) for		X
<u>'</u>	-		Vor ≤ 150											- V
Max. OVP Reset Time     Over-temperature Protection (OTP)	S	<u> </u>	AC On/O				.f		/I - 4 - I I	0-1	/     -   - 4 -	le e el Acote	I - \	X
11. Phase-Loss Protection		•					mode / Un				ode/ Unlato	nea: Auto-	mode)	X
	1	1 165, po	wei suppi	y Siluluon	VII (Lateri	eu. Gale-i	noue / On	iatorieu. A	ulo-mou	<del>-</del> )				
1.4 REMOTE ANALOG CONTROLS & SIGNALS	T a 4000/	0 51/	0 4014					10/ ()						T 1/
1. Vout Voltage Programming							Linearity:							X
2. lout Voltage Programming							Linearity: acy & Line			otod)				X
Nout Resistor Programming     Inout Resistor Programming							acy & Line							X
5. Shut-Off (SO) Control (rear panel)											(user-sele	ctable logic	2)	X
6. Output Current Monitor	0 ~ 5V or							ot. Open -	- 111, 011	51t - D10	(4001 0010	otable logic	<i>-</i>	X
7. Output Voltage Monitor	0 ~ 5V or				. ,.									X
8. Power Supply OK (PS OK) Signal	Yes. TTL													X
9. CV/CC Signal							TTL Low	(0 ~ 0.4V	, Max sir	nk curren	t = 10mA			Х
10. Enable/Disable	-	<u> </u>	,,				s Enable/[	` .						Х
11. Remote/Local Selection	Selects F	Remote or	Local ope	eration by	voltage:	0.6V	= Local / 2	- 15V = F	Remote					Х
12. Remote/Local Signal										= On (M	ax sink cur	rent = 10m	nA)	Х
1.5 FRONT PANEL														
1.Control Functions	Vout/ lout	t manual a	adiust by s	separate e	encoders	(coarse a	and fine ac	liustment	selectab	le)				Х
							nt Panel Lo			,				X
	Address		, ,	-										Х
	AC ON/O	FF, Outpu	ut On/Off,	Restart M	lodes (Au	to/Safe),	Foldback	Control (C	CV to CC	), Go-to-L	Local			Х
	RS-232/F	RS-485, IE	EEE (IEMI	D) and LA	N selection	on by rea	r panel DI	P-switch						Х
	Baud rate	eselection	n (RS-232	/RS-485 d	only): 120	0, 2400,	4800, 960	0 and 19,	200 (by c	urrent ad	djust encod	ler)		Χ
	Advanced	d Parallel	Master/SI	ave: Hx =	Master u	nit, where	e x = # of \$	Slave unit	s (0 to 4)	; S = Slav	ve unit(s)			Χ
2.Display	Voltage: 4	4 digits, A	ccuracy: ±	0.5% of \	Vo(rated)	±1 count								Х
	Current: 4	4 digits, A	ccuracy: ±	0.5% of \	Vo(rated)	±1 count								Χ
	-						) or at load							Х
3.Indications							VOFF, CV	CC, FINE	_					Х
	Red LED	:.ALHM (	JVP, OTP,	FULD, A	U FAIL, E	NA, SO)								<u></u>
1.6 DIGITAL PROGRAMMING & READBACK														
Vout Programming Accuracy	± 0.5% of													Х
2. lout Programming Accuracy	+			nt for unit	s with lo	< 187.5A;	± 0.7% of	rated Ou	tput curre	ent for lo	≥187.5A			Х
3. Vout Programming Resolution	0.02% of	/												X
4. lout Programming Resolution	0.04% of		n		n.									X
5. Vout Readback Accuracy	± (0.1% c													X
6. lout Readback Accuracy	± (0.1% c			of io(rate	a))									X
7. Vout Readback Resolution	0.02% of													X
lout Readback Resolution	0.02% of		otwoor \/	out ovec -	ding IET	_ 1 insit su	ad cupply!	nhihit tur	ning On'					X
9 OV Posponso Timo														1 /
9. OV Response Time	20mS ma									tv				
9. OV Response Time 10. Other Functions							neters and			ty				Х

15kW

<sup>\*30</sup>V, 40V and 50V models (15kW) only available with 400VAC and 480VAC. For 208VAC Input models please contact the factory.

\*1. Ripple and Noise at Vo(rated) and rated Load, Ta = 25C and nominal AC input, per ElJ R9002A.

\*2. Time for the Output voltage to recover within 2% of rating for a load current change of 50~100% or 100-50% of rated Output.

\*3. From 20% - 100% for models with lor < 25A.

All specifications subject to change without notice.

Genesys <sup>™</sup> 3U 15kW Specification	<b>Genesvs</b> ™	<b>3U</b>	15kW	<b>Specifications</b>
--	------------------	-----------	------	-----------------------

1.0 MODEL	GEN	150-100		250-60		400-37.5			800-18.8	1000-15	1250-12	1500-10	
1.Rated Output Voltage	VDC	150	200	250	300	400	500	600	800*	1000*	1250*	1500*	$\perp$
2.Rated Output Current	ADC	100	75	60	50	37.5	30	25	18.8	15	12	10	╙
3.Rated Output Power	kW	15.0	15.0	15.0	15.0	15.0	15.0	15.0	15.04	15.0	15.0	15.0	╙
4.Efficiency (min) at low AC line, 100% Rated Load	%				88					9	3.5		╁
1.1 CONSTANT VOLTAGE MODE (CV)	<u> </u>				Cont	act Factor	ry for othe	r models					느
1. Max. Line Reg (0.1% - Vor ≤ 30V; 0.01% - 30V < Vor ≤ 600V; 0.05% - 600V < Vor ≤ 1500V)	mV	15	20	25	30	40	50	60	400	500	625	750	
2. Max. Load Reg (0.1% - Vor ≤ 30V; 0.02% - 30V < Vor ≤ 600V; 0.1% - 600V < Vor ≤ 1500V)	mV	30	40	50	60	80	100	120	800	1000	1250	1500	
3. Ripple r.m.s, 5Hz~1MHz, CV (*1)	mV	25	35	35	60	60	60	60	80	100	120	140	
4. Output Noise p-p (20MHz), CV (*1)	mV	150	175	200	200	300	350	350	700	800	1000	1400	上
5.Remote Sense Compensation / Wire	V	5	5	5	5	5	5	5	5	5	5	5	╄
6. Temperature Stability						after 30 m	inute war	m up, con	istant Line	, Load & Te	emperature		╀
7. Temperature Coefficient 8. Up-Prog. Response Time, 0~Vomax, full-load	ppm / °C mS	200 (0.	02% 01 V	o Rated) /	100					17	7		⊬
9. Up-Prog. Response Time, 0~Vomax, no load	mS				50					17			╆
10. Transient Response Time (CV mode) (*2)	mS				Less than	3				Less t			⇈
1.2 CONSTANT CURRENT MODE (CC)		•											_
1. Max. Line Reg (0.1% - Ior ≥ 333A; 0.050% - Ior < 333A)	mA	50	38	30	25	19	15	13	28	23	18	15	Т
2. Max. Load Reg (0.1% - lor ≥ 333A; 0.075% - 25A ≤ lor <													⇈
333A; 0.2% - lor < 25A) (*3)	mA	75	57	45	38	28	23	19	38	30	24	20	L
3. Ripple r.m.s, 5Hz~1MHz, CC	mA	50	20	20	20	10	10	10	15	10	6	4	Ĺ
4. Temperature Stability						fter 30 mir	nute warm	up (cons	stant Line,	Load & Ter	mperature)		Ļ
5. Temperature Coefficient	ppm / °C	± 300 (	± 0.03%	of lo(rated	d))) / °C								上
1.3 PROTECTIVE FUNCTIONS													_
1. OCP	%	0 ~ 100	)										
2. OCP type			nt curren										┖
3. Foldback Protection		<del></del>									user-select	table	上
4. Foldback Response Time	S								a "FBD" co				╄
5. OVP type		_			al reset by	/ On/Off re	ecycle, Ol	JI button	, Remote A	analog or L	igital comm	nunication	⊢
6. OVP Programming Accuracy 7. OVP Trip Point	% V	5% to		of Vo(rate						00V < Vor <u>&lt;</u>	≤ 1500V; Sh	nall always	H
·						; Default = drop) for				r Output to	begin to dr	op) for	H
8. OVP response time 9. Max. OVP reset time	ms		Vor ≤ 15	00V Off switch	turn On)								H
10. Over temperature Protection		<u> </u>				xceeds sa	fe operat	ng levels	(Latched:	Safe/ Unla	tched: Auto	)	⇈
11. Phase Loss Protection		Yes, po	wer supp	oly shutdo	wn (Latch	ed: Safe-r	node / Ur	latched: A	Auto-mode	)		·	Т
1.4 REMOTE ANALOG CONTROLS & SIGNALS													
Vout Voltage Programming	0~100%.	0 ~ 5V or	r 0 ~ 10V.	user-sele	ctable. Ac	curacy &	Linearity:	+ 1% of \	/o(rated)				Т
2. lout Voltage Programming	0 ~ 100%												⇈
3. Vout resistor programming	0~100%,	0~5/10ko	hm full-s	cale, user	-selectabl	e. Accurac	cy & Linea	rity ± 1%	of Vo(rate	d)			Г
4. lout Resistor Programming									of lo(rated				
5. Shut-Off (SO) Control (rear panel)								ct: Open :	=EN, Shor	t-DIS (use	r-selectable	logic)	上
6. Output Current Monitor						user-sele							╄
7. Output Voltage Monitor						user-sele							╄
8. Power Supply OK (PS_OK) Signal						impedano		(0 0 4)/	\ Max siml		10 1		⊬
9. CV/CC Signal 10. Enable/Disable									ontacts = 6	k current =	IUMA		╀
11. Remote/Local Selection	<del></del>					age across 0 ~ 0.6V =				, v			$\vdash$
12. Remote/Local Signal										On (Max	sink curren	t = 10mA)	$\vdash$
	T Olgitalo o	perating	mode, op	ori conco	tor. Loour	- Open (i	viax voita	gc = 00 v)	, riomoto -	- OII (IVIAX	on in our our	1 - 1011171)	_
1.5 FRONT PANEL 1. Control Functions	Vout/ lour	t manual :	adjust hv	congrato	ancoders	(coarse a	nd fine a	diuetmant	selectable	<i>1</i> )			т
1. Control i difettorio						oder, Fron		-		')			$\vdash$
				-		of addres		00.00					$\vdash$
								k Control	(CV to CC	), Go-to-Lo	ocal		Н
	1	, ,		,	,	on by rear	,		(	,,			Г
	Baud rate	e selection	n (RS-23	2/RS-485	only): 120	0, 2400, 4	4800, 960	0 and 19,	200 (y cur	rent adjust	encoder)		
	Advanced	d Parallel	Master/S	lave: Hx =	Master u	ınit, where	x = # of	Slave unit	ts (0 to 4);	S = Slave	unit(s)		Г
2.Display	1 -	-	-			) ±1 count	t						
	Current: 4	-											L
						cal sense							L
3.Indications	Green LE Red LED					., OUT ON NA, SO)	I/OFF, CV	/CC, FIN	E				
		f rotari C	though a re-tr	200									_
	. 0.50/		<u> </u>		te with Ic	- 1875∧·	±/ <u>-</u> 0 7% ^	f rated O	itnut curro	nt for lo > 1	975Δ		$\vdash$
1. Vout Programming Accuracy	± 0.5% of		thut our	ant for		- 101/DA'	T/TU./70 0	ı ıaıtu Ul	uhar calle	וונוטווט ≥ 1	UI.JA		+
Vout Programming Accuracy     Iout Programming Accuracy	±0.5% of	rated Ou		ent for unit	13 WILLI TO	1 1011011,							1
Nout Programming Accuracy     Iout Programming Accuracy     Nout Programming Resolution	±0.5% of 0.02% of	rated Ou Vo(rated)	)	ent for unit	S WILL TO	1 1011071,							⊬
Nout Programming Accuracy     Iout Programming Accuracy     Vout Programming Resolution     Iout Programming Resolution	±0.5% of 0.02% of 0.04% of	rated Ou Vo(rated) Io(rated)	)			1 1011011,							F
Nout Programming Accuracy     Iout Programming Accuracy     Nout Programming Resolution     Iout Programming Resolution     Vout Readback Accuracy	±0.5% of 0.02% of 0.04% of ± 0.1% +	rated Our Vo(rated) Io(rated) 0.2% of r	rated Out	put voltag	е								F
Nout Programming Accuracy     Iout Programming Accuracy     Vout Programming Resolution     Iout Programming Resolution     Vout Readback Accuracy     Iout Readback Accuracy	±0.5% of 0.02% of 0.04% of	rated Ou Vo(rated) Io(rated) 0.2% of r 0.4% of r	rated Out	put voltag	е								
1.6 DIGITAL PROGRAMMING & READBACK  1. Vout Programming Accuracy 2. Iout Programming Accuracy 3. Vout Programming Resolution 4. Iout Programming Resolution 5. Vout Readback Accuracy 6. Iout Readback Accuracy 7. Vout Readback Resolution 8. Iout Readback Resolution 8. Iout Readback Resolution	±0.5% of 0.02% of 0.04% of ± 0.1% + ± 0.1% +	rated Our Vo(rated) Io(rated) 0.2% of r 0.4% of r Vo(rated)	rated Out	put voltag	е								
1. Vout Programming Accuracy 2. Iout Programming Accuracy 3. Vout Programming Resolution 4. Iout Programming Resolution 5. Vout Readback Accuracy 6. Iout Readback Accuracy 7. Vout Readback Resolution	±0.5% of 0.02% of 0.04% of ± 0.1% + ± 0.1% + 0.02% of 0.02% of	rated Our Vo(rated) Io(rated) 0.2% of r 0.4% of r Vo(rated) Io(rated)	rated Out rated Out	put voltag put currer	le nt	P Limit and		nhibit turr	ning On)				

<sup>\*800</sup>V - 1500V models (15kW) only available with 400VA and 480VAC input. For 208VAC Input models please contact the factory.

\*1. Ripple and Noise at Vo(rated) and rated Load, Ta = 25C and nominal AC input, per EIJ R8002A.

\*2. Time for the Output voltage to recover within 2% of rating for a load current change of 50~100% or 100-50% of lo(rated).

\*3. From 20% - 100% for models with lor < 25A.

All specifications subject to change without notice.

# General Specifications, Genesys™ 3U 10kW/15kW

2.1 INPUT CHARACTERISTICS		
Input Voltage / Frequency (range)		208VAC (180-253), 400VAC (360-440 , 342-440 (select 10kW/15kW models)), 480VAC (432-528); 47-63Hz (all)
2. No. of phases		3-Phase (Wye or Delta) 4 wire total (3-Phase and 1 protective Earth ground)
3. Dropout Voltage	V	180 / 360, 342 (select models) / 432; select models (10kW): 800V-1500V, select models (15kW): 30V-50V, 800V-1500V
4. Input Current (180VAC/360 or 342VAC/432VAC)	Arms	10kW - 45/23/20 (Vout ≤ 600V); N/A/23/20 (800V ≤ Vout ≤ 1500V) - at full rated Output power
4. Input Current (160 VAC/360 or 342 VAC/432 VAC)	Aiiiis	15kW - 64/32/27 (Vout ≤ 600V); N/A/32/27 (800V ≤ Vout ≤ 1500V) - at full rated Output power
5. Inrush Current	Α	Not to exceed full rated Input current (see para. above)
6. Power Factor		0.88 Passive (typical)
7. Leakage Current	mA	3.5 (EN60950) max.
8. Input Protection		208VAC: circuit breaker (Vout ≤ 600V); 400VAC/480VAC (all models) - line fuse
9. Input Overvoltage Protection		Unit shall not be damaged by line overvoltage of 120% nominal AC input voltage with maximum duration of 100usec.
10. Phase Imbalance	%	≤ 5% on Three-Phase Input

#### 2.2 POWER SUPPLY CONFIGURATION

Parallel Operation	Up to four (4) identical units may be connected in Master/Slave Mode with single wire connection (*3). In Advanced-Parallel feature, the current of Master unit multiplied by number of units connected in parallel, is available via digital interface and displayed on the front panel display of the Master unit. Remote Analog current monitor of the Master is scaled to the Output current of the Master unit (only).
2. Series Operation	Possible (with external diodes); Up to two identical units with total Output voltage not to exceed ± 600V from Chassis ground (for Vor ≤ 600V);

#### 2.3 ENVIRONMENTAL CONDITIONS

2.3 LIVINONWILLIVIAL CONDITIONS	
Operating Temperature	0 ~ +50°C, 100% load
2. Storage Temperature	-20 ~ +70°C
3. Operating Humidity	20 ~ 80% RH (non-condensing)
4. Storage Humidity	10 ~ 90% RH (non-condensing)
5. Vibration & Shock	ASTM D4169, Standard Practice for Performance Testing of Shipping Containers and Systems, Shipping Unit: Single Package Assurance Level: Level II; Acceptance Criteria: Criterion 1 - No product damage Criterion 2 - Packaging is intact, Distribution Cycle: 12 - Air (intercity) and motor freight (local), unitized is used.
6. Altitude	Operating: +50°C up to 7500 ft. (2500m), +45°C from 7501 to 10,000ft (2501m - 3000m), Non-Operating 40,000 ft (12,000m)
7. Audible Noise	65dBA at lo(rated) (measured 1m from front panel)

2.4 EMC (*4)	
1. 208VAC Input	CE Mark
1. ESD	EN61000-4-2 (IEC 801-2): Air-discharge ± 8kV , Contact-discharge ± 4kV
2. Fast Transients	EN61000-4-4 (IEC 1000-4-3)
3. Surge Immunity	EN61000-4-5 (IEC 1000-4-5)
4. Conducted Immunity	EN61000-4-6 (IEC 1000-4-6)
5. Radiated Immunity	EN61000-4-3 (IEC 1000-4-3)
6. Power Frequency Magnetic Field	EN61000-4-8
7. Conducted Emissions	EN55011A, FCC part 15J-A
8. Radiated Emissions	EN55011A, FCC part 15J-A
2. 400VAC/480VAC (*4) Input	CE Mark
1. ESD	EN61000-4-2 (IEC 801-2): Air-discharge ± 8kV , Contact-discharge ± 4kV
2. Fast Transients	EN61000-4-4 (IEC 1000-4-3)
3. Surge Immunity	EN61000-4-5 (IEC 1000-4-5)
Conducted Immunity	EN61000-4-6 (IEC 1000-4-6)
5. Radiated Immunity	EN61000-4-3 (IEC 1000-4-3)
6. Power Frequency Magnetic Field	EN61000-4-8
7. Voltage Dips, Short Interruptions and Voltage Variations Immunity Test (400VAC Only).	IEC 61000-4-11
8. Conducted Emissions	EN55011A, FCC part 15J-A
9. Radiated Emissions	EN55011A, FCC part 15J-A

#### 2.5 SAFETY

UL/cUL 60950-1, EN60950-1 recognized, CB Scheme, CE Mark (208VAC & 400VAC inputs only)
7.5V ≤ Vout ≤ 400V: Output is Hazardous; LAN/IEEE/Isolated Analog/USB are SELV 400V < Vout ≤ 600V: Output is Hazardous; LAN/IEEE/Isolated Analog/USB are not SELV 600V < Vout ≤ 1500V: Output is Hazardous; LAN/IEEE/Isolated Analog/USB are SELV
Vout ≤ 300V models: Input - Ground: 2900VDC for 1min, Input-Hazardous Output: 3500VDC for 1min, Input - SELV: 2900VDC for 1min Hazardous Output - SELV: 2121VDC for 1min, Hazardous Output - Ground: 2121VDC for 1min 300 < Vout ≤ 600V models: Input-Ground: 2900VDC for 1min, Input-Hazardous Output: 3900VDC for 1min, Input-SELV: 2900VDC for 1min. Hazardous Output - SELV: 2688VDC for 1min, Hazardous Output - Ground: 2688VDC for 1min 600 < Vout ≤ 1500V models: Input-Ground: 2900VDC for 1min, Input-Hazardous Output: 5040VDC for 1min, Input-SELV: 2900VDC for 1min. Hazardous Output - SELV: 2500VDC for 1min, Hazardous Output - Ground: 2500VDC for 1min
> 100Megohms at 500VDC, +25°C

### 2.6 MECHANICAL CONSTRUCTION

1. Cooling	Fan-driven, Airflow from front to rear. Supplemental vents on side that shall not be blocked. EIA Rack mounting, stackable "Zero Stackable" top and bottom. Chassis slides or suitable rear support required.
2. Dimensions (WxHxD)	Width: 429mm / 16.9", Height: 3U - 133mm / 5.22", Depth - 564mm / 22.2" (excluding connectors, encoders, handles, etc.)
3. Weight	32kg / 70lbs
4. AC Input connector (with Protective Cover)	3 x M6 x 1" threaded studs (L1, L2, L3 and Chassis GND) and terminal cover.
5.Output Connectors	Up to and including 300V models: bus-bars (one and two-hole). Greater than 300V models: M6 x 0.5" threaded-stud terminals.
6.Control Connectors	Analog Programming: DB25, plastic connector, AMP747461-5, Female on Supply; Male on Mating connector, 747321, 25 pin Sub-D connector.
7. Mounting Method	Standard 19" Rack-Mount, provision for standard chassis slides. Side/Rear Support is required; Do not mount by front panel only.
8. Output Ground Connection	M5 x 1.0" threaded-stud

#### 2.7 WARRANTY

	1. Warranty	5 years
--	-------------	---------

\*3 GENESYS™ 30V-50V (15kW) and 800V-1500V (10kW/15kW) mdoels require a Two-Wire Parallel Master-Slave connection. See the Product USer's Manual for details.
\*4, 30V-50V (15kW) and 800V-1500V (10kW/15kW) models with 480VAC Input have CE Mark.
All specifications subject to change without notice



# Genesys<sup>™</sup> Power Parallel and Series Configurations

### Parallel operation - Master/Slave:

Active current sharing allows up to four identical units to be connected in an Auto-parallel configuration for four times the Output power. In Advanced Parallel Master/Slave Mode, total current is programmed and reported by the Master, Up to four supplies act as one.



### Series operation

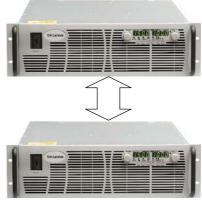
Up to two units may be connected in series to increase the Output voltage or to provide bipolar output. (Max 600V to Chassis GND for Vor  $\leq$  600V; Max 1500V to Chassis GND for 600V < Vor  $\leq$  1500V).

# Remote Programming via RS-232 & RS-485 Interface

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







# **Programming Options (Factory installed)**

### **IEEE Multi-Drop Interface**

- Allows IEEE Master to control up to 30 (Standard) slaves over RS-485 daisy-chain
- Only the Master needs be equipped with IEEE Interface
- IEEE 488.2 & SCPI Compliant
- Program Voltage
- Measure Voltage
- Over-Voltage setting and shutdown
- Error and Status Messages

- Program Current
- Measure Current
- Current Foldback shutdown

### Multi-Drop Slave Option is Standard

- Standard Units are equipped with the Multi-Drop Slave (RS-485) function
- Allows RS-485 Master to control up to 30 (standard) Slaves over RS-485 Daisy-chain

### **Isolated Analog Programming**

- Four Channels total (Two to Program Voltage and Current; Two to 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%

ng Accuracy: ±1.5%

### LAN Interface LXI Compliant to Class C

- Meets all LXI Class C Requirements
- Address Viewable on Front Panel
- Fixed and Dynamic Addressing
- Fast Startup

- VISA & SCPI Compatible
- LAN Fault Indicators
- Auto-detects LAN Cross-over Cable
- Compatible with most standard Networks

P/N: IEMD

P/N: "----"

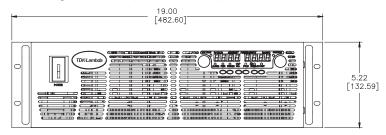
P/N: IS510

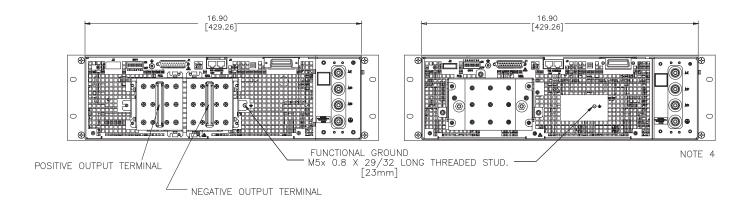
P/N: IS420

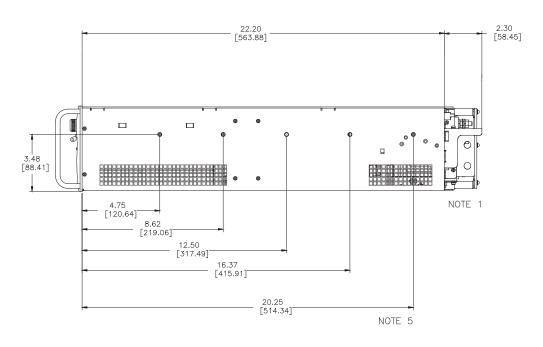
P/N: LAN

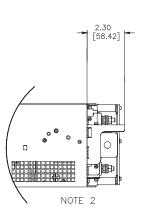


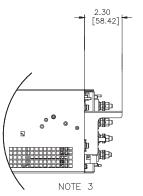
## Outline Drawings: Genesys™ 10kW (All - 208VAC), 10kW/15kW (60V to 600V - 208/400/480VAC)







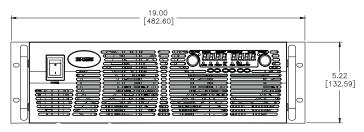


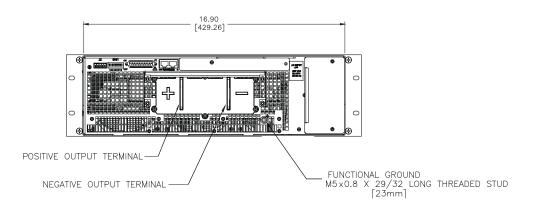


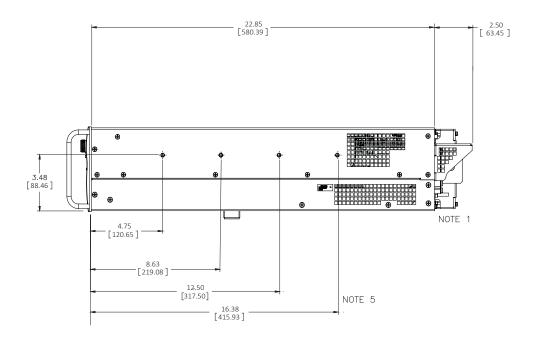
### NOTES:

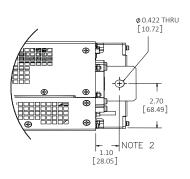
- 1. Busbars for models up to 30V Output: two holes 0.42" (10.72mm) diameter.
- 2. Busbars for models 40-300V (10kW) and 60-300V (15kW) Output: one hole 0.42" (10.72mm) diameter.
- 3. Threaded stud terminal for models above 300V Output.
- 4. Input Terminals M6 x 1" (3) + Ground M5 x 1" (2).
- Mounting for Slide Mounts (not included).
   Recommend General Devices, Chassis Trak P/N C230-S-122.
   Secure with pan head screw M5 x 0.8-8mm long (max).

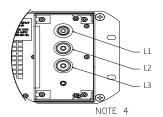
# Outline Drawings: Genesys™ 15kW (30V to 50V - 400VAC/480VAC)







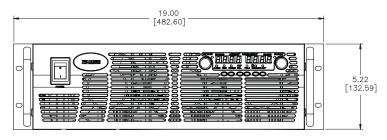


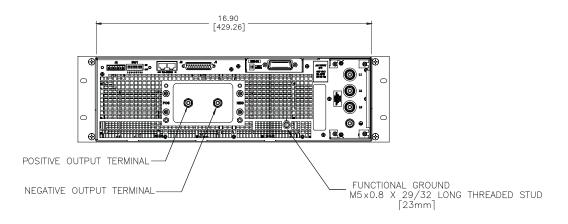


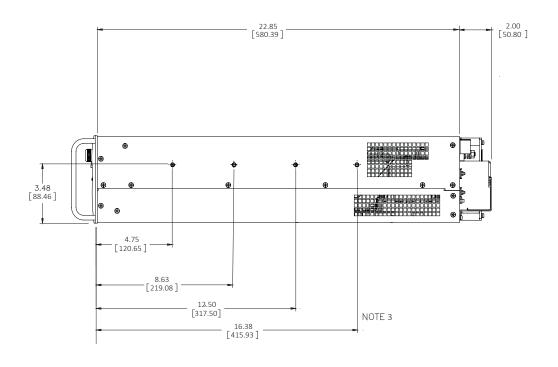
### NOTES:

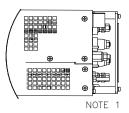
- 1. N/A
- 2. Bus bars for models 30-50V Output (15kW): one hole 0.42" (10.72mm) diameter.
- 3. N/A
- 4. Input Terminals M6 x 1" (3) + Ground M5 x 1" (2)
- Mounting for Slide Mounts (not included).
   Recommend General Devices, Chassis Trak P/N C230-S-122.
   Secure with pan head screw M5 x 0.8-8mm long (max).

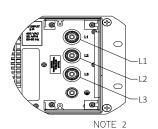
# Outline Drawings: Genesys™ 15kW (800V to 1500V - 400VAC/480VAC)











### NOTES:

- 1. Threaded stud terminals for 800V 1500V Output; M5 x 1".
- 2. Input Terminals M6 x 1" (3) + Ground M5 x 1" (2)
- 3. Mounting for Slide Mounts (not included). Recommend General Devices, Chassis Trak P/N C230-S-122. Secure with pan head screw M5 x 0.8-8mm long (max).

# Power Supply Identification / Accessories (Genesys™ 3U 10/15kW) **How to Order:**

GEN Series Name

10 Output Voltage

(0~10V)

- 1000

Output

Current

(0~1000A)

LAN **Factory Options** 

Option:

3P208 AC Input Options

IEMD IS510

LAN

IS420

3P208 (Three-Phase 208VAC) 3P400 (Three-Phase 400VAC) 3P480 (Three-Phase 480VAC)

Model	Output Voltage	Output Current	Output Power	
Woder	(Vdc)	(Adc)	(kW)	
GEN 7.5-1000	0~7.5	0~1000	7.5	
GEN 10-1000	0~10	0~1000	10	
GEN 12.5-800	0~12.5	0~800	10	
GEN 20-500	0~20	0~500	10	
GEN 25-400	0~25	0~400	10	
GEN 30-333	0~30	0~333	10	
GEN 30-500	0~30	0~500	15	
GEN 40-250	0~40	0~250	10	
GEN 40-375	0~40	0~375	15	
GEN 50-200	0~50	0~200	10	
GEN 50-300	0~50	0~300	15	
GEN 60-167	0~60	0~167	10	
GEN 60-250	0~60	0~250	15	
GEN 80-125	0~80	0~125	10	
GEN 80-187.5	0~60	0~187.5	15	
GEN 100-100	0~100	0~100	10	
GEN 100-150	0~100	0~150	15	
GEN 125-80	0~125	0~80	10	
GEN 125-120	0~125	0~120	15	
GEN 150-66	0~150	0~66	10	
GEN 150-100	0~150	0~100	15	

Model	Output Voltage (Vdc)	Output Current (Adc)	Output Power (kW)	
GEN 200-50	0~200	0~50	10	
GEN 200-75	0~200	0~75	15	
GEN 250-40	0~250	0~40	10	
GEN 250-60	0~250	0~60	15	
GEN 300-33	0~300	0~33	10	
GEN 300-50	0~300	0~50	15	
GEN 400-25	0~400	0~25	10	
GEN 400-37.5	0~400	0~37.5	15	
GEN 500-20	0.500	0~20	10	
GEN 500-30	0~500	0~30	15	
GEN 600-17	0~600	0~17	10	
GEN 600-25	0~600	0~25	15	
GEN 800-12.5	0~800	0~12.5	10	
GEN 800-18.8	0~800	0~18.8	15	
GEN 1000-10	0~1000	0~10	10	
GEN 1000-15	0~1000	0~15	15	
GEN 1250-8	0~1250	0~8	10	
GEN 1250-12	0~1250	0~12	15	
GEN 1500-6.7	0 1500	0~6.7	10	
GEN 1500-10	0~1500	0~10	15	

# **Factory options**

RS-232/RS-485 Multi-Drop Interface (built-in Standard) LAN Interface (LXI Class C compliant) GPIB (Multi-Drop Master) Interface Voltage Programming Isolated Analog Interface Current Programming Isolated Analog Interface

### P/N

LAN **IEMD** IS510\* IS420

Distributed by:



99, rue Beranger 92320 Chatillon - France Tel: +33 (0)1 71 16 17 00 Fax: +33 (0)1 71 16 17 03

#### www.testoon.com

### **Accessories**

### 1. Serial Communication cable

RS-232/RS-485 cable is used to connect the power supply to the Host PC.

Mode RS-485		RS-232	RS-232	
PC Connector	DB-9F	DB-9F	DB-25F	
Communication Cable Shield Ground, L=2m		Shield Ground, L=2m	Shield Ground, L=2m	
Power Supply Connector EIA/TIA-568A (RJ-45)		EIA/TIA-568A (RJ-45)	EIA/TIA-568A (RJ-45)	
<b>P/N</b> GEN/485-9		GEN/232-9	GEN/232-25	

### 2. Serial Link cable\*

Daisy-chain up to 31 Genesys<sup>™</sup> power supplies.

Mode	Power Supply Connector	Communication Cable	P/N	
<b>RS-485</b> EIA/TIA-568A (RJ-45)		Shield Ground, L=50cm	GEN/RJ45	

<sup>\*</sup> Included with GENESYS™-1U, -2U power supply only.

<sup>\*</sup>Standard on 800-1500V models

# Genesys™ Family - Output Voltage / Output Current

Model	GENH		GEN-1U		GEI	N-2U	GE	N 3U
Rated Power	750W	750W	1500W	2400W	3300W	5000W	10kW	15kW
Voltage Range Output Current Range								
0~6V	0~100A	0~100A	0~200A					
0~7.5V							0~1000A	
0~8V	0~90A	0~90A	0~180A	0~300A	0~400A	0~600A		
0~10V				0~240A	0~330A	0~500A	0~1000A	
0~12.5V	0~60A	0~60A	0~120A				0~800A	
0~15V					0~220A			
0~16V				0~150A		0~310A		
0~20V	0~38A	0~38A	0~76A	0~120A	0~165A	0~250A	0~500A	
0~25V							0~400A	
0~30V	0~25A	0~25A	0~50A	0~80A	0~110A	0~170A	0~333A	0~500A <sup>(3), (4)</sup>
0~40V	0~19A	0~19A	0~38A	0~60A	0~85A	0~125A	0~250A	0~375A(3), (4)
0~50V			0~30A				0~200A	0~300A <sup>(3), (4)</sup>
0~60V	0~12.5	0~12.5A	0~25A	0~40A	0~55A	0~85A	0~167A	0~250A
0~80V	0~9.5A	0~9.5A	0~19A	0~30A	0~42A	0~65A	0~125A	0~187.5A
0~100V	0~7.5A	0~7.5A	0~15A	0~24A	0~33A	0~50A	0~100A	0~150A
0~125V							0~80A	0~120A
0~150V	0~5A	0~5A	0~10A	0~16A	0~22A	0~34A	0~66A	0~100A
0~200V							0~50A	0~75A
0~250V							0~40A	0~60A
0~300V	0~2.5A	0~2.5A	0~5A	0~8A	0~11A	0~17A	0~33A	0~50A
0~400V							0~25A	0~37.5A
0~500V							0~20A	0~30A
0~600V	0~1.3A	0~1.3A	0~2.6A	0~4A	0~5.5A	0~8.5A	0~17A	0~25A
0~800V							0~12.5A	*0~18.8A <sup>(3), (4)</sup>
0~1000V							0~10A	*0~15A <sup>(3), (4)</sup>
0~1250V							0~8A	*0~12A <sup>(3), (4)</sup>
0~1500V							0~6.7A	*0~10A <sup>(3), (4)</sup>
Weight (kg/lb)	4.5 / 9.9	7.0 / 15.0	8.5 / 18.0	10 .0 / 22.0	13.0 / 29.0	16.0 / 35.0	43.0 / 97.0	43.0 / 97.0 *32.0 / 70.0

<sup>(4)</sup> Available in 400VAC and 480VAC input. For 208VAC input please contact the factory.

## **AC Inputs**

85-265Vac, 1Ø	• (1)	• (1)	• (1)					
230Vac, 1Ø				• (1	• (1)			
208Vac, 3Ø				• (1	• (1)	• (1)	• (2)	• (2)
400Vac, 3Ø					• (1)	• (1)	• (2)	• (2)
480Vac, 3Ø							• (3)	• (3)

<sup>(1)</sup> UL Listed; CE Mark , RoHS (2) UL Recognized; CE Mark (3) UL Recognized only (CE Mark for select 10kW (800V-1500V) and 15kW (30V-50V and 800V-1500V) models.

# Options (All Models)

70 31 31 3	
""	Standard (with Multi-Drop Slave installed)
LAN	LXI Compliant LAN Interface (Class C)
IEMD	IEEE Master (IEEE 488.2 & SCPI compliant) with Multi-Drop Slave installed
IS510	Isolated Analog Programming (0-5V or 0-10V, User-selectable); standard on 800-1500V Outputs
IS420	Isolated Analog Programming (4-20mA)

<sup>(</sup>All options are factory installed and limited to one per power supply). All specifications subject to change without notice.

# TDK·Lambda

# GLOBAL NETWORK

#### **USA**

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

#### **CANADA**

**ACA TMetrix** 

5805 Kennedy Road, Mississauga, Ontario, L4Z 2G3

Tel: +1-800-665-7301 Fax: +1-905-890-1959

Email: lambda@aca.ca Web: tmetrix.com

#### **MEXICO**

AcMax de Mexico

39 Poniente 3515 Piso 5 Col. Las Animas

Puebla, Pue. C.P. 72400

Tel: 01-800-211-0060 / (222) 891-8484 Fax: 222-264-1445

Email: info@acmax.mx, Web: www.acmax.mx

#### BRAZIL

Supplitec

Rua Sena Madureira 455, Belo Hte - 31340-000 Tel: +55-31-3498 1177 Fax: +55-31-3441 0841

Email: vendas@suplitec.com.br, Web: www.suplitec.com.br

#### UK

IRELAND

TDK-Lambda UK Kingsley Avenue

Ilfracombe, Devon EX 34 8ES

Tel: +44-1271-856666 Fax: +44-1271-864894 E-mail: powersolutions@uk.tdk-lambda.com

Web: www.uk.tdk-lambda.com

#### FRANCE

SPAIN

TDK-Lambda France

ZAC des Delaches, CS 41077

9 rue Thuillere, 91978 Villebon Courtaboeuf Tel: +33 1 60 12 71 65 Fax: +33 1 60 12 71 66

Email: france@fr.tdk-lambda.com, Web: www.fr.tdk-lambda.com

#### **GERMANY**

### **AUSTRIA**

NETHERLANDS

SWITZERLAND

TDK-Lambda Germany

Karl-Bold-Str.40, D-77855 Achern

Tel: +49-7841-666-0 Fax: +49-7841-500-0

E-mail: info@de.tdk-lambda.com, Web: www.de.tdk-lambda.com

### ITALY

TDK-Lambda Italy

Via dei Lavoratori 128/130

IT 20092 Cinisello Balsamo (MI)

Tel: +39-02-6129-3863 Fax: +39-02-6129-0900

E-mail: info.italia@it.tdk-lambda.com Web: www.it.tdk-lambda.com

# SCANDINAVIA TDK-Lambda Germany

BALTICS

Karl-Bold-Str.40, D-77855 Achern

Tel: +49-7841-666-0 Fax: +49-7841-500-0

E-mail: info@de.tdk-lambda.com Web: www.de.tdk-lambda.com

#### JAPAN

TDK-Lambda Corporation

International Sales Division,

3-9-1, Shibaura, Minato-ku,

Tokyo 108-0023

Tel: +81 3-6852-7136 Fax: +81 3-6852-7148

E-mail: momata@jp.tdk-lambda.com

Web: www.jp.tdk-lambda.com

#### CHINA

TDK-Lambda Shanghai Office

28F, Xingyuan Technology Building No.418, Guiping Road,

Shanghai, 200233 P.R. CHINA

Tel: +86-21-6485-0777 Fax: +86-21-6485-0666

E-mail:sales-sh@cn.tdk-lambda.com, Web: www.cn.tdk-lambda.com

TDK-Lambda Beijing Office

Room 12B11-12B12, Unit 7 DACHENG SQUARE,

No.28 Xuanwumenxi Street, Xuanwu District Beijing,

100053, P.R. CHINA

Tel: +86-10-6310-4872 Fax: +86-10-6310-4874

E-mail:sales-bj@cn.tdk-lambda.com, Web: www.cn.tdk-lambda.com

TDK-Lambda Hong Kong Office

1 / F. SAE Technology Centre, 6 science Park East Avenue,

HongKong Science Park, Shatin, NT.,

Tel: +852-23766658 Fax: +852-23172150

E-mail:sales-hk@hk.tdk-lambda.com, Web: www.cn.tdk-lambda.com

#### **KOREA**

TDK-Lambda Corporation

(Seocho-Dong, 8F. Songnam Bldg.) 273, Gangnam-Daero,

Seocho-Gu, Seoul 137-862, Republic of Korea 137-862

Tel: 82-2-3473-7051~4, Fax: 82-2-3472-9137

Email: BS.Bang@kr.tdk-lambda.com, Web: www.tdk-lambda.co.kr

### MALAYSIA

TDK-Lambda Malaysia

Lot 709, Nilai Industrial Estate

71800 Nilai, Negeri Sembilan

Tel: +60-6-799-1130 Fax: +60-6-799-3277

www.my.tdk-lambda.com

#### **SINGAPORE**

#### **PHILIPPINES**

**THAILAND** 

TDK-Lambda Singapore

1008 Toa Payoh North # 06-01/08

Singapore 318996

Tel: +65-6251-7211 Fax: +65-6250-9171

Email: anthony.lau@sg.tdk-lambda.com, Web: www.sg.tdk-lambda.com

#### **INDIA**

TDK-Lambda India

No.989, 1st Cross, 2nd Floor, 13th Main,

HAL 2nd Stage, Bangalore, Karnataka , India – 560 008

Tel: +91-80-43550500, Fax: +91-80-43550501

 $\label{lem:lemonth} Email: mathew.philip@in.tdk-lambda.com, Web: www.in.tdk-lambda.com$ 

#### **ISRAEL**

**RUSSIA** 

Kibbutz Givat Hashlosha Tel-Aviv 48800 Tel: +972-3-9024-333 Fax: +972-3-9024-777

E-mail: info@tdk-lambda.co.il Web: www.tdk-lambda.co.il



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