

Improved  
Specifications

# Genesys™

**Programmable DC Power Supplies**  
**3.3kW in 2U**

**Built in RS-232 & RS-485 Interface**

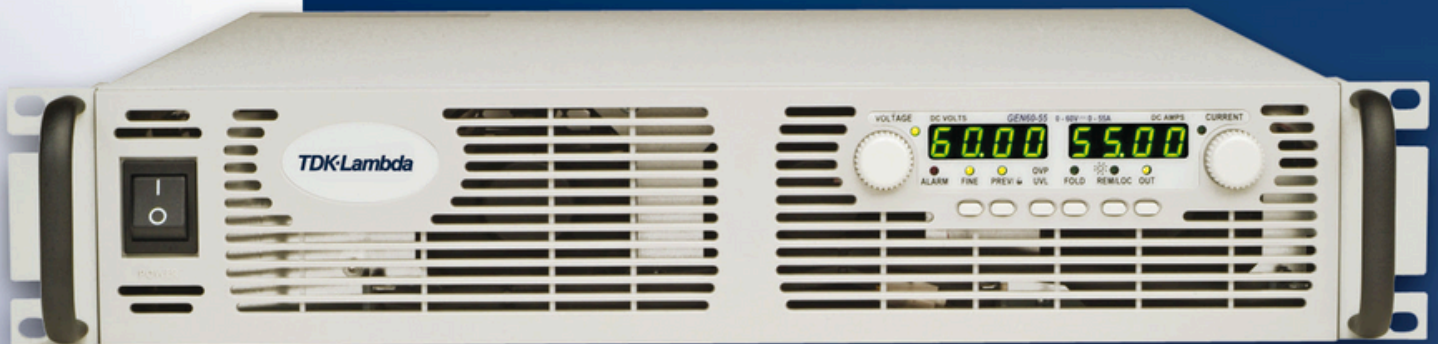
**Advanced Parallel Operation**

**Optional Interface:**

**LXI Compliant LAN**

**IEEE488.2 SCPI (GPIB) Multi-Drop**

**Isolated Analog Programming**



**Genesys™ Family**

**GENH 750W Half Rack**

**GEN1U 750/1500/2400W Full Rack**

**GEN2U 3.3/5kW**

**TDK-Lambda**

The Genesys™ 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 3.3kW in 2U
- Wide Range of popular worldwide AC inputs, 1ø (230VAC) & 3ø (208VAC, 400VAC)
- Active Power Factor Correction (Single-Phase & Three-Phase AC Input)
- Output Voltage up to 600V, Current up to 400A
- 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
- Constant Voltage/Constant Current auto-crossover
- Parallel Operation with Active Current Sharing; up to four identical units.
- Advanced Parallel Master / Slave. Total Current is Programmed and Measured via the Master.
- Independent Remote ON/OFF and Remote Enable/Disable
- 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
  - LXI** Compliant LAN
- LabView® and LabWindows® drivers
- Five Year Warranty

Worldwide Safety Agency Approvals; CE Mark for LVD and EMC Regulation



#### **Applications**

Genesys™ power supplies have been designed to meet the demands of a wide variety of applications.

**Test & Measurement systems, Component Device Testing.**

**Semiconductor Processing & Burn-In, Aerospace & Satellite Testing, Medical Imaging, Green Technology.**

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.

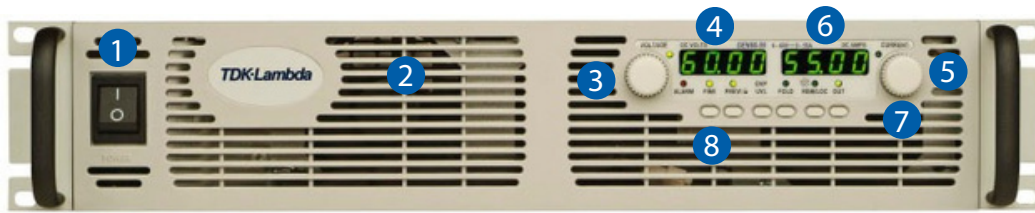
**Test Systems** using the IEEE-488 bus may achieve significant cost savings by incorporating the Optional IEEE Multi-Drop Interface for a Master and up to 30 RS-485 Multi-Drop Slaves.

**Higher power systems** can be configured with up to four 3.3kW modules. Each module is 2U with zero space between them (zero stack).

Flexible configuration is provided by the complete Genesys™ Family: 1U 750W Half-Rack, 1U 750W, 1500W and 2400W Full-Rack. All are identical in Front Panel, Rear Panel Analog, and all Digital Interface Commands.

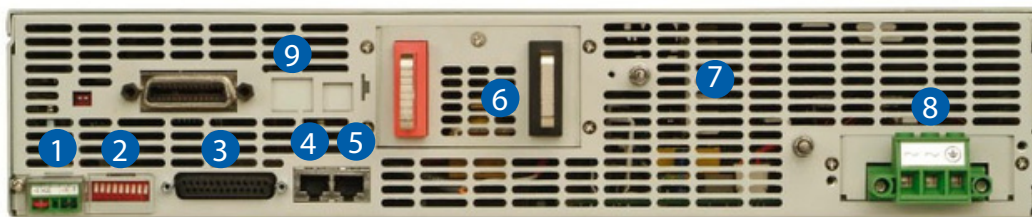
**OEM Designers** have a wide variety of Inputs and Outputs from which to select depending on application and location.

## Front Panel Description



1. ON/OFF Switch
2. Air Intake allows zero stacking for maximum system flexibility and power density.
3. Reliable encoder controls Output Voltage, Address, OVP and UVL settings.
4. Volt Display shows Output Voltage and directly displays OVP, UVL and Address settings.
5. Reliable encoder controls Output Current, sets baudrate 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
  - Foldback Mode
  - Fine Control
  - Remote Mode
  - Preview Settings
  - Output On
8. Pushbuttons allow flexible user configuration
  - Coarse and Fine adjustment of Output Voltage/Current and Advanced Parallel Master or Slave
  - Preview settings and set Voltage/Current with Output OFF, Front Panel Lock
  - Parallel Master/Slave
  - Set OVP and UVL Limits
  - Set Current Foldback Protection
  - Go to Local Mode and select Address and Baud rate
  - Output ON/OFF and Auto-Re-Start/Safe-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 (Non-isolated) Analog Program and Monitor and other functions.
4. RS-485 OUT to other Genesys™ Power Supplies.
5. RS-232/RS-485 IN Remote Serial Programming.
6. Output Connections: Rugged busbars (shown) for up to 100V Output; wire clamp connector for Outputs >100V.
7. Exit air assures reliable operation when zero stacked.
8. Input: 230VAC Single Phase (shown), 208 & 400VAC Three Phase, 50/60 Hz  
AC Input Connector: PHOENIX CONTACT Power Combicon PC 6/... Series with strain relief.
9. Optional Interface Position for IEEE 488.2 SCPI (shown) or Isolated Analog Interface or LAN Interface.

## Genesys™ 3.3kW Specifications

MODEL					Specifications in blue are improved															
1.Rated output voltage(*1)		2.Rated Output Current(*2)																		
3.Rated Output Power		1.1 CONSTANT VOLTAGE MODE																		
1.Max.line regulation (0.01% of rated Vo+ 2mV )(*6)		2.Max load regulation ( 0.015% of rated Vo+5mV )(*7)																		
3.Ripple and noise p-p 20MHz (*8)		4.Ripple r.m.s 5Hz~1MHz (*12)																		
4.Load regulation thermal drift		5.Remote sense compensation/wire		6.Temp. coefficient																
7.Temp. stability		8.Warm-up drift		9.Up-prog. response time, 0~Vo Rated (*9)																
				PPM/°C		50PPM/°C of rated output voltage, following 30 minutes warm-up														
						0.01% of rated Vout over 8hrs interval following 30 minutes warm-up. Constant line, load & temp.														
						Less than 0.05% of rated output voltage+2mV over 30 minutes following power On.														
				mS		80														
10.Down-prog response time		Full-load (*9)		mS		20	100		160		150		300		200		250			
time		No-load (*10)		mS		500	600	700	800	900	1000	1100	1200	1500	2000	3000	3500	4000		
11.Transient response time				mS		Time for output voltage to recover within 0.5% of its rated output for a load change 10-90% of rated output current. Output set-point: 10-100%, local sense. Less than 1mSec for models up to and including 100V. 2msec for models above 100V														
1.2 CONSTANT CURRENT MODE																				
1.Max.line regulation (0.01% of rated Io+ 2mA) (*8)					mA		42	35	24	18.5	13	10.5	7.5	6.2	5.3	4.2	3.65	3.1	2.6	
2.Max.load regulation (0.02% of rated Io+5mA) (*8)					mA		85	71	49	38	27	22	16	13.4	11.6	9.4	8.3	7.2	6.1	
3.Ripple r.m.s 5Hz~1MHz (*12)					mA		1000	650	400	300	250	150	70	60	50	20	30	15	8	
4.Load regulation thermal drift					PPM/°C		Less than 0.1% of rated output current over 30 minutes following load change.													
5.Temp. coefficient							70PPM/°C from rated output current, following 30 minutes warm-up.													
6.Temp. stability							0.01% of rated Iout over 8hrs. interval following 30minutes warm-up. Constant line, load & temperature.													
7.Warm-up drift							8V~20V models: Less than ±0.5% of rated output current over 30 minutes following power On.													
							30V~600V models: Less than ±0.25% of rated output current over 30 minutes following power On.													
1.3 PROTECTIVE FUNCTIONS							0~105% Constant Current													
1. OCP							Output shut down when power supply change from CV to CC. User selectable.													
2. OCP Foldback							Inverter shut-down, manual reset by AC input recycle or by OUT button or by communication port command.													
3. OVP type																				
4. OVP trip point							0.5~10V0.5~12V1~18V   1~24V   2~36V   2~44V   5~66V5~88V   5~110V   5~165V5~220V   5~330V5~660V													
5. Output Under Voltage Limit							Preset by front panel or communication port. Prevents from adjusting Vout below limit.													
6. Over Temp. Protection							User selectable, latched or non-latched.													
1.4 ANALOG PROGRAMMING AND MONITORING																				
1.Vout Voltage Programming							0~100%, 0~5V or 0~10V, user select. Accuracy and linearity:±0.5% of rated Vout.													
2.Iout Voltage Programming (*13)							0~100%, 0~5V or 0~10V, user select. Accuracy and linearity:±1% of rated Iout.													
3.Vout Resistor Programming							0~100%, 0~5/10Kohm full scale,user select, Accuracy and linearity: ±1% of rated Vout.													
4.Iout Resistor Programming (*13)							0~100%, 0~5/10Kohm full scale,user select. Accuracy and linearity:±1.5% of rated Iout.													
5.On/Off control (rear panel)							By electrical. Voltage: 0~0.6V/2~15V, or dry contact, user selectable logic.													
6.Output Current monitor (*13)							0~5V or 0~10V, Accuracy:±1%, user selectable.													
7.Output Voltage monitor							0~5V or 0~10V, Accuracy:±1%, user selectable.													
8.Power Supply OK signal							TTL high (4~5V) -OK, 0V-Fail 500ohm series resistance.													
9.CV/CC Indicator							Open collector, CC mode: On, CV mode: Off, Maximum voltage: 30V, maximum sink current: 10mA													
10.Enable/Disable							Dry contact. Open:off, Short: on. Max. voltage at Enable/Disable in: 6V.													
11.Local/Remote analog control							By electrical signal or Open/Short: 0~0.6V or short: Remote, 2~15V or open: Local.													
12.Local/Remote analog control Indicator							Open collector. Local: Off, Remote: On. Maximum voltage: 30V, maximum sink current: 10mA.													
1.5 FRONT PANEL							Vout, Iout manual adjust by separate encoders (coarse and fine adjustment selectable).													
							OVP/UVL manual adjust by Volt. Adjust encoder.													
							On/Off, Output on/off, Re-start modes (auto, safe), Foldback control (CV to CC), Go to local control.													
							Address selection by Voltage (or current) adjust encoder. Number of addresses:31.													
							Re-start modes (automatic restart, safe mode).													
							Baud rate selection: 1200,2400,4800,9600 and 19,200.													
							Voltage: 4 digits, Accuracy: 0.05% of rated output Voltage ±1 count.													
							Current: 4 digits, Accuracy: 0.2% of rated output current ±1 count.													
							Voltage, Current, Alarm, Fine, Preview, Foldback, Local, Output On, Front Panel Lock, CVCC.													
1.Control functions																				
2.Display																				
3.Indications																				
1.6 Interface Specifications for the GENESYS Series with RS-232/RS-485 Or Optional GPIB/LAN Interface Installed																				
1. Remote Voltage Programming (16 bit)		V	8	10	15	20	30	40	60	80	100	150	200	300	600					
Resolution (0.002% of Vo Rated)		mV	0.16	0.2	0.3	0.4	0.6	0.8	1.2	1.6	2	3	4	6	12					
Accuracy (0.05% of Vo Rated) (*14)		mV	4	5	8	10	15	20	30	40	50	75	100	150	300					
2. Remote Current Programming (16 bit)		I	8	10	15	20	30	40	60	80	100	150	200	300	600					
Resolution (0.002% of Io Rated)		mA	1200	990	660	495	330	255	165	126	99	66	49.5	33	16.5					
Accuracy (0.2% of Io Rated + 0.1% of Io Actual Output) (*14)		mA	1200	990	660	495	330	255	165	126	99	66	49.5	33	16.5					
3. Readback Voltage		V	8	10	15	20	30	40	60	80	100	150	200	300	600					
Resolution (% of Vo Rated)		%	0.002	0.011	0.007	0.006	0.004	0.003	0.002	0.002	0.011	0.007	0.006	0.004	0.002					
Resolution (Readback Voltage)		mV	0.16	1.10	1.05	1.20	1.20	1.20	1.20	1.60	11.00	10.50	12.00	12.00	12.00					
Accuracy (0.05% of Vo Rated)		mV	4	5	8	10	15	20	30	40	50	75	100	150	300					
4. Readback Current		I	8	10	15	20	30	40	60	80	100	150	200	300	600					
Resolution (% of Io Rated)		%	0.003	0.004	0.005	0.007	0.01	0.002	0.002	0.003	0.004	0.005	0.007	0.01	0.002					
Resolution (Readback Current)		mA	1200	13.20	11.00	11.55	11.00	1.70	1.10	1.26	1.32	1.10	1.16	0.11	0.11					
Accuracy (0.3% of Io Rated) (*13)		mA	1200	990	660	495	330	255	165	126	99	66	49.5	33.0	16.5					
5.OVP/UVL Programming																				
Resolution (0.1% of Vo Rated)		mV	8	10	15	20	30	40	60	80	100	150	200	300	600					
Accuracy (1% of Vo Rated)		mV	80	100	150	200	300	400	600	800	1000	1500	2000	3000	6000					



## General Specifications Genesys™ 3.3kW

2.1 INPUT CHARACTERISTICS		GEN	8-400	10-330	15-220	20-165	30-110	40-85	60-55	80-42	100-33	150-22	200-16.5	300-11	600-5.5
1. Input voltage/freq. (*3)		VAC	Single Phase,230V models: 170~265Vac, 47~63Hz 3-Phase, 208V models: 170~265Vac, 47~63Hz 3-Phase, 400V models: 342~460Vac, 47~63Hz												
2. Maximum	Single Phase,230V models:	A	24	24	24	24	23	24	23	23.5	23	23	23	23	23
Input current3-Phase, 208V models:	14.5		14.5	14.5	14.5	14	14.5	13.6	14	13.7	13.7	13.7	13.8	13.9	
at 100% load3-Phase, 400V models:	7.2		7.2	7.2	7.2	7.0	7.2	6.8	7.0	6.8	6.8	6.8	6.9	7.0	
3. Power Factor (Typ)			Single Phase models: 0.99@230Vac, rated output power. 3-Phase models: 0.94@208/380Vac, rated output power.												
4. Efficiency (*4)		%	82	83	83	83	86	86	88	88	88	87	87	87	87
5. Inrush Current (*5)		A	Single-Phase and 3-Phase 208V models: Less than 50A 3-Phase 400V models: Less than 20A												
6. Hold-up time (Typ)		mS	10mSec for Single-Phase and 3-phase 208V models, 6mSec for 3-Phase 400V models. Rated output power.												
2.2 POWER SUPPLY CONFIGURATION															
1. Parallel Operation		Up to 4 identical units in master/slave mode													
2. Series Operation		Up to 2 identical units. with external diodes. 600V Max to Chassis ground													
2.3 ENVIRONMENTAL CONDITIONS															
1. Operating temp		0~50°C, 100% load.													
2. Storage temp		-20~85°C													
3. Operating humidity		20~90% RH (non-condensing).													
4. Storage humidity		10~95% RH (non-condensing).													
5. Vibration		MIL-810F, method 514.5, The EUT is fixed to the vibrating surface.													
6. Shock		Less than 20G, half sine , 11mSec. Unit is unpacked.													
7. Altitude		Operating: 10000ft (3000m), Derate output current by 2%/100m above 2000m, Alternatively, derate maximum ambient temp. by 1°C/100m above 2000m. Non operating: 40000ft (12000m).													
8. RoHS Compliance		Complies with the requirements of RoHS directive.													
2.4 EMC															
1.Applicable Standards:															
2.ESD															
3.Fast transients		IEC1000-4-2. Air-disch.-8KV, contact													
4.Surge immunity		disch.-4KV IEC1000-4-4. 2KV IEC1000-4-5.													
5.Conducted immunity		1KV line to line, 2KV line to ground													
6.Radiated immunity		IEC1000-4-6, 3V IEC1000-4-3, 3V/m													
7.Magnetic field immunity		EN61000-4-8, 1A/m EN61000-4-11													
8.Voltage dips		EN55022A, FCC part 15-A, VCCI-A.													
9.Conducted emission		EN55022A, FCC part 15-A, VCCI-A.													
10. Radiated emission															
2.5 SAFETY															
1.Applicable standards:		UL 60950-1, CSA 22.2 No. 60950-1,IEC 60950-1, EN 60950-1													
2.Interface classification		Models with Vout 50V: Output is SELV, all communication/control interfaces (RS232/485, IEEE, Isolated Analog, LAN, Sense, Remote Programming and Monitoring) are SELV. Models with 60V Vout 400V: Output is Hazardous, communication/control interfaces: RS232/485, IEEE, Isolated Analog, LAN, Remote Programming and Monitoring (pins 1-3, pins14-16) are SELV, Sense, Remote Programming and Monitoring (pins 8-13, pins 21-25) are Hazardous.													
3.Withstand voltage		Models with 400V<Vout 600V: Output is Hazardous, all communication/control interfaces (RS232/485, IEEE, Isolated Analog, LAN, Sense, Remote Programming and Monitoring) are Hazardous. Vout 50V models : Input-Output (SELV): 4242VDC 1min, Input-communication/control (SELV): 4242VDC 1min, Input-Ground: 2828VDC 1min, 60V<Vout 100V models: Input-Output (Hazardous): 2600VDC 1min, Input-communication/control (SELV): 4242VDC 1min, Output(Hazardous)-Ground: 1200VDC 1min, Input-Ground: 2828VDC 1min.													
3.Insulation resistance		4242VDC 1min, Input-Output(Hazardous)-SELV: 1900VDC 1min, Output(Hazardous)-Ground: 1200VDC 1min, Input-Ground: 2828VDC 1min.													
2.6 MECHANICAL CONSTRUCTION															
1. Cooling		Forced air flow from front to rear. No ventilation holes at the top or bottom of the chassis. Variable fan speed.													
2. Dimensions (WxHxD)		424x280x118mm (16.7x11.0x4.7in) including cable connectors (standard), 462x280x118mm (18.2x11.0x4.7in) including cable connectors (optional).													
3. Weight		Output(Hazardous)-Ground: 2670VDC 1min, Input-Ground: 2828VDC 1min. More than 100Mohm at 25°C , 70% RH.													
4. AC input connector (with Protective Cover)		Single Phase 230V models, Power Combicon PC 6-16/3-GF-10,16 series, with Strain relief.													
5.Output connectors		3-Phase, 208V & 400V models, Power Combicon PC 6-16/4-GF-10,16 series, with Strain relief.													
2.7 RELIABILITY SPECS															
1. Warranty		8V to 100V models: Bus-bars (hole Ø 10.5mm). 150V to 600V models: wire clamp connector, Phoenix P/N: FRONT-4-H-7.62													
All specifications subject to change without notice.															
		5 years.													

## Genesys™ 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.

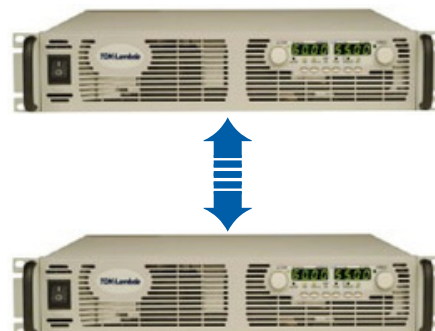


### Series operation

Up to two units may be connected in series to increase the output voltage or to provide bipolar output. (Max 600V to Chassis Ground).

### 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)

#### Digital Programming via IEEE Multi-Drop Interface

- Allows IEEE Master to control up to 30 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

P/N: IEEE

#### Isolated Analog Programming

Four Channels to Program and Monitor Voltage and Current. Isolation allows operation with floating references in harsh electrical environments. Choose between programming with Voltage or Current.

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

- Voltage Programming, user-selectable 0-5V or 0-10V signal.

P/N: IS510

Power supply Voltage and Current Programming Accuracy  $\pm 1\%$

Power supply Voltage and Current Monitoring Accuracy  $\pm 1.5\%$

- Current Programming with 4-20mA signal.

P/N: IS420

Power supply Voltage and Current Programming Accuracy  $\pm 1\%$

Power supply Voltage and Current Monitoring Accuracy  $\pm 1.5\%$

#### LAN Interface **LXI** Compliant to Class C

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

P/N: LAN

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

## Power Supply Identification / Accessories How to order

GEN	8	-	400	-	-
Series	Output	Output	Factory Options:	Factory AC Input Options:	
Name	Voltage	Current	Option: IEEE	1P230 (Single Phase 170~265VAC)	
	(0 ~ 8V)	(0~400A)	IS510	3P208 (Three Phase 170~265VAC)	
			IS420	3P400 (Three Phase 342~460VAC)	
			LAN		

### Models 3.3kW

Model	Output Voltage VDC	Output Current (A)	Output Power (W)
GEN 8-400	0~8V	0~400	3200
GEN 10-330	0~10V	0~330	3300
GEN 15-220	0~15V	0~220	3300
GEN 20-165	0~20V	0~165	3300
GEN 30-110	0~30V	0~110	3300
GEN 40-85	0~40V	0~85	3400

Model	Output Voltage VDC	Output Current (A)	Output Power (W)
GEN 60-55	0~60V	0~55	3300
GEN 80-42	0~80V	0~42	3360
GEN 100-33	0~100V	0~33	3300
GEN 150-22	0~150V	0~22	3300
GEN 200-16.5	0~200V	0~16.5	3300
GEN 300-11	0~300V	0~11	3300
GEN 600-5.5	0~600V	0~5.5	3300

### Factory option P/N

RS-232/RS-485 Interface built-in Standard

GPIB Interface

Voltage Programming Isolated Analog Interface

Current Programming Isolated Analog Interface

LAN Interface (Complies with **LV** Class C)

-

IEEE

IS510

IS420

LAN

### 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)
P/N	GEN/485-9	GEN/232-9	45) GEN/232-25

#### 2. Serial link cable\*

Daisy-chain up to 31 Genesys™ power supplies.

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

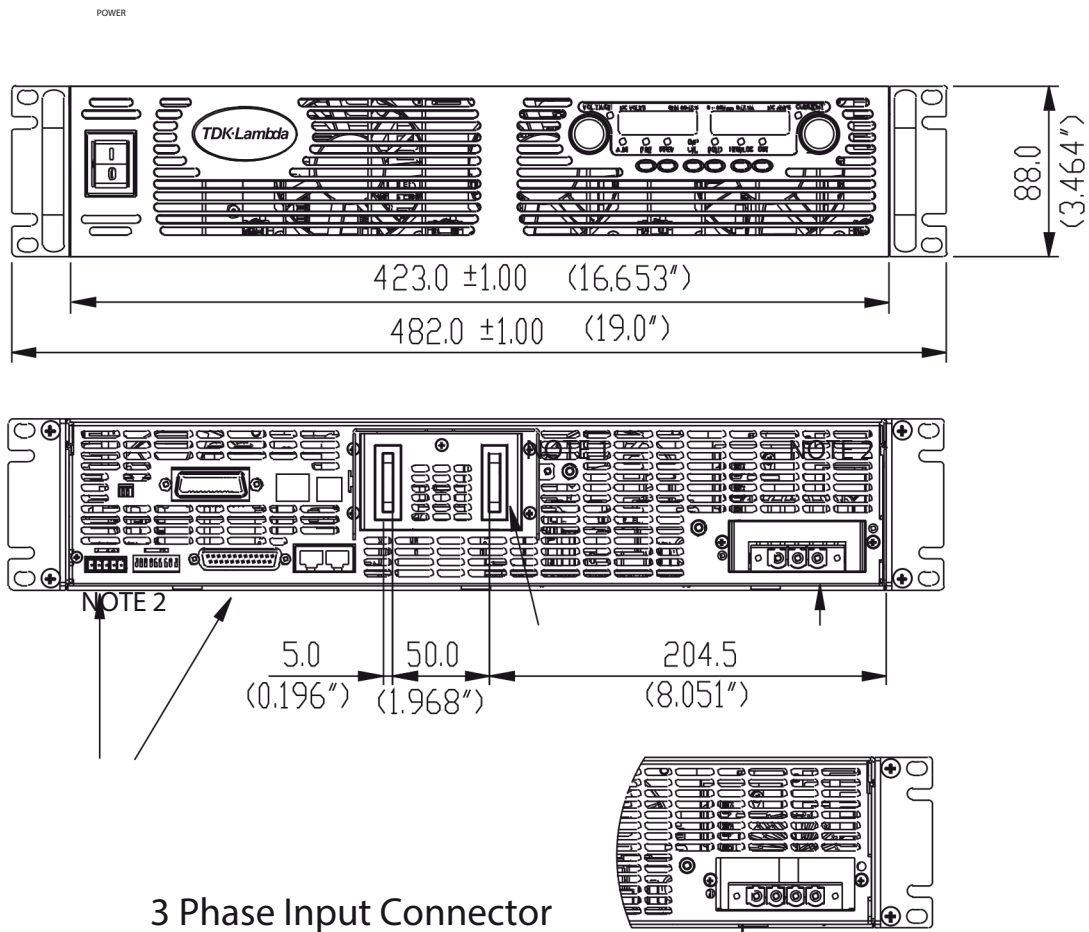
\* Included with power supply



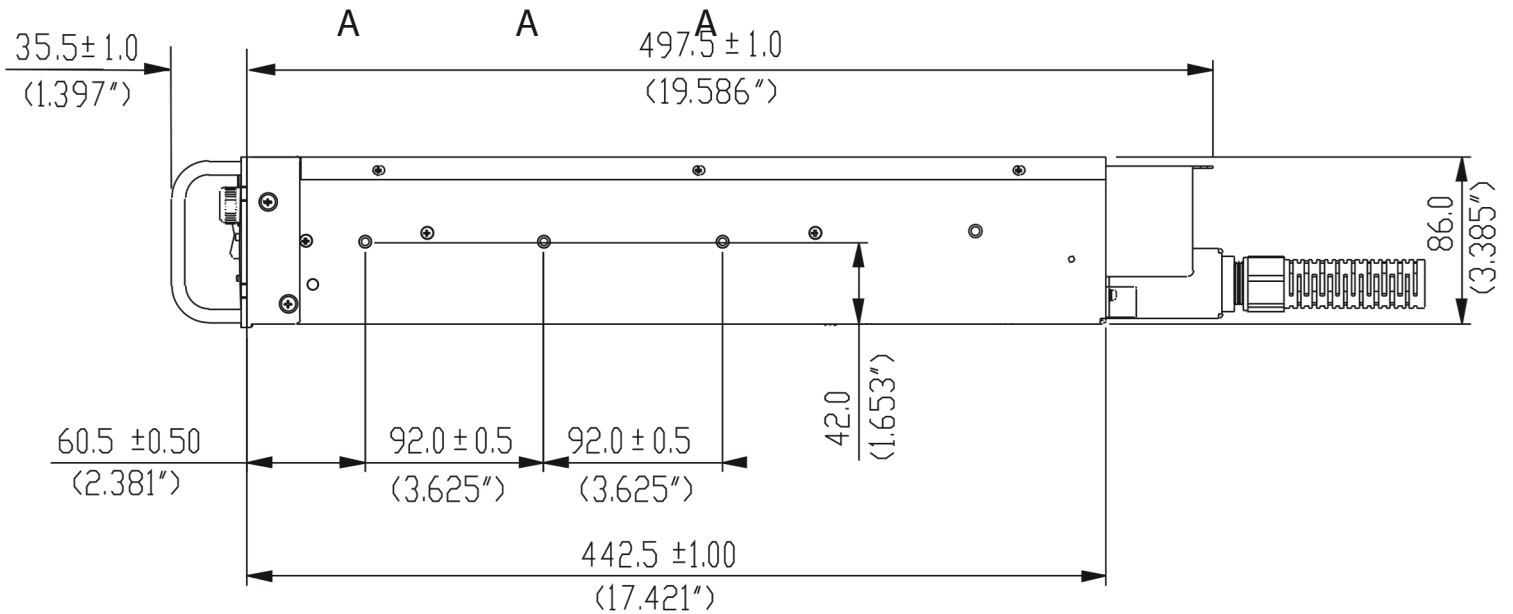
**Also available, Genesys™**  
**1U Half Rack 750W**  
**1U full Rack 750W/1500W/2400W**  
**2U full Rack 5000W**

**TDK-Lambda**

## Outline Drawing Genesys™ 3.3kW Units







#### NOTE

1. Bus bars for 8V to 100V models (shown)  
Wire clamp connector for 150V to 600V models
  2. Plug connectors included with the power supply
  3. Chassis slides mounting holes #10-32 marked "A"
- GENERAL DEVICES P/N: C-300-S-116 or equivalent



## **Contactgegevens**

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5667 KW Geldrop

+ 31 (0)40 851 2170

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