



Programmable DC Power Supplies 2.4kW in 1U Built in RS-232 & RS-485 Interface Advanced Parallel Operation Auxiliary Outputs 5V & 15V

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



Genesys™ Family GenH 750W Half Rack Gen1U 750/1500W Full Rack Gen2U 3.3/5kW



vertrieb@schulz-electronic.de www.schulz-electronic.de

The GenesysTM 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 2.4kW in 1U
- Wide Range of popular worldwide AC inputs, 1ø (230VAC) & 3ø (208VAC)
- Active Power Factor Correction (Single-Phase & Three-Phase AC Input)
- Output Voltage up to 600V, Current up to 300A
- Auxillary Outputs 5V/0.2A; 15V/0.2A for increased system control functionality
- 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

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

GenesysTM power supplies have been designed to meet the demands of a wide variety of applications. 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 2.4kW modules. Each module is 1U with zero space between them (zero stack).

Flexible configuration is provided by the complete GenesysTM Family: 1U 750W Half-Rack, 1U 750W and 1500W Full-Rack, 2U 3.3kW & 5kW. All are identical in Front Panel, Rear Panel Analog, and all Digital Interface Commands. A wide variety of outputs allows testing of many different devices.

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 ControlRemote Mode
- Preview Settings Output On
- 8. Pushbuttons allow flexible user configuration
- 8. Pushbuttons allow flexible user configuration
 - Coarse and Fine adjustment of Output Voltage/Current and Advanced Parallel Master or Slave select.
 - 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 VAC Three Phase, 50/60 Hz AC Input Connector: Phoenix P/N: FRONT-4-H-7.62.
- 9. Optional Interface Position for IEEE 488.2 SCPI (shown) or Isolated Analog Interface or LAN Interface.

10. Auxiliary Output Voltage Connector. Phoenix P/N: IMC1.5/7-ST-3.81

Genesys [™] 2.4kW Specifications

MODEL	GEN	8-300	10-240	16-150	20-120	30-80	40-60	60-40	80-30	100-24			600-
Rated output voltage(*1)	V	8	10	16	20	30	40	60	80	100	150	300	600
Rated Output Current(*2) Rated Output Power	A W	300 2400	240 2400	150 2400	120 2400	80 2400	60 2400	40 2400	30 2400	24 2400	16 2400	8 2400	4 240
.1 CONSTANT VOLTAGE MODE	VV	2400	2400	2400	2400	2400	2400	2400	2400	2400	2400	2400	240
.Max.line regulation (0.01% of rated Vo+ 2mV)(*6)	mV	2.8	3	3.5	4	5	6	8	10	12	17	32	62
.Max load regulation (0.015% of rated Vo+5mV)(*7)		6.2	6.5	7.25	8	9.5	11	14	17	20	27.5	50	95
.Ripple and noise p-p 20MHz (*8)	mV	50	50	50	50	55	55	60	60	70	90	150	24
.Ripple r.m.s 5Hz~1MHz	mV	6	6	6	6	6	6	6	7	10	20	45	60
.Remote sense compensation/wire	V	2	2	2	2	5	5	5	5	5	5	5	5
.Temp. coefficient	PPM/°C	50PPM/									1.0		
Temp. stability											oad & tem	р.	
.Warm-up drift		Less than	0.05% of		out voltag	<u>e+2mv ov</u>	20	utes follov 30	ving pow 40	er On. 40	60	80	10
<u>.Up-prog. response time, 0~Vo Rated (*9)</u> 0.Down-prog response Full-load (*9)	mS mS	10	10	15 20	20	20	20	30	50	50	80	100	10
me No-load (*10)	mS	500	500	500	500	600	700	1100	1200	1500	2500	3000	300
											of rated ou		
1.Transient response time	mS										msec for n		
.2 CONSTANT CURRENT MODE	1	1								. <u>j</u>			
.Max.line regulation (0.01% of rated lo+2mA)(*6)	mA	32	26	17	14	10	8	6	5	4.4	3.6	2.8	2.4
.Max.load regulation (0.02% of rated lo+5mA)(*11)		65	53	35	29	21	17	13	11	9.8	8.2	6.6	5.8
.Ripple r.m.s 5Hz~1MHz . (*12)	mA	700	500	400	250	150	90	60	40	30	12	10	5
Load regulation thermal drift			0.1% of ra		ut current	over 30 m							
.Temp. coefficient	PPM/°C	70PPM/											
.Temp. stability											ad & temp	perature.	
Warm-up drift		8V~20V n	nodels: Le	ss than ±0	0.5% of rat	ed output	current o	ver 30 mir	nutes follo	wing pov	ver On.		
.3 PROTECTIVE FUNCTIONS		30V~600	V models:	Less than	±0.25% 0	f rated ou	tput curre	nt over 30	minutes	following	power On		
.OCP		01050/ (Constant C	urront									
. OCP Foldback			hut down		ver sunnly	, change f	rom CV to	CC Users	electable				
. OVP type											cation por	t commar	nd
. OVP trip point											5~165V		
. Output Under Voltage Limit			front pan										
. Over Temp. Protection		User sele	ctable , lat	tched or n	on-latche	d.							
4 ANALOG PROGRAMMING AND MONITO	RING												
.Vout Voltage Programming			0~5V or 0							ut.			
Lout Voltage Programming (*13)			0~100%, 0~5V or 0~10V, user select. Accuracy and linearity:±1% of rated lout. 0~100%, 0~5/10Kohm full scale,user select.,Accuracy and linearity: ±1% of rated Vout.										
Vout Resistor Programming													
Lout Resistor Programming (*13)			0~5/10Ko cal. Voltad							ted lout.			
.Output Current monitor (*13)							ict ,user se	lectable le	ogic.				
Output Voltage monitor		0~5V or 0~10V , Accuracy:±1% , user selectable. 0~5V or 0~10V , Accuracy:±1% , user selectable.											
Power Supply OK signal		TTL high (4~5V) -OK, 0V-Fail 500ohm series resistance.											
. CV/CC Indicator		Open collector, CC mode: On, CV mode: Off, Maximum voltage: 30V, maximum sink current: 10mA											
0. Enable/Disable			act. Open:							- Sint curr		•	
1. Local/Remote analog control		By electrical signal or Open/Short: 0~0.6V or short: Remote, 2~15V or open: Local. Open collector, Local: Off, Remote: On. Maximum voltage: 30V, maximum sink current: 10mA.											
2. Local/Remote analog control Indicator		Open col	lector, Loc	al: Off, Re	mote: On.	Maximun	n voltage:	30V, maxi	mum sink	current: 1	0mA.		
.5 FRONT PANEL													
			t manual a					d fine adju	istment se	electable).			
			manual a					1 1	(6) (
.Control functions											cal control		
			selection k nodes (au				encoder. N	umper of	addresse	5:31.			
			selection				200						
			4 digits , A					200 +1 0	ount				
2.Display			4 digits, A										
.Indications			Current, A							l Lock, CV	CC.		
.6 Interface Specifications for the GENESY	S Series												
Remote Voltage Programming (16 bit)	V	8	10	15	20	30	40	60	80	100	150	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	6	12
Accuracy (0.05% of Vo Rated) (*14)	mV	4	5	8	10	15	20	30	40	50	75	150	300
. Remote Current Programming (16 bit)				-									
Resolution (0.002% of lo Rated)	mA	6	4.80	3.00	2.40	1.60	1.20	0.80	0.60	0.48	0.32	0.16	0.0
ccuracy (0.2% of lo Rated+0.1% of lo Actual Output) (*13)	mA mA	900	4.80 720	450	360	240	1.20	120	90	72	48	0.16 24	12
	IIIA	1 900	720	UCF	0	240	100	120	90	12	70	<u> 44</u>	1 12
Readback Voltage	0/	0.000	0.011	0.007	0.000	0.004	0.000	0.000	0.002	0.011	0.007	0.004	0.00
esolution (% of Vo Rated)	%	0.002	0.011	0.007	0.006	0.004	0.003	0.002	0.002	0.011	0.007	0.004	0.00
	mV	0.16	1.10	1.05	1.20	1.20	1.20	1.20	1.60	11.00	10.50	12.00	12.0
	mV	4	5	8	10	15	20	30	40	50	75	150	30
Accuracy (0.05% of Vo Rated)													
Accuracy (0.05% of Vo Rated) . Readback Current	-			0.007	0.009	0.002	0.002	0.003	0.004	0.005	0.007	0.002	0.00
accuracy (0.05% of Vo Rated) . Readback Current lesolution (% of Io Rated)	%	0.004	0.005				1.2	1.2	1.2	1.2	1.120	0.160	0.12
Accuracy (0.05% of Vo Rated) . Readback Current lesolution (% of Io Rated) lesolution (Readback Current)	mA	12	12	10.5	10.8	1.6							
Accuracy (0.05% of Vo Rated) . Readback Current Resolution (% of Io Rated) Resolution (Readback Current)					10.8 360	240	180	120	90	72	48	24	12
Accuracy (0.05% of Vo Rated) . Readback Current lesolution (% of lo Rated) lesolution (Readback Current) Accuracy (0.3% of lo Rated) (*13) . OVP/UVL Programming	mA mA	12 900	12 720	10.5	360	240	180		90	72	48	24	12
ccuracy (0.05% of Vo Rated) Readback Current esolution (% of lo Rated) esolution (Readback Current) ccuracy (0.3% of lo Rated) (*13) OVP/UVL Programming esolution (0.1% of Vo Rated)	mA mA mV	12 900 8	12 720 10	10.5 450 15	360 20	240 30	40	120 60	90 80	100	48	24 300	60
tesolution (Readback Voltage) tccuracy (0.05% of Vo Rated) . Readback Current tesolution (% of Io Rated) tesolution (Readback Current) tccuracy (0.3% of Io Rated) (*13) . OVP/UVL Programming tesolution (0.1% of Vo Rated) tccuracy (1% of Vo Rated) : Minimum voltage is guaranteed to maximum 0.2°	mA mA mV mV	12 900 8 80	12 720 10 100	10.5 450	360 20 200	240 30 300	180	60 600	90 80 800	72	48	24	

For cases where conformance to various safety standards (UL, IEC, etc.) is required, to be described as 190-240Vac (50/60Hz) for 3-Phase 208V models.
 3-Phase 208V models: At 208Vac input voltage. With rated output power.

*5: *6: Not including EMI filter inrush current, less than 0.2mSec. 3-Phase 208V models: 170~265Vac, constant load.

*7: *8: *9: From No-Load to Full-Load, constant input voltage. Maximum drop in Remote Sense. For 8V~300V models: Measured with JEITA RC-9131A (1:1) probe. For 600V model: Measured From 10% to 90% or 90% to 10% of Rated Output Voltage, with rated, resistive load with 10:1 probe.

 For 8W~16V models the ripple is measured from 2V to rated output voltage and rated output current. For other models, the ripple is measured at 10~100% of rated output voltage and rated output current.

*13: The Constant Current programming readback and monitoring accuracy does not include the warm-up and Load regulation thermal drift.

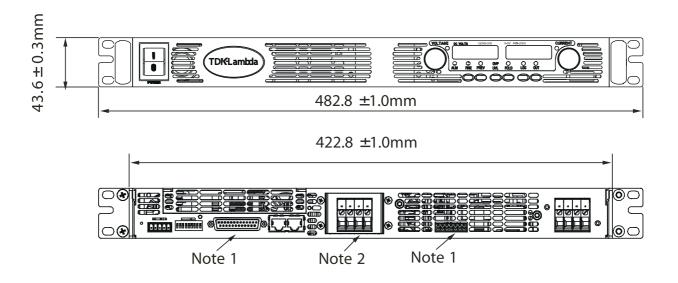
*14: Measured at the sensing point.

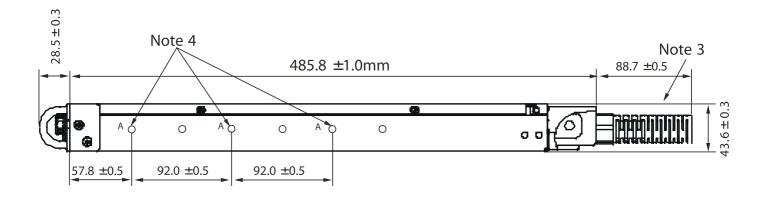
General Specifications Genesys[™] 2.4kW

16-150 20-120	30-80	40-60	60-40	80-30	100-24	150-16	300-8	600-4
dels: 170~265Vac,	47~63Hz							
: 170~265Vac, 47~6	53Hz							
17.3 16.8	16.6	16.6	16.6	16.6	16.6	16.6	16.6	16.6
10.5 10.2	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
0.99@230Vac, rated								10.1
86 86	86	88	88	88	88	88	88	87
nase 208V models:			00	00	00	00	00	0/
in master/slave me	ode							
. with external dio	des. 600V M	Aax to Cha	issis groun	nd				
densing).						-		
densing).								
.5 , The EUT is fixed			ace.					
ne, 11mSec. Unit is				00m 14	reatively	orata ra-	mum c !	on++-
000m), Derate outp 000m. Non operati				Juum, Alte	matively, d	erate maxi	mumamb	ient tem
uirements of RoHS		C 1200011	<i>.</i>					
	, anceuve.							
8KV, contact disc	h4KV							
to line, 2KV line to	ground							
5-A, VCCI-A.								
5-A, VCCI-A.								
No. 60950-1,IEC 60	050_1 EN 4	0050 1				-		
1: Output is SELV, a			ntrol inter	faces DCD	37/485 IEE	F Isolated	Analog	IN Son
g and Monitoring, 5					52/703, IEE	, isolateu	, maioy,L/	un, sell
400V: Output is Ha nd Monitoring (pin , pins 21-25),15V au	azardous, c 1s 1-3, pins1	ommunica 4-16), 5V d	ation/cont l.c. auxiliar	rol interfac				
ut 600V: Output is H rogramming and N	Hazardous, Nonitoring	all commu (all pins), 5	unication/ 5V d.c./15V	'control int / d.c. auxili	erfaces-RS ary output	232/485, II s are Haza	EEE, Isolate rdous.	d Analo
ut-Output/commu DC 1min., Output/c							VDC 1min.	
s: . auxiliary output/c /control/5V d.c. aux communication/co rol (Hazardous): -Gı	iliary outpu ntrol/5V d.o	ut (SELV): 42 c. auxiliary	242VDC 1m output (SE	nin, Output ELV): 1900V	/15V d.c. au DC 1min,O	ixiliary out utput/15V		
els: . auxiliary output/c /control/5V d.c. aux communication/con rol (Hazardous): -Gr DC 1min.	iliary outpu ntrol/5V d.c	ut (SELV): 42 auxiliary (242VDC 1m output (SE	nin, Output	/15V d.c. au	ixiliary out		
at 25°C , 70% RH.								
front to rear. No vei	ntilation ho	oles at the	top or bot	tom of the	chassis; Va	ariable fan	speed.	
n, D: 441mm (exclue								
dels, Power Comb								
models, Power Co								
is-bars (hole Ø 10.5	5mm). 150V	to 600V m	nodels: wir	re clamp co	onnector, P	hoenix P/N	N: FRONT-4	-H-7.62
							itial.	
a, Ripple & Noise 1	00mVp-p.	reterenced	internally	y to IF_COM	vi potentia	l.		
-							ad, Ripple & Noise 100mVp-p. referenced internally to IF_COM potential.	oad, Ripple & Noise 100mVp-p. referenced internally to the negative output potential. ad, Ripple & Noise 100mVp-p. referenced internally to IF_COM potential.

All specifications subject to change without notice.

Outline Drawing Genesys[™] 2.4kW Units





NOTE

- 1. Mating plug supplied with power supply.
- 2. Bus bars for 8V to 100V models. See Detail
- 2. Ac cable strain relief supplied with power supply.
- 4. Chassis slides mounting holes #10-32 marked "A".
 - GENERAL DEVICES P/N: CC3001-00-5160 or equivalent.

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

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 $\pm 1\%$ Power supply Voltage and Current Monitoring Accuracy $\pm 1.5\%$
- 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 **L** Compliant to Class C

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

- Program Current
- Measure Current
- Current Foldback shutdown

VISA & SCPI Compatible

- LAN Fault Indicators
- Auto-detects LAN Cross-over Cable
- Fast Startup



P/N: IEEE

V

P/N: IS510

P/N: IS420

P/N: LAN

Power Supply Identification / Accessories How to order

GEN	8 -	300 -	·	-
			Factory Options:	Factory AC Input Options:
Series	Output	Output	Option: IEEE	1P230 (Single Phase 170~265VAC)
Name	Voltage	Current	IS510	3P208 (Three Phase 170~265VAC)
	(0~8V	(0~300A)	IS420	
			LAN	

Models 2.4kW

Model	Output Voltage VDC	Output Current (A)	Output Power (W)		
GEN 8-300	0~8V	0~300	2400		
GEN 10-240	0~10V	0~240	2400		
GEN 16-150	0~16V	0~150	2400		
GEN 20-120	0~20V	0~120	2400		
GEN 30-80	0~30V	0~80	2400		
GEN 40-60	0~40V	0~60	2400		
Factory option					

Factory option	P/N
RS-232/RS-485 Interface built-in Standard	-
GPIB Interface	IEEE
Voltage Programming Isolated Analog Interface	IS510
Current Programming Isolated Analog Interface	IS420
LAN Interface (Complies with LXI Class C)	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 Communication Cable Power Supply Connector	DB-9F Shield Ground L=2m EIA/TIA-568A (RJ-45)	DB-9F Shield Ground L=2m EIA/TIA-568A (RJ-45)	DB-25F Shield Ground L=2m EIA/TIA-568A (RJ-45)
P/N	GEN/485-9	GEN/232-9	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 3300W/5000W

2.4 kW	GENESYS™	9
2.7/\//	GLINESIS	-

Model	Output Voltage VDC	Output Current (A)	Output Power (W)
GEN 60-40	0~60V	0~40	2400
GEN 80-30	0~80V	0~30	2400
GEN 100-24	0~100V	0~24	2400
GEN 150-16	0~150V	0~16	2400
GEN 300-8	0~300V	0~8	2400
GEN 600-4	0~600V	0~4	2400

Distribution:





Innovating Reliable Power

2.4KW Ver. 1