产品手册

仪器型号：TDK-Lambda可编程直流电源GenesYSTM

西安安泰测试科技有限公司

仪器维修|租赁|销售|测试

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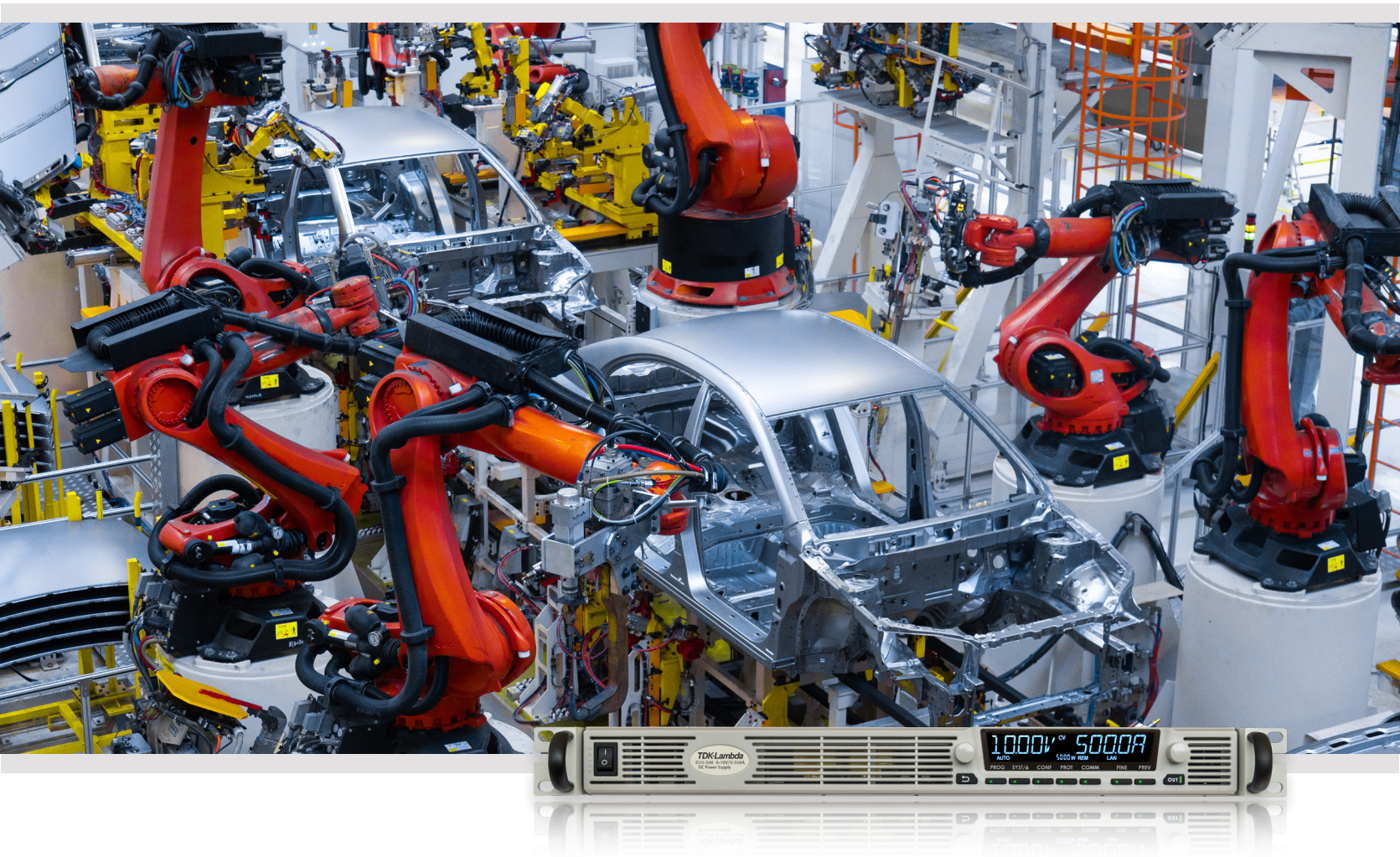


Programmable Power Supplies

Automotive

GENESYS™

Programmable Power Supplies

Special models for automotive applications

TDK-Lambda's series of programmable DC power supplies offer a wide variety of integrated functions and features. Delivering high power density and excellent reliability backed by a 5 year warranty its the best solution for many different applications in test & measurement and industrial control.

The GENESYS™ Fast-Speed and Power Sink models include features specifically for automotive requirements.

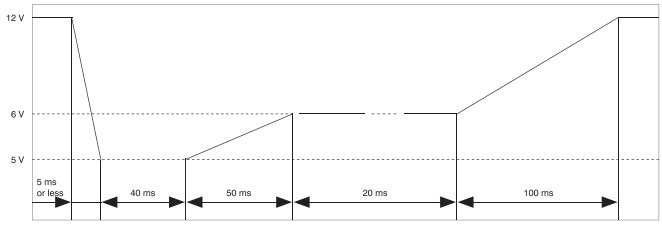
GENESYS™ Fast-Speed Models are es pecially designed for automotive test simulation and similar ATE applications where faster output dynamics are required.

Features

- Up-and down programming time TR 1ms, Tfold 2ms
  Increased Dynamics – up to 35 times faster than standard version
- Lower Output capacitance
- 5 year warranty

Applications

- Automotive Test Application
- Engine Control
- Powertrain Control (including hybrid drive technologies and electric drives)
- Vehicle Dynamics (e.g.: HIL, ESP, damping control)
- Comfort Electronics
- Interior Systems
- Infotainment
- Noise Cancelation



Simulation for Starter Motor Characteristics

1.7kW-Fast Series Specifications

Unless otherwise noted, specifications are warranted over the ambient temperature of 10℃ - 50℃

OUTPUT RATING		20-85-F	30-56-F	40-42-F
1.Rated output voltage (*1)	V	20	30	40
2.Rated output current (*2)	A	85	56	42
3.Rated output power	W	1700	1680	1680

INPUT CHARACTERISTICS	V	20	30	40
1.Input voltage/freq. (*3)	---	85~265Vac continuous, 47~63Hz, single phase.		
2.Maximum input current at 100% load (at 100Vac/200Vac)	A	20/10		
3.Power Factor (Typ.)	---	0.99 @ 100Vac, 0.98 @ 200Vac, rated output power.		
4.Efficiency (Typ. at 100Vac/200Vac)(*17)	%	87/89		
5.Inrush current (*5)	---	Less than 50A.		

CONSTANT VOLTAGE MODE		V	20	30	40
1.Max. Line regulation (*6)		---	0.01% of rated output voltage.		
2.Max. Load regulation (*7)		---	0.01% of rated output voltage +2mV.		
3. Ripple and noise (p-p, 20MHz) (*8) (*18)		mV	140	220	160
4. Ripple r.m.s. at 5Hz~1MHz (*8) (*18)		mV	25	40	30
5.Temperature coefficient		---	50PPM/^{O}C from rated output voltage, following 30 minutes warm-up.		
6.Temperature stability		---	0.01% of rated Vout over 8hrs interval following 30 minutes warm-up. Constant line, load & temperature.		
7.Warm-up drift		---	Less than 0.01% of rated output voltage +2mV over 30 minutes following power on.		
8.Remote sense compensation/wire (*10)		V	2	5	5
9.Up-prog. response time (*11)		mS	<1	<1	<1
10.Down-prog. response time (*12)	Full load	mS	<2	<2	<2.5
	No load		<80	<100	<180
11.Transient response time		---	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 1mS for models up to and including 100V. 2mS for models above 100V.		
12. Start-up delay		---	Less than 6Sec.		
13. Hold-up time		---	16mS Typical. Rated output power.		

CONSTANT CURRENT MODE	V	20	30	40
1.Max. Line regulation (*6)	---	0.01% of rated output current +2mA.		
2.Max. Load regulation (*9)	---	0.02% of rated output current +5mA.		
3.Ripple r.m.s. 5Hz~1MHz (*13) (*18)	mA	<500	<300	<100
4.Temperature coefficient	---	100PPM/^{O}C from rated output current, following 30 minutes warm-up.		
5.Temperature stability	---	0.01% of rated Iout over 8hrs. Interval following 30 minutes warm-up. Constant line, load & temperature.		
6.Warm-up drift	---	Less than +/-0.25% of rated output current over 30 minutes following power on.		

ANALOG PROGRAMMING AND MONITORING (ISOLATED FROM THE OUTPUT)

1.Vout voltage programming	---	0~100%, 0~5V or 0~10V, user selectable. Accuracy and linearity: +/-0.15% of rated Vout.
2.Iout voltage programming (*14)	---	0~100%, 0~5V or 0~10V, user selectable. Accuracy and linearity: +/-0.4% of rated Iout.
3.Vout resistor programming	---	0~100%, 0~5/10KΩ full scale, user selectable. Accuracy and linearity: +/-0.5% of rated Vout.
4.Iout resistor programming (*14)	---	0~100%, 0~5/10KΩ full scale, user selectable. Accuracy and linearity: +/-0.5% of rated Iout.
5.Output voltage monitor	---	0~5V or 0~10V, user selectable. Accuracy: +/-0.5% of rated Vout.
6.Output current monitor (*14)	---	0~5V or 0~10V, user selectable. Accuracy: +/-0.5% of rated Iout.

SIGNALS AND CONTROLS (ISOLATED FROM THE OUTPUT)

1.Power supply OK #1 signal	---	Power supply output monitor. Open collector. Output On: On. Output Off: Off. Maximum Voltage: 30V. Maximum Sink Current: 10mA.
2.CV/CC signal	---	CV/CC Monitor. Open collector. CC mode: On. CV mode: Off. Maximum Voltage: 30V. Maximum Sink Current: 10mA.
3.LOCAL/REMOTE Analog control	---	Enable/Disable analog programming control by electrical signal or dry contact. Remote: 0~0.6V or short. Local: 2~30V or open.
4.LOCAL/REMOTE Analog signal	---	Analog programming control monitor signal. Open collector. Remote: On. Local: Off. Maximum Voltage: 30V. Maximum Sink Current: 10mA.
5.ENABLE/DISABLE signal	---	Enable/Disable PS output by electrical signal or dry contact. 0~0.6V or short, 2~30V or open. User selectable logic.
6.INTERLOCK (ILC) control	---	Enable/Disable PS output by electrical signal or dry contact. Output ON: 0~0.6V or short. Output OFF: 2~30V or open.
7.Programmed signals	---	Two open drain programmable signals. Maximum voltage 25V. Maximum sink current 100mA (shunted by 27V zener).
8.TRIGGER IN / TRIGGER OUT signals	---	Maximum low level input voltage = 0.8V. Minimum high level input voltage = 2.5V. Maximum high level input = 5V positive edge trigger: tw = 10us minimum. Tr, Tf = 1us maximum. Min delay between 2 pulses 1ms.
9.DAISY_IN/SO control signal	---	By electrical Voltage: 0~0.6V/2~30V or dry contact.
10.DAISY_OUT/PS_OK #2 signal	---	4~5V = OK, 0V (500Ω impedance) = Fail.

FUNCTIONS AND FEATURES

1.Parallel operation	---	Not Applicable
2.Series operation	---	Not Applicable
3.Daisy chain	---	Power supplies can be connected in Daisy chain to synchronize their turn-on and turn-off.
4.Constant power control	---	Limits the output power to a programmed value. Programming via the communication ports or the front panel.
5.Output resistance control	---	Emulates series resistance. Resistance range: 1~1000mΩ. Programming via the communication ports or the front panel.
6.Slew rate control	---	Programmable Output rise and Output fall slew rate. Programming range: 0.0001~999.99 V/mS. or A/mS. Programming via communication ports or front panel.
7.Arbitrary waveforms	---	Profiles of up to 100 steps can be stored in 4 memory cells. Activation by command via communication ports or front panel.

PROGRAMMING AND READBACK (USB, LAN, RS232/485, Optional IEEE (*16) Interface)

	V	20	30	40
1.Vout programming accuracy (*15)	---	0.05% of rated output voltage		
2.Iout programming accuracy (*14)	---	0.1% of actual output current+0.2% of rated output current		
3.Vout programming resolution	---	0.002% of rated output voltage		
4.Iout programming resolution	---	0.002% of rated output current		
5.Vout readback accuracy	---	0.05% of rated output voltage		
6.Iout readback accuracy (*14)	---	0.2% of rated output current		
7.Vout readback resolution	% of rated output voltage	0.006%	0.004%	0.003%
8.Iout readback resolution	% of rated output current	0.002%	0.003%	0.003%

PROTECTIVE FUNCTIONS	V	20	30	40
1.Foldback protection	---	Output shut-down when power supply changes mode from CV or Power Limit to CC mode or from CC or Power Limit to CV mode. User presetable. Reset by AC input recycle in autostart mode, by Power Switch, by OUTPUT button, by rear panel or by communication.		
2.Over-voltage protection (OVP)	---	Output shut-down. Reset by AC input recycle in autostart mode, by Power Switchm, by OUTPUT button, by rear panel or by communication.		
3.Over -voltage programming range	V	1~24	2~36	2~44.1
4.Over-voltage programming accuracy	---	+/-1% of rated output voltage		
5.Output under voltage limit (UVL)	---	Prevents from adjusting Vout below limit. Does not apply in analog programming. Preset by front panel or communication port.		
6.Over temperature protection	---	Shuts down the output. Auto recovery by autostart mode.		
7.Output under voltage protection (UVP)	---	Prevents adjustment of Vout below limit. P.S output turns Off during under voltage condition. Reset by AC input recycle in autostart mode, by Power Switch, by OUTPUT button, by rear panel or by communication.		

FRONT PANEL

1.Control functions	---	Multiple options with 2 Encoders.
	---	Vout/Iout/Power Limit manual adjust.
	---	OVP/UVL/UVP manual adjust.
	---	Protection Functions - OVP, UVL, UVP, Foldback, OCL, ENA, ILC.
	---	Communication Functions - Selection of LAN, RS232, RS485, USB or Optional communication interface.
	---	Output ON/OFF. Front Panel Lock.
	---	Communication Functions - Selection of Baud Rate, Address, IP and communication language.
	---	Analog Control Functions - Selection Voltage/resistive programming 5V/10V, 5KΩ/10KΩ programming.
	---	Analog Monitor Functions - Selection of Voltage/Current Monitoring 5V/10V.
2.Display	---	Vout: 4 digits, accuracy: 0.05% of rated output voltage +/-1 count.
	---	Iout: 4 digits, accuracy: 0.2% of rated output current +/-1 count.
3.Front Panel Buttons Indications	---	OUTPUT ON, ALARM, PREVIEW, FINE, COMMUNICATION, PROTECTION, CONFIGURATION, SYSTEM, SEQUENCER.
4.Front Panel Display Indications	---	Voltage, Current, Power, CV, CC, CP, External Voltage, External Current, Address, LFP, Autostart, Safestart, Foldback V/I, Remote (communication), RS/USB/LAN/Optional communication interface, Trigger, Load/Store Cell.

ENVIRONMENTAL CONDITIONS

1.Operating temperature (*18)	---	0~50^{O}C, 100% load.
2.Storage temperature	---	-30~85^{O}C.
3.Operating humidity	---	20~90% RH (no condensation).
4.Storage humidity	---	10~95% RH (no condensation).
5.Altitude	---	Operating: 10000ft (3000m), output current derating 2%/100m or Ta derating 1^{O}C/100m above 2000m. Non-operating: 40000ft (12000m).

MECHANICAL

1.Cooling	---	Forced air-cooling by internal fans. Airflow direction: From front panel to power supply rear.
2.Weight	Kg	Less than 5Kg.
3.Dimensions (WxHxD)	mm	W: 423, H: 43.6, D: 441.5 (Without busbars and busbars cover), W: 423, H: 43.6, D: 553.2 (Including busbars and busbars cover) (Refer to Outline drawing).
4.Vibration	---	MIL-810G, method 514.6, Procedure I, test condition Annex C - 2.1.3.1
5.Shock	---	Less than 20G, half sine, 11mS. Unit is unpacked.

SAFETY/EMC

1.Safety standards	---	UL61010-1, CSA22.2 No.61010-1, IEC61010-1, EN61010-1
1.1.Interface classification	---	Output, J1, J2, J3, J4, J5, J6, J7, J8 (sense) and J9 (communication options) are SELV.
1.2.Withstand voltage	---	Input - Output (SELV): 4242VDC 1min, Input - Ground: 2835VDC 1min.
1.3.Isolation resistance	---	>100Mohm at 25℃, 70%RH, Output to Ground 500VDC.
2.EMC standards (*4)	---	IEC/EN61204-3 Industrial environment.
2.1.Conducted emission	---	IEC/EN61204-3 Industrial environment, Annex H table H.1, FCC Part 15-A, VCCI-A.
2.2.Radiated emission	---	IEC/EN61204-3 Industrial environment, Annex H table H.3 and H.4, FCC Part 15-A, VCCI-A.

NOTES:

*1: Minimum voltage is guaranteed to maximum 0.1% of rated output voltage.
*2: Minimum current is guaranteed to maximum 0.2% of rated output current.
*3: For cases where conformance to various safety standards (UL, IEC, etc…) is required, to be described as 100-240Vac (50/60Hz).
*4: Signal and control ports interface cables length: Less than 3m, DC output power port cables length: Less than 30m.
*5: Not including EMI filter inrush current, less than 0.2mS.
*6: 85~132Vac or 170~265Vac. Constant load.
*7: From No-Load to Full-Load, constant input voltage. Measured at the sensing point in Remote Sense.
*8: Measured with JEITA RC-9131C (1:1) probe.At low temperature (0~10℃) power supply needs 2min warm up.
*9: For load voltage change, equal to the unit voltage rating, constant input voltage.
*10: The maximum voltage on the power supply terminals must not exceed the rated voltage.
*11: From 10% to 90% of Rated Output Voltage, with rated, resistive load.
*12: From 90% to 10% of Rated Output Voltage.
*13: The ripple is measured at 10~100% of rated output voltage and rated output current. B.W 5Hz~1MHz.
*14: The Constant Current programming, readback and monitoring accuracy do not include the warm-up and Load regulation thermal drift.
*15: Measured at the sensing point.
*16: Maximum ambient temperature for IEEE option is 40℃.
*17: Tamb = 25℃, rated output power.
*18: At Tamb < 10℃ the Output Ripple & Noise is higher, there is a need of 2min warm-up.
To achieve high-speed responed, the output capacitance has been reduced.
Due to smaller capacitance, the output ripple & noise is higher, but it's not a problem for applications requiring high speed power supply as Automotive industry.

3.4kW-Fast Series Specifications

Unless otherwise noted, specifications are warranted over the ambient temperature of 10℃ - 50℃.

OUTPUT RATING		20-170-F	30-112-F	40-85-F
1.Rated output voltage (*1)	V	20	30	40
2.Rated output current (*2)	A	170	112	85
3.Rated output power	W	3400	3360	3400

INPUT CHARACTERISTICS		V	20	30	40
1.Input voltage/freq. 3-Phase, 3 wire+ground (*4) 1-Phase, 2 wire+ground		---	3-Phase, 200V models: 170~265Vac, 47~63Hz (Covers 200/230Vac).		
			3-Phase, 400V models: 342~460Vac, 47~63Hz (Covers 380/400/415Vac).		
			3-Phase, 480V models: 342~528Vac, 47~63Hz (Covers 380/400/415/440/460/480Vac).		
			1-Phase models: 170~265Vac, 47~63Hz (Covers 200/208/230/240).		
2.Maximum input current at 100% load (*19)	3-Phase, 200V models	---	12.5A @ 200Vac.		
	3-Phase, 400V models		6.5A @ 380Vac.		
	3-Phase, 480V models		6.5A @ 380Vac.		
	1-Phase models		21A @ 200Vac.		
3.Power Factor (Typ.)		---	For 3-Phase: 0.94 @ 200/380Vac, rated output power.		
			For 1-Phase: 0.99 @ 200Vac, rated output power.		
4.Efficiency (Typ.) (*5) (*20)		%	89	89.5	90
5.Inrush current (*6)		---	Less than 50A.		

CONSTANT VOLTAGE MODE		V	20	30	40
1. Max. Line regulation (*7)		---	0.01% of rated output voltage.		
2. Max. Load regulation (*8)		---	0.01% of rated output voltage +5mV.		
3. Ripple & Noise 3-Phase (p-p, 20MHz) (*9) (*20)		mV	120	300	150
4. Ripple r.m.s. 5Hz~1MHz for 3-Phase (*9) (*20)		mV	15	35	20
5. Ripple & Noise 1-Phase (p-p, 20MHz) (*9) (*20)		mV	130	350	200
6. Ripple r.m.s. 5Hz~1MHz for 1-Phase (*9) (*20)		mV	20	40	25
7.Temperature coefficient		---	50PPM/^{O}C from rated output voltage, following 30 minutes warm-up.		
8.Temperature stability		---	0.01% of rated Vout over 8hrs interval following 30 minutes warm-up. Constant line, load & temperature.		
9.Warm-up drift		---	Less than 0.05% of rated output voltage +2mV over 30 minutes following power on.		
10.Remote sense compensation/wire (*10)		V	2	5	5
11.Up-prog. response time (*11)		mS	<1	<1	<1
12.Down-prog. response time	Full load (*11)	mS	<1.3	<1.3	<1.3
	No load (*12)		<80	<120	<120
13.Transient response time		---	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 1mS for models up to and including 100V.		
14.Start-up delay		---	Less than 6Sec.		
15.Hold-up time		---	For 3-Phase: 7mS Typical, rated output power. For 1-Phase: 10mS Typical, rated output power.		

CONSTANT CURRENT MODE	V	20	30	40
1.Max. Line regulation (*7)	---	0.05% of rated output current.		
2.Max. Load regulation (*13)	---	0.08% of rated output current.		
3.Ripple r.m.s. 5Hz~1MHz for 3-Phase (*14) (*20)	mA	<600	<400	<200
4.1. Ripple r.m.s. 5Hz~1MHz for 1-Phase (*14) (*20)	mA	<800	<400	<400
5.Temperature coefficient	---	10V~100V models: 100PPM/^{O}C from rated output current, following 30 minutes warm-up.		
6.Temperature stability	---	0.01% of rated Iout over 8hrs. interval following 30 minutes warm-up. Constant line, load & temperature.		
7.Warm-up drift	---	10V~100V models: Less than +/-0.25% of rated output current over 30 minutes following power on.		

ANALOG PROGRAMMING AND MONITORING (ISOLATED FROM THE OUTPUT)

1.Vout voltage programming	---	0~100%, 0~5V or 0~10V, user selectable. Accuracy and linearity: +/-0.15% of rated Vout.
2.Iout voltage programming (*15)	---	0~100%, 0~5V or 0~10V, user selectable. Accuracy and linearity: +/-0.4% of rated Iout.
3.Vout resistor programming	---	0~100%, 0~5/10KΩ full scale, user selectable. Accuracy and linearity: +/-0.5% of rated Vout.
4.Iout resistor programming (*15)	---	0~100%, 0~5/10KΩ full scale, user selectable. Accuracy and linearity: +/-0.5% of rated Iout.
5.Output voltage monitor	---	0~5V or 0~10V, user selectable. Accuracy: +/-0.5% of rated Vout.
6.Output current monitor (*15)	---	0~5V or 0~10V, user selectable. Accuracy: +/-0.5% of rated Iout.

SIGNALS AND CONTROLS (ISOLATED FROM THE OUTPUT)

1.Power supply OK #1 signal	---	Power supply output monitor. Open collector. Output On: On. Output Off: Off. Maximum Voltage: 30V. Maximum Sink Current: 10mA.
2.CV/CC signal	---	CV/CC Monitor. Open collector. CC mode: On. CV mode: Off. Maximum Voltage: 30V. Maximum Sink Current: 10mA.
3.LOCAL/REMOTE Analog control	---	Enable/Disable analog programming control by electrical signal or dry contact. Remote: 0~0.6V or short. Local: 2~30V or open.
4.LOCAL/REMOTE Analog signal	---	Analog programming control monitor signal. Open collector. Remote: On. Local: Off. Maximum Voltage: 30V. Maximum Sink Current: 10mA.
5.ENABLE/DISABLE signal	---	Enable/Disable PS output by electrical signal or dry contact. 0~0.6V or short, 2~30V or open. User selectable logic.
6.INTERLOCK (ILC) control	---	Enable/Disable PS output by electrical signal or dry contact. Output ON: 0~0.6V or short. Output OFF: 2~30V or open.
7.Programmed signals	---	Two open drain programmable signals. Maximum voltage 25V. Maximum sink current 100mA (shunted by 27V zener).
8.TRIGGER IN / TRIGGER OUT signals	---	Maximum low level input voltage = 0.8V. Minimum high level input voltage = 2.5V. Maximum high level input = 5V positive edge trigger: tw = 10us minimum. Tr,Tf = 1us maximum. Min delay between 2 pulses 1ms.
9.DAISY_IN/SO control signal	---	By electrical Voltage: 0~0.6V/2~30V or dry contact.
10.DAISY_OUT/PS_OK #2 signal	---	4~5V = OK, 0V (500Ω impedance) = Fail.

FUNCTIONS AND FEATURES

1.Parallel operation	---	Not Applicable
2.Series operation	---	Not Applicable
3.Daisy chain	---	Power supplies can be connected in Daisy chain to synchronize their turn-on and turn-off.
4.Constant power control	---	Limits the output power to a programmed value. Programming via the communication ports or the front panel.
5.Output resistance control	---	Emulates series resistance. Resistance range: 1~1000mΩ. Programming via the communication ports or the front panel.
6.Slew rate control	---	Programmable Output rise and Output fall slew rate. Programming range: 0.0001~999.99 V/mS. or A/mS. Programming via communication ports or front panel.
7.Arbitrary waveforms	---	Profiles of up to 100 steps can be stored in 4 memory cells. Activation by command via communication ports or front panel.

PROGRAMMING AND READBACK (USB, LAN, RS232/485, Optional (*18) Interfaces)

	V	20	30	40
1.Vout programming accuracy (*16)	---	0.05% of rated output voltage.		
2.Iout programming accuracy (*15)	---	0.1% of actual output current+0.2% of rated output current.		
3.Vout programming resolution	---	0.002% of rated output voltage.		
4.Iout programming resolution	---	0.002% of rated output current.		
5.Vout readback accuracy	---	0.05% of rated output voltage.		
6.Iout readback accuracy (*15)	---	0.2% of rated output current.		
7.Vout readback resolution	% of rated output voltage	0.006%	0.004%	0.003%
8.Iout readback resolution	% of rated output current	0.007%	0.010%	0.002%

PROTECTIVE FUNCTIONS	V	20	30	40
1.Foldback protection	---	Output shut-down when power supply changes mode from CV or Power Limit to CC mode or from CC or Power Limit to CV mode. User presetable. Reset by AC input recycle in autostart mode, by Power Switch, by OUTPUT button, by rear panel or by communication.		
2.Over-voltage protection (OVP)	---	Output shut-down. Reset by AC input recycle in autostart mode, by Power Switch, by OUTPUT button, by rear panel or by communication.		
3.Over -voltage programming range	V	1~24	2~36	2~4.1
4.Over-voltage programming accuracy	---	+/-1% of rated output voltage		
5.Output under voltage limit (UVL)	---	Prevents from adjusting Vout below limit. Does not apply in analog programming. Preset by front panel or communication port.		
6.Over temperature protection	---	Shuts down the output. Auto recovery by autostart mode.		
7.Output under voltage protection (UVP)	---	Prevents adjustment of Vout below limit. P.S output turns Off during under voltage condition. Reset by AC input recycle in autostart mode, by Power Switch, by OUTPUT button, by rear panel or by communication.		

FRONT PANEL

1.Control functions	---	Multiple options with 2 Encoders.
	---	Vout/Iout/Power Limit manual adjust.
	---	OVP/UVL/UVP manual adjust.
	---	Protection Functions - OVP, UVL, UVP, Foldback, OCL, ENA, ILC.
	---	Communication Functions - Selection of LAN, RS232, RS485, USB or Optional communication interface.
	---	Output ON/OFF. Front Panel Lock.
	---	Communication Functions - Selection of Baud Rate, Address, IP and communication language.
	---	Analog Control Functions - Selection Voltage/resistive programming 5V/10V, 5KΩ/10KΩ programming.
	---	Analog Monitor Functions - Selection of Voltage/Current Monitoring 5V/10V.
2.Display	---	Vout: 4 digits, accuracy: 0.05% of rated output voltage +/-1 count.
	---	Iout: 4 digits, accuracy: 0.2% of rated output current +/-1 count.
3.Front Panel Buttons Indications	---	OUTPUT ON, ALARM, PREVIEW, FINE, COMMUNICATION, PROTECTION, CONFIGURATION, SYSTEM, SEQUENCER.
4.Front Panel Display Indications	---	Voltage, Current, Power, CV, CC, CP, External Voltage, External Current, Address, LFP, Autostart, Safestart, Foldback V/I, Remote (communication), RS/USB/LAN/Optional communication interface, Trigger, Load/Store Cell.

ENVIRONMENTAL CONDITIONS

1.Operating temperature (*20)	---	0~50^{O}C, 100% load.
2.Storage temperature	---	-30~85^{O}C.
3.Operating humidity	---	20~90% RH (no condensation).
4.Storage humidity	---	10~95% RH (no condensation).
5.Altitude	---	Operating: 10000ft (3000m), output current derating 2%/100m or Ta derating 1^{O}C/100m above 2000m. Non-operating: 40000ft (12000m).

MECHANICAL

1.Cooling	---	Forced air cooling by internal fans. Airflow direction: From front panel to power supply rear.
2.Weight	Kg	Less than 6.25Kg.
3.Dimensions (WxHxD)	mm	W: 423, H: 43.6, D: 441.5 (Without busbars and busbars cover), W: 423, H: 43.6, D: 553.2 (Including busbars and busbars cover) (Refer to Outline drawing).
4.Vibration	---	MIL-810G, method 514.6, Procedure I, test condition Annex C - 2.1.3.1
5.Shock	---	Less than 20G, half sine, 11mS. Unit is unpacked.

SAFETY/EMC

1.Safety standards	---	UL61010-1, CSA22.2 No.61010-1, IEC61010-1, EN61010-1.
1.1.Interface classification	---	Vout≤40V Models: Output, J1, J2, J3, J4, J5, J6, J7, J8 (sense) and J9 (communication options) are SELV. 60≤Vout≤600V Models: Output and J8 (sense) are hazardous, J1, J2, J3, J4, J5, J6, J7 and J9 (communication options) are SELV.
1.2.Withstand voltage	---	Vout≤40V Models: Input - Output (SELV): 4242VDC 1min, Input - Ground: 2835VDC 1min.
1.3.Isolation resistance	---	>100Mohm at 25℃, 70%RH, Output to Ground 500VDC.
2.EMC standards (*17)	---	IEC/EN61204-3 Industrial environment.
2.1.Conducted emission	---	IEC/EN61204-3 Industrial environment, Annex H table H.1, FCC Part 15-A, VCCI-A.
2.2.Radiated emission	---	IEC/EN61204-3 Industrial environment, Annex H table H.3 and H.4, FCC Part 15-A, VCCI-A.

NOTES:

*1: Minimum voltage is guaranteed to maximum 0.1% of rated output voltage.
*2: Minimum current is guaranteed to maximum 0.2% of rated output current.
*3: Derate 4A/1℃ above 40℃.
*4: For cases where conformance to various safety standards (UL, IEC, etc…) is required, to be described as 190-240Vac (50/60Hz) for 3-Phase 200V models, 380~415Vac (50/60Hz) for 3-Phase 400V models, 380~480Vac (50/60Hz) for 3-Phase 480V models and 190-240Vac (50/60Hz) for 1-Phase models.
*5: 3-Phase 200V models: At 200Vac input voltage, 3-Phase 400/480V models: At 380Vac input voltage, 1-Phase models: At 200Vac input voltage. At rated output power.
*6: Not including EMI filter inrush current, less than 0.2mS.
*7: 3-Phase 200V models: 170~265Vac, 3-Phase 400V models: 342~460Vac, 3-Phase 480V models: 342~528Vac, 1-Phase models: 170~265Vac. Constant load.
*8: From No-Load to Full-Load, constant input voltage. Measured at the sensing point in Remote Sense.
*9: For 10V~150V models: Measured with JEITA RC-9131C (1:1) probe. For 300~600V models: Measured with 100:1 probe.
*10: The maximum voltage on the power supply terminals must not exceed the rated voltage.
*11: From 10% to 90% of Rated Output Voltage at rated resistive load.
*12: From 90% to 10% of Rated Output Voltage.
*13: For load voltage change, equal to the unit voltage rating, constant input voltage.
*14: The ripple is measured at 10~100% of rated output voltage and rated output current. B.W 5Hz~1MHz.
*15: The Constant Current programming, readback and monitoring accuracy do not include the warm-up and Load regulation thermal drift.
*16: Measured at the sensing point.
*17: Signal and control ports interface cables length: Less than 3m, DC output power port cables length: Less than 30m.
*18: Maximum ambient temperature for IEEE option is 40℃.
*19: Typ. at Ta=25℃, rated output power.
*20: At Tamb < 10℃ the Output Ripple & Noise is higher, there is a need of 2min warm-up.
To achieve high-speed respond, the output capacitance has been reduced.
Due to smaller capacitance, the output ripple & noise is higher, but it's not a problem for applications requiring high speed power supply as Automotive industry

5kW-Fast - Series Specifications

Unless otherwise noted, specifications are warranted over the ambient temperature 10℃ - 50℃.

OUTPUT RATING		20-250-F	30-170-F	40-125-F
1.Rated output voltage (*1)	V	20	30	40
2.Rated output current (*2)	A	250	170	125
3.Rated output power	W	5000	5100	5000

INPUT CHARACTERISTICS		V	20	30	40
1.Input voltage/freq. 3 phase, 3 wire+ground (*3)		---	3-Phase, 200V models: 170~265Vac, 47~63Hz (Covers 200/230Vac).		
			3-Phase, 400V models: 342~460Vac, 47~63Hz (Covers 380/400/415Vac).		
			3-Phase, 480V models: 342~528Vac, 47~63Hz (Covers 380/400/415/440/460/480Vac).		
2.Maximum Input current at 100% load	3-Phase, 200V models:	---	17.5A @ 200Vac.		
	3-Phase, 400V models:		9.2A @ 380Vac.		
	3-Phase, 480V models:		9.2A @ 380Vac.		
3.Power Factor (Typ.)		---	0.94 @ 200/380Vac, rated output power.		
4.Efficiency (Typ.) (*4) (*18)		%	91	91	91
5.Inrush current (*5)		---	Less than 50A.		

CONSTANT VOLTAGE MODE		V	20	30	40
1.Max. Line regulation (*6)		---	0.01% of rated output voltage.		
2.Max. Load regulation (*7)		---	0.01% of rated output voltage +5mV.		
3.Ripple & noise (p-p, 20MHz) (*8) (*19)		mV	150	300	200
4.Ripple r.m.s. 5Hz~1MHz (*8) (*19)		mV	20	55	35
5.Temperature coefficient		---	50PPM/^{O}C from rated output voltage, following 30 minutes warm-up.		
6.Temperature stability		---	0.01% of rated Vout over 8hrs. interval following 30 minutes warm-up. Constant line, load & temperature.		
7.Warm-up drift		---	Less than 0.05% of rated output voltage +2mV over 30 minutes following power on.		
8.Remote sense compensation/wire (*9)		V	2	5	5
9.Up-prog. response time (*10)		mS	<1	<1	<1
10.Down-prog. response time	Full load (*10)	mS	<1	<1.5	<2
	No load (*11)		<60	<80	<100
11.Transient response time		---	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 1mS for models up to and including 100V. 2mS for models above 100V.		
12.Start-up delay		---	Less than 5Sec.		
13.Hold-up time		---	5mS Typical. Rated output power.		

CONSTANT CURRENT MODE	V	20	30	40
1.Max. Line regulation (*6)	---	0.05% of rated output current.		
2.Max. Load regulation (*12)	---	0.08% of rated output current.		
3.Ripple r.m.s. 5Hz~1MHz (*13) (*19)	mA	<850	<350	<250
4.Temperature coefficient	---	100PPM/^{O}C from rated output current, following 30 minutes warm-up.		
5.Temperature stability	---	0.01% of rated Iout over 8hrs. interval following 30 minutes warm-up. Constant line, load & temperature.		
6.Warm-up drift	---	Less than +/-0.25% of rated output current over 30 minutes following power on.		

ANALOG PROGRAMMING AND MONITORING (ISOLATED FROM THE OUTPUT)		
1.Vout voltage programming	---	0~100%, 0~5V or 0~10V, user selectable. Accuracy and linearity: +/-0.15% of rated Vout.
2.Iout voltage programming (*14)	---	0~100%, 0~5V or 0~10V, user selectable. Accuracy and linearity: +/-0.4% of rated Iout.
3.Vout resistor programming	---	0~100%, 0~5/10KΩ full scale, user selectable. Accuracy and linearity: +/-0.5% of rated Vout.
4.Iout resistor programming (*14)	---	0~100%, 0~5/10KΩ full scale, user selectable. Accuracy and linearity: +/-0.5% of rated Iout.
5.Output voltage monitor	---	0~5V or 0~10V, user selectable. Accuracy: +/-0.5% of rated Vout.
6.Output current monitor (*14)	---	0~5V or 0~10V, user selectable. Accuracy: +/-0.5% of rated Iout.

SIGNALS AND CONTROLS (ISOLATED FROM THE OUTPUT)

1.Power supply OK #1 signal	---	Power supply output monitor. Open collector. Output On: On. Output Off: Off. Maximum Voltage: 30V. Maximum Sink Current: 10mA.
2.CV/CC signal	---	CV/CC Monitor. Open collector. CC mode: On. CV mode: Off. Maximum Voltage: 30V. Maximum Sink Current: 10mA.
3.LOCAL/REMOTE Analog control	---	Enable/Disable analog programming control by electrical signal or dry contact. Remote: 0~0.6V or short. Local: 2~30V or open.
4.LOCAL/REMOTE Analog signal	---	Analog programming control monitor signal. Open collector. Remote: On. Local: Off. Maximum Voltage: 30V. Maximum Sink Current: 10mA.
5.ENABLE/DISABLE signal	---	Enable/Disable PS output by electrical signal or dry contact. 0~0.6V or short, 2~30V or open. User selectable logic.
6.INTERLOCK (ILC) control	---	Enable/Disable PS output by electrical signal or dry contact. Output ON: 0~0.6V or short. Output OFF: 2~30V or open.
7.Programmed signals	---	Two open drain programmable signals. Maximum voltage 25V. Maximum sink current 100mA (shunted by 27V zener).
8.TRIGGER IN / TRIGGER OUT signals	---	Maximum low level input voltage = 0.8V. Minimum high level input voltage = 2.5V. Maximum high level input = 5V positive edge trigger: tw = 10us minimum. Tr,Tf = 1us maximum. Min delay between 2 pulses 1ms.
9.DAISY_IN/SO control signal	---	By electrical Voltage: 0~0.6V/2~30V or dry contact.
10.DAISY_OUT/PS_OK #2 signal	---	4~5V = OK, 0V (500Ω impedance) = Fail.

FUNCTIONS AND FEATURES

1.Parallel operation	---	Not Applicable
2.Series operation	---	Not Applicable
3.Daisy chain	---	Power supplies can be connected in Daisy chain to synchronize their turn-on and turn-off.
4.Constant power control	---	Limits the output power to a programmed value. Programming via the communication ports or the front panel.
5.Output resistance control	---	Emulates series resistance. Resistance range: 1~1000mΩ. Programming via communication ports or front panel.
6.Slew rate control	---	Programmable Output rise and Output fall slew rate. Programming range: 0.0001~999.99 V/mS. or A/mS. Programming via communication ports or front panel.
7.Arbitrary waveforms	---	Profiles of up to 100 steps can be stored in 4 memory cells. Activation by command via communication ports or front panel.

PROGRAMMING AND READBACK (USB, LAN, RS232/485, Optional (*17) Interfaces)

	V	20	30	40
1.Vout programming accuracy (*15)	---	0.05% of rated output voltage.		
2.Iout programming accuracy (*14)	---	0.1% of actual output current +0.2% of rated output current.		
3.Vout programming resolution	---	0.002% of rated output voltage.		
4.Iout programming resolution	---	0.002% of rated output current.		
5.Vout readback accuracy	---	0.05% of rated output voltage.		
6.Iout readback accuracy (*14)	---	0.2% of rated output current.		
7.Vout readback resolution	% of rated output voltage	0.006%	0.004%	0.003%
8.Iout readback resolution	% of rated output current	0.005%	0.006%	0.009%

PROTECTIVE FUNCTIONS	V	20	30	40
1.Foldback protection	---	Output shut-down when power supply changes mode from CV or Power Limit to CC mode or from CC or Power Limit to CV mode. User presetable. Reset by AC input recycle in autostart mode, by Power Switch, by OUTPUT button, by rear panel or by communication.		
2.Over-voltage protection (OVP)	---	Output shut-down. Reset by AC input recycle in autostart mode, by Power Switch, by OUTPUT button, by rear panel or by communication.		
3.Over-voltage programming range	V	1~24	2~36	2~44.1
4.Over-voltage programming accuracy	---	+/-1% of rated output voltage.		
5.Output under voltage limit (UVL)	---	Prevents from adjusting Vout below limit. Does not apply in analog programming. Preset by front panel or communication port.		
6.Over temperature protection	---	Shuts down the output. Auto recovery by autostart mode.		
7.Output under voltage protection (UVP)	---	Prevents adjustment of Vout below limit. P.S output turns Off during under voltage condition. Reset by AC input recycle in autostart mode, by Power Switch, by OUTPUT button, by rear panel or by communication.		

FRONT PANEL

1.Control functions	---	Multiple options with 2 Encoders.
	---	Vout/Iout/Power Limit manual adjust.
	---	OVP/UVL/UVP manual adjust.
	---	Protection Functions - OVP, UVL, UVP, Foldback, OCL, ENA, ILC.
	---	Communication Functions - Selection of LAN, RS232, RS485, USB or Optional communication interface.
	---	Output ON/OFF. Front Panel Lock.
	---	Communication Functions - Selection of Baud Rate, Address, IP and communication language.
	---	Analog Control Functions - Selection Voltage/resistive programming 5V/10V, 5KΩ/10KΩ programming.
	---	Analog Monitor Functions - Selection of Voltage/Current Monitoring 5V/10V.
2.Display	---	Vout: 4 digits, accuracy: 0.05% of rated output voltage +/-1 count.
	---	Iout: 4 digits, accuracy: 0.2% of rated output current +/-1 count.
3.Front Panel Buttons Indications	---	OUTPUT ON, ALARM, PREVIEW, FINE, COMMUNICATION, PROTECTION, CONFIGURATION, SYSTEM, SEQUENCER.
4.Front Panel Display Indications	---	Voltage, Current, Power, CV, CC, CP, External Voltage, External Current, Address, LFP Autostart, Safetstart, Foldback V/I, Remote (communication), RS/USB/LAN/Optional communication interface, Trigger, Load/Store Cell.

ENVIRONMENTAL CONDITIONS

1.Operating temperature (*19)	---	0~50^{O}C, 100% load.
2.Storage temperature	---	-30~85^{O}C.
3.Operating humidity	---	20~90% RH (no condensation).
4.Storage humidity	---	10~95% RH (no condensation).
5.Altitude	---	Operating: 10000ft (3000m), output current derating 2%/100m or Ta derating 1^{O}C/100m above 2000m. Non-operating: 40000ft (12000m).

MECHANICAL

1.Cooling	---	Forced air cooling by internal fans. Airflow direction: From front panel to power supply rear.
2.Weight	Kg	Less than 7.5Kg.
3.Dimensions (WxHxD)	mm	W: 423, H: 43.6, D: 441.5 (Without busbars and busbars cover), W: 423, H: 43.6, D: 553.2 (Including busbars and busbars cover). Refer to Outline drawing.
4.Vibration	---	MIL-810G, method 514.6, Procedure I, test condition Annex C - 2.1.3.1
5.Shock	---	Less than 20G, half sine, 11mS. Unit is unpacked.

SAFETY/EMC

1.Safety standards	---	UL61010-1, CSA22.2 No.61010-1, IEC61010-1, EN61010-1.
1.1.Interface classification	---	Output, J1, J2, J3, J4, J5, J6, J7, J8 (sense) & J9 (communication options) are Non Hazardous.
1.2.Withstand voltage	---	Input – Output & J8 (sense), J1, J2, J3, J4, J5, J6, J7 & J9 (communication options): 4242VDC 1min, Input - Ground: 2835VDC 1min.
1.3.Isolation resistance	---	>100Mohm at 25℃, 70%RH, Output to Ground 500VDC.
2.EMC standards (*16)	---	IEC/EN61204-3 Industrial environment.
2.1.Conducted emission	---	IEC/EN61204-3 Industrial environment, Annex H table H.1, FCC Part 15-A, VCCI-A.
2.2.Radiated emission	---	IEC/EN61204-3 Industrial environment, Annex H table H.3 and H.4, FCC Part 15-A, VCCI-A.

NOTES:

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

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

*3: For cases where conformance to various safety standards (UL, IEC, etc…) is required, to be described as 190-240Vac (50/60Hz) for 3-Phase 200V models 380~415Vac (50/60Hz) for 3-Phase 400V models and 380~480Vac (50/60Hz) for 3-Phase 480V models.

*4: 3-Phase 200V models: At 200Vac input voltage, 3-Phase 400/480V: At 380Vac input voltage. With rated output power.

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

*6: 3-Phase 200V models: 170~265Vac, 3-Phase 400V models: 342~460Vac, 3-Phase 480V models: 342~528Vac. Constant load.

*7: From No-Load to Full-Load, constant input voltage. Measured at the sensing point in Remote Sense.

*8: Measured with JEITA RC-9131C (1:1) probe.

*9: The maximum voltage on the power supply terminals must not exceed the rated voltage.

*10: From 10% to 90% of Rated Output Voltage at rated resistive load.

*11: From 90% to 10% of Rated Output Voltage.

*12: For load voltage change, equal to the unit voltage rating, constant input voltage.

*13: The Ripple is measured at 10~100% of rated output voltage and rated output current. B.W 5Hz~1MHz.

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

*15: Measured at the sensing point.

*16: Signal and control ports interface cables length: Less than 3m, DC output power port cables length: Less than 30m.

*17: Max. ambient temperature for IEEE is 40℃.

*18: Typ. at Ta=25℃, rated output power.

*19: At Tamb < 10℃ the Output Ripple & Noise is higher, there is a need of 2min warm-up.
To achieve high-speed respond, the output capacitance has been reduced.
Due to smaller capacitance, the output ripple & noise is higher, but it's not a problem for applications requiring high speed power supply as Automotive industry

How to order G1.7kW FAST - Power Supply Identification / Accessories

G		20	-	85	-		-	F	-	
Series Name		Output		Output		Interface Options		FAST		Accessories Options
Front Panel Type		Voltage		Current						M - Printed *User Manual
Empty: standard		(0~20V)		(0~85A)						* User Manual & GUI are available on the website
B: Blank Front Panel (ATE version)										P - Bus Parralleling Cable

AC Inputs (All Models)

1Ø, 85 ~ 265Vac

Interface Options (Factory installed)	P/N
LAN (LXI 1.5 compliant with Multi-Drop capability)- built-in	-
USB 2.0 compliant with Multi-Drop capability - built-in	-
RS-232/RS-485 - built-in	-
Isolated Analog Program/Monitor Interface (5V/10V Pgm/Mon with 600V isolation) - built-in	-
IEEE (488.2 & SCPI compliant with Multi-Drop capability installed)	IEEE
Modbus-TCP	MDBS
EtherCAT	ECAT

Models 1.7kW

Model	Voltage (V)	Current (A)	Power (W)
G20-85-F	0~20V	0~85	1700
G30-56-F	0~30V	0~56	1680
G40-42-F	0~40V	0~42	1680

Accessories

Accessories will be sent separately from the Power Supply packing, according to order.

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
PC Connector, Communication Cable, Power Supply Connector	DB-9F. Shielded L=2m. RJ-45	DB-9F. Shielded L=2m, RJ-45
P/N	GEN/485-9	GEN/232-9

2. Serial link cable (Included with the power supply)

Daisy-chain up to 31 GENESYS™ power supplies.

Mode	Power Supply Connector	Communication Cable	P/N
RS-485	RJ-45	Shielded L=50cm	GEN/RJ45

3. Bus Paralleling cable

Connectors	Cables	P/N
2013595-1 (TYCO)	Shielded L=11cm	G/P

4. User Manual

Printed User Manual	G/M

How to order G3.4kW / 5kW-FAST - Power Supply Identification / Accessories

G - **20** - **170** - _____ - **F** - _____ - _____

Series Name Front Panel Type	Output Voltage	Output Current	Interface Options	FAST	AC Input Options	Accessories Options
Empty: standard	(0~20V)	(0~170A)			3.4kW-1P208 (1Ø 170~265VAC)	M - Printed *User Manual
B: Blank Front Panel (ATE version)					3.4kW/5kW-3P208 (3Ø 170~265VAC)	* User Manual & GUI are available on the website
					3.4kW/5kW 3P400 (3Ø 342~460VAC)	
					3.4kW/5kW 3P480 (3Ø 342~528VAC)	P - Bus Parralleling Cable

Interface Options (Factory installed)

	P/N
LAN (LXI 1.5 compliant with Multi-Drop capability)- built-in	-
USB 2.0 compliant with Multi-Drop capability - built-in	-
RS-232/RS-485 - built-in	-
Isolated Analog Program/Monitor Interface (5V/10V Pgm/Mon with 600V isolation) - built-in	-
IEEE (488.2 & SCPI compliant with Multi-Drop capability installed)	IEEE
Modbus-TCP	MDBS
EtherCAT	ECAT

Models G3.4kW

Model	Output Voltage VDC	Output Current (A)	Output Power (W)
G20-170-F	0~20V	0~170	3400
G30-112-F	0~30V	0~112	3360
G40-85-F	0~40V	0~85	3400

Models G5kW

Model	Output Voltage VDC	Output Current (A)	Output Power (W)
G20-250-F	0~20V	0~250	5000
G30-170-F	0~30V	0~170	5100
G40-125-F	0~40V	0~125	5000

Accessories

Accessories will be sent separately from the Power Supply packing, according to order.

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
PC Connector, Communication Cable, Power Supply Connector	DB-9F. Shielded L=2m. RJ-45	DB-9F. Shielded L=2m, RJ-45
P/N	GEN/485-9	GEN/232-9

2. Serial link cable (Included with the power supply)

Daisy-chain up to 31 GENESYS™ power supplies.

Mode	Power Supply Connector	Communication Cable	P/N
RS-485	RJ-45	Shielded L=50cm	GEN/RJ45

3. Bus Paralleling cable

Connectors	Cables	P/N
2013595-1 (TYCO)	Shielded L=11cm	G/P

4. User Manual

Printed User Manual	G/M

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