

Input Parameters	
NOMINAL INPUT VOLTAGE RANGE	100-240VAC or 177- 326VDC
MAX. INPUT VOLTAGE RANGE	90-264VAC or 160-358VDC
INPUT FREQUENCY	47-63Hz
MAXIMUM INPUT CURRENT	10A AC or 6A DC
INRUSH CURRENT	<50 AMPS

Output Parameters

Adjustment and Derating.
 The Alpha 600 series is designed to provide a maximum output power of 600W at nominal output voltages. The following procedure must be used to ensure the PSU is operated within its ratings

- Calculate user power for each module (volts x amps).
- Add all the individual module powers together. The total power must not exceed the power rating of the converter, 600W.
- Calculate secondary transformer turns x amps or each module see outputs table for transformer secondary turns.
- Add all the module turns x amps together and this must not exceed 120AT.
- If necessary reduce the loading until the conditions are met. ie. power and ampere-turns maxima.

Modules	Note	Output Range	Current	Slots	Turns	Max. Current Limit	Settings for hazardous energy
Standard Modules							
A		4.5-5.5V	60A	2	1	79.2A	>3V
AA		4.5-6.5V	60A	2	1	79.2A	>3V
AL		4.95-5.05V	60A	2	1	79.2A	>3V
B		4.5-5.5V	25A	1	1	33A	-
BB		4.5-6.5V	25A	1	1	33A	-
C	1,8	5-16V	16A	1	2	21.2A	>11.3V
CM	8	5.2-6.6V	16A	1	2	21.2A	-
CL	8	4.75-5.3V	16A	1	2	21.2A	-
CH	1,8	11.9-12.7V	16A	1	2	21.2A	>11.3V
D	8	18-29V	8A	1	4	10.6A	>22.6V
E	2	5-16V	8A	1	2	10.6A	-
		5-16V	8A		2	10.6A	-
EB		4.5-5.5V	9A	1	1	11.9A	-
		4.5-5.5V	9A		1	11.9A	-
EH	2	11.9-12.7V	8A	1	2	10.6A	-
		11.9-12.7V	8A		2	10.6A	-
EL	2	5.2-6.6V	8A	1	2	10.6A	-
		11.9-12.7V	8A		2	10.6A	-
EQ		4.5-5.5V	9A	1	1	11.9A	-
		2.7-3.9V	9A		1	11.9A	-
F	8	9-16V	33A	2	2	43.6A	>5.5V
G	8	17.5-29V	25A	2	4	33A	>7.2V
H	3	18-32V	5A	1	4	6.6A	-
		18-32V	5A		4	6.6A	-
J	5,8,9	30-48V	10A	2	4	13A	>18.4V
K	8	18-29V	15A	2	4	19.8A	>12V
L	8,10	1.8-3.2V	25A	1	1	33A	-
M	8	5-16V	8A	1	2	10.6A	-
N	6,8	18-32V	5A (8)	1	4	6.6A	-

Modules	Note	Output Range	Current	Slots	Turns	Max. Current Limit	Settings for hazardous energy
Standard Modules							
P	4	18-29V	5A	1	4	6.6A	-
		5-16V	8A		2	10.6A	-
PL	4	23.5-24.5V	5A	1	4	6.6A	-
		4.75-5.3V	8A		2	10.6A	-
Q	8	2.7-3.9V	25A	1	1	33A	-
R	8	2.7-3.9V	60A	2	1	79.2A	>3V
S	7,8	2.5-5.7V	85A	2	1	110.5A	>2.2V
T	8	1.8-3.2V	60A	2	1	79.2A	>3V
U	8	10-21V	16A	1	3	21.2A	>11.3V
W		4.5-5.5V	15A	1	1	19.8A	-
Z		4.5-5.5V	25A	1	1	33A	-

- Module Limitations**
- For C, CH, modules the max output current is 12A for voltages > 12V.
 - For E, EH, EL modules the max output current is limited to 7A in slot 3 and 6A in Slot 4.
 - For H modules the max output current is limited to 4A in slot 4. For voltages >29V, the output current is limited to 1A.
 - For P, PL modules the max output current is limited to 5A for channel 1 and for channel 2, 8A in slot 1, 7A in slots 2, 3 and 5, and 6A in slot 4.
 - For J modules output current derates by 0.25A per volt above 40V.
 - N modules with output voltage greater than 29V have max output current of 1 Amp.
 - For S modules the max output current is limited to 75A in slots 2 & 3, 77A in slots 3 & 4, and 80A in slots 4 & 5.
 - When using remote sense, the max output voltage will be reduced by 0.5V for L, S, T, Q and R modules, and by 1.0V for C, CH, CL, CM, D, F, G, J, M, K, N, U modules.
 - Ampere turns for J module is calculated as AT = (output current + 15A) x 4.
 - For L modules the max. output current is limited to 20A in slot 5.
 - Adjusting output voltage beyond the stated range may cause overvoltage protection (OVP) to operate, whereby all outputs will turn off. To reset OVP, turn back output voltage adjustment and remove the mains supply for 30 seconds and then switch back on.

- Unit Limitations**
- 600W max output power. 120 ampere turns maximum.
 - Ambient temperature range 0-50degC
 - For PSUs fitted with RA option (reverse air flow), the output is limited to 475W and 100AT at a max ambient of 40°C, or 400W, 85AT for a max ambient of 50°C (horizontal only). Operation in any vertical position is not permitted.
 - For power supplies having input or output connector housings fitted there is no effect on ratings in any orientation.

Custom Models

Model	CA600 18G (NS-WAK-001)
Input voltage range	90-264Vac
Outputs	18V 25A (450W, 100AT total)
Ambient	50degC max
Orientations	All except psu vertical with airflow downwards and psu upside down

Important Safety Instructions

Servicing

These products are not customer serviceable. Repairs may only be carried out by Lambda UK or their authorised agents. These products are not authorised for use as critical components in nuclear control systems, life support systems or equipment for use in hazardous environments without the express written approval of the Managing Director of Coutant Lambda Ltd.

Energy Hazards

Certain modules are capable of providing hazardous energy (240VA) according to output voltage setting. Final equipment manufacturers must provide protection to service personnel against inadvertent contact with these module output terminals. If set such that hazardous energy can occur then the module terminals or connections must not be user accessible. Non-seriesed outputs that are earthed in the end use equipment are SELV. If outputs are not earthed they must be considered hazardous, as a single fault in the secondary may make them exceed the SELV limits between output and earth. If any output is non-SELV then all outputs become non-SELV. Outputs connected in series may produce non-SELV levels, and this must be taken into account in the end use application.

Approval Limitations: Use in North America (AC units only)

When this product is used on 180VAC-250VAC mains with no neutral, connect the two live wires to L (live) and N (neutral) terminals on the input connector. In this instance double pole fusing is required.

High Voltage Warning

Dangerous voltages present within the power supply. Do not remove covers.

External Hot Surfaces

Section 6 of the Health and Safety at Work Act requires that manufacturers have an obligation to protect service engineers as well as users. In order to comply with this, a label must be fitted to these products which is clearly visible to service personnel accessing the overall equipment, and which legibly warns that surfaces of these products may be hot and must not be touched when the products are in operation

Safety Earthing Screw

On products with an enclosure, special safety earthing screws are used which connect the cover to the chassis. They must not be removed.

Safety Class of Protection

These products are designed for the following parameters: Material Group IIIb, Pollution Degree Overvoltage Category II, Class 1 (earthed), Indoor use as part of an overall equipment such that the product is accessible to service engineers only.

Safety Approvals

UL60950-1 and CSA22.2 No60950-1-UL recognised. C-UL for Canada.
IEC/EN60950-1 - CE mark. CE marking when applied to any Alpha product, indicates compliance with the Low Voltage Directive (2006/95/EC) in that it complies with EN60950-1.

Symbols

alternating current (a.c.).

direct current (d.c.)

caution, refer to supplementary documents.

danger, shock hazard

Input markings

+ L LIVE
 ~ NEUTRAL
 EARTH

Environmental parameters

Operation

Temperature 0 to 50°C (derating 2.5%°C above 50°C to 65°C -Not covered by approvals).
 Humidity 5 to 95% RH non-condensing. Air Pressure 70kPa to 106kPa.
 Altitude -200m to 3000m

Storage and Transportation

Temperature -40°C to +85°C. Humidity 5% to 95% RH non-condensing.
 Air Pressure 54kpa to 106kpa. Altitude -200m to 5000m.

Vibration and shock

10-200Hz @ 1.5G sinewave, 20G for 15 minutes in 3 axes random vibration / 3000 bumps, 10G (16mS) half sinewave.

Cooling

Provided that the fan air intake and air outlet slots are not impeded, these units may be mounted in any of 4 orientations: Horizontal, on either side or vertical with airflow upwards. For correct airflow, allow 50mm clearance around the side and ends of the product. Exceptions to orientation are covered in the product specific handbooks

Level of insulation

Dielectric Strength testing is carried out as follows:

Primary mains circuit to earth - 2.25 - 2.35kVDC
 Primary mains circuits to transformer core - 4.25 - 4.35kVDC*
 Primary mains circuits to secondary -4.25 - 4.35kVDC*
 Outputs to each other and to earth are isolated to 500VDC

*This test is not possible with modules fitted to the unit as damage to RFI capacitors will occur)

EMC performance

Emissions :

EN55022 Conducted RFI-Class A or B (depending on product - Consult Technical Sales).

Radiated RFI - Class A

EN61000-3-2 / A14 - Pass - Class A and D. EN61000-3-3 / A1 - Pass

Immunity:

EN61000-4-2 - Level 4 Criteria B EN61000-4-3 - Level 3 Criteria B

EN61000-4-4 - Level 4 Criteria B EN61000-4-5 - Level 3 Criteria B (Installation Class 3, Criteria B)

EN61000-4-6 - Level 3 Criteria B EN61000-4-11 - Pass VDE 0160 - Class 2 (Clause 7.3.1.1.)

General installation instructions

- i) The Alpha family of component power supplies is designed for use within other equipment or enclosures which restrict access to authorised competent personnel only. For safe installation and operation of this product, carefully follow the instructions below.
- ii) The unit covers/chassis are designed to protect only skilled personnel from hazards and must not be made user accessible.
- iii) These products are Class 1 and must therefore be reliably earthed and professionally installed in accordance with the prevailing electrical wiring regulations and the safety standards covered herein.
- iv) These products are IPX0 and chemicals/solvents, cleaning agents and other liquids must not be used.

Mechanical parameters

Do not use mounting screws which penetrate the unit by more than 4.5 mm.
 Weight 2.4Kg dependant on configuration

Connection details

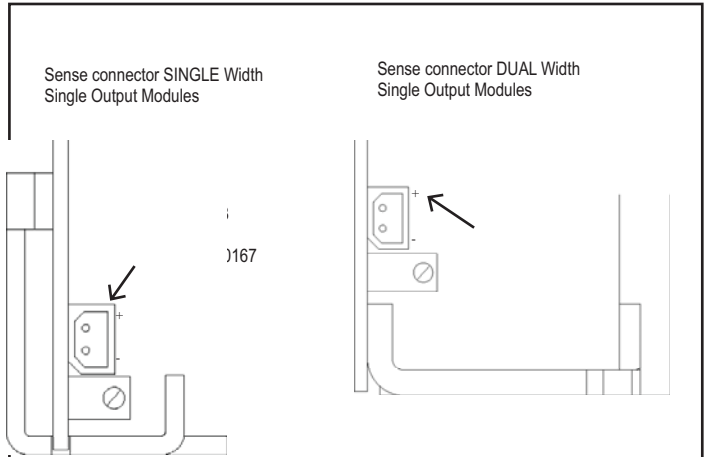
Input Connections

Input tabs- 6.3mm x 0.8mm, tin plated brass, rated 15A. Internal fuse (FS101) 6.3 x 32mm, F12AH/250V

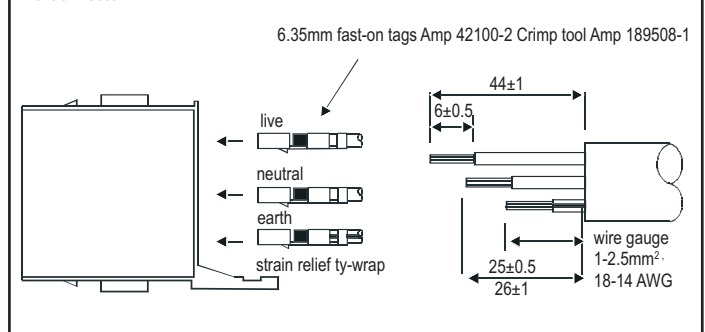
Mating input faston connectors				
Brand	Colour	Wire size (awg)	Part number	Current rating
Amp	Red	22 - 18	2-520407-2	15A
Amp	Blue	16 - 14	3-520408-2	15A

Output Connections

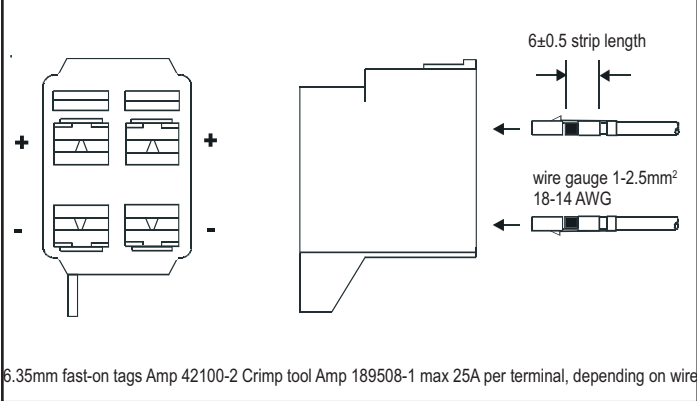
- Output Connector Ratings:
- 6.35mm fastons are rated at 15A.
 - 9.5mm Faston terminals are rated at 32A (tab thickness = 1.0mm, suitable Faston terminals are AMP 151667-2 or AMP 280223-2)
 - M5 screw terminals are rated at 100A subject to the wire and wire connector used to connect them. Maximum recommended torque setting for M5 screws is 2.5 - 3.0Nm.



AC Connector

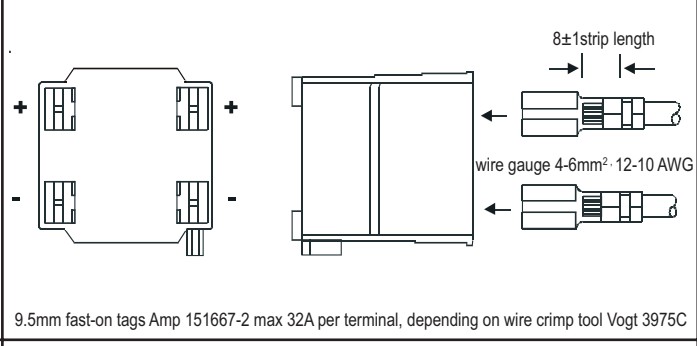


S1 connector for single output modules



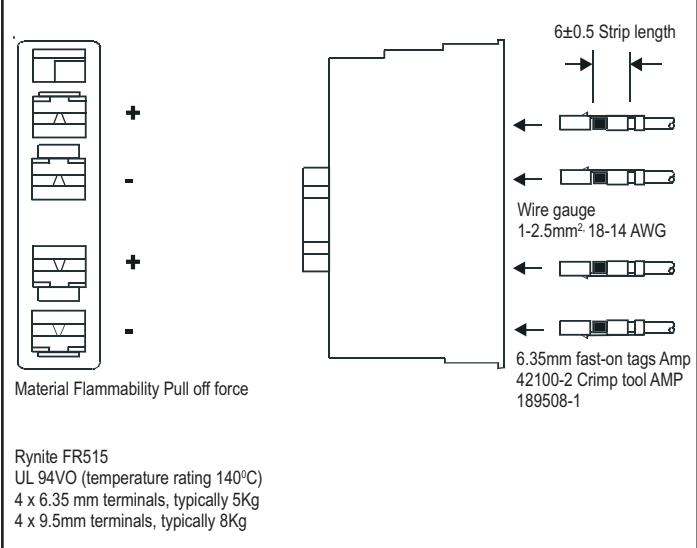
6.35mm fast-on tags Amp 42100-2 Crimp tool Amp 189508-1 max 25A per terminal, depending on wire.

S2 connector for single output modules



9.5mm fast-on tags Amp 151667-2 max 32A per terminal, depending on wire crimp tool Vogt 3975C

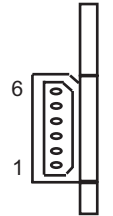
D1 connector for dual output modules



Option: Mains fail options (MF, MFL, MFE, MFU, MFV)

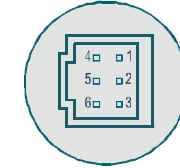
Connector: Six way Molex, 50-37-5063. Crimp terminals: 08-70-1040.

	MF/MFL	MFE	MFU	MFV
Pin 1	Inhibit Low	Enable Low	Inhibit Low	Inhibit Low
Pin 2	+5V Aux	+5V Aux	+5V Aux	+5V Aux
Pin 3	Power Fail	Power Fail	Power Fail Emitter	AC Fail
Pin 4	0V Aux	0V Aux	0V Aux	0V Aux
Pin 5	Inhibit High	Enable High	Inhibit High	Inhibit High
Pin 6	NC	NC	Power Fail Collector	SYS Reset

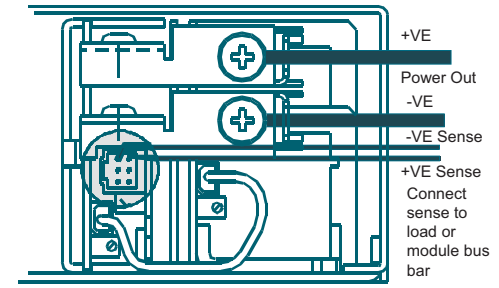


Option: PP - Parallel

Connector: Six way Molex, 90142-0006. Crimp terminals: 90119-2109.



- +ve sense
- no connection
- no connection
- ve sense
- no connection
- no connection



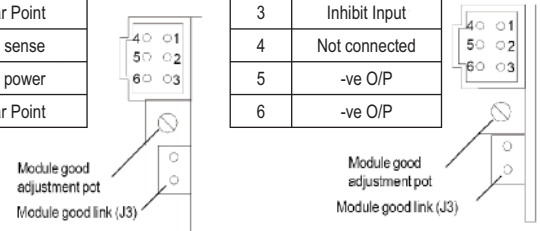
Option: PA - Parallel **Option: IN - Inhibit**

Connector: Six way Molex, 90142-0006. Crimp terminals: 90119-2109.

Connector: Six way Molex, 90142-0006. Crimp terminals: 90119-2109.

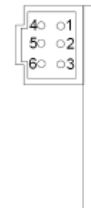
1	+ve sense
2	Module Good
3	Star Point
4	-ve sense
5	-ve power
6	Star Point

1	Not connected
2	Module Good
3	Inhibit Input
4	Not connected
5	-ve O/P
6	-ve O/P



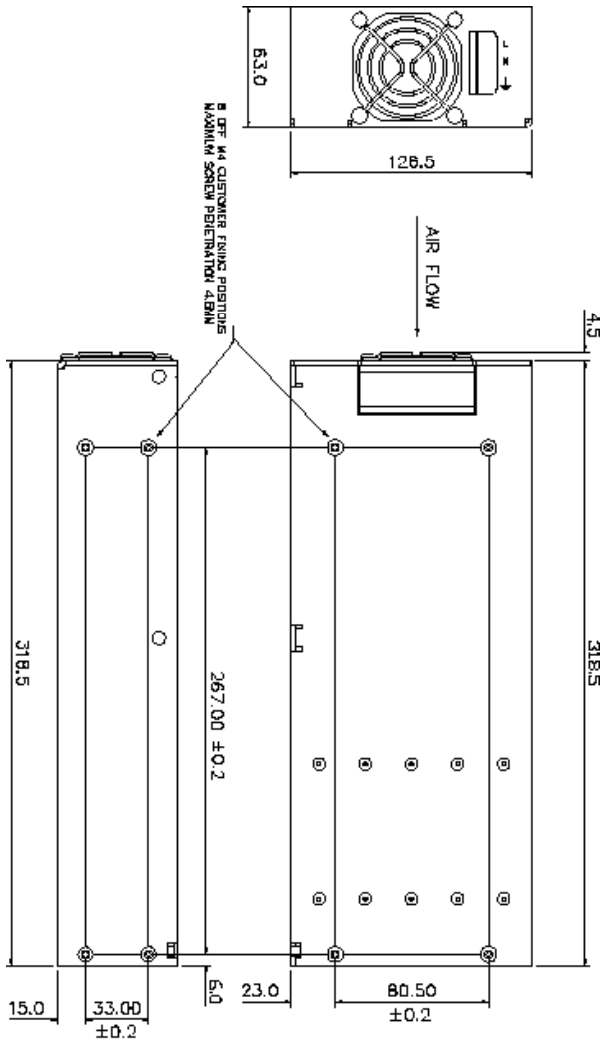
Option: RP - Remote Programming

1	+ve sense
2	-ve sense
3	Control 2
4	NC
5	Control 1
6	NC

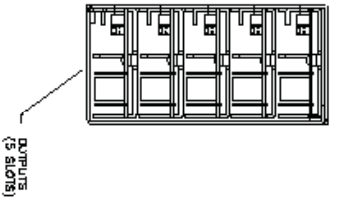


For other options refer to application notes

Customer fixings:



NOTE : DIMENSIONS ARE NOMINAL TOLERANCES +/- 0.5MM



CEL Part No. 17130 Issue 26, October 2007,
 Coutant Lambda Limited,
 Kingsley Avenue,
 Ilfracombe,
 Devon, EX34 8ES.
 Telephone - Sales and Service (01271) 856666. Head Office and Works (01271) 856600.
 Facsimile (01271) 864894. WEBSITE: www.lambda-gb.com