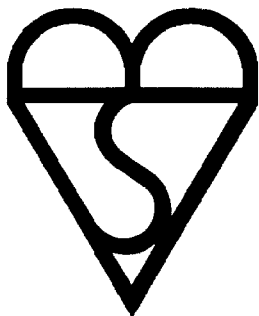


# K I T E M A R K L I C E N C E



No. KM 13930

Coutant Lambda Limited  
Ilfracombe

## Model

Vega DC

## Report Number

249/4504393 Issue 2

### Vega DC models as described below:

#### Unit Configuration Code:

a) V0 or Vega DC

b) followed by: F, R or C

where F = Standard fan, forward airflow

R = Standard fan, reverse air

C = Customer air

c) optionally followed by: F, S

where F= Fast on or quick connect input terminals

S= Screw input terminals

d) optionally followed by S

Where S = Standard filter

e) optionally followed by: E, F, EV, FV or D

where E = DC input fail with PSU & fan enable and 5V aux supply

F = DC input fail with PSU & fan inhibit and 5V aux supply

EV = DC input fail with PSU & fan enable and 5V/300mA aux supply

FV = DC input fail with PSU & fan inhibit and 5V/300mA aux supply

D = Primary digital option. Provides PSU inhibit and enable, fan monitor, standby supply, hours of operation, serial numbers, mains fail, over temperature warning. When secondary digital options fitted also provides status bytes, unit and module IDs, grouping, digital voltage and current limit programming, secondary inhibit and enable, secondary turn on delay, global and secondary module good, module monitoring.

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Date: 7 May 2004

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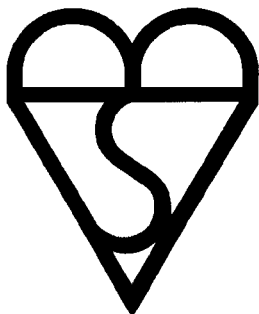
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# K I T E M A R K L I C E N C E



No. KM 13930

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## Vega DC continued

### Module Configuration Code:

B@, C@, C1Y, D@, E@, F1, F2, H@/@, L@, W2 or W5

where the letter represents a module and @ is a number between 1 and 5, which represents the number of turns on the transformer secondary. By reference to the following table, this in turn defines the permitted voltage range of the module. Blanking plates may be fitted in place of modules.

@ may optionally be followed by the letter L or H, where L and H indicate the low or high output voltage variants of the module.

For W2 & W5 modules only: @ is followed by F or T, indicating fixed or tracking OVP.

Followed by F or S, where F indicates fast-on output terminals and S indicates screw output terminals.

or Z#

where # is a number between 1 and 99. This code represents any two of the above modules that have had their outputs paralleled together. The number # is a module reference number and does not represent the number of turns. May optionally followed by F or S, where F indicates fast-on output terminals and S indicates screw output terminals.

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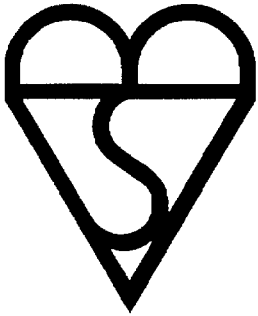
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# K I T E M A R K L I C E N C E



No. KM 13930

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or BB@, CC@, DD@, EE@, HH@/@, JJ@/@, LL@, C5B4 or B5B4

where @ is a number between 1 and 5, which represents the number of turns on the transformer secondary. For HH@/@ the code represents one H module that has had its two outputs connected in series. For all other variants this code represents two modules, selected from those listed above, that have had their outputs connected in series. May optionally followed by F or S, where F indicates fast-on output terminals and S indicates screw output terminals.

Note: Seriesed outputs may make all outputs hazardous, see Electrical & Thermal Ratings section for details. JJ@/@ modules are HH@/@ modules with reduced OVP and/or current ratings.

or X1, X2, X4 or X8

where the number relates to the maximum voltage capability of the X module in accordance with X1=10V, X2=20V, X4=40V, X8=80V. The X module is connected to the output terminals of D or E modules, which may be connected in series or parallel. The X module contains diodes in series with its output (for paralleling use) and additional circuitry for remote sense, paralleling with other X modules and module inhibit. A maximum of two X modules may be fitted in a PSU.

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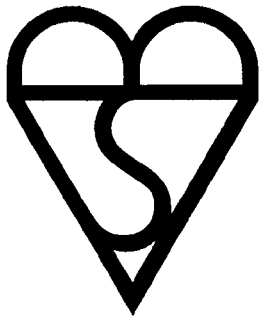
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PS027/0202/AP

# K I T E M A R K L I C E N C E



No. KM 13930

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## Module Options:

N, P, R, T, L, K, D, V‡ or R‡

where N = Inhibit, module good and remote sense

P = Parallel with current share

R = Remote sense (twin output modules only)

T = Remote sense (one output of twin output modules only)

L = Module good using LED indication

K = Allows for Vega products to be paralleled with Omega products

D = Secondary digital option (may only be fitted to single output modules). Provides analogue voltage and resistive programming, current limit modes, inhibit output, enable output, turn on delay, module good, N+1 paralleling.

V‡ = Voltage programmable output voltage

R‡ = Resistance programmable output voltage

where ‡ represents a number between 1 and 99. Each number indicates an option variant which does not affect safety, of these the following are standard variants:

1 = Inhibit, fixed current limit

2 = Inhibit, programmable current limit

3 = Enable, fixed current limit

4 = Enable, programmable current limit

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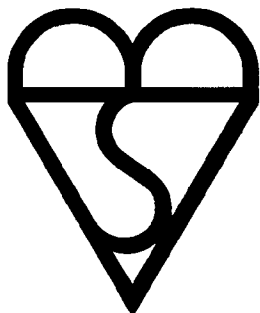
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# K I T E M A R K L I C E N C E



No. KM 13930

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## Electrical & Thermal Ratings:

Output modules:

Module	Output Voltage	Rated Current	Power	Occupied Slots	Secondary Turns	Ampere Turns
B1L	1 - 3.8V	20A	76W	1	1	20
B1H	3.9 - 5.5V	20A	110W	1	1	20
B2	5 - 9V	25A	225W	1	2	50
B3	9.1 - 16.2V	12A	195W	1	3	36
B4	16.3 - 21.5V	10A	215W	1	4	40
B5	21.6 - 31V	6A	186W	1	5	30
C1	1 - 4.1V	35A	144W	1	1	35
C1Y	1 - 4.1V	40A	164W	1	1	40
C3	9.1 - 16.2V	18A	292W	1	3	54
C4	16.3 - 21.5V	14A	301W	1	4	56
C5	21.6 - 31V	10A	310W	1	5	50
D1L	1 - 3.8	50A	190W	1.5	1	50
D1H	3.9 - 5.5	50A	275W	1.5	1	50
D2	3.8 - 9V	45A	405W	1.5	2	90
D3	8 - 16.5V	24A	396W	1.5	3	72
D4	14 - 21.5V	18A	387W	1.5	4	72

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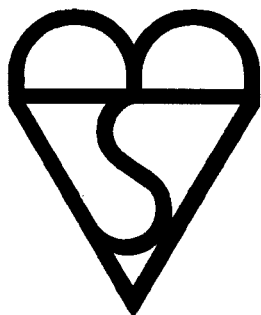
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D5	21 - 28V	15A	420W	1.5	5	75
E1	1 - 3.8V	60A	228W	2	1	60
E2	3.8 - 8V	60A	480W	2	2	120
E3L	8 - 13.9V	40A	556W	2	3	120
E3H	14 - 15V	36A	540W	2	3	108
E4	14 - 19.9V	30A	597W	2	4	120
E5L	20 - 24V	27A	648W	2	5	135
E5H	24 - 28V	25A	650W	2	5	125
F1	1 - 3.8V	80A	640W	2	1	80
F2	3.8 - 8V	80A	640W	2	2	160
H1L/1L	1-3.8/1-3.8V	12A/8A	46W/31W	1	1/1	12/8
H1L/1H	1-3.8/3.9-5.5V	12A/8A	46W/44W	1	1/1	12/8
H1H/1L	3.9-5.5 /1-3.8V	12A/8A	66W/31W	1	1/1	12/8
H1H/1H	3.9-5.5 /3.9-5.5V	12A/8A	66W/44W	1	1/1	12/8
H1L/2	1-3.8/5-9V	12A/6A	46W/54W	1	1/2	12/12
H1H/2	3.9-5.5/5-9V	12A/6A	66W/54W	1	1/2	12/12
<b>H1L/3</b>	1-3.8/9.1-16.2V	12A/6A	46W/98W	1	1/3	12/18
H1H/3	3.9-5.5/9.1-16.2V	12A/6A	66W/98W	1	1/3	12/18
H1L/4	1-3.8/16.3-25V	12A/4.5A	46W/113W	1	1/4	12/18
H1H/4	3.9-5.5/16.3-25V	12A/4.5A	66W/113W	1	1/4	12/18
H2/1L	5.6-9/1-3.8V	10A/8A	90W/31W	1	2/1	20/8

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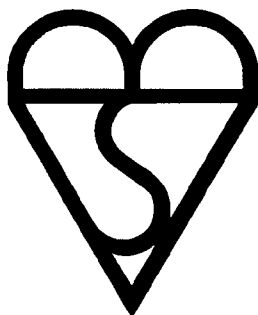
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H2/1H	5.6-9/3.9-5.5V	10A/8A	90W/44W	1	2/1	20/8
H2/2	5.6-9/5.6-9V	10A/6A	90W/54W	1	2/2	20/12
H2/3	5.6-9/9.1-16.2V	10A/6A	90W/98W	1	2/3	20/18
H2/4	5.6-9/16.3-25V	10A/4.5A	90W/113W	1	2/4	20/18
H3/1L	9.1-16.2/1-3.8V	10A/8A	162W/31W	1	3/1	30/8
H3/1H	9.1-16.2/3.9-5.5V	10A/8A	162W/44W	1	3/1	30/8
H3/2	9.1-16.2/5.6-9V	10A/6A	162W/54W	1	3/2	30/12
H3/3	9.1-16.2/9.1-16.2V	10A/6A	162W/98W	1	3/3	30/18
H3/4	9.1-16.2/16.3-25V	10A/4.5A	162W/113W	1	3/4	30/18
H5/1L	16.2-31/1-3.8V	5A/8A	155W/31W	1	5/1	25/8
H5/1H	16.2-31/3.9-5.5V	5A/8A	155W/44W	1	5/1	25/8
H5/2	16.2-31/5.6-9V	5A/6A	155W/54W	1	5/2	25/12
H5/3	16.2-31/9.1-16.2V	5A/6A	155W/98W	1	5/3	25/18
H5/4	16.2-31/16.3-25V	5A/4.5A	155W/113W	1	5/4	25/18

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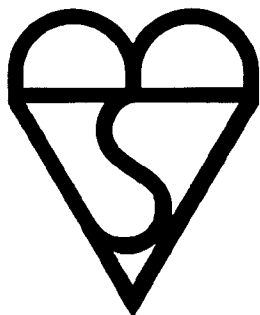
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# K I T E M A R K L I C E N C E



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Module	Output Voltage	Rated Current	Power	Occupied Slots	Secondary Turns	Ampere Turns
L1	4.2 - 5.5V	35A	193W	1	1	35
W2	0.25 - 7.5V	30A	225W	1	2	60
W5	0.25 - 32V	8.5A	272W	1	5	42.5
X1	10V (see Note 1)	90A	See Note 2	1	-	-
X2	20V (see Note 1)	64.5A	See Note 2	1	-	-
X4	40V (see Note 1)	32.4A	See Note 2	1	-	-
X8	80V (see Note 1)	16.2A	See Note 2	1	-	-

**Note 1:** Actual voltage and current output of an X module is dependent, and limited by, the ratings of the modules from which it is fed. The ratings given above are additional rating limitations imposed by the X module itself.

**Note 2:** The maximum power output of PSUs fitted with X modules is reduced from 450W by the following power:  $0.55 \times (\text{total X1 current}) + 0.7 \times (\text{total X2 \& X4 current}) + 0.9 \times (\text{total X8 current})$

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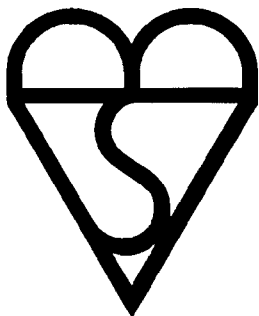
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# K I T E M A R K L I C E N C E



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## **Additional module limitations:**

E2 module fitted in slots 4/5 is limited to 55A.

C1Y module can only be fitted in slot 1.

F2 module may only be fitted in slots 1/2 and is limited to 75A for ambient temperatures of greater than 45°C.

For PSUs with three D modules fitted:

D1L & D1H in slots 2/3 is limited to 42A and in slots 4/5 is limited to 47A

D2 in slots 2/3 is limited to 40A

PSUs fitted with a W2 module are limited to a maximum ambient of 45°C.

All the above ratings and limitations apply to the individual modules from which a series or paralleled pair is made.

## **SELV and Outputs Connected in Series**

Outputs are SELV except as described below

- Non-earthed outputs that have secondaries with 2 or more turns are Non-SELV as a single fault in the secondary may make them exceed the SELV limit between output and earth.
- Non-earthed outputs that are connected in series are non-SELV unless all the seriesed outputs use 1 turn secondaries and there are no more than 3 outputs connected in series.
- Outputs connected in series are non-SELV if the total output voltage +20% of the max. rated output voltage of the output with the highest rated voltage exceeds 60Vdc (the 20% addition allows for a single fault in any one individual channel).
- The total voltage of a seriesed output must not exceed 160V.
- If any output or seriesed output is non-SELV then all the outputs in the PSU must be considered non-SELV
- Non-SELV outputs must be guarded or a deflector fitted during installation to avoid a service engineer making inadvertent contact with the output terminals or dropping a tool onto them.
- All outputs have operational spacings to earth and due consideration must be given to this in the end product design.

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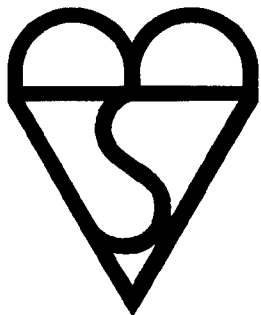
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# K I T E M A R K L I C E N C E



No. KM 13930

Coutant Lambda Limited

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## Input, Power and Thermal Ratings

Nominal input voltage: 48V dc

Input voltage range: 34 - 75 V dc max., 17.5A rms max.

Permitted orientations: Horizontal with chassis lowest, on either side or vertical with the airflow upwards.

Cooling Option	Max Ambient	Input Voltage	Max Power	Max AT (total)	Module Current Rating
F	50	34	344	140	100%
		36	360	140	100%
		44 - 75	450	180	100%
R	50	34	300	145	100%
		36	320	145	100%
		44 - 75	420	165	100%
C	50	See Customer Air Cooling section for ratings			

Power and AT (Ampere Turns) ratings may be interpolated.

Ampere Turns is the sum of (output amps x secondary turns)

## Customer Air Cooling (option C):

The following method must be used for determining the safe operation of PSUs when C option (Customer Air) is fitted, ie fan not fitted to PSU.

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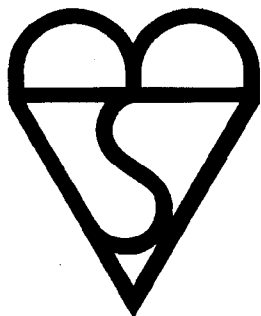
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# K I T E M A R K L I C E N C E



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For PSUs cooled by customer supplied airflow the components listed in the following table must not exceed the temperatures given. Additionally ratings specified for units with an internal fan must still be complied with, eg mains input voltage range, maximum output power, ampere turns, module voltage / current ratings and maximum ambient temperature. To determine the component temperatures the heating tests must be conducted in accordance with the requirements of IEC60950-1: 2001 Clause 4.5. Consideration should also be give to the requirements of other safety standards.

Test requirements include: PSU to be fitted in its end-use equipment and operated under the most adverse conditions permitted in the end-use equipment handbook/specification and which will result in the highest temperatures in the PSU. To determine the most adverse conditions consideration should be given to the end use equipment maximum operating ambient, the PSU loading and input voltage, ventilation, end use equipment orientation, the position of doors & covers, etc. Temperatures should be monitored using type K fine wire thermocouples (secured with cyanoacrylate adhesive, or similar) placed on the hottest part of the component (out of any direct airflow) and the equipment should be run until all temperatures have stabilised.

Circuit Ref.	Description	Max. Temperature (°C)
-	Power transformer primary, secondary and core	130
T1, TX101, TX201	Module current transformer windings	127
XQ1, XTR1	E, EV, F & FV Primary option transformers	90
L1, XT601	Choke winding	127
L4, T2	Choke winding	117
Various	All other choke & transformer windings	140
Various	All X capacitors and electrolytic capacitors	105

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