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# EU DECLARATION OF CONFORMITY

## Alpha 800 and Alpha 1000 Series

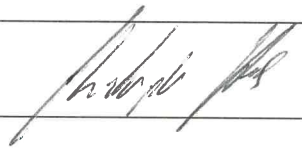
We, TDK-Lambda UK Limited, of Kingsley Avenue, Ilfracombe, Devon, EX34 8ES declare under our sole responsibility that the TDK-Lambda Alpha 800 and Alpha 1000 series of power supplies, as detailed on the attached products covered sheets, complies with the provisions of the following European Directives and is eligible to bear the CE mark:

| | |
|---|---|
| Low Voltage Directive | 2014/35/EU |
| RoHS Directive | 2011/65/EU |
| RoHS Directive (EU) | 2015/863 |

Assurance of conformance of the described product with the provisions of the stated EC Directive is given through compliance to the following standards:

| | |
|---|---|
| Electrical Safety (LVD) | EN60950-1:2006 + A2:2013 |

Our representative in the EU is TDK-Lambda Germany GmbH, located at Karl-Bold-Str. 40, 77885 Achern, Germany.

| | |
|---|---|
| Name of Authorized Signatory | Christopher Haas |
| Signature of Authorized Signatory |  |
| Position of Authorized Signatory | Technical Manager and Head of Quality & Compliance, TDK-Lambda Germany GmbH |
| Date | 22nd October 2019 |
| Date series first CE marked | 21st July 1999 |
| Place where signed | Achern, Germany |

## ALPHA 800/1000 PRODUCTS COVERED

The Model Alpha 800 and Alpha 1000 Series Power Supplies are nearly electrically and mechanically identical. The difference between the two series relates to the fact that the Alpha 800 Series has a 800 W maximum output and the Alpha 1000 Series has a 1000 W maximum output. CA1250 models are special custom units which are identical to CA1000 except that they have a restricted input voltage range and 1250W output power.

Units may be marked with a Product Code: J1x or H1x for Alpha 1000 and J8 or H8 for Alpha 800, where x may be any number of characters.

Unit Configuration Code (Description :) may be prefixed by NS # followed by / or - (where # may be any number of characters indicating non- safety related model differences).

**Unit Configuration Code:**

Alpha 1000 and CA1000 are identical.
Alpha 1000 or CA1000 may be followed by: TL, RL, LL or ML

Where TL = Tiny leakage input filter
RL = Reduced leakage input filter
LL = Low leakage input filter
ML = Medium leakage input filter

May be followed by up to seven of the following:

@ followed by AA, A, BB, B, C, D, F, G, J, K, L, M, N, Q, R, S, T, U, W, or Z,

optionally followed by _MF, _X, _XL, MFL, MFE, MFU, MFV or _MFV, _PA, _IN, _PP, _RP_D,

or B/S

or @/@ (where / may be replaced with a _) followed by: E, EB, EQ, H, or P:

Where @ and @/@ = applicable voltage range and the following one or two letters are the module type.

_MF, MFE = Mains fail option (may also be called X).
MFU = Mains fail option with uncommitted output connections.
MFV = Mains fail option with VME bus
MFL, _XL = Mains fail latch
_PA, _PP, _IN, _RP = Secondary module options.
B/S = Blanking slot which occupies one 23mm slot.

Only up to seven 23mm slots may be filled up per unit, noting that all modules occupy one 23mm slot except for AA, A, F, G, J, K, R, S and T modules which occupy two 23mm slots. All primary MF options can only be fitted in slot 1.

Valid voltage ranges for @ and @/@ for each module are as follows:

| Module | Voltage Range | Module | Voltage Range |
|---|---|---|---|
| AA | @ = 4.5 – 6.2V | A | @ = 4.5 – 5.5V |
| BB | @ = 4.5 – 6.5V | B | @ = 4.5 – 5.5V |
| C | @ = 5 – 16V | D | @ = 18 – 29V |
| E | @/@ = 5 – 16V / 5 – 16V | EB | @/@ = 4.5 – 5.5V / 4.5 – 5.5V |
| EQ | @/@ = 4.5 – 5.5V / 2.7 – 3.9V | F | @ = 9 – 15.5V |
| G | @ = 17.5 – 29V | H | @/@ = 18 – 32V / 18 – 32V |
| J | @ = 30 – 48V | K | @ = 18 – 29V |
| L | @ = 1.8 – 3.2V | M | @ = 5 – 16V |
| N | @ = 18 – 32V | P | @/@ = 18 – 29V / 5 – 16V |
| Q | @ = 2.7 – 3.9V | R | @ = 2.7 – 3.9V |
| S | @ = 2.5 – 5.7V | T | @ = 1.8 – 3.2V |
| U | @ = 10 – 21V | W | @ = 4.5 – 5.5V |
| Z | @ = 4.5 – 5.5V | - | - |

**Secondary Options:**

| Option | Description |
|---|---|
| _MG | Provides a module good signal with indicates output voltage is within limits. |
| _PA | Forces paralleled modules to share load current. Additionally it also provides the module good signal. |
| | |
| _PP | Provides either of the following functions: |
| | a) Reduces module current limit and caters for paralleled modules with busbar linking. For use with modules providing a max output of up to 16V only; or<br>b) Identical to _PA except that the module is paralleled at the output of the module with busbar linking. |
| _IN | Provides an external signal which may be used to inhibit the output of the module. |
| _RP | Provides remote programming of the module output voltage. |
| _D | Provides a delay to the turn on time of the output. |

**Note:**
The RP option can only be used on modules with output voltages rated up to 16V. Not for use with a module voltage range of 18-29V or twin output modules.

B, BB, Z, Q, M, G, C, and D modules fitted with PP options are not permitted in slot 7.

Only one G module is permitted on each converter.

**Custom Models:**

CA1000RA B/S_MF 5S_PP 5B_PP 12F (NS-AMD-001)
Input voltage range: 198 - 264Vac.
Outputs: S Module: 5.5V max., 80A max.
B Module: 5.5V max., 25A max.
F Module: 12.5V max., 33A max.
All orientations are permitted.

CA1000 B/S_MF 24G_PP 24D_PP 15/15E 5M_IN
Input voltage range: 90 - 264Vac.
Outputs: G Module: 24V max., 20A max.
D Module: 24V max., 8A max.
E Module: 15/15V max., 8/6A max.
N Module: 5V max., 8A max.
Permitted orientation: Vertical with the fans lowest.
Fans: Papst 612NGM (lower airflow than fans fitted to standard Alpha 800/1000 PSUs).

CA1000 LSF B/S_MF 24G 15/15E 5M_IN (NS-TEG-010)
Input voltage range: 85 - 264Vac.
Outputs: G Module: 24V max., 20A max.
E Module: 15/15V max., 4/4A max.
M Module: 5V max., 8A max.
Permitted orientation: Horizontal
Fans: Papst 612NML or 612NGML (lower airflow than fans fitted to standard Alpha 800/1000 PSUs).

CA1000 LSF B/S_MF 24G 15/15E 5M_IN 36J (NS-TEG-011)
Input voltage range: 85 - 264Vac.
Outputs: G Module: 24V max., 18A max.
E Module: 15/15V max., 3/3A max.
M Module: 5V max., 8A max.
J Module: 36V max., 5.5A max.
Permitted orientation: Horizontal
Fans: Papst 612NML or 612NGML (lower airflow than fans fitted to standard Alpha 800/1000 PSUs).

Model: CA1250 12C_MF_PP 12F_PP 12F_PP 12F_PP (NS-AMD-002 and NS-AMD-003)
Input voltage range: 207 - 264Vac
Outputs: C Module: 13V @ 16A, F Module: 13V @ 30A, F Module: 13V @ 30A, F Module: 13V @ 30A
Ambient: 50°C max.
Orientations: All except vertical with airflow downwards

Model: CA1250 12C_MF 12FF 12FF 12FF (NS-AMD-005)
Input voltage range: 207 - 264Vac.
Outputs: C Module: 13V max., 16A max.
F Module: 13V max., 30A max.
F Module: 13V max., 30A max.
F Module: 13V max., 30A max.
Ambient: 50°C max.
Permitted orientation: Horizontal only.

Model: CA1000LSF 5.25B 12.7C 16/16E 24G 18D 18D (NS-FOSS-002)
Input voltage range: 90 - 264Vac
Outputs B Module: 6V @ 3A, C Module: 13.7V @ 9A E Module: 16V @ 0.5A, 16V @ 0.5A, G Module: 25V @ 25A, D Module: 19V @ 2.5A, D Module: 19V @ 2.5A (877.3W)
Ambient: 40°C max.
Orientations Vertical with airflow upwards
Notes Papst 612 fans fitted. Forward direction airflow.

Model: CA1000 LSF 5A 24D 12F 24/12P 5B (NS-LAM-141)
Input voltage range: 207-264Vac
Outputs: A module: 5V@50A, D module: 24V@7A, F module: 12V@25A, P module: 24V@4A/12V@6A, B module: 5V@10A.
Ambient: 40°C
Orientations: Horizontal Only
Notes: 612NML Fans fitted. CE marked only. No agency approvals.

CA1000 LSF LL 22K_IN 12C-IN 48J-IN 24N_IN 24N_IN (J10077A)
Input voltage range: 90 - 264Vac.
Outputs: K Module: 22V max., 15A max.
C Module: 12V max., 10A max.
J Module: 48V max., 5A max.
N Module: 24V max., 5A max.
N Module: 24V max., 5A max.
Permitted orientation: Horizontal only.
Max. Ambient: 40°C
Fans: Papst 612NGME or 612NME (lower airflow than fans fitted to standard Alpha 800/1000 PSUs).

**ELECTRICAL & THERMAL RATINGS:**
**Input parameters**

| | |
|---|---|
| NOMINAL INPUT VOLTAGE RANGE | 94.5 - 240VAC or 133VDC-328VDC* |
| MAX. INPUT VOLTAGE RANGE | 85-264VAC or 120-360VDC* |
| INPUT FREQUENCY | 47-63Hz |
| MAXIMUM INPUT CURRENT | 16 AMPS or 11 AMPS DC |
| INRUSH CURRENT | <50 AMPS |

* DC for specific Non-standard, 60950-1 versions only

**Output parameters**

| INPUT VOLTAGE RANGE | MAX INPUT CURRENT | MAX. AMBIENT | OPERATING MODE | MAX. OUTPUT POWER |
|---|---|---|---|---|
| **90-99.9Vac, 47-63Hz** | 16A | 45°C | Continuous | 1000W |
| **100-264Vac, 47-63Hz** | 16A | 50°C | Continuous | 1000W |
| **85-264Vac, 47-63Hz** | 16A | 50°C | Continuous | 800W |
| **120-360Vdc** | 11A | 45°C | Continuous | 800W |
| **85-90Vac, 47-63Hz** | 16A | 50°C | Intermittent* | 1000W |

*Intermittent: Duty cycle is 30 sec. max at up to 1000W output followed by 60 sec. min. at up to 800W output.

Ampere Turns is sum of (Amps x Number of Secondary Turns) for all outputs.
Max Total Ampere-turns = 200AT
Max Ampere-Turns for converter #1 (slots 1-3) = 120AT
Max Ampere-Turns for converter #2 (slots 4-7) = 120AT
The above ratings apply for all PSU mounting orientations. The ratings also apply whether or not input and/or output connector housings are fitted.

Output module ratings:

| Module | Output Voltage | Current | Slots | Turns | Ampere-Turns | Max Current Limit | Setting for Hazardous Energy |
|---|---|---|---|---|---|---|---|
| A | 4.5-5.5V | 60A | 2 | 1 | 60 | 79.2A | >3V |
| AA | 4.5-6.2V | 60A | 2 | 1 | 60 | 79.2A | >3V |
| B | 4.5-5.5V | 25A | 1 | 1 | 25 | 33A | - |
| BB | 4.5-6.5V | 25A | 1 | 1 | 25 | 33A | - |
| C | 5-16V | 16A | 1 | 2 | 32 | 21.2A | >11.3V |
| D | 18-29V | 8A | 1 | 4 | 32 | 10.6A | >.22.6V |
| E | 5-16V | 8A | 1 | 2 | 16 | 10.6A | - |
| | 5-16V | 8A | | 2 | 16 | 10.6A | - |
| EB | 4.5-5.5V | 9A | 1 | 1 | 9 | 11.9A | - |
| | 4.5-5.5V | 9A | | 1 | 9 | 11.9A | - |
| EQ | 4.5-5.5V | 9A | 1 | 1 | 9 | 11.9A | - |
| | 2.7-3.9V | 9A | | 1 | 9 | 11.9A | - |
| F | 9-15.5V | 33A | 2 | 2 | 66 | 43.6A | >5.5V |
| G | 17.5-29V | 25A | 2 | 4 | 100 | 33A | >7.2V |
| H | 18-32V | 5A | 1 | 4 | 20 | 6.6A | - |
| | 18-32V | 5A | | 4 | 20 | 6.6A | - |
| J | 30-48V | 10A | 2 | 4 | 40 | 13A | >18.4V |
| K | 18-29V | 15A | 2 | 4 | 60 | 19.8A | >12V |
| L | 1.8-3.2V | 25A | 1 | 1 | 25 | 33A | - |
| M | 5-16V | 8A | 1 | 2 | 16 | 10.6A | - |
| N | 18-32V | 5A | 1 | 4 | 20 | 6.6A | - |
| P | 18-29V | 5A | 1 | 4 | 20 | 6.6A | - |
| | 5-16V | 8A | | 2 | 16 | 10.6A | - |
| Q | 2.7-3.9V | 25A | 1 | 1 | 25 | 33A | - |
| R | 2.7-3.9V | 60A | 2 | 1 | 60 | 79.2A | >3V |
| S | 2.5-5.7V | 85A | 2 | 1 | 85 | 110.5A | >2.2V |
| T | 1.8-3.2V | 60A | 2 | 1 | 60 | 79.2A | >3V |
| U | 10-21V | 16A | 1 | 3 | 48 | 21.2A | >11.3V |
| W | 4.5-5.5V | 15A | 1 | 1 | 15 | 19.8A | - |
| Z | 4.5-5.5V | 25A | 1 | 1 | 25 | 33A | - |

- A and AA modules can be used up to 37A in slots 6 and 7 and used up to 60A in all other slots.
- B and BB modules can be used up to 15A in slot 7 and used up to 25A in all other slots.
- (a) C modules can be used up to 16A for outputs up to 12V. For 15-16V outputs C modules can be used at up to 12A.
  Maximum module output current derates linearly between 12V and 15V.
- (b) C modules can be used up to 10A in slot 7 and up to 16A in all other slots, subject to the limitations of (a).

D modules can be used at up to 8A in slots 1-6. In slot 7 this reduces to 5A.

- E modules can be used up to 5A in slot 7 and up to 8A in all other slots.
- EQ and EB modules can be used up to 5.6A in slot 7 and up to 9A in all other slots.
- F modules can be used up to 20A in slots 6 and 7 and up to 33A in all other slots.
- G modules can be used up to 15A in slots 6 and 7 and up to 25A in all other slots.

- H modules can be used up to 3A in slot 7 and up to 5A in all other slots. For 29.01 - 32V output current is limited to 1A max for all slots.
- J modules can be used up to 6A in slots 6 and 7 (for 30-48V). For all other slots the max. permitted current is limited to 8A at 48V and 10A at 41V. For intermediate voltages interpolation is used to determine the max. permitted current. For outputs in the range 36-41V max. current is 10A.
- K modules can be used up to 10A in slot 6/7 and up to 15A in all other slots.
- L modules can be used up to 15A in slot 7 and used up to 25A in all other slots.
- M modules can be used up to 5A in slot 7 and up to 8A in all other slots.
- (a) N modules can be used up to 5A for outputs up to 29V. For 29-32V output current is limited to 1A max.
- (b) N modules can be used up to 3A in slot 7 and up to 5A in all other slots.
- P modules can be used up to 5A on the 18-29V channel in slots 1 to 6 and up to 3A in slot 7.
- P modules can be used up to 8A in the 5-16V channel in slots 1 to 6 and up to 5A in slot 7.
- Q modules can be used up to 25A in slots 1-6. In slot 7, this is 15A.
- R modules can be used up to 60A in any slot.
- S modules can be used up to 75A in slots 1/2, 76A in slots 2/3; 51A in slots 6/7 and up to 85A in all other slots. When the psu is operated in a horizontal orientation (with the ratings label uppermost) the S modules may be used up to 85A in slots 2/3.
- T modules can be used up to 37A in slot 6 and 7 and used up to 60A in all other slots.
- U modules can be used up to 16A in all slots.
- W modules can be used up to 15A in all slots.
- Z modules can be used up to 15A in slot 7 and used up to 25A in all other slots.

**Additional module limitations:**

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, D, F, G, J, M, K, N, U Modules.
Ampere turns for J module is calculated as AT= (output current + 15A) x 4.
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.