

450-900W Multiple Output Modular Power Supply

Features

- ◆ 1-10 Wide Range Outputs With Adjustment
- ◆ Forward/Reverse/Low Noise/System Air Cooling
- ◆ Output Voltages From 0.5V - 62V
- ◆ 48VDC Input Option
- ◆ Medical Approval Options
- ◆ MIL-STD-810 Shock and Vibration
- ◆ PFC compliant to EN61000-3-2
- ◆ Safety Agency Approvals EN, cULus, BSI, CE



Key Market Segments & Applications



| Specifications | | VEGA 450 | VEGA 650 | VEGA 900 |
|--|--------|---|----------------------------------|--------------------|
| Input Voltage Range (47-440Hz with reduced PFC) | - | 90 - 264VAC 47-63Hz ⁽¹⁾ or 34-75VDC | 90-264VAC 47-63Hz ⁽¹⁾ | 150-264VAC 47-63Hz |
| Input Current (Typ. at 90VAC) | A | 7.7A | 11A | 9.2A at 150VAC |
| Efficiency (Typ.) | % | 75% at 230VAC (or 48VDC) and full load, configuration dependent | | |
| Nominal Output Voltages | VDC | 0.5 - 62 (See configuration guide) | | |
| Output Voltage Adjustment | - | Wide range, via potentiometer or remote adjust pin, module dependent | | |
| Minimum Load | A | 0A | | |
| Max Output Power | W | 450 ⁽²⁾ | 650 | 900 |
| Max Ripple & Noise (pk-pk) | mV | <1% (or 50mV which ever is greater) using EIAJ test method & 20MHz bandwidth | | |
| Regulation (load, line, cross) | % | Less than 0.5% | | |
| Hold Up Time | ms | 16ms min at 90VAC (150VAC for 900W, 10ms for 450WDC input) | | |
| Over Voltage Protection | % | 120 - 150% (See website for more details) | | |
| Overload/Short Circuit | % | 105-125%, constant current characteristic, 150% max short circuit current. | | |
| Remote ON/OFF Control | - | A TTL compatible signal will turn ON/OFF all output modules (optional) | | |
| Remote Sense | V | Compensates for total of 0.75V total line drop (optional on dual output modules) | | |
| Isolation (3) | - | Input-Output 4.3kVDC ⁽³⁾ ; (2 x MOPPs (3rd edition 60601)), Input-Ground 2.3kVDC; Output-Ground 200VDC | | |
| Conducted EMI | - | EN55022 Class B, (as per CISPR .22), Class A for 48V input | | |
| Radiated EMI | - | EN55022 Class B, (as per CISPR .22) | | |
| Operating Temperature | °C | 0°C to 50°C, derate ea. output @ 2.5%/°C from 50°C to 65°C. ⁽⁴⁾ Consult factory for 70°C operation. -20°C startup requires a 30 min. warm-up period. | | |
| Cooling | - | Forced Air Cooled | | |
| Dynamic Load Response | - | <6% or 300mV of set voltage for 50% load change (above 25% load), recovery to within 1% of nominal within 500 μs | | |
| Safety Agency Approvals (601-1 not available on 48V input) | - | UL/CSA/IEC/EN 60950-1, UL/CSA/IEC/EN 60601-1, ANSI/AAMI ES60601-1, IEC/EN 61010-1, CE Mark | | |
| Vibration | G | MIL-STD-810E, Method 514.4, Pro I, Cat 1, 9 2G, 10-200Hz sweep for 1hr to search for resonant. 6G random, 6-Axis to IEC68-2-64 | | |
| Shock | G | MIL-STD-810F, Method 516.5, Pro I, IV, VI; 20G per IEC68-2-27 | | |
| Switching Frequency | kHz | 200 | | |
| Weight (Typ.) | lbs | 3.0 lbs. + 0.25 lbs. / used slot; maximum # of slots =5 | | |
| Size (L×W×H) | in(mm) | 10.6" x 5" x 2.5" (268.4mm x 127mm x 63.5mm) | | |
| Warranty | yrs | 3 Years | | |

Consult datasheet and application notes for detailed specifications and test methods.

(1) Will operate with 130-330VDC, CE Mark safety approval only applies.

(2) DC Input <44V input 370W

(3) 4kVAC Type tested (non-production test). Refer to CB Report

(4) 450WDC 1.5%/°C

Configuring Guide

Choose your options for boxes A through E. Select output voltage, single or dual output module code from the tables below, and options (if required) A maximum of 5 module slots may be used. List actual output voltages required to have them pre-set by the factory.

V A B C D E

Choose the following power supply options.

Primary Options
(Leave empty if not required)

| | |
|----------------------|---|
| F | AC Fail, Global/fan Inhibit, 5V/100mA standby |
| FV | AC Fail, Global/fan Inhibit, 5V/300mA standby |
| xFW ^(5,7) | AC Fail, Global/fan Inhibit, 5-15V/1A standby |
| E | AC Fail, Global/fan Enable, 5V/100mA standby |
| EV | AC Fail, Global/fan Enable, 5V/300mA standby |
| xEW ^(5,7) | AC Fail, Global/fan Enable, 5-15V/1A standby |

(5) Specify value of x from 5-15V.
(Increase leakage current by 90µA.)

Input Filter Choice*

| | | | |
|---|--------------|--------------|------------------|
| | 120VAC, 60Hz | 240VAC, 60Hz | 264VAC, 63Hz (9) |
| S | 564µA | 1270µA | 1.5mA |
| M | 244µA | 550µA | 650µA |
| L | 109µA | 246µA | 290µA |
| R | 66µA | 148µA | 175µA |
| T | 23µA | 51µA | 60µA |

Input Connection

| | |
|---|--------------------------------|
| F | Fast on terminals (7) |
| S | Screw terminals |
| I | Switched IEC 320 Connector (7) |

Cooling

| | |
|-----|--------------------------------|
| F | Standard forward air fan |
| Q | Quiet fan, forward air (7) |
| R | Standard reverse air fan (6) |
| P | Quiet fan, reverse air (6) (7) |
| C** | Customer air (30 CFM req'd) |

Output Power

| | |
|---|---------------|
| 0 | 450W DC Input |
| 4 | 450W |
| 6 | 650W |
| 9 | 900W |

* Max Leakage calculated at 264VAC, 63Hz. Note: Contact Lambda Technical Support for non-standard leakage options emissions compliance.
 ** Thermocoupled evaluation unit recommended. Consult sales office.
 (6) Not available on 900W Model (7) Not available on 450WDC Model
 (8) Only available on 900W Model (9) Type testing result

Single Output Module Selection †

Output Options
(Leave empty if not required)
Inhibit, module good, and current share

Output Connection
Fast on terminals
Screw terminals

Vout Module Conn. Opt.

N
F
S

Example
12B3SN: 12V @ 12A single output module, screw terminal outputs, inhibit option

† Remote sense is standard on single output modules, optional on duals.

Dual Output Module Selection

V1 V2 Module Conn. Opt.

Output Connection
Fast on terminals
Screw terminals

Output Options
Inhibit, module good, and remote sense
Remote sense

F
S
N
R

Example
3.3/12H1L/3FR: 3.3V @ 12A and 12V @ 6A output, fast on output terminals and remote sense option.

Full Description Example:
V4FSSFV 5L1S 3.3E1SN 15/15H3/3SR

450W power supply with standard forward air fan, screw terminal input connections, 1.5mA leakage input filter, AC fail with Global/fan inhibit & 5V @ 300mA aux. supply option with the following outputs:
 5V @ 35A Screw terminal connections with remote sense standard
 3.3V @ 60A Screw terminal connection with output inhibit, module good, and current share options, remote sense standard
 15V @ 10A Screw terminal connection with remote sense option (1st half of dual)
 15V @ 6A Screw terminal connection with remote sense option (2nd half of dual)
 Note the module descriptions are to be used as listed in the module tables.

Model Selector

| Module | V Range | Amp | Slots | Module | V Range | Amp | Slots |
|----------------------|-----------|------|-------|---------------------------------|------------|------|-------|
| Single Output | | | | | | | |
| B1L | 1.8-3.8V | 20A | 1 | E4 | 14-19.9V | 30A | 2 |
| C1 | 1.8-4.1V | 35A | 1 | E3H | 14-15V | 36A | 2 |
| C1Y | 1.8-4.1V | 40A | 1 | C4 | 16.2-21.5V | 14A | 1 |
| D1L | 1.8-3.8V | 50A | 1.5 | CC3 | 18.2-32.4V | 18A | 2 |
| E1 | 1.8-3.8V | 60A | 2 | EE5L | 20-24V | 27A | 2 |
| F1 ⁽⁶⁾ | 1.8-3.8V | 80A | 2 | B5 | 21.6-31V | 6A | 1 |
| Z2 | 1.8-3.8V | 95A | 3 | C5 | 21.6-31V | 10A | 1 |
| Z3 | 1.8-3.8V | 114A | 4 | D5 | 21-28V | 15A | 1.5 |
| B1H | 3.9-5.5V | 20A | 1 | E5H | 24-28V | 25A | 2 |
| L1 | 4.2-5.5V | 35A | 1 | Z19 ⁽⁸⁾ | 24-28V | 36A | 3.5 |
| D2 | 3.8-9V | 45A | 1.5 | HH5/3 | 25.3-44.2V | 5A | 1 |
| D1H | 3.9-5.5V | 50A | 1.5 | DD4 | 28-43V | 18A | 3 |
| E2 | 3.8-8V | 60A | 2 | EE4 ⁽⁶⁾ | 28-38 | 22.5 | 4 |
| Z18 | 4.2-5.5V | 66A | 2 | HH5/4 | 32.5-53V | 4.5A | 1 |
| F2 ⁽⁶⁾ | 3.8-8V | 75A | 2 | BB4 | 32.6-43V | 10A | 2 |
| Z4 | 3.9-5.5V | 95A | 3 | EE5L ⁽⁶⁾ | 40-48 | 18 | 4 |
| Z6 | 3.9-5.5V | 104A | 3.5 | C5B4 | 43-48V | 10A | 2 |
| B2 | 5-9V | 25A | 1 | EE5H ⁽⁶⁾ | 48-56 | 18 | 4 |
| B3 | 9.1-16.2V | 12A | 1 | CC5 | 48.1-62V | 10A | 2 |
| C3 | 9.1-16.2V | 18A | 1 | DD5 | 42-56V | 15A | 3 |
| D3 | 8-16.5V | 24A | 1.5 | Wide Range Programmable* | | | |
| E3L | 8-13.9V | 40A | 2 | W2 ⁽⁶⁾ | 1-7.5V | 30A | 1 |
| Z7 | 8-16.5V | 45A | 3 | W5 | 0.5-32V | 8.5A | 1 |
| EE2 | 7.6-16V | 45A | 4 | * Refer to Vega Datasheet | | | |
| D4 | 14-21.5V | 18A | 1.5 | | | | |

Model Selector

| Module | V1 Min - V1 Max | V1 Amp | V2 Min - V2 Max | V2 Amp | Slots |
|--------------------|-----------------|--------|-----------------|--------|-------|
| Dual Output | | | | | |
| H1L/1L | 1.8V - 3.8V | 12A | 1.8V - 3.8V | 8A | 1 |
| H1L/1H | 1.8V - 3.8V | 12A | 3.9V - 5.5V | 8A | 1 |
| H1L/2 | 1.8V - 3.8V | 12A | 5.6V - 9V | 6A | 1 |
| H1L/3 | 1.8V - 3.8V | 12A | 9.1V - 16.2V | 6A | 1 |
| H1L/4 | 1.8V - 3.8V | 12A | 16.3V - 25V | 4.5A | 1 |
| H1H/1L | 3.9V - 5.5V | 12A | 1.8V - 3.8V | 8A | 1 |
| H1H/1H | 3.9V - 5.5V | 12A | 3.9V - 5.5V | 8A | 1 |
| H1H/2 | 3.9V - 5.5V | 12A | 5.6V - 9V | 6A | 1 |
| H1H/3 | 3.9V - 5.5V | 12A | 9.1V - 16.2V | 6A | 1 |
| H1H/4 | 3.9V - 5.5V | 12A | 16.3V - 25V | 4.5A | 1 |
| H2/1L | 5.6V - 9V | 10A | 1.8V - 3.8V | 8A | 1 |
| H2/1H | 5.6V - 9V | 10A | 3.9V - 5.5V | 8A | 1 |
| H2/2 | 5.6V - 9V | 10A | 5.6V - 9V | 6A | 1 |
| H2/3 | 5.6V - 9V | 10A | 9.1V - 16.2V | 6A | 1 |
| H2/4 | 5.6V - 9V | 10A | 16.3V - 25V | 4.5A | 1 |
| H3/1L | 9.1V - 16.2V | 10A | 1.8V - 3.8V | 8A | 1 |
| H3/1H | 9.1V - 16.2V | 10A | 3.9V - 5.5V | 8A | 1 |
| H3/2 | 9.1V - 16.2V | 10A | 5.6V - 9V | 6A | 1 |
| H3/3 | 9.1V - 16.2V | 10A | 9.1V - 16.2V | 6A | 1 |
| H3/4 | 9.1V - 16.2V | 10A | 16.3V - 25V | 4.5A | 1 |
| H5/1L | 16.2V - 28V | 5A | 1.8V - 3.8V | 8A | 1 |
| H5/1H | 16.2V - 28V | 5A | 3.9V - 5.5V | 8A | 1 |
| H5/2 | 16.2V - 28V | 5A | 5.6V - 9V | 6A | 1 |
| H5/3 | 16.2V - 28V | 5A | 9.1V - 16.2V | 6A | 1 |
| H5/4 | 16.2V - 28V | 5A | 16.3V - 25V | 4.5A | 1 |

For Additional Information, please visit
us.tdk-lambda.com/lp/products/vega-series.htm





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