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# TDK·Lambda

# DDA Series

## 250-500W, Wide Range Input, Non-isolated, DIN Rail DC-DC Converters

https://product.tdk.com/en/power/dda
www.emea.lambda.tdk.com/dda




Industrial | Test | Semi-Fab

The DDA DIN rail mount, non-isolated step-down converters are ideal for creating additional high current output voltages from a single output 12V, 24V or 48V AC-DC power supply. The highly efficient DDA series accepts a very wide DC input and has a wide output adjustment range, with a choice of single or dual output models.

| Features | Benefits |
|---|---|
| • 250W Single Output, 325W and 500W Dual Output Power Levels | • High Power Density |
| • High Efficiency up to 95% | • Less Waste Heat |
| • Wide Input Range - 9 up to 53V | • One Part For Multiple Applications |
| • Wide 3.3 to 24V Output Adjustment | • Accommodates Non-Standard Voltages |
| • Narrow 36.5mm Width | • More Space Available For Other DIN Rail Devices |
| • Convection Cooled | • Easy To Cool In End System |

## Model Selector

| Part Number | Output Voltage 1 | | Output Voltage 2 | | Maximum Output Current | Maximim Output Power |
|---|---|---|---|---|---|---|
| | Nominal (V)(1) | Adjust Range (V) | Nominal (V)(1) | Adjust Range (V) | | |
| DDA250N-S1PX-12-001 | 12V | 3.3 to 15V | NA | NA | 20A / NA | 250W / NA |
| DDA500N-D2PP-1205-001 | 12V | 3.3 to 15V | 5V | 3.3 to 15V | 20A / 20A | 250W / 250W |
| DDA325N-D2PN-1212-001 | 12V | 3.3 to 24V | -12V | -3.3 to -24V | 14A / 8A | 250W / 75W |

Consult factory for other output voltage combinations.

## Specification

| Model(s) | | DDA250 | DDA500 | DDA325 |
|---|---|---|---|---|
| **Input** | | | | |
| Input Voltage range | Vdc | 9 to 53V (Turn on at 10V or greater) | | 9 to 40V (Turn on at 10V or greater) |
| Input Current (Max.) | A | 20A | 40A | 35A |
| Efficiency | - | 92 - 95% | | 88 - 94% |
| Conducted & Radiated EMI | - | EN55032 Class A | | |
| Immunity | - | EN55024 | | |
| Safety Certifications and Markings | - | IEC/UL/CSA/EN 62368-1, CE Mark and UKCA Mark | | |
| **Output** | | | | |
| Switching Frequency | kHz | 400 | | |
| Line Regulation | mV | 25mV | | 20mV |
| Load Regulation | mV | 150mV | | 100mV |
| External Load Capacitance | uF | 0 - 1000uF each output voltage | | |
| Output Ripple & Noise (pk-pk) | mV | 60mV | | 50mV each output voltage |
| Overcurrent Protection Threshold | A | 28A | | 22 / 15A |
| Overvoltage Protection | V | None | | |
| Remote On / Off | - | To enable the output(s), connect the on/off pins to the GND pin(s) on the top connector | | |
| Remote Sense | - | (+) Sense, compensating up to 5% of output voltage | | |
| Power Good | - | Open collector(s), low on fail | | |
| Indicators | - | A green LED indicates the output is OK | | |
| Parallel Operation | - | Not possible | | |
| Series operation | - | Not possible | | |

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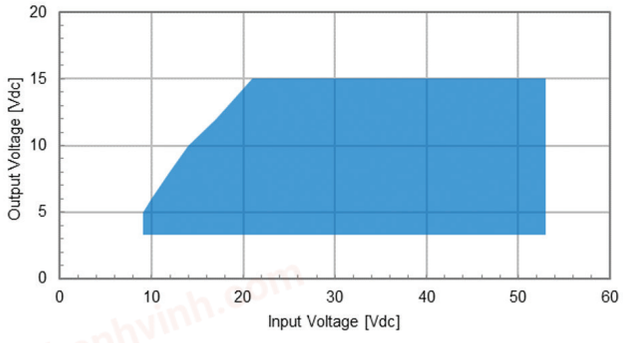
## Specification

| Model(s) | | DDA250 | DDA500 | DDA325 |
|---|---|---|---|---|
| **Environmental** | | | | |
| Operating Temperature | °C | -40 to 100 (see full technical datasheet on website) | | |
| Storage Temperature | °C | -55 to 125 | | |
| Cooling | - | Convection or forced air | | |
| **Other** | | | | |
| MTBF - Telcordia SR-332 | - | >5MHrs; 100% Load, Ta = 40°C | | |
| Weight | g | 450 | | |
| Size (WxHxD) | mm | 36.5 x 123.4 x 115 | | |
| Size (WxHxD) | In | 1.44 x 4.86 x 4.53 | | |
| Case Material | - | Metal | | |
| DIN Rail type | - | Suitable for mounting on DIN Rail TS-35/7.5 or TS35/15 | | |
| Warranty | yrs | 3 | | |

See website for detailed specifications, test methods and installation manual.
(1) Output voltage cannot exceed input voltage (see graphs below).
(2) For Output Derating, check the Installation Manual and detailed Specifications.

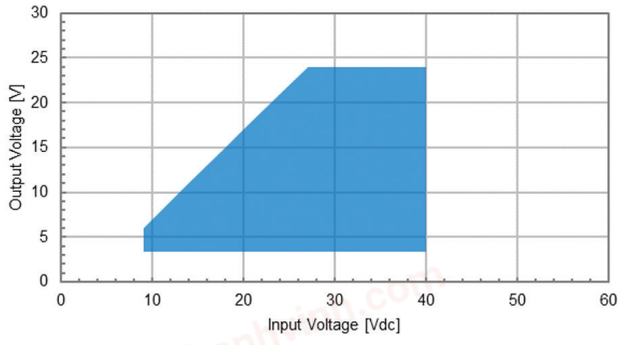
## Output vs. Input Voltage Operating Range

### DDA250N-S1PX-12-001 & DDA500N-D2PP-1205-001



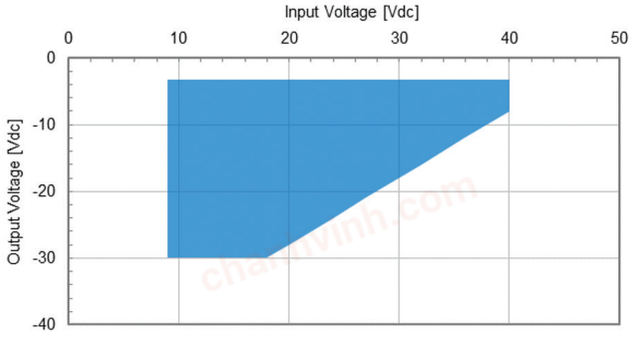

## Output vs. Input Voltage Operating Range

### DDA325N-D2PN-1212-001 (V1)




## Output vs Input Voltage Operating Range

### DDA325N-D2PN-1212-001 (V2)

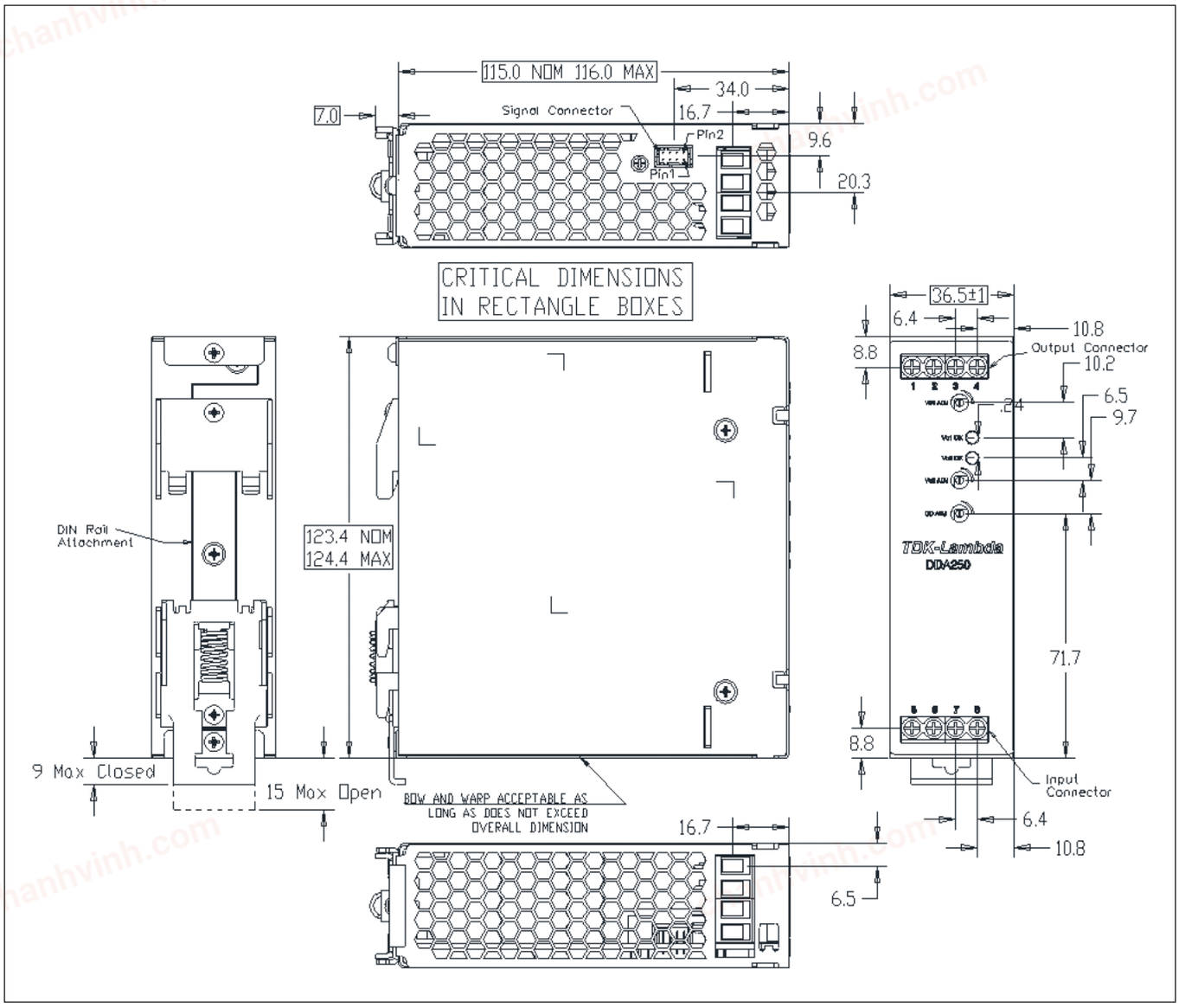


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## Mechanical Specification

### Recommended Hole Pattern (top view)




### Front Panel Connectors

| # | Function | # | Function |
|---|---|---|---|
| 1 | Vo2 (-) | 5 | On/Off Vo2 |
| 2 | Vo2 (+) | 6 | On/Off Vo1 |
| 3 | Vo1 (-) | 7 | VIN (-) |
| 4 | Vo1 (+) | 8 | VIN (+) |

### Signal Collector Pinout

| PIN | Function | PIN | Function |
|---|---|---|---|
| 1 | Vo1 SENSE (+) | 5 | Vo1 PWR GOOD |
| 2 | Vo2 SENSE (+) | 6 | Vo2 PWR GOOD |
| 3 | N/C | 7 | CC Ref (N/C) |
| 4 | Signal GND | 8 | Signal GND |

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