



# D1SE Series DIN-Rail Power Supplies

**TDK-Lambda**

# Essential power supplies without compromises

## D1SE Series



The D1SE series is a cost-effective solution for users requiring a reliable power supply. With outputs of 120W, 240W and 480W, a wide range of industrial applications can be flexibly scaled. Thanks to the use of the latest semiconductors, these single-phase power supplies not only reduce energy consumption, but also optimize the balance between performance and cost efficiency – without compromising on quality or reliability. The D1SE series demonstrates a consistent response to evolving system requirements. In addition to conventional operation with

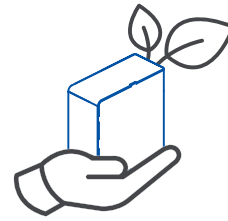
AC voltage, the devices can alternatively be operated safely with DC voltage. Equipped with push-in terminals, they can be quickly and reliably mounted, thereby reducing installation times or even enabling automation. For applications in challenging environments, separate models with coated printed circuit boards are available. The compact design and easy assembly make the D1SE series an optimal choice for a variety of control cabinets, machines, and production systems.

# Benefits



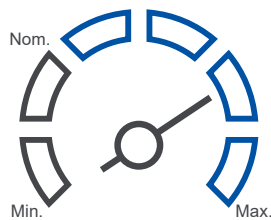
## ECONOMIC DESIGN

These products have been developed with a focus on essential functions, ensuring a perfect balance of cost-effectiveness and performance. They represent the optimal solution for typical panel board assemblies.



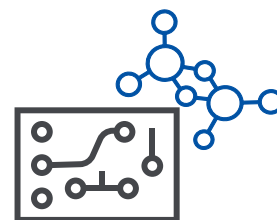
## SUSTAINABLE SOLUTION

Thanks to efficiencies up to 95%, this series minimizes energy consumption and heat generation, enhancing both economic efficiency and longevity.



## AMPLE RESERVES

Without compromising on quality and performance, these power supplies offer a continuous power reserve of up to 130%.



## BUILT FOR TOUGH CONDITIONS

Dedicated models with a coated printed circuit board are designed to withstand the harshest environments, making them a long-lasting source of power.

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# Technical specification

All products available without DC OK (-A3), with DC OK (-A4) and with DC OK and PCB coating (-A5)

|                                     |      | D1SE120-24-Ax                                                                                                        | D1SE240-24-Ax                                                                           | D1SE480-24-Ax                                                                                                         |
|-------------------------------------|------|----------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------|
| Output voltage                      | nom. | 24V <sub>DC</sub>                                                                                                    | 24V <sub>DC</sub>                                                                       | 24V <sub>DC</sub>                                                                                                     |
| Adjustment range                    | nom. | 22.5 .. 29V <sub>DC</sub>                                                                                            | 22.5 .. 29V <sub>DC</sub>                                                               | 22.5 .. 29V <sub>DC</sub>                                                                                             |
| Output current                      | nom. | 5A                                                                                                                   | 10A                                                                                     | 20A                                                                                                                   |
| Boost current                       | max. | 6.5A / 80s                                                                                                           | 13A / 10s                                                                               | 23A / 200s                                                                                                            |
| Hold-up time                        | min. | 23ms                                                                                                                 | 25ms                                                                                    | 23ms                                                                                                                  |
| Ripple & noise voltage <sup>4</sup> | max. | 30 / 45mV <sub>pp</sub>                                                                                              | 20 / 20mV <sub>pp</sub>                                                                 | 20 / 25mV <sub>pp</sub>                                                                                               |
| Overload behaviour                  |      | Constant current + Intermittent mode (Hiccup)                                                                        |                                                                                         |                                                                                                                       |
| AC power systems                    |      | TT, TN, IT, CGD                                                                                                      |                                                                                         |                                                                                                                       |
| Mains frequency                     | nom. | 50/60Hz                                                                                                              |                                                                                         |                                                                                                                       |
| AC input voltage                    | nom. | 100 .. 240V <sub>AC</sub>                                                                                            |                                                                                         |                                                                                                                       |
| 1AC, N, PE                          | nom. |                                                                                                                      |                                                                                         |                                                                                                                       |
| AC input current                    | max. | 1.5A                                                                                                                 | 3A                                                                                      | 5.6A                                                                                                                  |
| AC inrush current <sup>1</sup>      | typ. | 15 / 19 / 29A < 1ms                                                                                                  | 12 / 15 / 35A < 1ms                                                                     | 0 / 11 / 20A < 4ms                                                                                                    |
| AC inrush energy <sup>1</sup>       | typ. | 0.07 / 0.12 / 0.30A <sup>2</sup> s                                                                                   | 0.06 / 0.10 / 0.55A <sup>2</sup> s                                                      | 0.10 / 0.15 / 0.40A <sup>2</sup> s                                                                                    |
| DC Input voltage                    | nom. | 110 .. 250V <sub>DC</sub>                                                                                            |                                                                                         |                                                                                                                       |
| DC Inrush current <sup>2</sup>      | typ. | 12 / 25A < 2ms                                                                                                       | 13 / 35A < 2ms                                                                          | 8A < 15ms / 15A < 12ms                                                                                                |
| DC Inrush energy <sup>2</sup>       | typ. | 0.07 / 0.25A <sup>2</sup> s                                                                                          | 0.10 / 0.80A <sup>2</sup> s                                                             | 0.25 / 0.80A <sup>2</sup> s                                                                                           |
| Output power                        | nom. | 120W                                                                                                                 | 240W                                                                                    | 480W                                                                                                                  |
| Boost power                         | max. | 156W / 80s                                                                                                           | 312W / 10s                                                                              | 552W / 200s                                                                                                           |
| Power factor                        | typ. | 0.92                                                                                                                 | 0.95                                                                                    | 0.95                                                                                                                  |
| Conversion efficiency <sup>1</sup>  | typ. | 88.4 / 90.2 / 92.0%                                                                                                  | 92.4 / 93.5 / 94.4%                                                                     | 92.0 / 93.3 / 95.1%                                                                                                   |
| Power losses <sup>1</sup>           | typ. | 15.7 / 13.0 / 10.4W                                                                                                  | 19.7 / 16.7 / 14.2W                                                                     | 41.7 / 34.5 / 24.7W                                                                                                   |
| No-load consumption <sup>1</sup>    | max. | 0.8W                                                                                                                 | 2.6 / 1.7 / 1.0W                                                                        | 1.7 / 1.7 / 1.6W                                                                                                      |
| Service lifetime <sup>1</sup>       | min. | 275k / 466k / 689k hrs                                                                                               | 142k / 180k / 218k hrs                                                                  | 44k / 87k / 183k hrs                                                                                                  |
| Early life MTBF                     | min. | 1.36M hrs                                                                                                            | 0.91M hrs                                                                               | 0.74M hrs                                                                                                             |
| Telcordia SR-332 Issue 4            | min. |                                                                                                                      |                                                                                         |                                                                                                                       |
| Service life MTBF                   | min. | 2.43M hrs                                                                                                            | 1.48M hrs                                                                               | 1.18M hrs                                                                                                             |
| Telcordia SR-332 Issue 4            | min. |                                                                                                                      |                                                                                         |                                                                                                                       |
| Ambient operating temperature       | nom. | -25 .. +55°C <sub>amb</sub> (-13 .. +131°F <sub>amb</sub> )                                                          |                                                                                         |                                                                                                                       |
|                                     | max. | -25 .. +70°C <sub>amb</sub> (-13 .. +158°F <sub>amb</sub> )                                                          |                                                                                         |                                                                                                                       |
| Power derating <sup>3</sup>         | min. | 1.6 / 0.8W/°C <sub>amb</sub><br>(0.89 / 0.44W/°F <sub>amb</sub> )                                                    | 4.0 / 2.4W/°C <sub>amb</sub><br>(2.22 / 1.33W/°F <sub>amb</sub> )                       | 12.0 / 8.0W/°C <sub>amb</sub><br>(6.67 / 4.44W/°F <sub>amb</sub> )                                                    |
| Operating altitude                  | nom. | 3000mASL (9842ftASL)                                                                                                 |                                                                                         |                                                                                                                       |
|                                     | max. | 6000mASL (19685ftASL)                                                                                                |                                                                                         |                                                                                                                       |
| Percentage power derating           | min. | 5% per 1000mASL (5% per 3281ftASL)                                                                                   |                                                                                         |                                                                                                                       |
| Temperature derating                | min. | 5K per 1000m (9K per 3281ft)                                                                                         |                                                                                         |                                                                                                                       |
| Class of protection                 |      | I                                                                                                                    |                                                                                         |                                                                                                                       |
| IEC 61140                           |      |                                                                                                                      |                                                                                         |                                                                                                                       |
| Ingress protection degree           |      | IP 20                                                                                                                |                                                                                         |                                                                                                                       |
| IEC 60529                           |      |                                                                                                                      |                                                                                         |                                                                                                                       |
| Radiated noise emission             |      | Class B                                                                                                              |                                                                                         |                                                                                                                       |
| EN 55011, CISPR 11                  |      |                                                                                                                      |                                                                                         |                                                                                                                       |
| Conducted noise emission            |      | Class B                                                                                                              |                                                                                         |                                                                                                                       |
| EN 55011, CISPR 11                  |      |                                                                                                                      |                                                                                         |                                                                                                                       |
| Cooling concept                     |      | Natural convection                                                                                                   |                                                                                         |                                                                                                                       |
| Dimensions (WxHxD)                  |      | 38x125x110mm<br>(1 <sup>1</sup> / <sub>2</sub> x4 <sup>59</sup> / <sub>64</sub> x4 <sup>21</sup> / <sub>64</sub> in) | 44x125x127mm<br>(1 <sup>47</sup> / <sub>64</sub> x4 <sup>59</sup> / <sub>64</sub> x5in) | 60x125x129mm<br>(2 <sup>23</sup> / <sub>64</sub> x4 <sup>59</sup> / <sub>64</sub> x5 <sup>5</sup> / <sub>64</sub> in) |
| Weight                              | max. | 460g (1.01lb)                                                                                                        | 615g (1.36lb)                                                                           | 900g (1.98lb)                                                                                                         |
| Overvoltage category                |      | II < 3000mASL (< 9842ftASL)                                                                                          |                                                                                         |                                                                                                                       |
| IEC 61010-1, IEC 62368-1 (Ed.3)     |      |                                                                                                                      |                                                                                         |                                                                                                                       |
| Certifications & Approvals          |      | IEC/EN/UL/CSA 61010-1, 61010-2-201, 62368-1 (Ed.3), IS 13252-1 (in progress)                                         |                                                                                         |                                                                                                                       |
| Designed to meet                    |      | IEC 60950-1   EN 60204-1   IEC/EN 62477-1, 61204-7, 61558-2-16                                                       |                                                                                         |                                                                                                                       |

<sup>1</sup>100 / 120 / 240V<sub>AC</sub> | <sup>2</sup>110 / 250V<sub>DC</sub> | <sup>3</sup>120 / 240V<sub>AC</sub> | <sup>4</sup>25 .. 70°C<sub>amb</sub> / -25 .. +25°C<sub>amb</sub>

Unless otherwise stated, all values are specified in normal mounting position, at full load, nominal input and output voltages, 25°C ambient temperature and a run-in time of 5 minutes.

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# Add-ons and accessories

## DUSH DC-UPS

In mission critical applications, the DUSH serves as a backup solution to deliver power from a battery.



### DUSH960-1248-0M

20A input/output/battery, 12..48V programmable, buck-boost converter, battery interface, Modbus/RTU, LCD, 5A AUX output, push-in terminals

### DUSH960-1248-1M

20A input/output/battery, 12..48V programmable, buck-boost converter, battery interface, Modbus/RTU, LED indication, push-in terminals

[www.emea.lambda.tdk.com/uk/products/dush](http://www.emea.lambda.tdk.com/uk/products/dush)

## DBM Buffer Modules

In order to secure process uptime and reliability in 24V low-voltage systems, DBM buffer modules increase hold-up time or provide a reserve for peak loads.



### DBM20

Buffer module, input/output 20A, electrolytic capacitors, signalling & control, screw terminals

### DBM20/E

Buffer module, input/output 20A, electrolytic capacitors, signalling & control, spring terminal blocks

[www.emea.lambda.tdk.com/uk/products/dbm20](http://www.emea.lambda.tdk.com/uk/products/dbm20)

## DRM Redundancy Modules

For building fault tolerant 12/24V systems, DRM redundancy modules can be used to decouple n+1 power supplies.



### DRM40

40A output, 2x20A input, screw terminals, DC OK and balancing LEDs

### DRM40B

40A output, 2x20A input, screw terminals

[www.emea.lambda.tdk.com/uk/products/drm40](http://www.emea.lambda.tdk.com/uk/products/drm40)

## DDA DC/DC Converters

Non-isolated step-down converters for creating additional DC bus voltages from a single DC input source.



### DDA250N

Single output 20A at 3.3..15V, input 9..53V, DC OK LED, screw terminals

### DDA325N

Dual output 14A at 3.3..24V and 8A at -3.3..-24V, input 9..40V, DC OK LEDs, screw terminals

### DDA500N

Dual output 2x20A at 3.3..15V, input 9..53V, DC OK LEDs, screw terminals

[www.emea.lambda.tdk.com/uk/products/dda](http://www.emea.lambda.tdk.com/uk/products/dda)

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