

# NFC10 SERIES

Single and dual output



- 10 Watts output power
- Power density 13.3W/in<sup>3</sup>
- 2:1 input voltage range
- UL, CSA and VDE safety approvals (48V input units)
- Overvoltage protection
- Extended operating temperature range
- Fixed switching frequency

The NFC10 offers 10 Watts of output power from a 2 x 1 x 0.375 inch package without derating to 71°C. A range of 15 models with 2:1 wide input voltages of 9-18, 18-36 and 36-72VDC and single and dual outputs are offered. Features of the NFC10 series include fixed frequency operation, high MTBF, overvoltage protection and tight load regulation. All of the models have been designed to meet EN60950 (Vin <60VDC) safety requirements. Typical applications are telecommunications, industrial automation and distributed power.

[ 2 YEAR WARRANTY ]



## SPECIFICATION All specifications are typical at nominal input, full load at 25°C unless otherwise stated

| OUTPUT SPECIFICATIONS                 |  |  |
|---------------------------------------|--|--|
| Line regulation                       | LL to HL, single output<br>LL to HL, dual output | ±1.0%<br>±1.0%                           |
| Load regulation                       | FL to 10% FL, singles<br>FL to 10% FL, duals     | ±1.0% typ.<br>±2.0% typ.                 |
| Total error band                      | Singles<br>Duals                                 | ±3.0% max.<br>±5.0% max.                 |
| Ripple and noise                      | 5Hz to 20MHz                                     | 100mV pk-pk, max.<br>20mV rms max.       |
| Transient response                    | 25% step   | ±2.0% max. dev.,<br>500µs recovery       |
| Temperature coefficient               |  | ±0.02%/°C, max.                          |
| Overvoltage protection clamp          | Single output<br>Dual output                     | 125% Vout<br>125% Vout total             |
| Short circuit protection (See Note 9) |  | Continuous automatic recovery            |
| INPUT SPECIFICATIONS                  |  |  |
| Input voltage range                   | 12VDC<br>24VDC<br>48VDC                          | 9 to 18VDC<br>18 to 36VDC<br>36 to 72VDC |
| Input filter                          |  | Pi filter                                |
| Surge protection                      | 24VDC<br>48VDC                                   | 50V for 100ms<br>100V for 100ms          |
| Continuous protection                 | ETSI requirement for 48V and 60VDC telecoms      | 75VDC                                    |

| GENERAL SPECIFICATIONS             |   |   |
|------------------------------------|---|---|
| Efficiency                         | See table   | 79% to 86%  |
| Isolation voltage                  | Input/output  | 500VAC/710VDC   |
| Switching frequency                | Fixed   | 400kHz ±10%   |
| Approvals and standards See Note 5 | Safety  | VDE0805, EN60950, IEC950, UL1950<br>CSA C22.2 No. 950   |
| Case material                      |   | Thick aluminum alloy, hard black anodized finish  |
| Cover material                     | UL94V-0   | 10% glass reinforced polyetherimide GE ULTEM #2110 or equivalent  |
| Material flammability              |   | UL94V-0   |
| Weight                             |   | 27g (0.95oz.)   |
| MTBF                               | MIL-HDBK-217E   | 760,000 hours   |
| ENVIRONMENTAL SPECIFICATIONS       |   |   |
| Thermal performance                | Operating ambient<br>Max. case temperature, (See Notes 6, 8)<br>Non-operating amb.,<br>Option, ambient, (See Note 7)<br>Derating (See curve, and Note 8)<br>Cooling | -25°C to +71°C<br>+110°C max.<br>-55°C to +125°C<br>-40°C to +71°C<br>None to +71°C<br>Free air convection cooled |

### International Safety Standard Approvals: 48V input units

- VDE0805/EN60950/IEC950 File No. 10401-3336-1077, VDE licence No. 1663
- UL1950 File No. E136005
- CSA C22.2 No. 950 File No. LR41062C/LR50913C/LR101320

# 10 Watt Wide input DC/DC converters

| INPUT VOLTAGE (1) | OUTPUT VOLTAGE | OVP    | OUTPUT CURRENT | INPUT CURRENT (2) | EFFICIENCY | REGULATION |          | MODEL NUMBER |
|-------------------|----------------|--------|----------------|-------------------|------------|------------|----------|--------------|
|                   |                |        |                |                   |            | LINE (3)   | LOAD (4) |              |
| 9-18VDC           | 5VDC           | 6.2VDC | 2000mA         | 1085mA            | 79%        | ±1.0%      | ±1.0%    | NFC10-12S05  |
| 9-18VDC           | 12VDC          | 15VDC  | 833mA          | 1055mA            | 82%        | ±1.0%      | ±1.0%    | NFC10-12S12  |
| 9-18VDC           | 15VDC          | 18VDC  | 666mA          | 1055mA            | 82%        | ±1.0%      | ±1.0%    | NFC10-12S15  |
| 9-18VDC           | ±12VDC         | 30VDC  | ±416mA         | 1055mA            | 81%        | ±1.0%      | ±2.0%    | NFC10-12D12  |
| 9-18VDC           | ±15VDC         | 36VDC  | ±333mA         | 1055mA            | 81%        | ±1.0%      | ±2.0%    | NFC10-12D15  |
| 18-36VDC          | 5VDC           | 6.2VDC | 2000mA         | 535mA             | 81%        | ±1.0%      | ±1.0%    | NFC10-24S05  |
| 18-36VDC          | 12VDC          | 15VDC  | 833mA          | 530mA             | 84%        | ±1.0%      | ±1.0%    | NFC10-24S12  |
| 18-36VDC          | 15VDC          | 18VDC  | 666mA          | 530mA             | 84%        | ±1.0%      | ±1.0%    | NFC10-24S15  |
| 18-36VDC          | ±12VDC         | 30VDC  | ±416mA         | 520mA             | 82%        | ±1.0%      | ±2.0%    | NFC10-24D12  |
| 18-36VDC          | ±15VDC         | 36VDC  | ±333mA         | 520mA             | 82%        | ±1.0%      | ±2.0%    | NFC10-24D15  |
| 36-72VDC          | 5VDC           | 6.2VDC | 2000mA         | 265mA             | 82%        | ±1.0%      | ±1.0%    | NFC10-48S05  |
| 36-72VDC          | 12VDC          | 15VDC  | 833mA          | 260mA             | 86%        | ±1.0%      | ±1.0%    | NFC10-48S12  |
| 36-72VDC          | 15VDC          | 18VDC  | 666mA          | 260mA             | 86%        | ±1.0%      | ±1.0%    | NFC10-48S15  |
| 36-72VDC          | ±12VDC         | 30VDC  | ±416mA         | 255mA             | 84%        | ±1.0%      | ±2.0%    | NFC10-48D12  |
| 36-72VDC          | ±15VDC         | 36VDC  | ±333mA         | 255mA             | 84%        | ±1.0%      | ±2.0%    | NFC10-48D15  |

**Notes**

- Nominal input voltages are 12VDC, 24VDC and 48VDC.
- Maximum figure, at full load.
- Measured from high line to low line.
- Measured from full load to 10% full load.
- Designed to meet EN60950 with an input voltage that does not exceed the SELV limit of 60VDC.
- Maximum case temperature must not be exceeded. Derating curve may be extended or restricted depending on available cooling.
- Extended operating temperature range is available on the following models: NFC10-12S12, -24S05, -24S12, -24S15. The suffix '-4' must be added to the model number, e.g. **NFC10-24S05-4**.
- Derating curve assumes unrestricted natural convection cooling. Higher ambient temperatures are permitted with forced air cooling, if the case temperature does not exceed 110°C.
- Long term continuous operation into a short circuit will compromise the reliability of the unit.

| PIN CONNECTIONS |               |             |
|-----------------|---------------|-------------|
| PIN NUMBER      | SINGLE OUTPUT | DUAL OUTPUT |
| 1               | + Input       | + Input     |
| 2               | - Input       | - Input     |
| 3               | + Output      | + Output    |
| 4               | No Pin        | Common      |
| 5               | - Output      | - Output    |

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