



TECHNICAL SPECIFICATIONS

Input data:

AC Input Voltage	230 Vac +10%/-15%
AC Frequency	50 Hz ±5%

Output data (MN175)

Output voltage (main ac supply present)	48 Vdc, nominal, adjustable: 48 – 49.5 Vdc
Output power	175 W nominal, (3.7 A/48.6 V)
Output current limit	4 A, nominal, adjustable: 4.2 – 1.8 A

Output dynamic response (change load 20% to 100%)	±1.5%
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Output load line response	±1%
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Output voltage ripple and noise	±50 mV _{max}
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Psometric noise	U _{eff} ≤ 1mV
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Efficiency	η > 80%
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Output data (MP125)

Output battery voltage	54 Vdc, nominal
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Output battery voltage in charging process

V _{float} :	54.6 Vdc, nominal, adjustable: 51 – 55 Vdc (2.275 V/cell, adjustable: 2.12 – 2.3 V/cell)
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V _{bulk} :	57.5 Vdc, nominal, adjustable: 53.5 – 58 Vdc (2.4 V/cell, adjustable: 2.2 – 2.4 V/cell)
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Charging current:	2.4 A standard/nominal, adjustable: 2.4 A-1A
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Temperature compensation:	4 mV – /C/cell standard, adjustable: 1 – 8 mV/C/cell
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Output data under failure of main ac supply:

Output voltage	40.5 – 56 Vdc
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Low voltage battery disconnect (LVD) threshold adjustable	40 – 44 Vdc
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Threshold of battery connect	45 – 47 Vdc
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Standard battery delivered within NN301:

NP24-12, 12V/24Ah, Yuasa, 4 pcs. in set

Battery recharge time	10h (±1h)
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Remote alarms interface (DB9 connector):

Number of signals (alarms)	4
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Isolation	optoisolation
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Output voltage	5 – 10 V
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Designed and tested according to:

Safety standard	EN60950 (UL1950)
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EMC standard	EN55022/CISPR22, class A
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Environmental:

Ambient operating temperature	+5°C to +50°C
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Dimensions:

Physical Size (WxLxH)	415 x 250 x 301 mm
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Weight	50 kg (with batteries)
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NN301/48 Vdc SMALL DC POWER SUPPLY SYSTEM

■ Compact uninterruptible dc power supply system - in one enclosure:

- Rectifier 230 Vac/48 Vdc, up to 175 W
- Battery Charger 220 Vac/40,5 — 56 Vdc, up to 125W
- Batteries 48 Vdc/12 Ah/17 Ah/24 Ah
- Low Voltage Disconnect block

■ Optimal Charging of Batteries

- Each system is completely wired, charged and ready to go



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09/06/2021



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Applications

DC power supply system NN301 is designed for:

- Applications in which electronic equipment need to have reliable and permanent DC power supply regardless on main supply failure
- Equipment to be used in telecom, datacom, and network applications
- Equipment to be used in security and monitoring applications

Typical Applications

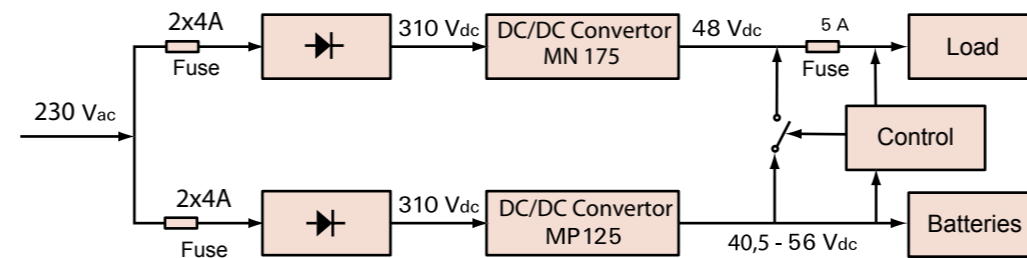
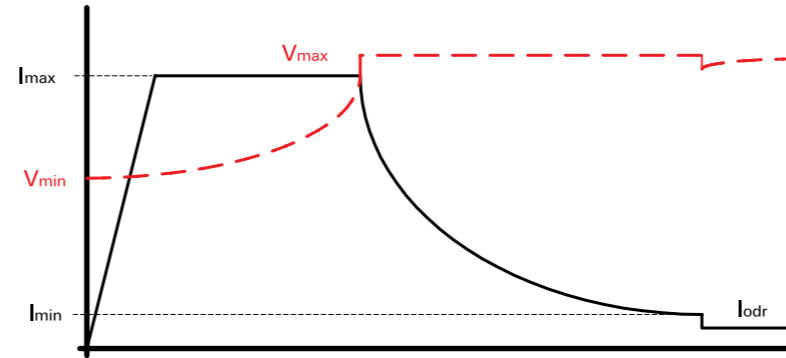
- Fiber Optic Networks
- Data communications
- PABX/ISDN
- Industrial
- Customer premises

System overview

NN301 contains:

- Rectifier/ Charger N301:
 - Rectifier - DC/DC converter (MN175) providing DC output power to load
 - Charger – DC/DC converter (MP125) providing battery charging:
 - Battery charging is independent of rectifier and move according to optimal charging characteristics given by battery manufacturer
 - It works like current/voltage source (IU characteristics)
 - System of semiconductor switches providing uninterrupted DC output power to load:
 - Connecting load and batteries when ac power is loss (rectifier off)
 - Assuring permanent power to load
- Control block:
 - Controlling system of semiconductor switches mentioned above
 - Detection of system failures – overload detection, loss of AC detection, battery damage
- Battery set (up to 24 Ah)
- Enclosure
- N301 can be used separately

NN301/48 Vdc



NN301 Block diagram



N301

Protections

Protections include:

- Overload (current limit) and short circuit protection - both rectifier and charger
- Over Voltage Protection (OVP) - both rectifier and charger
- Electronic Low Voltage Disconnect (LVD) - Disconnect the battery to the load when the battery drops below 40.5 V
- Output fuse, one 5 A in-line with system negative output,

Batteries and charging

Inside NN301 are stored set of four sealed lead-acid batteries, standard dimensions, with maximum 24 Ah capacity. These kinds of batteries do not need special maintenance. Optimal charging process increasing working life (5 to 12 years) and protect from determination. Automatic temperature compensation is accomplished using temperature sensor on batteries. Charging process has next stages:

- Soft start, charging with constant current, I_{max} (charger working like current source)
- Charging in two-stage voltage mode:
 - Boost mode - after reaching V_{blk} voltage, constant voltage of that value is maintained
 - Float mode - after charging current fall under I_{min} value, voltage become V_{float} (keeping that value), batteries are fully charged

System Monitoring

With LED indicators user can monitoring status of correct NN301 functioning:

- Red neon light on main switch – presence of ac voltage
- Green LED OUT – power to load from rectifier (ac lines)
- Green LED BATT – power to load from batteries
- Green LED1 – charging of batteries in Current/Boost Voltage mode
- Yellow LED2 – charging of batteries in float mode
- Red LED3 – failure of batteries or decreasing of battery capacity

Remote alarms - optoisolated interface:

- Failure (loss or incorrect) main supply voltage
- Output power from batteries (rectifier do not work)
- Battery low level (remain battery capacity low)
- Non-correct charging of battery (failure of charger or batteries)