# 250W High Reliable Built-in Type True Sine Wave DC-AC Power Inverter NTS-250P series

(DC input side)

(AC output side)

User's Manual

Video

IEC62368-1 TPTC004 AS/NZS 62368.1

Please refer to page3 for more details.

Household Railway Car Use Marine Network Telecom

## Features

- Compact size and light weight
- True sine wave output (THD<3%)
- High surge power up to 500W
- Fanless design, cooling by free air convention
- AC output voltage and frequency selectable by DIP S.W
- No load disspation <1.5W max. at standby saving mode
- -20℃~+70℃ wide operating temperature
- Power ON-OFF remote control
- Protections :
  Input : Reverse polarity / DC low alarm / DC low shutdown / Over voltage
  Output : Short circuit / Overload / Over temp.
- Battery over discharge protection (Low voltage disconnect)
- Suitable for lead-acid or li-ion batteries
- Support Tx/Rx for monitoring power inverter status
- Conformal coating
- 3 years warranty

## Applications

- Mobile device
- Home and office appliance
- Portable equipment
- Vehicle
- Yacht
- Off-grid solar power system
- Wireless network
- Telecom or datacom system

## GTIN CODE

MW Search: https://www.meanwell.com/serviceGTIN.aspx

## Description

NTS-250P is a 250W highly reliable built-in type off-grid true sine wave DC-AC power inverter. Its key features include: digital design with MCU control, streamlined control circuitry that quickly responds to environmental changes and improves reliability, compact size, light weight, fanless quiet design, 500W peak power, adjustable AC output voltage and frequency, -20~+70℃ wide operating temperature range, built-in remote ON/OFF control, low no-load power consumption (energy saving mode < 1.5W max.), complete protection features, and etc. Combined with batteries, the NTS-250P is suitable for use in residential, commercial, marine, automobile, and remote areas with no access to utility power, and the output can be used to power fans, TV, radio, phone charger, PC/laptop, lighting, outdoor camping equipment, marine AC power, and etc.

## Model Encoding

**NTS - 250 P - 1 12**

- 12: DC input voltage (12: 12Vdc, 24: 24Vdc, 48: 48Vdc)
- 1: AC output voltage (1: 100/110/115/120Vac, 2:200/220/230/240Vac)
- P: PCB built-in type
- 250: Rated wattage
- NTS: Series name

# 250W High Reliable Built-in Type True Sine Wave DC-AC Power Inverter NTS-250P series

## SPECIFICATION

| MODEL NO. | | | NTS-250P-112 | NTS-250P-124 | NTS-250P-148 | NTS-250P-212 | NTS-250P-224 | NTS-250P-248 |
|---|---|---|---|---|---|---|---|---|
| AC OUTPUT | RATED POWER(Continuous) | | 250W | | | | | |
| | OVER RATED POWER(3 Min.) | | 287.5W | | | | | |
| | PEAK POWER(10 Sec.) | | 375W | | | | | |
| | SURGE POWER(30 Cycles) | | 500W | | | | | |
| | AC VOLTAGE | | Default setting set at 110VAC | | | Default setting set at 230VAC | | |
| | | | 100 / 110 / 115 / 120Vac selectable by DIP S.W | | | 200 / 220 / 230 / 240Vac selectable by DIP S.W | | |
| | FREQUENCY | | Default setting set at 60Hz±0.1Hz | | | Default setting set at 50Hz±0.1Hz | | |
| | | | 50/60Hz selectable by DIP S.W | | | 50/60Hz selectable by DIP S.W | | |
| | WAVEFORM Note.1 | | True sine wave (THD<3%) | | | | | |
| | AC REGULATION | | ±3.0% at rated output voltage | | | | | |
| | LED STATUS | | Please refer to page3 | | | | | |
| DC INPUT | DC VOLTAGE | | 12V | 24V | 48V | 12V | 24V | 48V |
| | VOLTAGE RANGE (Typ.) | | 10 ~ 16.5Vdc | 20 ~ 33Vdc | 40 ~ 66Vdc | 10 ~ 16.5Vdc | 20 ~ 33Vdc | 40 ~ 66Vdc |
| | DC CURRENT (Typ.) | | 25A | 13A | 7A | 25A | 13A | 7A |
| | NO LOAD DISSPATION (Typ.) | Non-Saving mode | 10W | 10W | 12W | 10W | 10W | 12W |
| | | Saving mode | Default disable, ≦1.2W ~ 1.5W by models @ auto detec AC output load ≦10W will be changed to saving mode | | | | | |
| | | | 1.2W | 1.3W | 1.5W | 1.2W | 1.3W | 1.5W |
| | OFF MODE CURRENT DRAW | | <1mA at battery ~DC input must be disconnected | | | | | |
| | EFFICIENCY (Typ.) Note.1 | | 91% | 91% | 92% | 92% | 93% | 93% |
| | BATTERY TYPES | | Lead Acid or Li-ion | | | | | |
| PROTECTION DC INPUT | FUSE(Internal) | | 30A*2 | 30A*1 | 10A*2 | 30A*2 | 30A*1 | 10A*2 |
| | LOW | ALARM | 11±0.3Vdc | 22±0.5Vdc | 44±1Vdc | 11±0.3Vdc | 22±0.5Vdc | 44±1Vdc |
| | | SHUTDOWN | 10±0.3Vdc | 20±0.5Vdc | 40±1Vdc | 10±0.3Vdc | 20±0.5Vdc | 40±1Vdc |
| | | RESTART | 12.5±0.3Vdc | 25±0.5Vdc | 50±1Vdc | 12.5±0.3Vdc | 25±0.5Vdc | 50±1Vdc |
| | HIGH | ALARM | 15.5±0.3Vdc | 31±0.5Vdc | 62±1Vdc | 15.5±0.3Vdc | 31±0.5Vdc | 62±1Vdc |
| | | SHUTDOWN | 16.5±0.3Vdc | 33±0.5Vdc | 66±1Vdc | 16.5±0.3Vdc | 33±0.5Vdc | 66±1Vdc |
| | | RESTART | 15±0.3Vdc | 30±0.5Vdc | 60±1Vdc | 15±0.3Vdc | 30±0.5Vdc | 60±1Vdc |
| | BAT. POLARITY | | By internal fuse open | | | | | |
| AC OUTPUT | OVER TEMPERATURE | | Protection type : Shut down o/p voltage, re-power on to recover | | | | | |
| | OUTPUT SHORT | | Protection type : Shut down o/p voltage, re-power on to recover | | | | | |
| | OVER LOAD (Typ.) | | 105 ~ 115% load for 180 sec., 115% ~ 150% load for 10 sec. | | | | | |
| | | | Protection type : Shut down o/p voltage, re-power on to recover | | | | | |
| FUNCTION | REMOTE CONTROL | | Power ON-OFF remote control by front panel dry contact connector (by RELAY), Open : Normal work ; Short : Remote off | | | | | |
| | Tx/Rx | | Support Tx/Rx for monitoring power inverter status | | | | | |
| ENVIRONMENT | WORKING TEMP. | | -20 ~ +70℃ (Refer to "Derating curve") | | | | | |
| | WORKING HUMIDITY | | 20% ~ 90% RH non-condensing | | | | | |
| | STORAGE TEMP., HUMIDITY | | -30 ~ +70℃ / -22 ~ +158°F, 10 ~ 95% RH non-condensing | | | | | |
| | VIBRATION | | 10 ~ 500Hz, 3G 10min./1cycle, 60min. each along X, Y, Z axes | | | | | |
| SAFETY & EMC (Note.4) | SAFETY STANDARDS | | CB IEC62368-1 for all models; E13, EAC TPTC004, AS/NZS 62368.1 for NTS-250P-212/224/248 approved (Please refer to next page "Safety overview" table for more details) | | | | | |
| | WITHSTAND VOLTAGE | | DC I/P - AC O/P:3.0KVac AC O/P - FG:1.5KVac | | | | | |
| | EMC EMISSION | | **Parameter** | **Standard** | | | **Test Level / Note** | |
| | | | Radiated | FCC for 112,124,148 only | | | Class A | |
| | | | | BS EN/EN55032(CISPR32) for 212,224,248 only | | | Class A | |
| | | | Harmonic Current | BS EN/EN61000-3-2 | | | ----- | |
| | | | Voltage Flicker | BS EN/EN61000-3-3 | | | ----- | |
| | EMC IMMUNITY | | BS EN/EN55024, BS EN/EN55035 | | | | | |
| | | | **Parameter** | **Standard** | | | **Test Level / Note** | |
| | | | ESD | BS EN/EN61000-4-2 | | | Level 4, 15KV air ; Level 4, 8KV contact | |
| | | | Radiated | BS EN/EN61000-4-3 | | | Level 3, 10V/m | |
| | | | Magnetic Field | BS EN/EN61000-4-8 | | | Level 4, 30A/m | |
| OTHERS | MTBF | | 836.9K hrs min. Telcordia TR/SR-332 (Bellcore) ; 84K hrs min. MIL-HDBK-217F (25℃) | | | | | |
| | DIMENSION | | 186*100.5*32mm (L*W*H) | | | | | |
| | PACKING | | 0.75Kg; 18pcs/ 14.5Kg/ 1.01CUFT | | | | | |

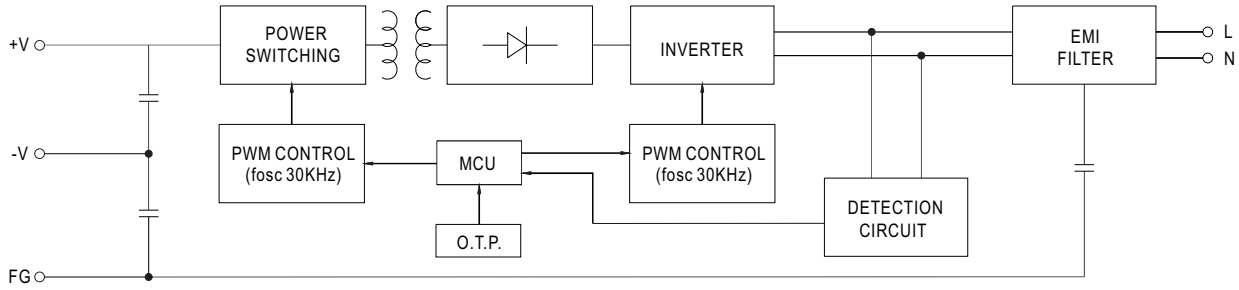
**NOTE**

1.Efficiency, AC regulation and THD are tested by 250W, linear load at 12.5Vdc/25Vdc/50Vdc input voltage.
2.All parameters not specified above are measured at rated load, 25℃ of ambient temperature and set to factory setting.
3.Internal pre-start circuit, the setup time is 8s.
4.The power supply is considered as an independent unit, but the final equipment still need to re-confirm that the whole system complies with the EMC directives. For guidance on how to perform these EMC tests, please refer to "EMI testing of component power supplies." (as available on http://www.meanwell.com)
※ Product Liability Disclaimer : For detailed information, please refer to https://www.meanwell.com/serviceDisclaimer.aspx

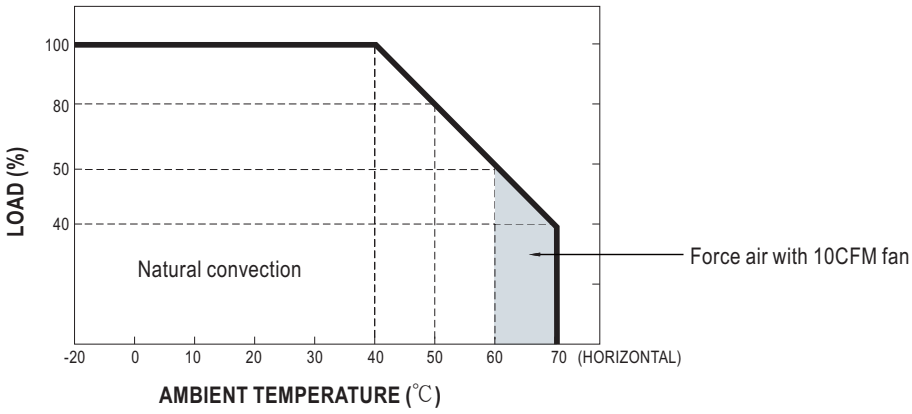
## ■ Safety Overview

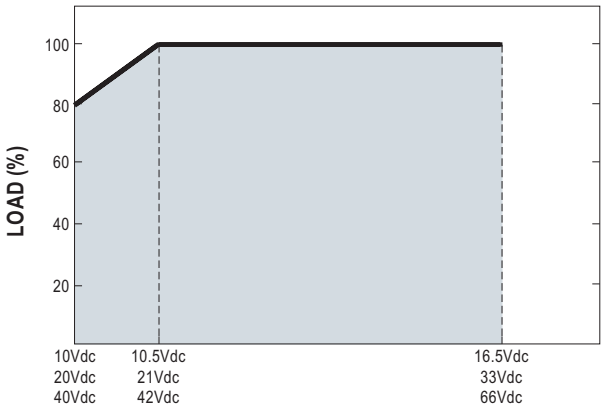
| MODEL NO. | Certificate |
|---|---|
| NTS-250P-112/124/148 | CB FC |
| NTS-250P-212/224/248 | CB E13 EAC CE UKCA |

## ■ Block Diagram



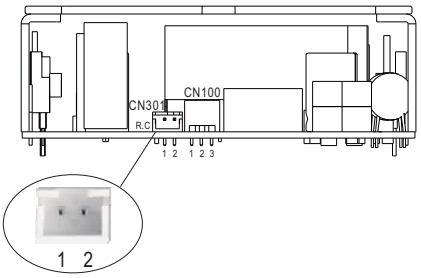

## ■ DERATING CURVE



## ■ Remote ON-OFF Control

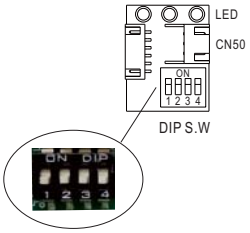
| Remote ON-OFF (CN301 PIN1,2) | AC Output Status |
|---|---|
| Open | power inverter ON |
| Short | power inverter OFF |




## ■ AC output voltage、Frequency、Power saving mode selectable by DIP SW

Output Voltage and Frequency Setting Factory settings are either 110Vac/60Hz or 230Vac/50Hz, users are able to adjust the voltage and frequency, through the DIP switch of position 1,2,3,4.

| AC Output Voltage、 Frequency、Power saving mode selectable by DIP SW | | | |
|---|---|---|---|
| SW1 SW2 | | SW3 | SW4 |
| OFF | OFF : 100Vac or 200Vac | ON : 50Hz | ON : Saving mode |
| OFF | ON : 110Vac or 220Vac | | |
| ON | OFF : 115Vac or 230Vac | OFF: 60Hz | OFF: Non-Saving mode |
| ON | ON : 120Vac or 240Vac | | |




## ■ Support Tx/Rx for monitoring power inverter status

Users can monitor the status of the power inverter through Tx/Rx, and can modify the input and output parameters set internally.

## ■ LED STATUS

**Normal work:**

| Status | Green | Orange | Red |
|---|---|---|---|
| | Inverter OK | Remote off<br>Saving mode | Abnormal Status<br>(See below table) |

| DC Input | Green | Orange | Red |
|---|---|---|---|
| | 12.5~15.5Vdc<br>25~31Vdc<br>50~62Vdc | 11~12.5Vdc<br>22~25Vdc<br>44~50Vdc | <11Vdc or >15.5Vdc<br><22Vdc or >31Vdc<br><44Vdc or >62Vdc |

| Load | Green | Orange | Red |
|---|---|---|---|
| | <40% load | 40~80% load | >80% load |

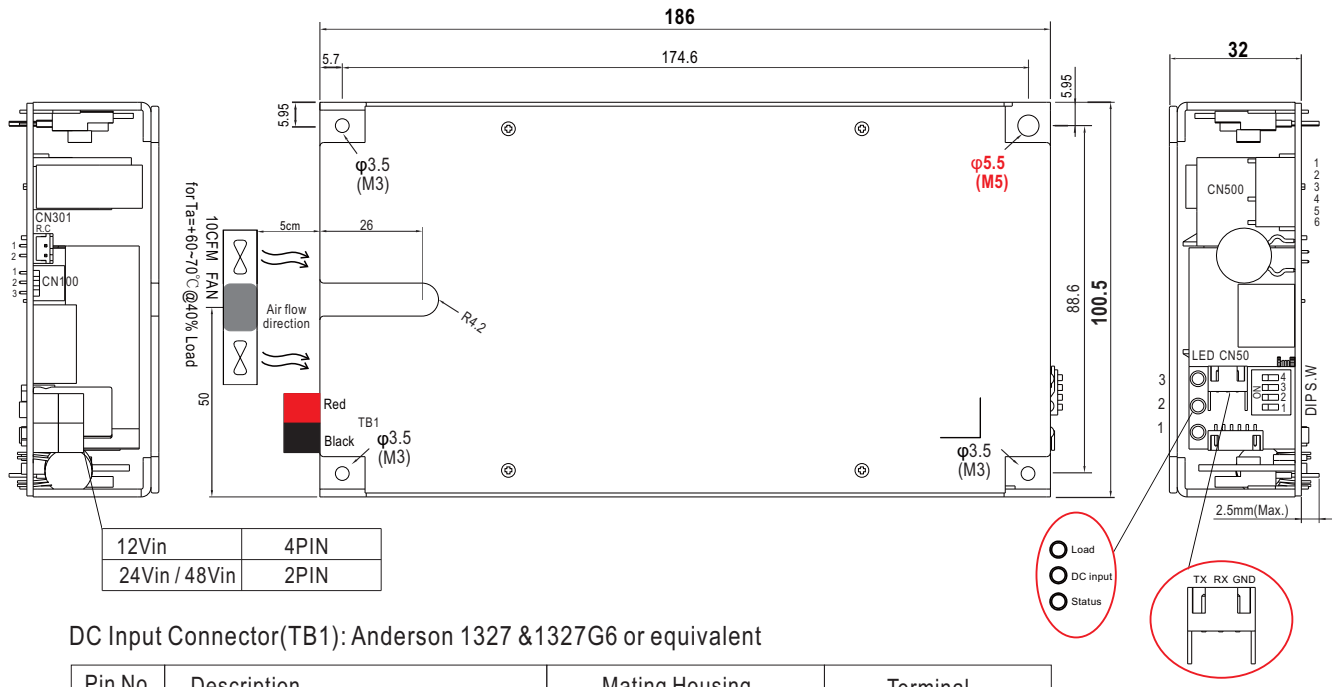
**Abnormal status :**

| LED Indicator | Abnormal Indication |
|---|---|
| Status ●<br>DC Input ○<br>Load ☀ | Output overload or AC output short circuit |
| Status ●<br>DC Input ☀<br>Load ○ | Abnormal DC voltage |
| Status ●<br>DC Input ☀<br>Load ☀ | Over temperature or Fan lock |
| Status ☀<br>DC Input ○<br>Load ○ | Inverter fail |

● Light
○ Light off
☀ Flash

## ■ MECHANICAL SPECIFICATION

Unit:mm




| | |
|---|---|
| 12Vin | 4PIN |
| 24Vin / 48Vin | 2PIN |

DC Input Connector(TB1): Anderson 1327 &1327G6 or equivalent

| Pin No. | Description | Mating Housing | Terminal |
|---|---|---|---|
| Red | DC Input +V | 1327 or equivalent | 261G2-LPBK or equivalent |
| Black | DC Input -V | 1327G6 or equivalent | |

AC Output Connector(CN500): JST B6P-VH or equivalent

| Pin No. | Assignment | Mating Housing | Terminal |
|---|---|---|---|
| 1 | FG | JST VHR or equivalent | JST SVH-21T-P1.1 or equivalent |
| 2,3 | NC | | |
| 4 | Output AC/N | | |
| 5 | NC | | |
| 6 | Output AC/L | | |

Remote ON-OFF Control Connector(CN301): JST S2B-XH-A or equivalent

| Pin No. | Description | Mating Housing | Terminal |
|---|---|---|---|
| 1 | Pin 1,2 Open: Inverter Normal work | JST XHP or equivalent | JST SXH-001T or equivalent |
| 2 | Pin 1,2 Short: Inverter Remote off | | |

Communicating Function Connector(CN50): CHYAO SHIUN JS-100R-03 or equivalent

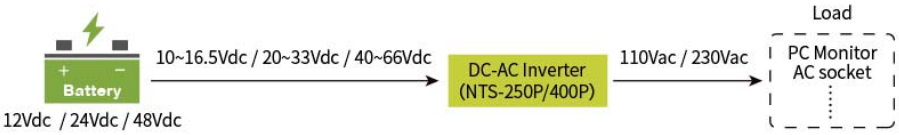
| Pin No. | Description | Mating Housing | Terminal |
|---|---|---|---|
| 1 | Signal GND | CHYAO SHIUNN JS-2001 or equivalent | CHYAO SHIUNN JS-2001-TX or equivalent |
| 2 | UART-RX | | |
| 3 | UART-TX | | |

FAN Connector(CN100): JST B3B-XH-A or equivalent
Suggested Fan model: CCHV CHT4012BH-W20D 4020B

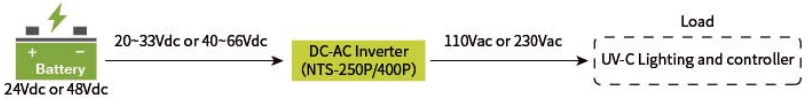
| Pin No. | Description | | Mating Housing | Terminal |
|---|---|---|---|---|
| 1 | Fan supply +V | 12V/0.4A max. | JST XHP or equivalent | JST SXH-001T or equivalent |
| 2 | Fan supply -V | | | |
| 3 | PWM signal for Fan speed control | | | |

DIP SW： Please refer to page4 for more detail

## ■ TYPICAL APPLICATION






## ■ INSTALLATION MANUAL

Please refer to : http://www.meanwell.com/manual.html