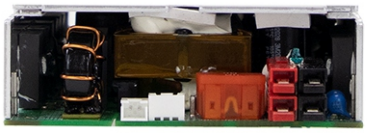
400W High Reliable Built-in Type True Sine Wave DC-AC Power Inverter NTS-400P series



(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 800W
- 250W convection, 400W forced air
- 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-400P is a 400W 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, 800W 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-400P 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 - 400 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
- 400: Rated wattage
- NTS: Series name

400W High Reliable Built-in Type True Sine Wave DC-AC Power Inverter NTS-400P series

SPECIFICATION

MODEL NO.			NTS-400P-112	NTS-400P-124	NTS-400P-148	NTS-400P-212	NTS-400P-224	NTS-400P-248
AC OUTPUT	RATED POWER(Continuous)		400W					
	OVER RATED POWER(3 Min.)		460W					
	PEAK POWER(10 Sec.)		600W					
	SURGE POWER(30 Cycles)		800W					
	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 input 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.)		40A	20A	10A	40A	20A	10A
	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		89%	91%	91%	91%	93%	93%
	BATTERY TYPES		Lead Acid or Li-ion					
PROTECTION	DC INPUT	FUSE(Internal)	40A*2	30A*2	10A*2	40A*2	30A*2	10A*2
		LOW ALARM	11±0.3Vdc	22±0.5Vdc	44±1Vdc	11±0.3Vdc	22±0.5Vdc	44±1Vdc
		LOW SHUTDOWN	10±0.3Vdc	20±0.5Vdc	40±1Vdc	10±0.3Vdc	20±0.5Vdc	40±1Vdc
		LOW 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
		HIGH SHUTDOWN	16.5±0.3Vdc	33±0.5Vdc	66±1Vdc	16.5±0.3Vdc	33±0.5Vdc	66±1Vdc
		HIGH 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-400P-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		836.2K 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					

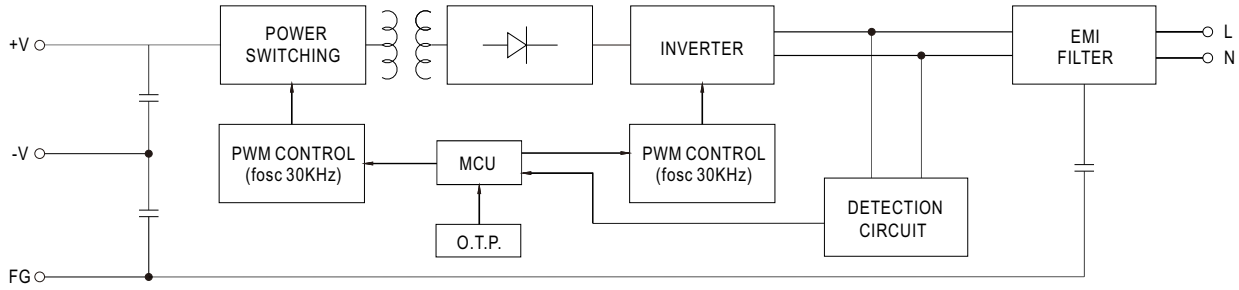
NOTE

1.Efficiency, AC regulation and THD are tested by 400W, 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

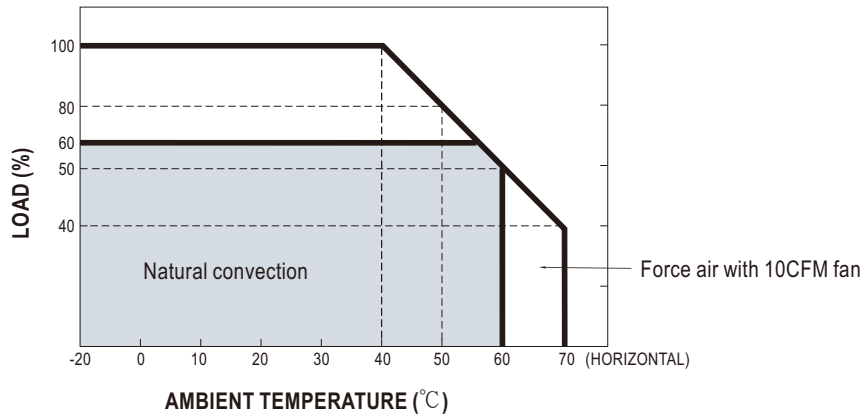
■ Safety Overview

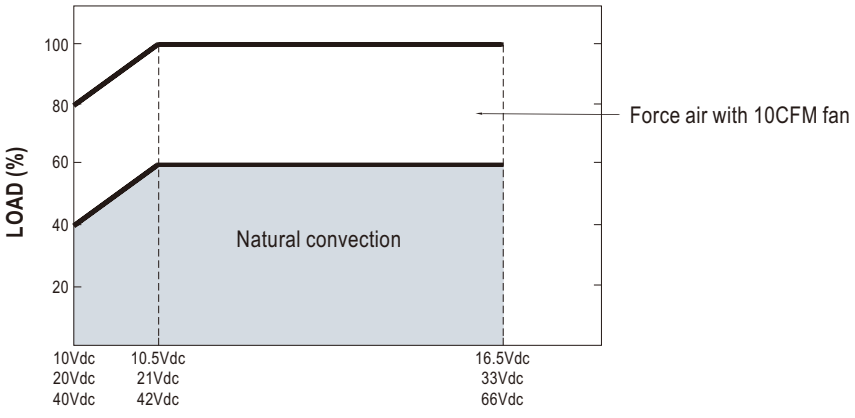
MODEL NO.	Certificate
NTS-400P-112/124/148	CB FC
NTS-400P-212/224/248	CB E13 EAC CE UKCA

■ Block Diagram



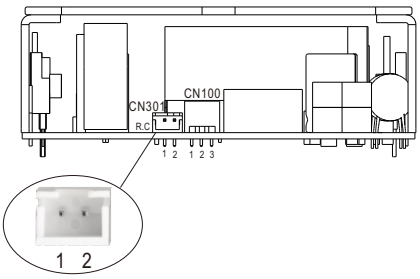
■ DERATING CURVE





■ Remote ON-OFF Control

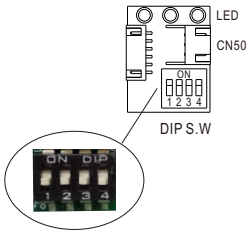
Remote ON-OFF (CN301 PIN1,2)	AC Output Status
Open	power inverter ON
Short	power inverter OFF



■ 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 ☀ Saving mode	● Abnormal Status (See below table)

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

Load	Green	Orange	Red
	● <40% load	● 40~80% load	● >80% load

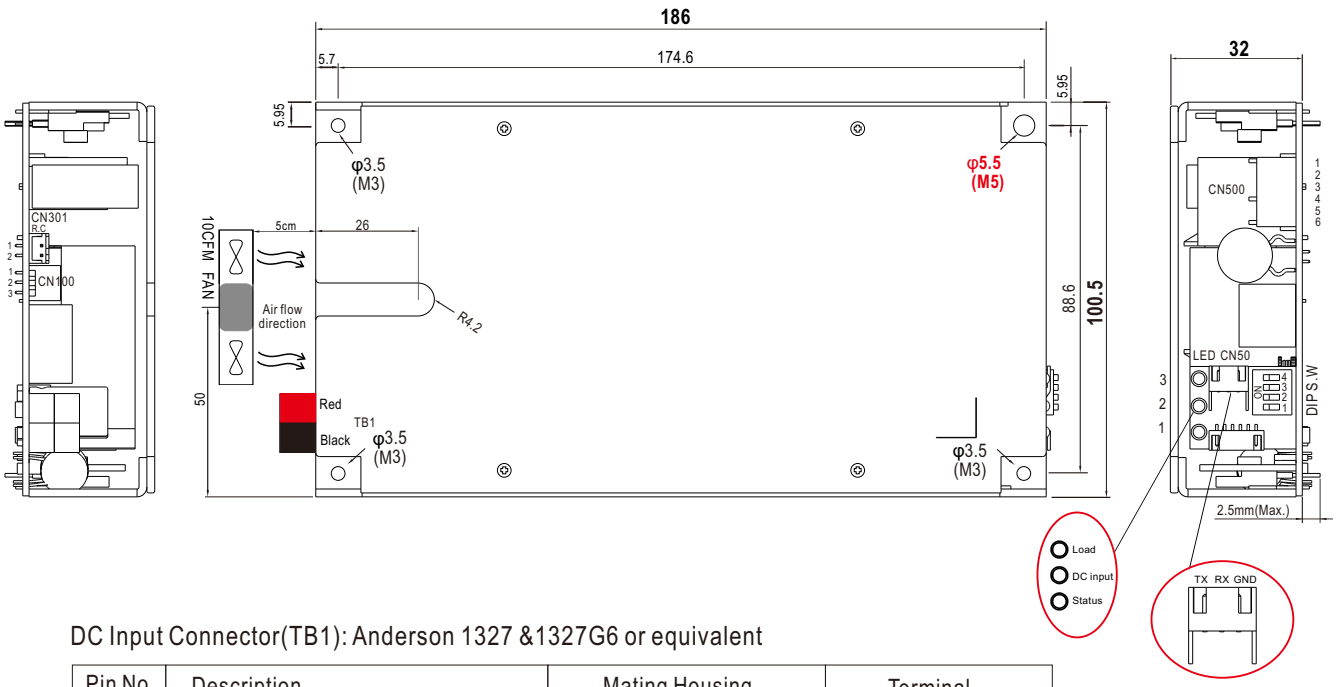
Abnormal status :

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

● Light
○ Light off
☀ Flash

■ MECHANICAL SPECIFICATION

Unit:mm



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

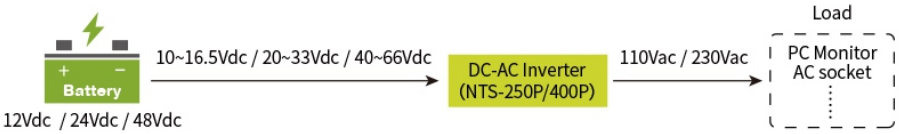
Pin No.	Description	Mating Housing	Terminal
1	Signal GND	CHYAO SHIUNN JS-2001 or equivalent	CHYAO SHIUNN JS-2001-TX or equivalent
2	UART-RX		
3	UART-TX		

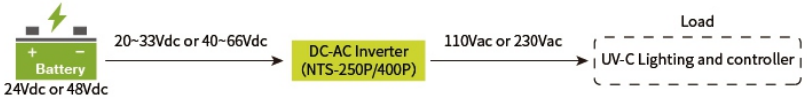
FAN Connector(CN100): JST B3B-XH-A or equivalent
Suggested Fan model: CCHV CHT4012BH-W20D 4020B

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