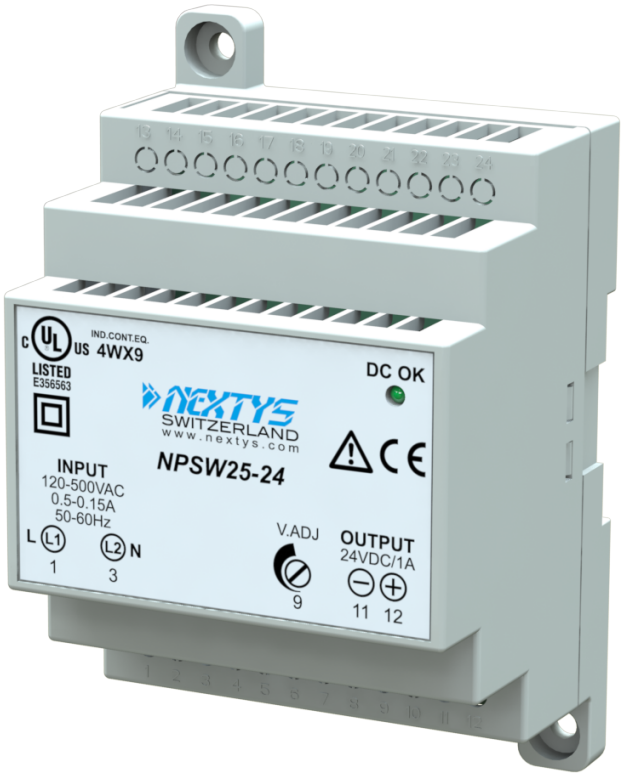


COATED

LISTED

RoHS 2011/65/EU

lead-free

Main Features

- High efficiency and extremely compact size
- 1 or 2 phases AC (90…550Vac) or DC (150…725Vdc)
- Plastic enclosure, circuit breaker shape
- Class II insulation (simplified wiring)
- Overload 130%
- Up to 70°C operating temperature with derating
- Ideal for applications with harsh main conditions
- Compliant to renewable energy system and high voltage DC BUS
- Conformal coated PC-Board

TECHNICAL DATA

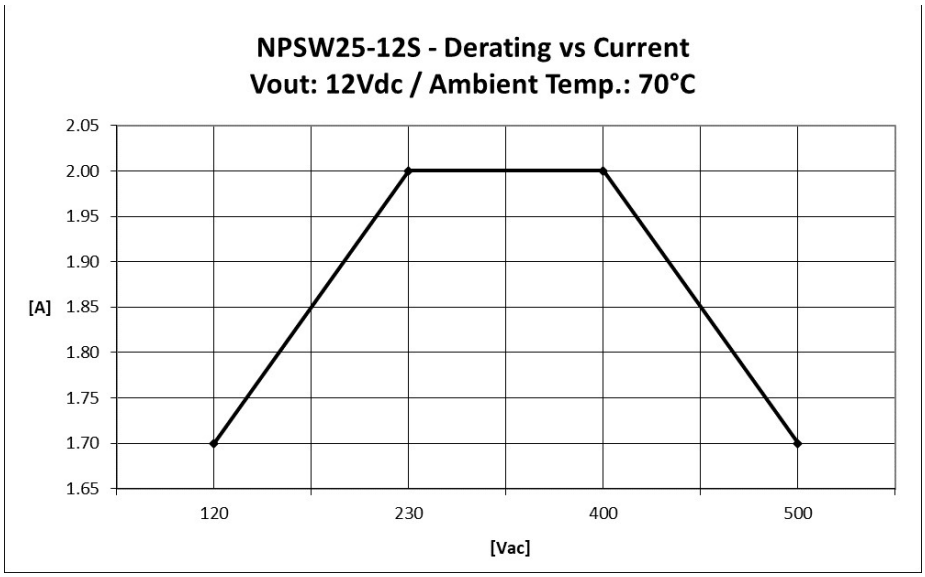
Model type	NPSW25-12S	NPSW25-24S	NPSW25-48S
OUTPUT DATA			
Rated voltage	12Vdc	24Vdc	48Vdc
Adj. output voltage range	12…15Vdc	23…28Vdc	45…55Vdc
Continuous current	2.0…1.6A	1.0A	0.5A
Overload limit[3] Vin = 120Vac Vin = 240Vac Vin = 400Vac Vin = 500Vac	 2.65A 2.90A 2.90A 2.90A	 1.45A 1.70A 1.70A 1.70A	 0.75A 0.90A 0.90A 0.90A
Short circuit peak current	6.5A	4.0A	2.5A
Load regulation	≤ 0.5%		
Ripple & Noise[1]	≤ 50mVpp		
Hold up time Vin = 240Vac Vin = 500Vac	 ≥ 35ms ≥ 180ms		
Protections	▪ Overload/short circuit: Hiccup mode ▪ Thermal protection ▪ Output overvoltage		
Output overvoltage protection	≥ 18Vdc	≥ 33Vdc	≥ 68Vdc
Status Signals	▪ **DC OK** - green LED		
Parallel connection	Possible for redundancy (with external ORing module)		
INPUT DATA			
Input AC rated voltage Frequency	Nominal: 1/2 phases, 120…500Vac Range: 90…550Vac 47…63Hz		
Input DC rated voltage	150…725Vdc		
Input AC rated current Vin = 120Vac 1Ph Vin = 500Vac 2Ph	 0.50A 0.15A		
Input DC rated current Vin = 150Vdc Vin = 725Vdc	 0.30A < 0.10A		
Inrush peak current[2] / I^2t	≤ 17A / 0.10A²s		
Touch (leakage) current	≤ 0.2mA		
Internal protection fuse	None, external fuse must be provided		
Recommended external protection[5]	MCB 2A C curve / Cartridge fuse Class CC 2AT 600Vac It is strongly recommended to provide external surge arresters (SPD) according to local regulations.		
GENERAL DATA			
Efficiency[3]	> 81.5%	> 84.5%	> 84%
Dissipated power	< 5.5W	< 4.5W	< 4.6W
Operating temperature[4]	- 40°C…+ 70°C		
Derating	See charts on Fig.1		
Storage temperature	- 40°C…+ 80°C		
Humidity	5…95% r.H. non condensing		
Life time expectation	179'477h (20.4 years) at 25°C ambient full load		
MTBF	▪ MIL-HDBK-217F	> 600'000h at 25°C ambient full load	
Overvoltage category Pollution degree	▪ EN50178 ▪ IEC60664-1	III 2	
Protection Class	▪ Class	II	
Input / output isolation	4.2kVdc		
Safety Standards[5]	▪ UL508 ▪ IEC/EN61010-1 ▪ IEC/EN61010-2-201 ▪ IEC/EN60950	(certified E356563)	
EMC Emission	▪ EN55011 (CISPR11) ▪ EN55022 (CISPR22)	Class A Class A	
EMC Immunity	▪ EN61000-4-2 ▪ EN61000-4-3 ▪ EN61000-4-4 ▪ EN61000-4-5 ▪ EN61000-4-11	Level 3 Level 3 Level 3 Level 4 Level 2	
Protection degree	▪ EN60529	IP20	
Vibration sinuosoidal	▪ IEC 60068-2-6	(5-17.8Hz: ±1.6mm; 17.8-500Hz: 2g 2hours / axis (X,Y,Z)	
Shock	▪ IEC 60068-2-27	(30g 6ms, 20g 11ms; 3 bumps / direction, 18 bumps total)	
Connection terminals	2.5mm², screw type header (24...12AWG)		

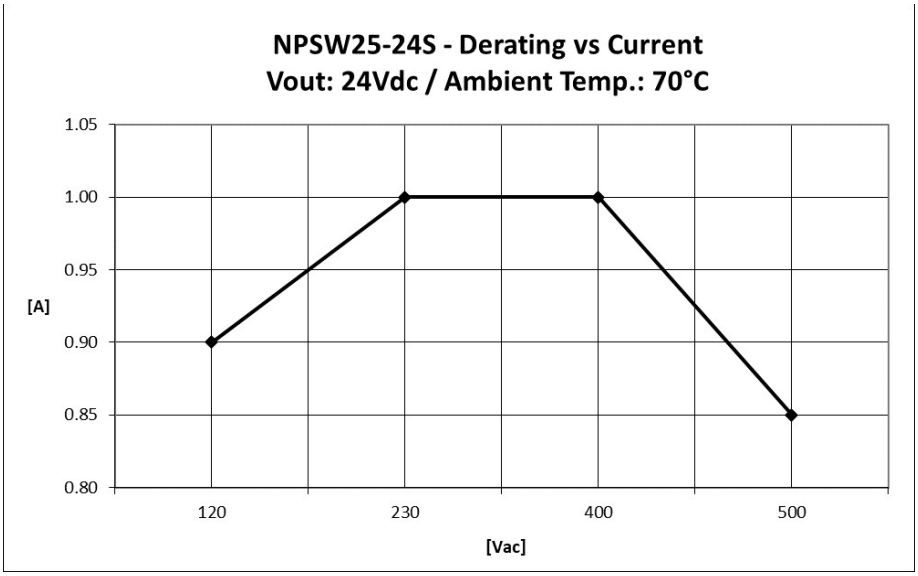
Case material	Plastic, Flame retardant UL94 V-0
Weight	0.17kg
Size (W x H x D)	72.0 x 114.2 x 61.5mm

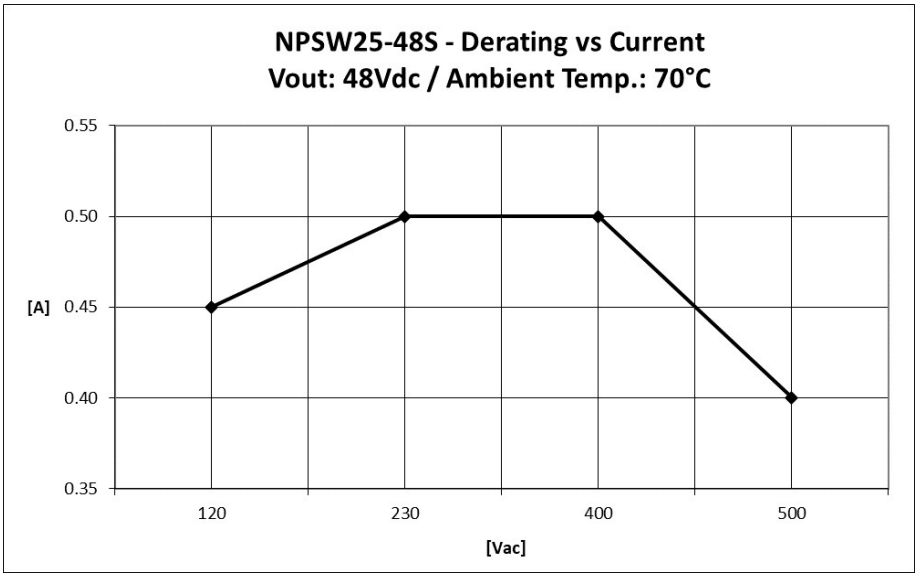
1) Ripple and Noise are measured with 20MHz bandwidth, probe terminated with a 0.1µF MKP parallel capacitor.
2) Peak current measured after 0.2ms from main connection; 400Vac/50Hz; Ambient temperature at 25°C; Cold Start.
3) On NPSW25-12S measures are performed with output set to 12Vdc.
4) Start-up type tested: - 40°C, possible at nominal voltage with load deration.
5) In order to be UL compliant use Listed Cartridge nonrenewable (JDDZ) fuse Class CC 2AT 600Vac.

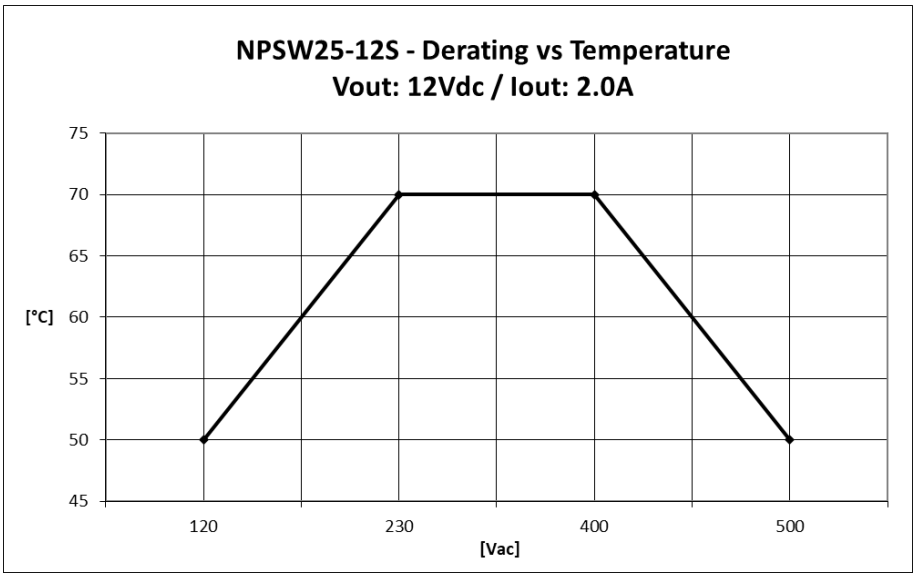
Notes:
- Technical parameters are typical, measured in laboratory environment at 25°C and 240Vac / 50Hz, at nominal values, after minimum 5 minutes of operation.
- Power rating, losses, efficiency, ripple, thermal behaviour and start-up may change outside of the nominal rated input range. Contact factory for details.
- Data may change without prior notice in order to improve the product.

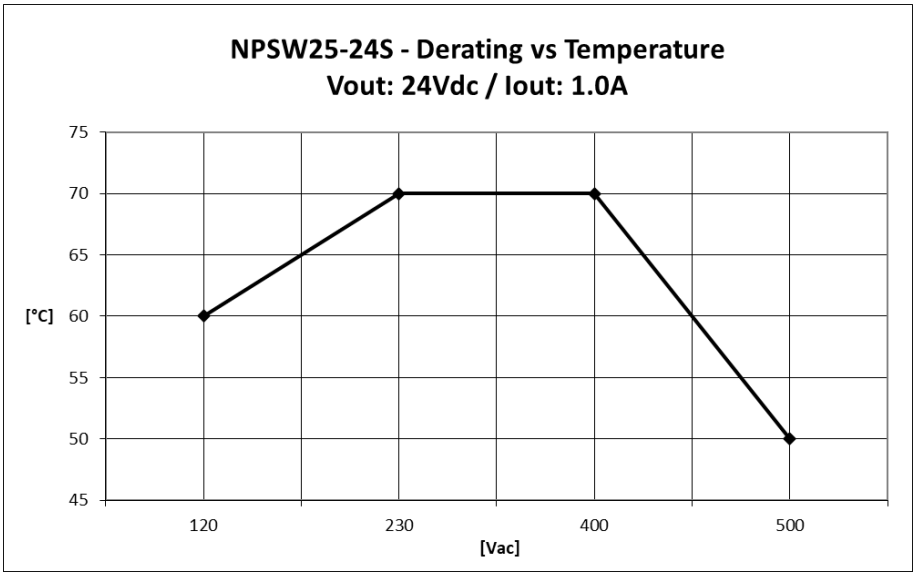
Fig.1

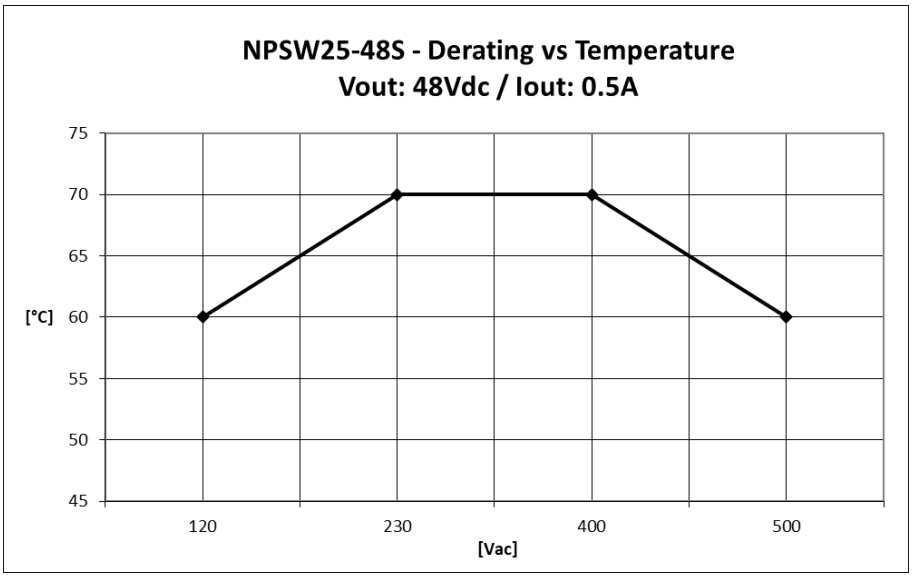

NPSW25-12S - Derating vs Current
Vout: 12Vdc / Ambient Temp.: 70°C
2.05
2.00
1.95
1.90
[A] 1.85
1.80
1.75
1.70
1.65
120
230
400
500
[Vac]


NPSW25-24S - Derating vs Current
Vout: 24Vdc / Ambient Temp.: 70°C
1.05
1.00
0.95
[A]
0.90
0.85
0.80
120
230
400
500
[Vac]

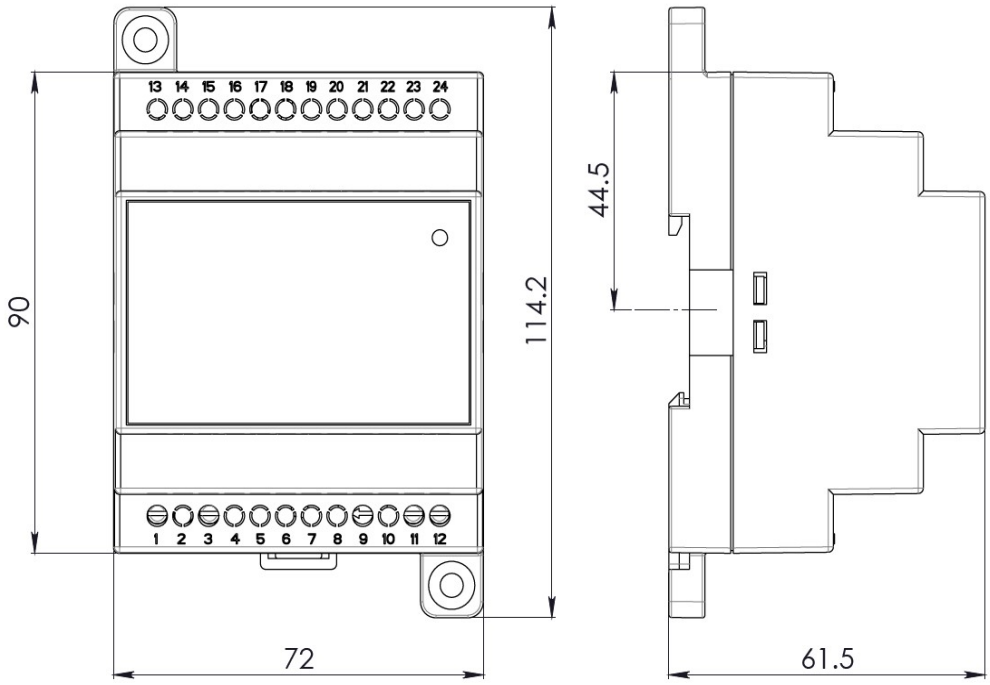

NPSW25-48S - Derating vs Current
Vout: 48Vdc / Ambient Temp.: 70°C
0.55
0.50
[A] 0.45
0.40
0.35
120
230
400
500
[Vac]

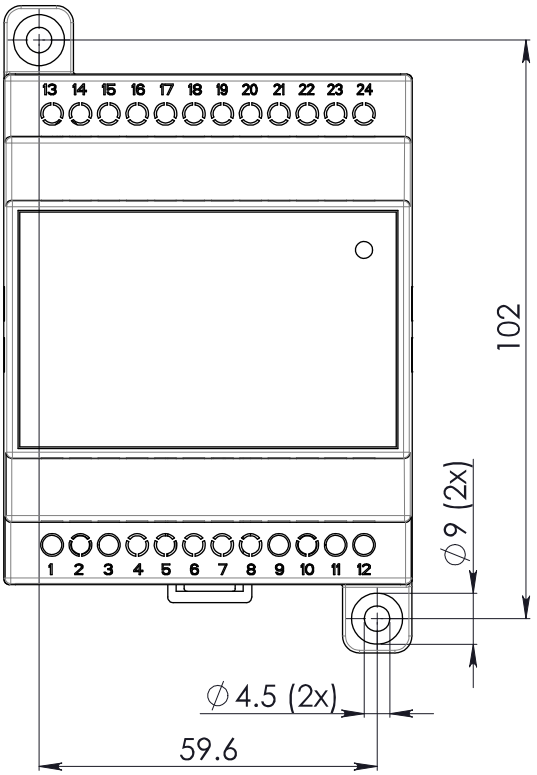

NPSW25-12S - Derating vs Temperature
Vout: 12Vdc / Iout: 2.0A
75
70
65
[°C] 60
55
50
45
120
230
400
500
[Vac]


NPSW25-24S - Derating vs Temperature
Vout: 24Vdc / Iout: 1.0A
75
70
65
[°C] 60
55
50
45
120
230
400
500
[Vac]

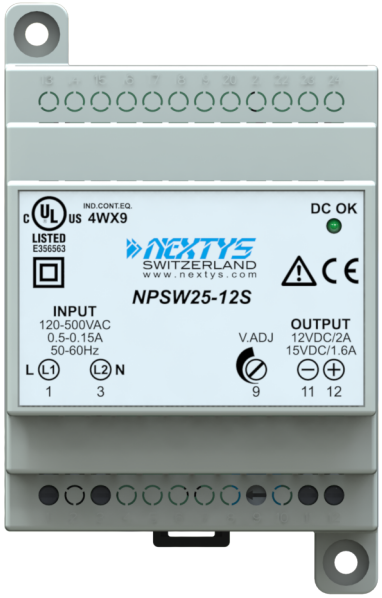

NPSW25-48S - Derating vs Temperature
Vout: 48Vdc / Iout: 0.5A
75
70
65
[°C] 60
55
50
45
120
230
400
500
[Vac]

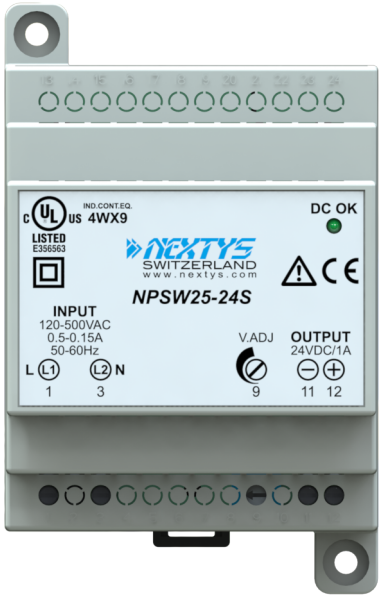
DIMENSIONS

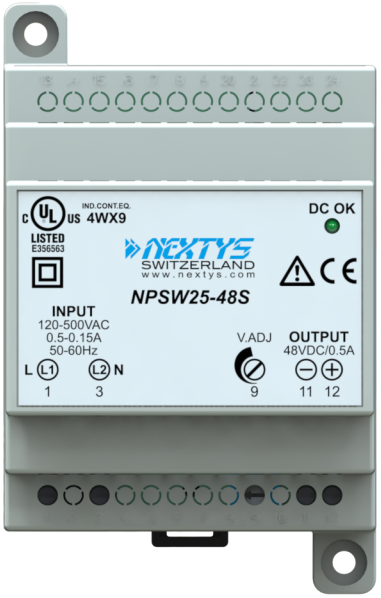

13 14 15 16 17 18 19 20 21 22 23 24
1 2 3 4 5 6 7 8 9 10 11 12
90
114.2
44.5
72
61.5


13 14 15 16 17 18 19 20 21 22 23 24
1 2 3 4 5 6 7 8 9 10 11 12
102
∅9 (2x)
∅4.5 (2x)
59.6

CONNECTION







Input Connection:

Single phase:
- L = Line (1)
- N = Neutral (3)

2 phases:
- L1 = phase 1 (1)
- L2 = phase 2 (3)

DC:
- L (L1) = + Positive DC (1)
- N (L2) = - Negative DC (3)

Output Connection:

- + = Positive DC (12)
- - = Negative DC (11)