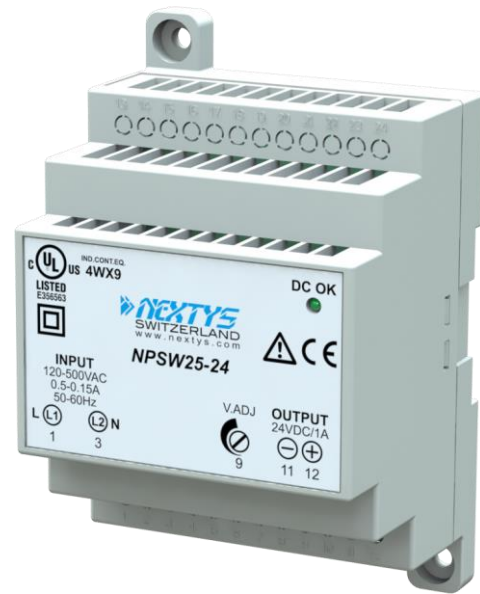


NPSW25 Series – Single or 2 Phases / DC input switching power supply

■ **Main Features:**

- Single or 2 phase AC (90...550Vac) or DC (150...725Vdc) input
- High efficiency and extremely compact size
- Plastic enclosure UL94-V0
- Class II (simplified wiring)
- Overload 130%
- Up to 70°C operating temperature with derating curve
- Ideal for applications with harsh mains conditions
- Compliant to renewable energy systems and high DC Bus
- Conformal coated PC-Board



INDEX	
	Page
Installation Requirements	2
Declaration of Conformity	2
User Instructions	3
Connections	4
Dimensions	4
Distances	4
Mounting	4
Dismounting	5
Input Connections	5
Environment	6
Accessory Device	7

READ THIS CAREFULLY BEFORE INSTALLATION!	VOR DER INSTALLATION BITTE FOLGENDE SICHERHEITSHINWEISE BEACHTEN	LEGGERE ATTENTAMENTE PRIMA DELL'INSTALLAZIONE!	A LIRE ATTENTIVEMENT AVANT L'INSTALLATION!
<p>Before operating, read this document thoroughly and retain it for future reference. Non-respect of these instructions may reduce performances and safety of the devices and cause danger for people and property. The products must be installed, operated, serviced and maintained by qualified personnel in compliance with applicable standards and regulations. Don't open the device, it does not contain replaceable components, the tripping of the internal fuse (if included) is caused by an internal failure. Don't repair or modify the device, if malfunction or failure should occur during operation, send unit to the factory for inspection. TDK-Lambda Switzerland SA assumes no responsibility for any consequences deriving from the use of this material.</p>	<p>Lesen Sie dieses Dokument vor der Inbetriebnahme sorgfältig durch und bewahren Sie es zum späteren Nachschlagen auf. Die Nichtbeachtung dieser Anweisungen kann die Funktion und Sicherheit der Geräte beeinträchtigen und birgt Gefahren für Personen und Eigentum. Die Geräte müssen von qualifiziertem Personal unter Einhaltung der geltenden Normen und Vorschriften installiert, betrieben, gewartet und instand gehalten werden. Öffnen Sie das Gerät nicht, es enthält keine austauschbaren Komponenten, das Auslösen der internen Sicherung (falls vorhanden) ist stets auf tiefergehende Fehler im Schaltkreis zurück zu führen. Reparieren oder modifizieren Sie das Gerät nicht. Sollte während des Betriebs eine Fehlfunktion oder ein Defekt auftreten, schicken Sie das Gerät zur Überprüfung ins Werk. TDK-Lambda Switzerland SA übernimmt keine Haftung für die Folgen, die sich aus dem Einsatz dieses Gerätes ergeben.</p>	<p>Prima dell'installazione, leggere attentamente questo documento istruzioni e conservarle per future consultazioni. L'insosservanza delle presenti istruzioni può compromettere le caratteristiche e la sicurezza dell'apparecchio e causare pericolo per le persone e le cose. Il prodotto deve essere installato, utilizzato e riparato da personale qualificato e nel rispetto delle normative vigenti. Non aprire il prodotto, esso non contiene componenti sostituibili, il guasto del fusibile interno (se previsto) è causato da un guasto interno. Non tentare di riparare o modificare il prodotto, se durante il funzionamento si verificano guasti o anomalie, inviarlo al produttore per il controllo. TDK-Lambda Switzerland SA non si assume nessuna responsabilità per qualunque conseguenza derivante dall'uso di questo materiale.</p>	<p>Lisez ces instructions avant l'installation, conservez ce manuel pour référence future. Défaut de se conformer à ces instructions peut affecter les caractéristiques et la sécurité du dispositif de danger et de causer aux personnes ou aux biens. Les produits doivent être installés, exploités et entretenus par personnel qualifié et en conformité avec les règlements. N'ouvrez pas le produit, il ne contient aucune pièce réparable, le déclenchement du fusible interne (le cas échéant) est causé par un défaut interne. Ne pas essayer de réparer ou modifier le produit ; si des défaillances se produisent pendant le fonctionnement ou les dysfonctionnements, le retourner au fabricant pour inspection. TDK-Lambda Switzerland SA n'assume aucune responsabilité des conséquences éventuelles découlant de l'utilisation des produits.</p>
CAUTION	ACHTUNG	ATTENZIONE	AVERTISSEMENT
<p>RISK OF BURNS, EXPLOSION, FIRE, ELECTRICAL SHOCK, PERSONAL INJURY. Never carry out work on live parts! Danger of fatal injury! The product's enclosure may be hot, allow time for cooling product before touching it. Do not allow liquids or foreign objects to enter into the products. To avoid sparks, do not connect or disconnect the device before having previously turned-off input power and wait for internal capacitors discharge (minimum 1 minute).</p>	<p>GEFAHR VON VERBRENNUNGEN, EXPLOSIONEN, FEUER, STROMSCHLAG, PERSONENSCHÄDEN. Führen Sie niemals Arbeiten an spannungsführenden Teilen durch! Gefahr von tödlichen Verletzungen! Das Gehäuse des Gerätes kann heiß sein, lassen Sie Zeit zum Abkühlen des Gerätes, bevor Sie es berühren. Lassen Sie keine Flüssigkeiten oder Fremdkörper in die Geräte eindringen. Um Überschläge zu vermeiden, schließen Sie das Gerät nicht an oder trennen Sie es nicht ohne vorher die Eingangsspannung abgeschaltet zu haben, und warten Sie die Entladung der internen Kondensatoren ab (mindestens 1 Minute).</p>	<p>RISCHIO USTIONI, ESPLOSIONE, INCENDIO, SCOSSA, LESIONI GRAVI. Non effettuare mai operazioni sulle parti sotto tensione! Pericolo di lesioni letali! Il contenitore può scottare, lasciar quindi raffreddare il dispositivo prima di toccarlo. Non far entrare liquidi o oggetti estranei nel dispositivo. Per evitare scintille, non collegare o scollegare l'apparecchiatura prima di avere tolto tensione di ingresso e prima che sia avvenuta la scarica dei condensatori interni (min. 1 minuto).</p>	<p>RISQUE DE BRULURES, EXPLOSION, INCENDIE, ELECTROCUTION, DOMMAGE AUX PERSONNES. Ne jamais effectuer des opérations sur les parties sous tension! Danger de mort! Le récipient peut produire des brulures, le laisser refroidir avant de toucher l'appareil. Ne faites pas pénétrer des liquides ou des corps étrangers dans l'appareil. Pour éviter des étincelles, ne pas connecter ou déconnecter l'équipement jusqu'à ce que vous avez supprimé la tension d'entrée et avant qu'elle n'ait lieu de décharge des condensateurs internes (minimum 1 minute).</p>

DECLARATION OF CONFORMITY									
	<p>TDK-LAMBDA SWITZERLAND SA Via Luserte Sud 6, 6572 Quartino - Switzerland Phone: +41-(0)91 840 14 46 / 840 14 48; Fax: +41-(0)91 840 14 47 E-mail: TLN.info@tdk.com</p>								
<p>This Declaration of Conformity is suitable to the European Standard EN45014 "General criteria for supplier's declaration of conformity". We declare under our sole responsibility that the device included in this box, has passed all processing inspections and the final test and it is in conformity with the product requirements, including all reference codes and supply specifications.</p>									
<p>ROHS compliance: the product respects the EC requirements related to ROHS substances, according to "Restriction of Hazardous Substances" as per document 2011/65/UE REACH compliance: the product respects the EC requirements related to REACH SVHC directive (EC) 1907/2006 Note: all the reported information comes from our suppliers, TDK-LAMBDA SWITZERLAND SA has not run any test to evaluate if the specific elements are present.</p>									
<p>All indicated devices are designed according to the latest Reference standards, if not expressly indicated through the official documents or files, they have been tested through our internal pre-compliance testing. Consult directly on www.nextys.com the reference standards applied to each model.</p>									
<table border="1"> <thead> <tr> <th>Code</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>NPSW25-12S</td> <td>1-2 phases switching power supply IN 120 - 500Vac (150 - 725Vdc) / OUT 12...15Vdc - 2.0...1.6A</td> </tr> <tr> <td>NPSW25-24S</td> <td>1-2 phases switching power supply IN 120 - 500Vac (150 - 725Vdc) / OUT 24Vdc - 1.0A</td> </tr> <tr> <td>NPSW25-48S</td> <td>1-2 phases switching power supply IN 120 - 500Vac (150 - 725Vdc) / OUT 48Vdc - 0.5A</td> </tr> </tbody> </table>	Code	Description	NPSW25-12S	1-2 phases switching power supply IN 120 - 500Vac (150 - 725Vdc) / OUT 12...15Vdc - 2.0...1.6A	NPSW25-24S	1-2 phases switching power supply IN 120 - 500Vac (150 - 725Vdc) / OUT 24Vdc - 1.0A	NPSW25-48S	1-2 phases switching power supply IN 120 - 500Vac (150 - 725Vdc) / OUT 48Vdc - 0.5A	
Code	Description								
NPSW25-12S	1-2 phases switching power supply IN 120 - 500Vac (150 - 725Vdc) / OUT 12...15Vdc - 2.0...1.6A								
NPSW25-24S	1-2 phases switching power supply IN 120 - 500Vac (150 - 725Vdc) / OUT 24Vdc - 1.0A								
NPSW25-48S	1-2 phases switching power supply IN 120 - 500Vac (150 - 725Vdc) / OUT 48Vdc - 0.5A								
<p>Certifications and approvals</p>									
<p>Reference standards</p>	<p>2014/35/EU (Low Voltage Directive) 2014/30/EU (EMC directive) EN61010-1 (Safety Standard) EN61010-2-201 (Safety Standard) UL508 (Certified - IND. CONT. EQ. 4WX9 file no. E356563) EN61000-6-2 (Generic immunity standard for industrial environments) - EN61000-4-2 (Electrostatic discharge immunity test) - EN61000-4-3 (Radiated, radio-frequency, electromagnetic field immunity test) - EN61000-4-4 (Electrical fast transient/burst immunity test) - EN61000-4-5 (Surge immunity test) - EN61000-4-11 (Voltage dips, short interruptions and voltage immunity test) EN61000-6-4 (Generic emission standard for industrial environments) - EN55011 (CISPR11 - EMC)</p>								

USER INSTRUCTIONS
<p>1) Description: DIN rail mountable primary switched-mode power supply with 90...550Vac (150...725Vdc) input, suitable for Single phase main line and DC line.</p>
<p>2) Installation: use DIN-rails according to EN60715. Installation should be made vertically (see Fig.4). For better device stability fix the rail to the wall close to the point where the device is to be mounted. In order to guarantee sufficient convection, we recommend observing a minimum distance to other modules (see Fig.3). The device is provided with a thermal protection; a limited air flow can cause the thermal protection tripping. The SMPS automatically restarts after cooling. To get normal operation reduce the temperature of the air surrounding the power supply, increase the ventilation or reduce the load (see Fig.8).</p>
<p>3) Connections: the device is equipped with screw terminal blocks. To avoid sparks, do not connect or disconnect the connectors before having previously turned-off input power and waited for internal capacitors discharge (minimum 1 minute). In order to comply with UL certification, use appropriate copper cables of indicated cross section, designed for an operating temperatures of: 60°C for ambient up to 45°C 75°C for ambient up to 60°C 90°C for ambient up to 70°C Strip the connecting ends of the wires according to the indication and ensure that all strands of a stranded wire enter the terminal connection (see Fig.5).</p>
<p>4) Input protection: the device input is provided with varistors against overvoltage. Input isn't provided with internal fuse, thus an external short circuit/overcurrent protection must be provided by the end user (see Fig.6). For operation on a single-phase or 2-Phases system, a protection fuse on each phase must be provided. Surge protection: it is strongly recommended to provide external surge arresters (SPD) according to local regulations.</p>
<p>5) AC input connection: the device can be connected to single-phase or 2-phases AC lines with U_{in} 120...500Vac (see Fig.7).</p>
<p>6) DC input connection: connect L terminal to (+) positive pole, N terminal to (-) negative pole. Rated voltage 150...725Vdc. The device is also suitable for photovoltaic or wind turbine applications (see Fig.7).</p>
<p>7) Output connection: The device is suitable for SELV and PELV circuitry. U_{out} can be adjusted with a potentiometer to a wide range (see Fig.1). Check U_{out} before connecting the power supply to the load. With output voltage set to the max. value, the continuous [current x voltage] must not exceed the nominal power.</p>
<p>8) Parallel connection and redundancy: U_{out} must be set uniformly ($\pm 100mV$) on each power supply and the wiring must be symmetrical to ensure an equal current distribution. For redundant connection, use an external isolating device must be used (see accessory device).</p>
<p>9) Output protection: the device is protected against overload (OL) / short circuit (SC) / overvoltage (OV) / overtemperature (OT). OL and SC: are controlled by a hiccup mode auto-reset protection with the following behaviour. OL behaviour: Max. OL = $I_n \times 1.5$ with constant output voltage. If the current is $\geq I_n \times 1.5$ the unit enters the OL protection and starts an ON/OFF cycle (hiccup mode). SC behaviour: the device supplies the indicated short circuit peak current for 60ms if the output current exceeds $I_n \times 1.5$ the device enters into a controlled ON/OFF cycles (hiccup mode). The output voltage drops to a voltage value depending on the impedance of the failed load circuit. Output OV circuit protection: the output is protected against potential OV due to internal malfunction or coming from the load for $U_{out} \geq U_{nom} \times 1.2 - 1.3$, depending on the model. OT protection: turns off the device if the internal temperature exceeds a safe limit. The device restarts automatically after cooling down. To recover to normal operation reduce air temperature surrounding the power supply, increase cooling or reduce load (see Fig.8).</p>
<p>10) Feeding DC motors: it is possible to feed DC motors considering that when a motor starts-up under effort its consumption is much higher than the nominal current and it can trigger overcurrent protection (see accessory device). NOTE: motors can generate high conducted noise on the DC line. Therefore it is not recommended to feed on the same line motors and equipment sensitive to noise.</p>


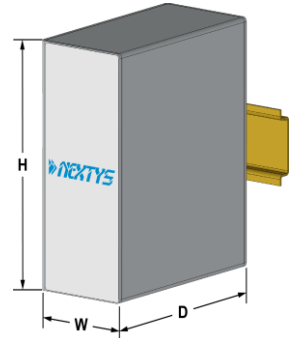
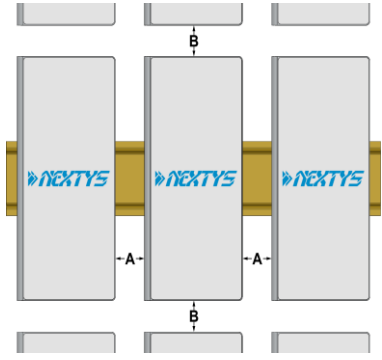
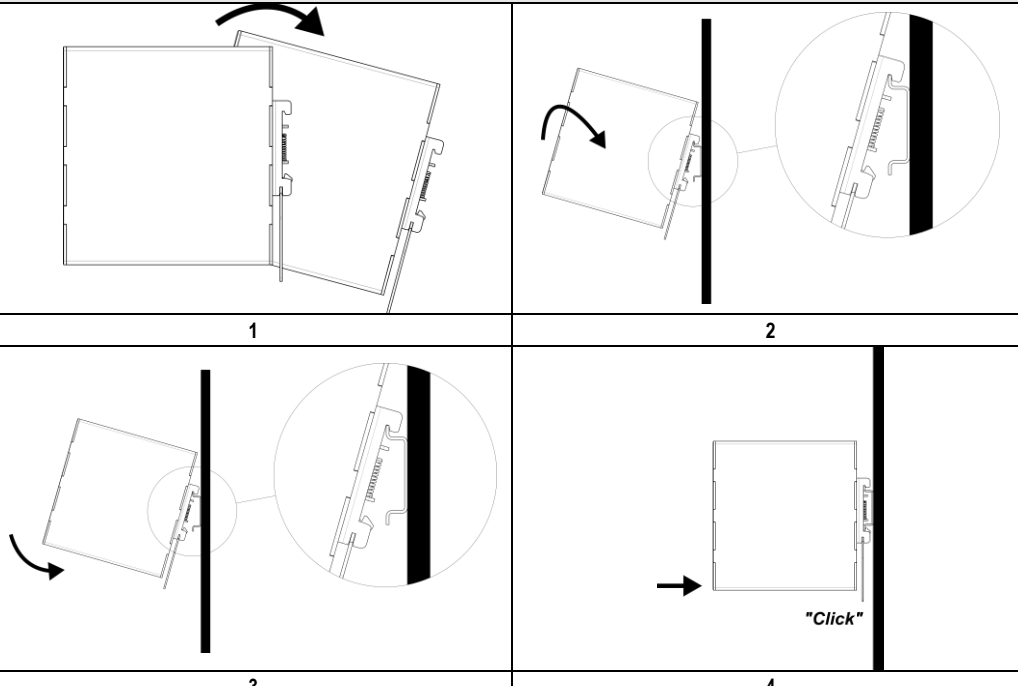
Fig.1 Connections	Fig.2 Dimensions	Fig.3 Distances															
 <p>(1) AC/DC input (2) DC output (load) (3) Green LED: Output OK (4) Output voltage adjustment</p> <p>Input AC Line single phase: <ul style="list-style-type: none"> ▪ L = Line (1) ▪ N = Neutral (3) </p> <p>Input AC Line 2 phases: <ul style="list-style-type: none"> ▪ L1 = Line 1 (1) ▪ L2 = Line 2 (3) </p> <p>Input DC Line: <ul style="list-style-type: none"> ▪ L = + Positive DC (1) ▪ N = - Negative DC (3) </p> <p>Output: <ul style="list-style-type: none"> ▪ + = Positive DC (12) ▪ - = Negative DC (11) </p> <p>Just for reference</p>	 <table border="1" data-bbox="710 672 1029 795"> <thead> <tr> <th>Dimension</th> <th>mm (inc)</th> </tr> </thead> <tbody> <tr> <td>W</td> <td>114.2 (4.49)</td> </tr> <tr> <td>D</td> <td>61.5 (2.42)</td> </tr> <tr> <td>H</td> <td>72.0 (2.83)</td> </tr> </tbody> </table>	Dimension	mm (inc)	W	114.2 (4.49)	D	61.5 (2.42)	H	72.0 (2.83)	 <table border="1" data-bbox="1053 672 1476 795"> <thead> <tr> <th>Distance</th> <th>mm (inc)</th> </tr> </thead> <tbody> <tr> <td>A</td> <td>10 (0.4)</td> </tr> <tr> <td>B</td> <td>10 (0.4)</td> </tr> </tbody> </table>		Distance	mm (inc)	A	10 (0.4)	B	10 (0.4)
Dimension	mm (inc)																
W	114.2 (4.49)																
D	61.5 (2.42)																
H	72.0 (2.83)																
Distance	mm (inc)																
A	10 (0.4)																
B	10 (0.4)																

Fig.4 Mounting / Dismounting Instructions	
<p>For DIN rail fastening according to IEC 60715 TH35-7.5(-15)</p> <p>Mounting as shown in figure, with input terminals on lower side, with suitable cooling and maintaining a proper distance between adjacent devices as specified in the I.S. manual of each family.</p>	
<p>Mounting:</p>	
<ol style="list-style-type: none"> 1. Tilt the unit slightly backwards. 2. Fit the unit over the top edge of the rail. 3. Slide it downward until it hits the stop. 4. Press against the bottom for locking. 	

Dismounting:		
<ol style="list-style-type: none"> 1. Pull down the slide clamp lever 2. Tilt the unit upward 3. Unhook the unit from the rail 	<p>1 & 2</p>	<p>3</p>

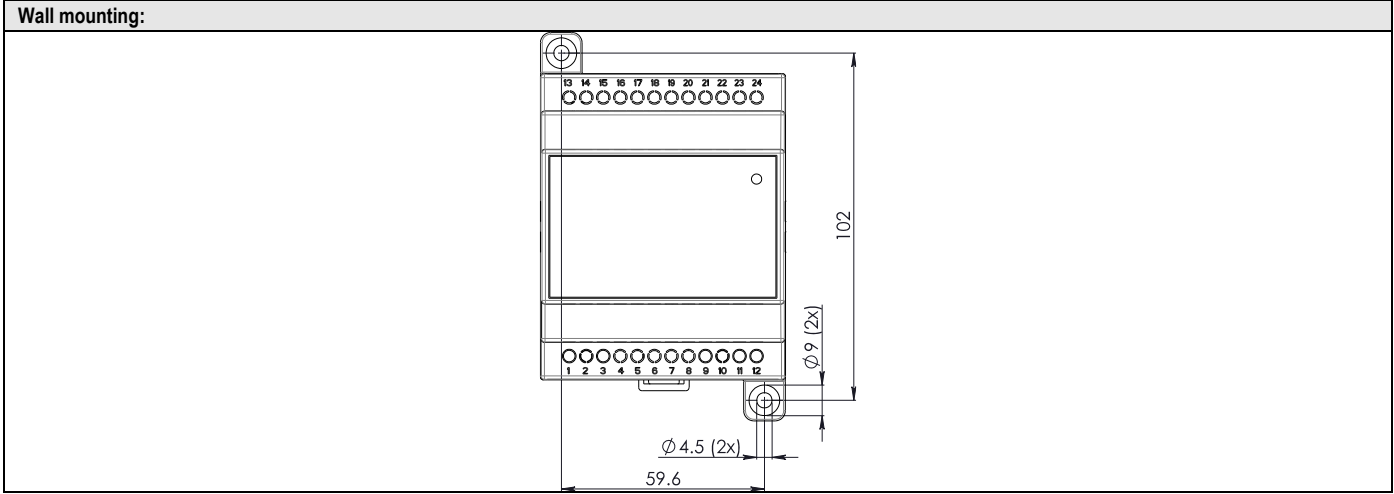


Fig.5 Recommended connecting cable			
	<p>Recommended Tightening torque 0.5 Nm 4.4 lbf in</p>		<p>Solid: 2.5mm² / 12AWG Stranded: 1.5mm² / 12AWG L: 5.5-6.5mm / 0.22-0.26 in</p>

Fig.6 Input protection
 In order to be UL compliant use Listed Cartridge nonrenewable (JDDZ) fuse Class CC 2AT 600Vac.
 Fuse 2AT or MCB 2A C curve.
 For USA and Canada, use the fuse type closest to the European equivalent type.

Surge protection: it is strongly recommended to provide external surge arresters (SPD) according to local regulations.

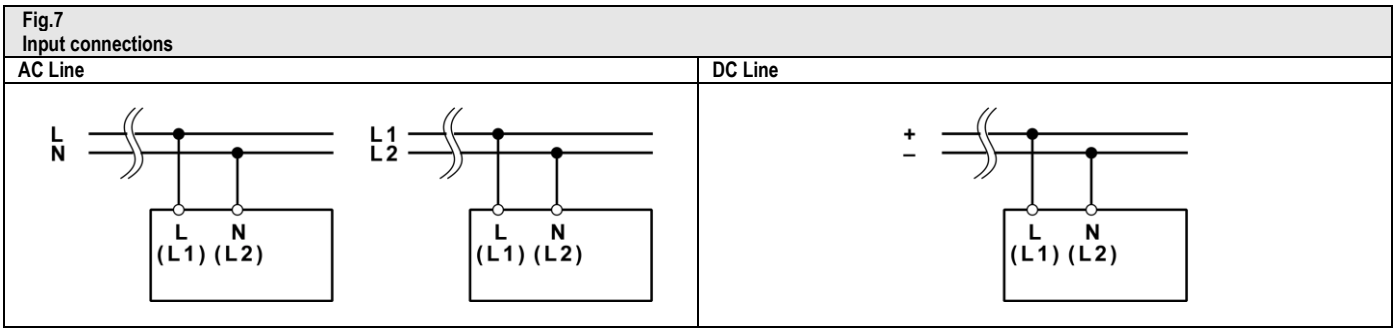


Fig.8 Environment											
Operating temperature	Derating vs Temperature										
- 40°C...70°C 5...95% r.H. non condensing Overtemperature protection	<p>NPSW25-12S - Derating vs Temperature Vout: 12Vdc / Iout: 2.0A</p> <table border="1"> <caption>Data for NPSW25-12S Derating vs Temperature</caption> <thead> <tr> <th>[Vac]</th> <th>Temperature [°C]</th> </tr> </thead> <tbody> <tr><td>120</td><td>50</td></tr> <tr><td>230</td><td>70</td></tr> <tr><td>400</td><td>70</td></tr> <tr><td>500</td><td>50</td></tr> </tbody> </table>	[Vac]	Temperature [°C]	120	50	230	70	400	70	500	50
	[Vac]	Temperature [°C]									
	120	50									
230	70										
400	70										
500	50										
<p>NPSW25-24S - Derating vs Temperature Vout: 24Vdc / Iout: 1.0A</p> <table border="1"> <caption>Data for NPSW25-24S Derating vs Temperature</caption> <thead> <tr> <th>[Vac]</th> <th>Temperature [°C]</th> </tr> </thead> <tbody> <tr><td>120</td><td>60</td></tr> <tr><td>230</td><td>70</td></tr> <tr><td>400</td><td>70</td></tr> <tr><td>500</td><td>50</td></tr> </tbody> </table>	[Vac]	Temperature [°C]	120	60	230	70	400	70	500	50	
[Vac]	Temperature [°C]										
120	60										
230	70										
400	70										
500	50										
<p>NPSW25-48S - Derating vs Temperature Vout: 48Vdc / Iout: 0.5A</p> <table border="1"> <caption>Data for NPSW25-48S Derating vs Temperature</caption> <thead> <tr> <th>[Vac]</th> <th>Temperature [°C]</th> </tr> </thead> <tbody> <tr><td>120</td><td>60</td></tr> <tr><td>230</td><td>70</td></tr> <tr><td>400</td><td>70</td></tr> <tr><td>500</td><td>60</td></tr> </tbody> </table>	[Vac]	Temperature [°C]	120	60	230	70	400	70	500	60	
[Vac]	Temperature [°C]										
120	60										
230	70										
400	70										
500	60										

Operating temperature	Derating vs Current										
<p>- 40°C...70°C 5...95% r.H. non condensing Overtemperature protection</p>	<p style="text-align: center;">NPSW25-12S - Derating vs Current Vout: 12Vdc / Ambient Temp.: 70°C</p> <table border="1"> <caption>NPSW25-12S - Derating vs Current Data</caption> <thead> <tr> <th>[Vac]</th> <th>[A]</th> </tr> </thead> <tbody> <tr><td>120</td><td>1.70</td></tr> <tr><td>230</td><td>2.00</td></tr> <tr><td>400</td><td>2.00</td></tr> <tr><td>500</td><td>1.70</td></tr> </tbody> </table>	[Vac]	[A]	120	1.70	230	2.00	400	2.00	500	1.70
	[Vac]	[A]									
	120	1.70									
230	2.00										
400	2.00										
500	1.70										
<p style="text-align: center;">NPSW25-24S - Derating vs Current Vout: 24Vdc / Ambient Temp.: 70°C</p> <table border="1"> <caption>NPSW25-24S - Derating vs Current Data</caption> <thead> <tr> <th>[Vac]</th> <th>[A]</th> </tr> </thead> <tbody> <tr><td>120</td><td>0.90</td></tr> <tr><td>230</td><td>1.00</td></tr> <tr><td>400</td><td>1.00</td></tr> <tr><td>500</td><td>0.85</td></tr> </tbody> </table>	[Vac]	[A]	120	0.90	230	1.00	400	1.00	500	0.85	
[Vac]	[A]										
120	0.90										
230	1.00										
400	1.00										
500	0.85										
<p style="text-align: center;">NPSW25-48S - Derating vs Current Vout: 48Vdc / Ambient Temp.: 70°C</p> <table border="1"> <caption>NPSW25-48S - Derating vs Current Data</caption> <thead> <tr> <th>[Vac]</th> <th>[A]</th> </tr> </thead> <tbody> <tr><td>120</td><td>0.45</td></tr> <tr><td>230</td><td>0.50</td></tr> <tr><td>400</td><td>0.50</td></tr> <tr><td>500</td><td>0.40</td></tr> </tbody> </table>	[Vac]	[A]	120	0.45	230	0.50	400	0.50	500	0.40	
[Vac]	[A]										
120	0.45										
230	0.50										
400	0.50										
500	0.40										

Note:
<ul style="list-style-type: none"> ▪ Data may change without prior notice in order to improve the product. ▪ Please refer to the latest version of the "Instruction Manual" for each product by visiting www.nextys.com

See also the products below that can be used in conjunction with NPSW25 units:	<i>(accessory device)</i>
<ul style="list-style-type: none"> ▪ OR20 20A Active ORing controller 	