







Short Form Installation User's Manual			 TDK-Lambda Switzerland SA. Via Luserte Sud 6, 6572 Quartino – Switzerland Phone: +41-(0)91 8401446 / 8401448; Fax: +41-(0)91 8401447
Models	NDW240 - Programmable Output DC-DC Converter		
File No.:	I.M.NDW240	Rev.:	



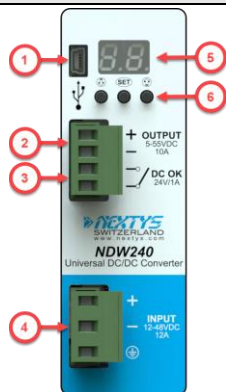
Use latest device Documentation, Software and Firmware to ensure reliable operation of the system
(downloadable from www.nextys.com)



READ THIS CAREFULLY BEFORE INSTALLATION!	LEGGERE ATTENTAMENTE PRIMA DELL'INSTALLAZIONE!	A LIRE ATTENTIVEMENT AVANT L'INSTALLATION!
<p>Before operating, read this document thoroughly and retain it for future reference.</p> <p>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.</p> <p>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.</p> <p>Don't repair or modify the device, if malfunction or failure should occur during operation, send unit to the factory for inspection. No responsibility is assumed by TDK-Lambda Switzerland SA for any consequences deriving from the use of this material.</p>	<p>Prima dell'installazione, leggere attentamente questo documento istruzioni e conservarle per future consultazioni.</p> <p>L'inosservanza delle presenti istruzioni può compromettere le caratteristiche e la sicurezza dell'apparecchio e causare pericolo per le persone e le cose.</p> <p>Il prodotto deve essere installato, utilizzato e riparato da personale qualificato e nel rispetto delle normative vigenti.</p> <p>Non aprire il prodotto, esso non contiene componenti sostituibili, il guasto del fusibile interno (se previsto) è causato da un guasto interno.</p> <p>Non tentare di riparare o modificare il prodotto, se durante il funzionamento si verificano guasti o anomalie, inviarlo al produttore per il controllo.</p> <p>TDK-Lambda Switzerland SA non si assume nessuna responsabilità per qualunque conseguenza derivante dall'uso di questo materiale.</p>	<p>Lire ces instructions avant l'installation, conserver ce manuel pour référence future.</p> <p>Défaut de se conformer à ces instructions peut affecter les caractéristiques et la sécurité du dispositif, et causer du danger aux personnes ou aux biens.</p> <p>Les produits doivent être installés, exploités et entretenus par du personnel qualifié et en conformité avec les règlements.</p> <p>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, retourner le produit au fabricant pour inspection. TDK-Lambda Switzerland SA n'assume aucune responsabilité des conséquences éventuelles découlant de l'utilisation des produits.</p>
CAUTION	ATTENZIONE	AVVERTISSEMENT
<p>RISK OF BURNS, EXPLOSION, FIRE, ELECTRICAL SHOCK, PERSONAL INJURY.</p> <p>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.</p> <p>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>RISCHIO USTIONI, ESPLOSIONE, INCENDIO, SCOSSA, LESIONI GRAVI.</p> <p>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.</p> <p>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.</p> <p>Ne jamais effectuer des opérations sur les parties sous tension! Danger de mort! Le boîtier peut produire des brûlures, le laisser refroidir avant de toucher l'appareil. Ne faire 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 la tension d'entrée a été supprimée et avant qu'il n'ait eut lieu la décharge des condensateurs internes (minimum 1 minute).</p>
INTENDED USE	USO PREVISTO	UTILISATION
<p>These are isolated devices suitable for SELV and PELV circuitry and are designed to be mounted on DIN rail and installed inside a protective enclosure. They are intended for general use such as in industrial control, communication, and instrumentation equipment.</p> <p>Don't use these devices in applications where malfunction may cause injury or death.</p>	<p>I dispositivi sono isolati, adatti per applicazioni SELV e PELV, sono dotati di aggancio per il montaggio su guida DIN all'interno di quadri elettrici o contenitori di protezione, per l'utilizzo con controllori industriali, unità di comunicazione o apparecchi di misura.</p> <p>Non utilizzare in applicazioni in cui un eventuale guasto può comportare rischio di lesioni o di morte.</p>	<p>Les produits sont isolés, appropriés pour les circuits TBTS et TBTP et sont équipés d'un crochet pour montage sur rail DIN dans des armoires ou conteneurs de protection, pour utilisation avec les contrôleurs industriels, des modules de communication ou des unités de mesure.</p> <p>Ne pas utiliser ces dispositifs dans une application où un dysfonctionnement pourrait entraîner le risque des blessures ou de mort.</p>
ENVIRONMENTAL CHARACTERISTICS	CARATTERISTICHE AMBIENTALI	CARACTÉRISTIQUES ENVIRONNEMENTALES
<p>Installation in a Pollution Degree 2 environment, Overvoltage Category I, according to IEC60664-1.</p> <p>Do not use in wet area or subject to moisture.</p> <p>Carefully recycle the product and related batteries according to local regulations.</p>	<p>Usare in ambienti con Grado di Inquinamento 2 e Categoria di Sovratensione I, secondo IEC60664-1.</p> <p>Non far funzionare l'apparecchio in un ambiente umido o soggetto a formazione di condensa. Riciclare il prodotto e le batterie collegate, nel rispetto delle normative locali vigenti.</p>	<p>Utiliser les produits dans des environnements avec degré de pollution 2, catégorie de surtension I selon IEC60664-1.</p> <p>Ne pas employer l'appareil dans un environnement humide ou soumis à la condensation. Recycler les produits et les batteries, conformément à la réglementation locale.</p>

Declaration of Conformity			
		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>This Declaration of Conformity is suitable to the European Standard EN45014 "General criteria for supplier's declaration of conformity".</p> <p>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</p> <p>REACH compliance: the product respects the EC requirements related to REACH SVHC directive (EC) 1907/2006</p> <p>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>			
Code	Description		
NDW240	Programmable DC-DC Converter IN 12...48Vdc / OUT 5...55Vdc – 10A Max (240W Max)		
Certifications and approvals			
Reference standards	2014/35/EU (2014) 2014/30/EU (2014) EN61010-1 EN61010-2-201 UL508 EN61000-6-2 EN61000-6-3	(Low Voltage Directive) (EMC directive) (Safety Standard) (Safety Standard) (Certified - IND. CONT. EQ. 4WX9 file no. E356563) (Generic immunity standard for industrial environments) (Generic emission standard for residential environments)	

Connections and User interface



1. **Modbus over USB:** used to connect a device running **POWERMASTER** or custom user application. Firmware update is also possible.
2. **DC Output:** connected to the load. The output voltage is adjustable between 5 to 55Vdc.
3. **DC-OK dry contact:** normally open relay contact is available; the relay closes when the output voltage is >90% of the programmed output voltage value.
4. **DC Input:** input voltage supply, range is from 11 to 55Vdc.
5. **Display:** 2-digits LED display used to program the device and read its status.
- 6 **Control keys:** 3 push buttons are provided to navigate through menus and to select various functions.

Input Connection:

- + = Positive DC
- - = Negative DC
- ⊕ = Earth ground

Output Connection:

- + = Positive DC
- - = Negative DC

Auxiliary Connection:

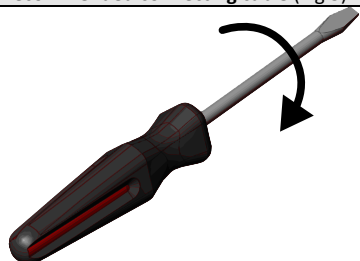
- DC OK:** Dry contact
- NO
 - COM

Mini USB-B Type



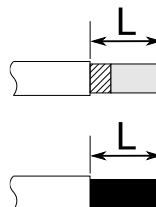
- 1 = VBUS (+5V)
- 2 = Data (D-)
- 3 = Data (D+)
- 4 = Not connected (ID)
- 5 = GND

Recommended connecting cable (Fig.5)



Recommended Tightening torque

0.5-0.6Nm
4.42-5.30 lbf in

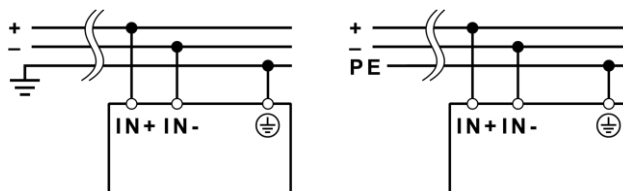


Input / output connections

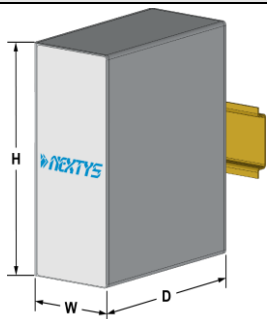
Solid: 2.5mm² / 12AWG
Stranded: 2.5mm² / 12AWG
L: 6.0-7.5mm / 0.24-0.30in

Input connection

DC Line



Dimensions



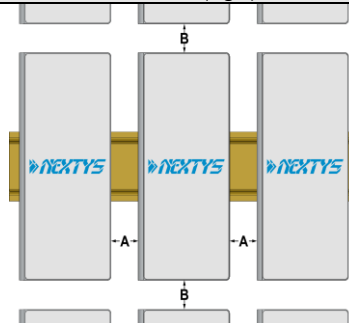
Dimension

W
D
H

mm

40.0
110.0
115.0

Distances (Fig.3)



Distance

A
B

mm

20
50

INSTRUCTIONS

1) Description: NDW240 can be supplied with any voltage between 11Vdc and 55Vdc, **please respect the polarity**. The output voltage can be programmed to any voltage between 5Vdc and 55Vdc.

To prevent damage in case of reverse polarity, the device is protected by an internal not replaceable fuse.

NDW240 can be used in SELV and PELV circuits.

2) Installation: use DIN-rails according to EN 60715. 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 device automatically restarts after cooling.

To get normal operation reduce the temperature of the air surrounding the unit, increase the ventilation or reduce the load.

3) Connections: the device is equipped with pluggable screw terminals. To avoid sparks, do not connect or disconnect the connectors before having previously turned-off input power and waited for capacitors discharge.

In order to comply with local 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 on Fig.5 and ensure that all strands of a stranded wire enter the terminal connection.

4) DC Input protection: NDW240 is equipped with internal fuse, ratings of DC line protection devices must be coordinated with input current indicated on the data sheet.

5) Overload (OL) / short circuit (SC) / overvoltage (OVP) / overtemperature (OTP) protections: Hiccup auto-reset and constant current limitation, user selectable.

Overload behaviour in hiccup mode: the output current is limited at $1.5 \times I_{max}$. When the programmed I_{max} value is exceeded a timer is started. If the load current demand is not reduced below I_{max} for maximum 5 seconds the output is switched off and kept off for 10 seconds.

Overload (OL) error message is shown on the display, this cycle is then repeated until the load current demand is not decreased below I_{max} .

Overload behaviour in constant current mode: the output current is limited at I_{max} . If the load asks for more current than I_{max} the output voltage is progressively decreased to keep the output current regulated at I_{max} .

Short circuit behaviour: the output is switched off in about 0.2 seconds and kept off for 10 seconds. Short Circuit (SC) error message is shown on the display details. This cycle is then repeated until the short circuit is removed.

Input/output overvoltage protection: the unit is protected against external overvoltage applied to the input; for input voltages greater than 62V the device will shut down. In case of an internal failure, a double protection circuit switch off the output and avoid output voltage higher than 62V potentially dangerous for the supplied devices.

Overtemperature protection: The "Over Temperature (Ot)" error message appears when the internal temperature exceeds the safe limits. In this case the output is switched off. The output is switched back on when the temperature decreased to safe limits.

6) Status Signals:

"DC OK" relay contact (24V/1A): Contact closes when the output voltage is present and within the product specified output voltage regulation range

7) Redundant and parallel connection: NDW240 is equipped with an internal ORing circuit allowing direct parallel connection for redundancy without the need of an external isolating diode. Parallel connection for power increase can be achieved connecting the output of the devices in parallel. Please keep the length of the input and output cables of the 2 paralleled units the same length and cross section to achieve the best possible current balancing. Avoid exceeding 80% of the total available output current. To use parallel connection the operating mode shall be set to "Parallel (PA)" in the configuration menu.

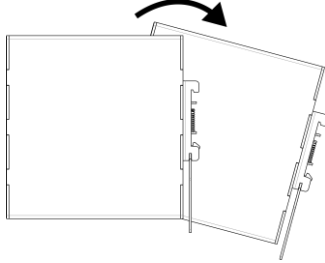
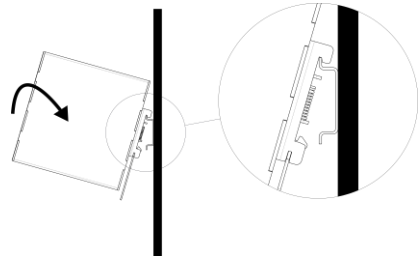
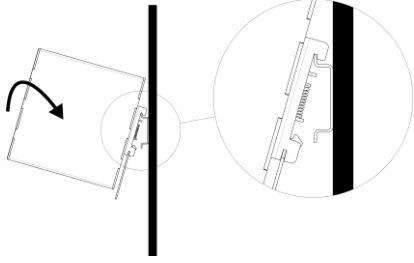
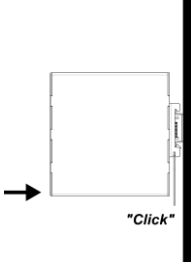
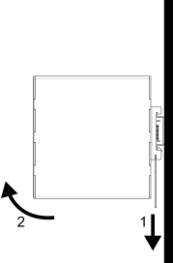
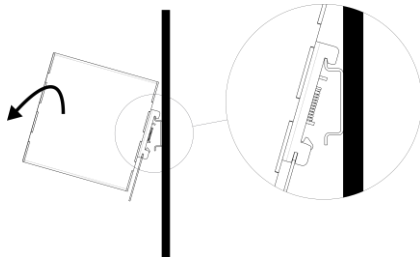
10) Feeding DC motors: it is possible to feed DC motors considering that when a motor starts-up under effort its consumption is much higher than the nominal current and it can trigger overcurrent protection.

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.

In order to improve the products TDK-LAMBDA SWITZERLAND SA reserves the right to change product specifications, ratings and data without previous advice.

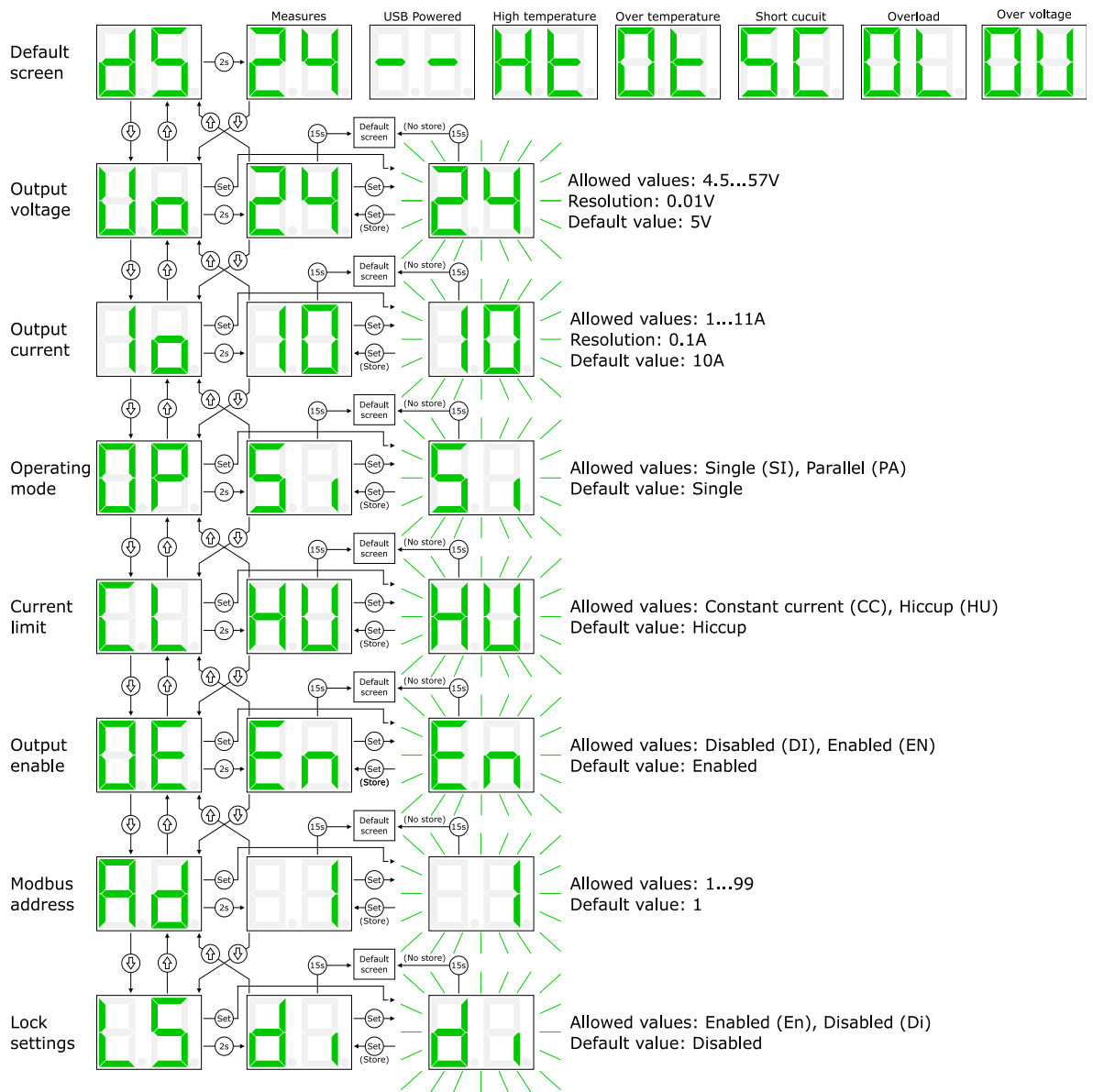
Mounting / Dismounting Instructions (Fig.4)

For DIN rail mounting according to IEC 60715 TH35-7.5(-15). 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 User manual.

Mounting	
<p>1. Tilt the unit slightly backwards.</p> <p>2. Fit the unit over the top edge of the rail.</p> <p>3. Slide it downward until it hits the stop.</p> <p>4. Press against the bottom for locking.</p>	 <p style="text-align: center;">1</p>
	 <p style="text-align: center;">2</p>
	 <p style="text-align: center;">3</p>
	 <p style="text-align: center;">4</p>
Dismounting	
<p>1. Pull down the slide clamp lever.</p> <p>2. Tilt the unit upward.</p> <p>3. Unhook the unit from the rail.</p>	 <p style="text-align: center;">1 & 2</p>
	 <p style="text-align: center;">3</p>

Menu navigation

The menu organization is presented in the following diagram. The various options are selected with the 3 control keys.



Alarm codes

Display code	Description	Behaviour
	Output short circuit error	The "Short Circuit (SC)" error message appears when a short circuit is detected at the output. In this case the output is switched off and then restarted after 10 seconds. This cycle is repeated until the short circuit is removed.
	Output overload error	The "Overload (Ol)" error message appears when the output current exceeds I _{max} ; it is only applicable when "hiccup mode" current limitation is selected. In this case the output is switched off after 5 seconds of sustained overload and then restarted after 10 seconds. This cycle is repeated until the output current is reduced below I _{max} .
	Over-temperature warning	The "Over Temperature warning (Ht)" appears when the internal temperature is reaching unusually high levels. If no modification of the ambient operating temperature and / or load conditions is performed by the user, it is highly possible that a "Over Temperature (Ot)" error occurs, leading to the output switch off.
	Over-temperature error	The "Over Temperature (Ot)" error message appears when the internal temperature exceeds the safe limits. In this case the output is switched off. The output is switched back on when the temperature decreased to safe limits. In case of repeated Over Temperature errors check the device ventilation and/or reduce ambient temperature
	Output over voltage error	In case of an internal DC/DC converter defect, if the measured voltage exceeds the set voltage of 15% the output is shut down and the alarm signaled.

Measures

