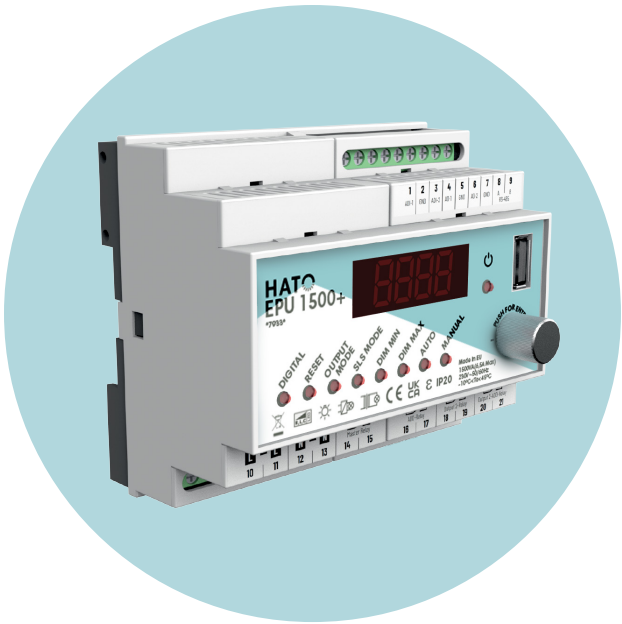


Installation Instructions

EPU 1500+

7933



Maximum allowable load (230VAC)

Incandescent load:	1500VA max
LED (dimmable):	1300VA max
HATO 230V products:	1300VA max

EPU 1500+

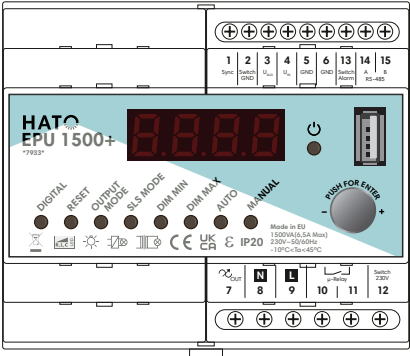
Supply voltage:	230VAC (+/- 10%) sinusoidal, 50 / 60Hz, 1-phase + neutral. Important: Powering the regulator via an autotransformer or any type of safety transformer, and powering from two phases may damage the regulator or the connected load.	
Initial protection:	16 A max.	
Power consumption:	1.8W	
Heat losses:	6.5W	
Working temperature:	-10°C to +45°C	
Storage temperature:	-10°C to +65°C	
Cable diameter:	1.5 - 2.5 mm ² Mains	0.75 - 1.5mm ² Control
IP Rating:	IP20	
Mounting method:	for DIN-35mm rail	
Compliance with standards:	EN60669-2-1, EN55015	
Button input (= terminal #12)	230VAC, possibility to connect buttons with backlight (= 5mA max.), max. cable length 50m	
0-10VDC signal input (= terminal #4)	0.5mA, possibility of connecting a 10-100kΩ-log-150mW potentiometer	
Relay contact:	230VAC/30VDC – 4A max. Potential-free contact, the relay circuit shall be fused externally with a 4 A fuse	
Alarm output:	N-MOSFET; OD (Open Drain), 12/24 VDC-200mA max	
Interfaces:	Interface protocol / for service only	
• RS-485		
• USB		
• 0-10V		

Important

To obtain the optimal quality of regulation, a minimum load 10VA should be connected, regardless of the type of load.

Correct regulation will be ensured if the connected load meets the harmonic current standards.

Only for installation into suitable sub-distributions or installations boxes.



EPU 1500+ Installation Instructions - EN V1.2

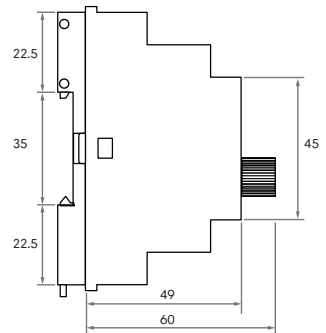
EPU 1500+

Safety relay

The EPU 1500+ controller is equipped with a relay (terminals 10 + 11), thanks to which it is possible to completely disconnect the load, which ensures the safety of technical service. The function is performed by means of an additional external 230V contactor. In this case, the galvanic disconnection of the load takes place always after the lighting is turned off.

Activation

After connecting the device to the 230V power supply, the green POWER LED is ON and the display is illuminated at the same time. By turning and pressing (turn&click) the knob on the controller, you can select one of the eight menu points visible on the housing front panel and program the appropriate values.



DIGITAL - Selection between analog and digital operating mode

The function enables the controller to be controlled via the RS-485 input or to enable digital control of light sources. By default, analog mode is on. Turn the knob to select DIGITAL option (LED=green), press and hold the knob until you hear a beep, about 5s = the dimmer enters digital mode.

RESET - Return to factory settings

Select RESET from the customer menu (LED=green, on the display rSt) press and hold the knob until you hear a beep. The display shows OFF, set to ON position and confirm by pressing the knob until you hear a beep.

Additionally, after the sound signal confirming return to the factory settings, SOFT and information about the software version of the processors will appear on the display. The whole process takes a few seconds and is fully automatic.

Mode selection

Different dimming modes can be configured to optimize the dimming performance for various types of lighting.

Turn the knob to select MODE (LED=green). Press and hold the knob until a beep is heard.

Choose operating modes depending on the load:

MODE 0.7 – Special lamps

MODE 1.0 – HATO PICA, ARA and FORTIS. (default)

MODE 1.6 – LED

MODE 3.2 – CFL energy-saving bulbs

Trigger function - light cycle function (= sunrise and sunset)

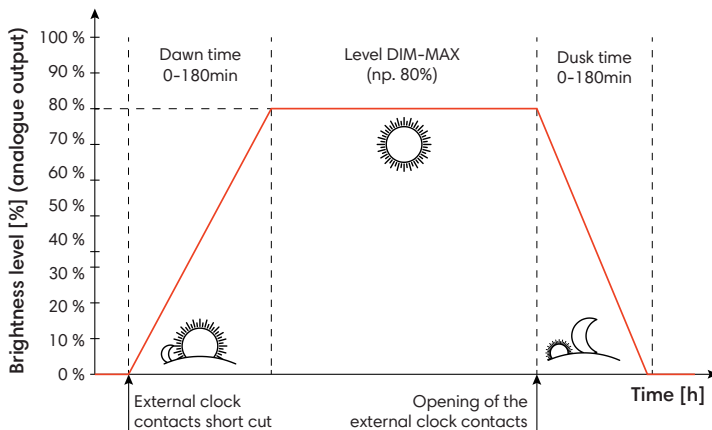
An additional function in the EPU 1500+ controller that allows the user to simulate sunrise and sunset. The user himself, according to his needs, can set the duration of dawn and dusk (duration of rising and falling). The SLS function requires the connection of an external clock, the contact of which is to be connected between terminal 12 and the phase.

By default, the Rise and Dimming time when SLS is selected is set to 30 and 15 minutes.

EPU 1500+

Example: Turn the knob to select SLS (LED=green), the display shows OFF if the function is disabled or ON if the function is enabled. Press and hold the knob until you hear a beep, ON or OFF will start blinking. We can choose from the following settings:

- Rise time settings - on the display, horizontal lines move up, the time can be set within the range of 0-180 minutes, after selecting the appropriate value, press the knob until a beep is heard.
- Falling time settings - horizontal lines on the display move downwards, the time can be set within the range of 0-180 minutes, after selecting the desired value, press the knob until a beep is heard.
- END - Immediately end of the brightening process (dimmer sets to maximum brightness) or dimming (dimmer switches off).
- ON - enables SLS function.
- OFF - disables SLS function.



MIN - Setting the minimum brightness

The minimum brightness level can be set between 0% and 25%.

Turn the knob to select MIN (LED=green), press and hold the knob until a beep is heard.

Set the desired value in the range of 0-25 and confirm by pressing the knob until you hear a beep.

MAX - Setting the maximum brightness

The maximum brightness level can be set between 100% and 35%.

Turn the knob to select MAX (LED=green), press and hold the knob until a beep is heard.

Set the desired value in the range of 100-35 and confirm by pressing the knob until you hear a beep.

The EPU 1500+ controller has two ways to adjust the brightness depending on the operating mode

AUTO - external operation mode

Control via 0-10V analog signal (terminals 4 + 5) or potentiometer (terminals 3 + 4 + 5) or in SLS mode via a 230V signal from an external clock (terminal 12).

HAND - manual operation mode

Controlled by a rotary knob in the device or by a connected external switch (terminal 12).

EPU 1500+

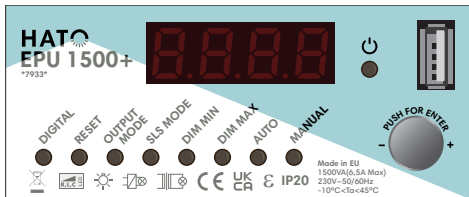
INFO - information on the current controller settings

This position is not labeled on the front of the controller, it can be called up by turning the knob to the right or left in the customer menu, so that no menu item is highlighted (= display InFo).

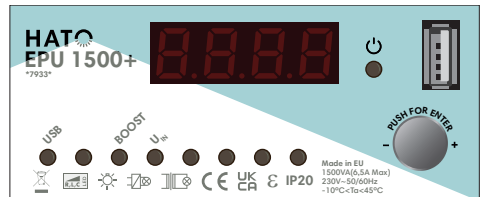
Turn the knob to select INFO (= on display InFo), press and hold the knob until you hear a beep. After its activation, this function is performed automatically and shows all the controller settings.

Service Menu

The EPU 1500+ controller has two menus, one visible and described on the front panel, the other service hidden and described in the manual. Additional functions, used less frequently or in special cases, are hidden in the service menu.



Customer menu (visible on the front panel)



Service menu (hidden)

Entering the service menu – hidden functions of the regulator

Turn the knob to select the AUTO option (LED=green) press the knob (LED=red flashes) and press the knob again holding it for about 30 seconds until you hear a beep, four horizontal lines will light on the display. We are in the service menu.

USB - write / read external USB memory

Turn the knob to select the AUTO option (LED=green) press the knob (LED=red flashes - operating mode) and press again holding it for about 30 seconds until you hear a beep, four horizontal lines will light up on the display. This is the service menu now.

Highlight the DIGITAL/USB (LED= green LED is blinking) press the knob until you get a beep, the display will show the selection of OFF/AUTO/INFO.

OFF pressing the knob to obtain a sound signal exits the menu into the selection mode (LED= green LED blinks).

AUTO press the knob to obtain a sound signal, the display will show d5u0. Insert the USB flash drive into the USB socket, the reprogramming process will start and last up to 3 minutes, then the dimmer will be set to AUTO (LED=red flashes).

INFO in case of problems with the regulator, you can be asked by the service technicians to copy the black box. Highlight INFO , press the knob to beep, d5u2 will appear on the display, insert the pendrive into the USB port, the data downloading process will start automatically and last a few minutes, then the dimmer will switch to AUTO (LED=red flashes).

EPU 1500+

U_{in} - turn on the internal 0-10V input power supply

When using an external 100k potentiometer or external electronic potentiometer, the internal auxiliary power should be ON. For any other control mode (e.g. computer) internal power must be turned OFF. By default, internal power is turned off.

In the Service Menu - Highlight the MODE/ U_{in} (LED= green LED is blinking), press the knob until you get a sound signal, the display will show the choice of ON or OFF, confirm your selection by pressing the knob until you get a sound signal.

BOOST - function of temporary power increase

Used for some types of light sources that do not want to turn on at the minimum setting of the light level. These sources then require a temporary increase in power during ignition. By default, the BOOST function is disabled. When BOOST is enabled, the default setting is 1.

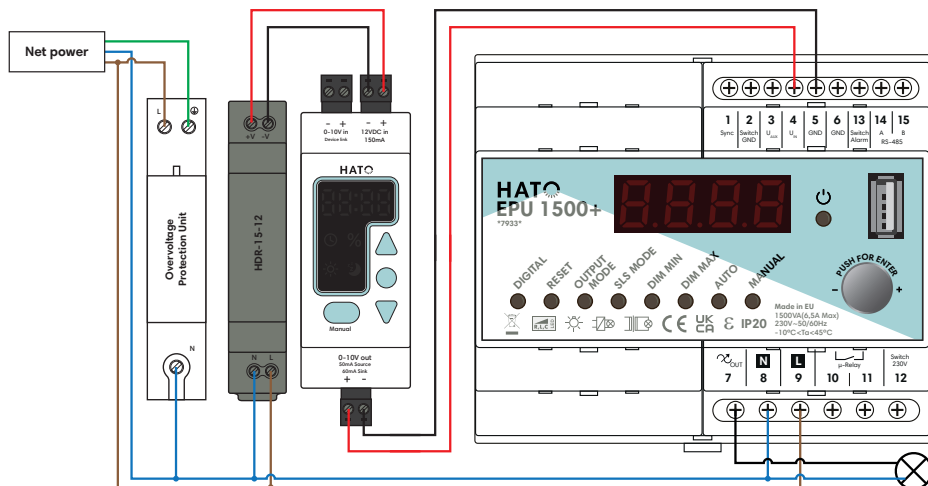
In the Service Menu - Highlight the SLS/BOOST (LED= green LED is blinking) press the knob until you get a beep, the display will show the following options: ON, OFF and 1.

ON/OFF function enable / disable BOOST

1 We adjust the power increase in steps from 1 to 99. If we set the value too high, a flash of light will be visible during ignition.

(The BOOST value should be decreased).

Installation Example



EPU 1500+

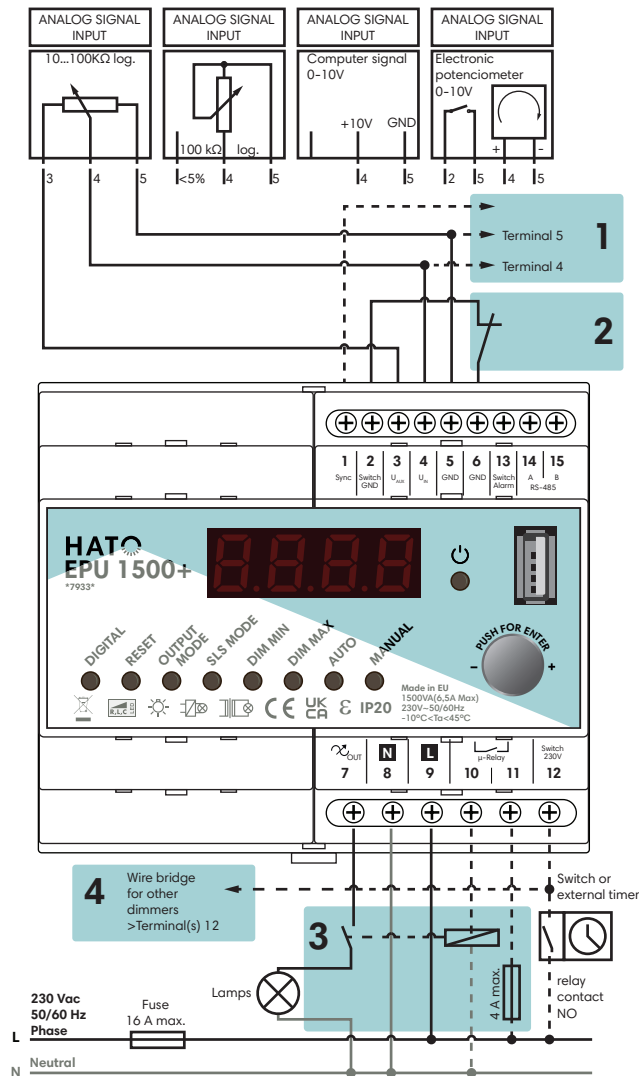
Error signaling

In case of errors, the controller informs us about it on the display and acoustically (acoustic signals). The acoustic signal can be turned off by pressing the knob.

Error	Description	Restart	Activation of alarm output (terminal 13)	Possible causes of errors
Er01	Internet Communication	Automatic	YES	Interference with internal communication between processors or RS-485 communication with other devices
Er02	Low mains voltage	Automatic	NO	The power supply has dropped below 90VAC
Er03	Too high voltage pulses on power transistor leads	Automatic	YES	Connection as EI transformer load
Er04	Overload	Automatic	YES	Too high load connected (1600W)
Er05	Short circuit	Automatic	YES	Short circuit at the regulator output
Er06	Overheating	Power ON/OFF	YES	The temperature inside the dimmer is above +120°C or the ambient temperature is too high
Er07	Overvoltage on power supply terminals 8-9	-----	YES	Connecting phase-to-phase voltage
Er08	-----	-----	-----	Permanent damage to the regulator
Er09	Overloaded alarm output	Automatic	N/E	The current at terminal 13 exceeded (200mA)
Er10	Power interruption 40ms	Automatic	NO	No circuit continuity, loose contacts, frequent switching of power supply circuits on the power side, Power frequency out of the range =45-65 Hz
Er15	Internal control of the dimmer interface	-----	-----	The error must be cleared manually. If this is not possible, the dimmer is permanently damaged.

EPU 1500+

Additional Installation Options



Options

- 1 Wire bridge for other dimmers. Required if terminal number 4 is in use.
- 2 Additional on/off control of the load, e.g., when connecting a twilight switch or any sensor.
 - Closed contacts = Load off
 - Contacts open = Load on
- 3 Method of connecting the load using an additional contactor, enabling galvanic load disconnection.
- 4 Wire jumper for additional dimmers. Required if terminal 12 is in use.

EPU 1500+

Alarm Output

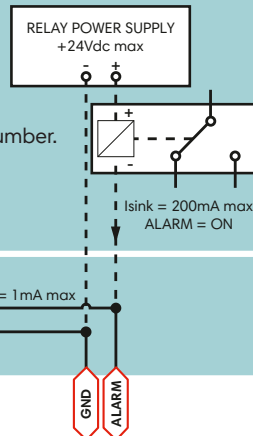
The EPU 1500+ controller can be connected to the alarm control panel through the alarm output. This connection provides status information when the light is turned off due to an error (see Error Signaling for details).

- **No Error Information:** When there is no error, terminals 13 and 6 (ground) maintain a voltage of **12Vdc** (max. 1mA).
- **Error:** When an error occurs, the voltage is turned off (**0Vdc**), and the display shows the corresponding error number.

Alarm Output Method 1: Relay Control Signal:

RELAY CONTROL SIGNAL

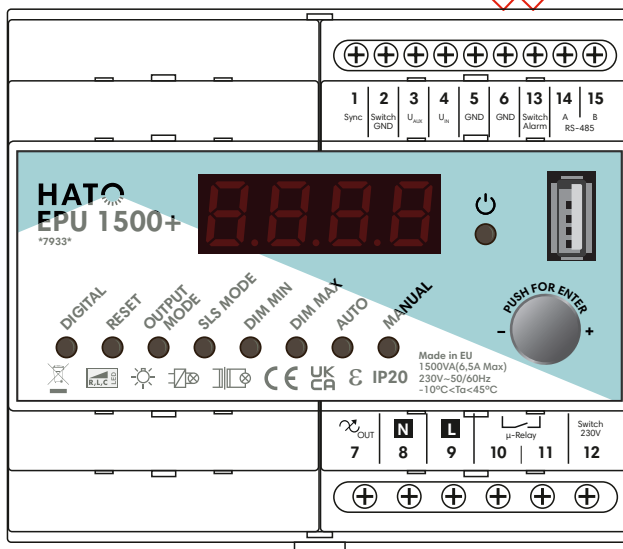
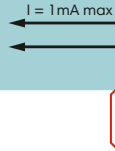
ALARM OFF NO
ALARM ON NC shows the corresponding error number.



Alarm Output Method 2: Voltage-Based Signal:

SIGNAL TO COMPUTER OR ALARM CONTROL PANEL

ALARM OFF U = 12Vdc
ALARM ON U = 0Vdc



EPU 1500+

EN - General safety notes 230 VAC products

Read and follow all instructions

1. Failure to follow warnings and installation instructions can cause serious personal injury or damage to the installation.
2. Installation must be in accordance with the latest electrical regulations and national requirements.
3. Turn off electrical power before installing or servicing the product in any way.
4. Broken or damaged products must be removed immediately.
5. The person responsible for any modification to the product shall be considered the manufacturer.
6. HATO bears no liability for damage caused by inappropriate use or application.
7. To reduce the risk of fire and overheating, make sure all connections are made according to standard regulations and installation instructions.
8. To reduce the risk of fire and burns do not install this product where the exposed bare conductor can contact any conductive material.
9. Do not install any products closer than 15 cm from any curtain or similar combustible materials or a heat source.
10. To minimize the risk of electrical interference, install the power cables separate from the dimming signal cables. Especially keep cables switching heavy (inductive) loads away from signal cables. In case both cables have to cross each other, do this perpendicularly to minimize interference.
11. Install the product in an enclosure suitable for its environment.
12. In case of discrepancy, the English version shall prevail

NL - Algemene veiligheidsvoorschriften voor 230 VAC-producten

Lees alle instructies en volg ze op

1. Het niet opvolgen van waarschuwingen en montage-instructies kan leiden tot ernstig persoonlijk letsel of schade aan de installatie.
2. De installatie dient in overeenstemming te zijn met de meest recente elektrische voorschriften en nationale vereisten.
3. Schakel de elektriciteit uit voordat u het product op welke manier dan ook installeert of er onderhoud aan pleegt.
4. Verwijder kapotte of beschadigde producten onmiddellijk.
5. De verantwoordelijke voor elke wijziging aan een product wordt beschouwd als de fabrikant.
6. HATO is niet aansprakelijk voor schade die is veroorzaakt door oneigenlijk gebruik of onjuiste toepassing.
7. Zorg ervoor dat alle aansluitingen tot stand zijn gebracht volgens de standaard voorschriften en montage-instructies om het risico op brand en oververhitting te beperken.
8. Installeer dit product niet op een plaats waar de massa van de onbeschermde geleider in contact kan komen met geleidend materiaal om het risico op brand en brandwonden te beperken.
9. Installeer een product op ten minste 15 cm afstand van een gordijn of soortgelijke brandbare materialen of een warmtebron.
10. Installeer de voedingskabels gescheiden van de dimsignaalkabels om het risico op elektrische interferentie tot een minimum te beperken. Houd vooral kabels die zware (inductieve) belastingen schakelen uit de buurt van signaalkabels. Als beide kabels elkaar moeten kruisen, doe dit dan loodrecht om storingen tot een minimum te beperken.
11. Installeer het product in een behuizing die geschikt is voor de omgeving.
12. Bij onderlinge tegenstrijdigheden is de Engelse versie leidend.

EPU 1500+

FR - Remarques générales concernant la sécurité Produits 230 Vca- Veuillez lire et suivre les instructions

1. Le non-respect des avertissements et des instructions d'installation peut provoquer des blessures graves ou endommager l'installation.
2. L'installation doit être effectuée conformément aux dernières réglementations électriques et exigences nationales.
3. Coupez toujours l'alimentation électrique avant d'installer le produit ou d'en faire l'entretien.
4. Les produits cassés ou endommagés doivent être immédiatement retirés.
5. La personne responsable de toute modification du produit sera considérée comme son fabricant.
6. HATO n'est en aucun cas responsable des dommages causés par une utilisation ou une application inappropriée.
7. Pour réduire les risques d'incendie et de surchauffe, assurez-vous que tous les raccordements sont effectués conformément aux réglementations standard et aux instructions d'installation.
8. Pour réduire le risque d'incendie et de brûlures, n'installez pas ce produit dans un endroit où le conducteur nu exposé risque d'entrer en contact avec un matériau conducteur quelconque.
9. N'installez pas de produits à moins de 15 cm d'une source chaleur, d'un rideau ou de tout autre matériau combustible similaire.
10. Pour limiter les risques d'interférences électriques, installez les câbles d'alimentation à l'écart des câbles de signal de gradation. Veillez tout particulièrement à installer les câbles de commutation de charges lourdes (inductives) à l'écart des câbles de signaux. Si ces deux câbles doivent se croiser, faites un croisement perpendiculaire afin de minimiser les interférences.
11. Installez le produit dans un environnement adapté à son utilisation.
12. En cas de divergence, la version en anglais prévaut.

ES - Indicaciones generales de seguridad para productos de 230 VCA - Lea y siga todas las instrucciones

1. No respetar las advertencias y las instrucciones de instalación puede provocar lesiones personales graves o dañar la instalación.
2. La instalación debe realizarse de acuerdo con las normativas eléctricas más recientes y con los requisitos nacionales.
3. Apague la corriente eléctrica antes de instalar o realizar cualquier reparación del producto.
4. Los productos rotos o dañados deben retirarse inmediatamente.
5. El fabricante se considerará la persona responsable de cualquier modificación del producto.
6. HATO no se hace responsable de los daños causados por un uso o una aplicación inadecuados.
7. Para reducir el riesgo de incendio y sobrecalentamiento, asegúrese de que todas las conexiones se realicen de conformidad con las normativas estándar y las instrucciones de instalación.
8. Para reducir el riesgo de incendio y quemaduras, no instale este producto en lugares donde el conductor desnudo expuesto pueda entrar en contacto con cualquier material conductor.
9. No instale ningún producto a menos de 15 cm de una cortina o materiales combustibles similares, o de una fuente de calor.
10. Para minimizar el riesgo de interferencia eléctrica, instale los cables de alimentación separados de los cables de señal de atenuación. En especial, mantenga los cables de conmutación de cargas pesadas (inductivas) alejados de los cables de señal. En caso de que ambos cables deban cruzarse entre sí, hágalo de forma perpendicular para minimizar la interferencia.
11. Instale el producto en una carcasa adecuada a las condiciones ambientales.
12. En caso de discrepancia, prevalecerá la versión en inglés.

EPU 1500+

DE - Allgemeine Sicherheitsanweisungen 230-VAC-Produkte - Alle Anweisungen lesen und befolgen

1. Bei Missachtung der Warnungen und Installationsanweisungen kann es zu schweren Verletzungen oder Schäden an der Anlage kommen.
2. Die Installation muss gemäß den aktuellen elektrotechnischen Vorschriften und nationalen Anforderungen erfolgen.
3. Vor allen Installations- und Wartungsarbeiten am Produkt die Stromversorgung ausschalten.
4. Defekte oder beschädigte Produkte sind unverzüglich zu entfernen.
5. Die für Änderungen am Produkt verantwortliche Person gilt als Hersteller.
6. HATO haftet nicht für Schäden, die auf eine unsachgemäße Nutzung oder Anwendung zurückzuführen sind.
7. Alle Anschlüsse und Verbindungen müssen gemäß den Standardvorschriften und Installationsanweisungen hergestellt werden, um die Gefahr von Bränden oder Überhitzung zu minimieren.
8. Dieses Produkt nicht an Stellen installieren, an denen der blanke Leiter mit Leitmaterial in Berührung kommen kann, um so die Brandgefahr zu verringern.
9. Die Produkte nicht in einem Abstand von weniger als 15 cm zu Hitzequellen oder Gardinen und ähnlichen brennbaren Materialien installieren.
10. Um die Gefahr elektrischer Störungen möglichst gering zu halten, die Stromkabel getrennt von den Kabeln für das Dimmsignal verlegen. Vor allem Kabel zum Schalten hoher (induktiver) Lasten müssen von Signalkabeln getrennt werden. Wenn eine Überkreuzung beider Kabel unvermeidlich ist, muss diese senkrecht verlaufen, um die Störeinflüsse möglichst gering zu halten.
11. Das Produkt in einem für die Einsatzumgebung geeigneten Gehäuse installieren.
12. Bei Abweichungen zwischen den Sprachfassungen gilt die englische Fassung.

CN - 230V产品一般安全注意事项

请阅读并遵循以下说明

1. 不遵循警告和安装说明可能会造成严重的人身伤害或设备损坏。
2. 安装需符合最新的电气法规和国家要求。
3. 在以任何方式安装或修改本产品之前，请关闭电源。
4. 本产品损坏后应立即拆除。
5. 对本产品的任何修改均应由制造商负责。
6. 因使用或应用不当造成损坏，HATO概不承担任何责任。
7. 为降低火灾和过热风险，请确保所有连接均遵守标准法规和安装说明。
8. 为减少火灾和烧伤风险，不得在裸露导体可接触导电材料处安装本产品。
9. 本产品不得安装在距离窗帘或类似易燃材料不足 15 厘米处。
10. 为了将电磁干扰的风险最小化，请将电源线与调光信号线分开安装。特别是将电源线重负载（感性）和信号线分开。如果两条电缆必须互相交叉，请垂直放置以最小化干扰。
11. 本产品应安装在适配的箱体内部。
12. 该安装说明如有语言表述差异，以英文版为准。