
LSS

Manual

Shuttledimmer Sine Wave 3kW



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Preamble

Notes for the reader

This manual provides advices and information's about the function and configuration of the *Shuttledimmer Sine Wave 3kW*.

Like all devices of LSS GmbH the *Shuttledimmer Sine Wave 3kW* is constantly evolving technology. It is therefore possible that this manual does not explain later development forms.

This manual uses the following symbols to indicate important information for your safety and for configuration.



Here you will get additional information.



Attention alerts you to situations in which decisions can provoke to technical problems with the equipment or losing data.



A Warning statement indicates situations in which can result in injury or damage to life and limb.

Security advices

Proper care of the *Shuttledimmer Sine Wave 3kW* is not dangerous. However please note the following:



- Warning - High voltages inside! Danger to life!
Disconnect device from power supply before opening (pull out the line plug). Do not pull on the connection cable, but on the plug, to disconnect the dimmer from mains. Any repairs or changing of the line plug must only be carried out by qualified personnel or B&S-service departments.
- Make sure of using a line cable that meets the safety standard of the country in which the device is used. The cable must be suitable for the maximum current (see max. current in "Technical Data").
Before connecting the device ensure that the power supply is correctly wired. Do not use without adequate earth connection unless either an isolation transformer or an earth-leakage trip is employed.

Note: In order to avoid unwanted tripping due to leaking currents and transient disturbances, care shall be taken that the collective leakage current of equipment on the load side of a residual current device is less than 1/3 of its rated residual current.

The typical leakage current of this device is below 0.7 mA (according EN 60598-1:1996, appendix G).

- Even with dimming value "0", which means no output voltage at load connector, the output is not electrically isolated from mains. In order to get zero potential at the load connection the device must be disconnected from mains.
- The device satisfies the standards of the recognized state of the engineering and the pertinent safety regulation of DIN EN 60065 for electrical appliances.
- The electronic of the dimmer is built in a housing with protective class I and protective rate IP 20 (no protection against rain). Supply voltage must not exceed the ranges that are given in the "Technical Data".

Ambient operating temperatures must be between -20°C and + 50°C! Neither heat sink nor air slots for ventilation should ever be covered or obstructed.

Protect device against direct sunshine.

For optimized cooling the device should be operated vertically with display panel face downwards. For fastening the 4 threaded holes at the side of the device can be used. Do not operate the Shuttle Dimmer in high humidity (dew) or in aggressive or explosive gas-air mixtures.

- The Shuttle Dimmer must be used only according to the directions in this “Operating Instruction”. The manufacturer shall not be liable for any damages caused by unintended use or wrong operation.

Instruction for use

The user of the Shuttle Dimmer is urgently requested to observe the following instructions:



- Dispose of packing material properly.
- Do not place the device into operation if damages are apparent.
- To assure safe operation, use device only according to the information given in these operating instructions, connect and operate it as shown on the serial number plate.
- In case of malfunction, disconnect the device from mains (pull out the line plug).
- Repairs, exchange of replacement parts and manipulations on the device must be carried out by qualified personnel or B&S service only.
- Use only original spare parts for repairs.
- Make worn-out devices inoperable immediately and dispose properly.
- Make sure that children do not operate the device.
- Clean device dry only or with a moist cloth. Never immerse it into water.
- Do not use the connection cables of the device for carrying, do not pull them over sharp edges, clamp them under doors or clamp them in any other way.
- Switch off device when it is not needed. Always switch off the device and pull out line plug before you clean it or do maintenance work on it.
- The load connection of this shuttle dimmer is not electrically isolated. The load connections of two dimmers must not be connected in parallel!

Shuttledimmer Sine Wave

Performance

The *Shuttledimmer Sine Wave 3kW* is suitable for professional indoor use (IP20 protection, no protection against rain).



The Shuttle Dimmer Sine Wave meets the European Council Directive of electromagnetic compatibility. Over an extensive range limits of radio disturbance characteristic B are fulfilled. But on principle it has to be classified under characteristic A, group 1. (DIN EN 55011)



Although limits of radio disturbance characteristic A are prescribed for industrial areas administrative authority can allow the use of equipment with characteristic A in other than industrial areas.

Compared to conventional phase control dimmers there are a number of advantages when using an electronic Sine Wave dimmer:

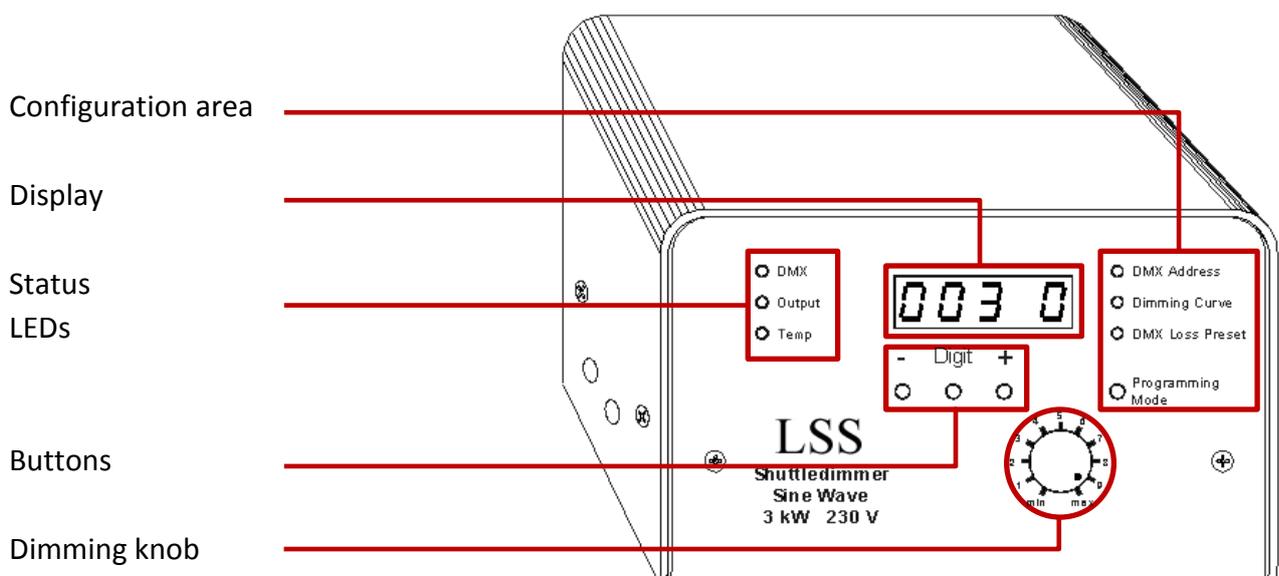
- Shuttle Dimmer Sine Wave operates with sinusoidal input and load current.
- There are no circuit feedbacks caused by harmonics ($\cos \phi \approx 0.98$).
- In contrast to conventional phase control dimmers it is possible to operate the load without troubling noise.
- Load can be ohmic (incandescent lamp), inductive (transformer) or capacitive (electronic ballast for fluorescent tubes). Pure capacitive loads must not exceed a value of 10 μF .
- The power electronic regulates the output voltage depending on dimming knob (resp. DMC control value) and chosen dimming curve
- The starting current is electronically limited to 20 A (e.g. a cold lamp). Thus the operating life time of the lamp increased.
- Construction as shuttle dimmer allows local assembly close to the lamp.

Device overview

The design of the *Shuttledimmer Sine Wave 3kW* allows a clear separation of control and operation elements on the front and the connections for power, load and DMX on the back. So you can configure the dimmer convenient and the visibility of the display is not disturbed by cables. The lack of cables on the front also increases the personal safety of the operator.

Front side

On the front of *Shuttledimmer Sine Wave 3kW* the configuration and operation elements are arranged. Clearly structured, the adjustments can be made quickly and easily with the elements. The clear bright LEDs provide a reliable reading of the operating conditions of the dimmer.



Configuration area

With the control elements in this area the *Shuttledimmer Sine Wave 3kW* can be configured.

LED	Meaning
DMX Address	If the LED is on, the DMX-address can be adjusted.
Dimming Curve	If the LED is on, the dimming curve can be adjusted.
DMX Loss Pre-set	If the LED is on, the behaviour in case of DMX signal loss can be adjusted.

Display

During normal operation the display shows the adjusted DMX address (1 – 512), followed by number of active dimming curve (0 - 2).

Status LEDs

The status LEDs displays the operating status of the device.

LED	On/Flash	Meaning
DMX	Flash	No valid DMX signals will be received at the chosen address. The actual dimming value can be selected by the dimming knob.
	On	The dimmer receives DMX signals and actual dimming value correlates to the value transmitted via DMX remote control. The dimming knob has no function in this case.
Output	On	The output voltage greater than 0 V.
Temp	On	Indicates that the dimmer cuts off due to overtemperature. After cooling down, the dimmer automatically switches on the output voltage again. The LED stays lit to indicate the temperature problem. To reset the LED the dimmer must be disconnected from mains.

Buttons

The buttons are used to configure the *Shuttledimmer Sine Wave 3kW*.

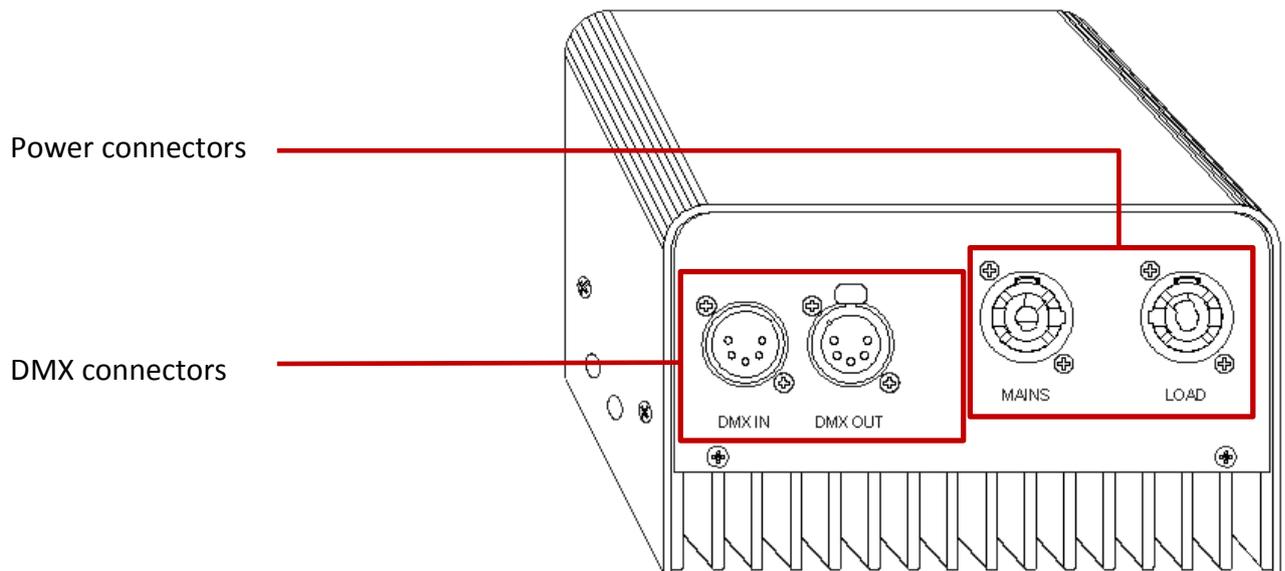
Button	Meaning
+	Increases the value to be set to 1.
-	Reduces the value to be set to 1.
Digit	Changing the menu levels.

Dimming knob

With the knob the current dimming can be set when the dimmer has no valid DMX address or is not connected to a DMX network. If the device receives DMX signals, the function of the knob is disabled.

Back side

On the back of the *Shuttledimmer Sine Wave 3kW* the connectors are situated.



Power connectors

The connectors for the power supply and loads are designed as Neutrik powerCon.

Connector	Meaning
Mains	Device power supply connector.
Load	Load power supply connector.

DMX connectors

The DMX-Out is designed as DMX-THRU connection.

Operating and Configuration

Start up

- Connect the properly checked load (230 V~, max. 3000 VA to the LOAD connector of the shuttle dimmer.
- In case of DMX control connect the DMX remote cable to connector DMX IN. Output DMX OUT can be used to connect further DMX devices. The last device of the DMX line must be terminated with a suitable terminating resistance.
- Connect the MAINS connector of the dimmer to the power supply source (230V~).
- During normal operation the display shows the adjusted DMX address (1 – 512), followed by number of active dimming curve (0 - 2).
- Output voltage, and therewith power of the connected load, can be controlled by dimming knob (resp. DMX control) now.

Dimming is done according the chosen dimming curve.

(0 = linear, 1 = quadratic, 2 = on/off)

As long as there are no valid DMX signals received at the chosen address the DMX LED is flashing and actual dimming value can be selected by dimming knob. As soon as the dimmer receives DMX signals the DMX LED is lit permanently and actual dimming value correlates to the value transmitted via DMX remote control. The dimming knob has no function in this case.

The OUTPUT LED is lit in case of output voltage greater than 0 V.

- The red LED "TEMP" indicates that the dimmer cuts off due to overtemperature. After cooling down, the dimmer automatically switches on the output voltage again. The LED "TEMP" stays lit to indicate the temperature problem. To reset the LED the dimmer must be disconnected from mains.

Configuration

During normal operation the display shows the adjusted DMX address (1 – 512), followed by number of active dimming curve (0 - 2). The three LED right beside the display are off. By use of the “Programming Mode” button different dimmer settings can be made.

- P1 After first-time pushing the “Programming Mode” button a flashing text “Pro” indicates the activation of programming mode.

- P2 A second push of the “Programming Mode” button activates the selection of the DMX address. Right beside the display the LED “DMX Address” is lit.
The button “Digit” can be used to choose one of the three digits, the buttons “ - “ and “ + ” modify this digit. It is not possible to adjust an address outside valid range (001 to 512).

- P3 Repeated push of the “Programming Mode” button activates the selection of the dimming curve. Right beside the display the LED “Dimming Curve” is lit.
The three left digits now show an abbreviation for the active dimming curve (Lin = linear, quA = quadratic, flashing on/oFF = on/off). The right digit of the display shows the consecutive number for this curve (0 – 2).
The dimming curve can be changed by use of buttons “ - “ and “ + ”. The button “Digit” has no function here.

- P4 Repeated push of the “Programming Mode” button activates the selection of behavior in case of loss of DMX signal. Right beside the display the LED “DMX Loss Pre-set” is lit.
The four digits now show abbreviations for the behavior in case of loss of DMX signal (hold, oFF or Pot). In case of “hold” the dimmer continues running according the last value received, in case of “off” the dimmer switches the output voltage off, in case of “Pot” the dimmer uses the value adjusted at the dimming knob.
The setting can be changed by use of buttons “ - “ and “ + ”. The button “Digit” has no function here.

- P5 Repeated push of the “Programming Mode” button applies the changes and returns to normal operation mode.

At every stage the programming mode is cancelled if there is no button pushed for six seconds. All changes are rejected and the display changes to normal mode. Programming always is done according the described sequence. If you only want to change the DMX address (steps P1 and P2) afterwards the “Programming Mode” button must be pressed three times (without any changes) to leave over steps P3 to P5 and get back to normal operation mode.

Technical data

Mains supply

Connector:	Neutric powerCon
Supply Voltage:	190 - 250V~ 50/60 Hz 1, N, PE
Line Power:	3200 VA (max.)
Nominal Current:	14 A (eff., @230V~)
Power Factor:	$\cos \varphi \approx 0.98$
Efficiency:	ca. 0.96

Load connection

Connector:	Neutric powerCon
Output Voltage:	0 – 250 V, voltage controlled (limited to actual supply voltage)
Current Characteristic:	sinusoidal
Current limiting:	20 A

Dimming

Dimming:	Range 0 - 100% of supply voltage
Dimming Curves:	linear, quadratic, on/off

General

Dimensions	
width • height • depth:	173 • 127 • 330mm
Weight:	ca. 5,0 kg
Protective Rate:	IP 20

Pinouts

DMX Ports

5 Pin XLR

Pinout is according to DMX512 standard.

Pin	Description
1	Ground
2	Data -
3	Data +
4	Spare
5	Spare

PE can be connected to the cable shielding.