
LSS

Manual

MasterPort 2



**Multi-protocol-capable 4-port node for
DMX512 and Ethernet (IEEE 802.3af)**

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Preamble

Notes for the reader

How to use this manual

This manual provides advices and information's about the function and configuration of the *MasterPort 2*.

Like all devices of LSS GmbH the *MasterPort 2* 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.

Safety advices

Proper care of the *MasterPort 2* is not dangerous. However please note the following



- Authorized personnel must install the device!
- Never operate with visibly damaged devices!
- If the suspect prior to a defect, immediately disconnect the device from the power supply! Secure the device to restart!
- Disconnect the device from the power supply before you open the case!
- Employees of the LSS GmbH may only make repairs!

Instruction for use

The *MasterPort 2* is designed for continuous operation. However please note the following:



- Use the device only for its intended purpose!
- Avoid extreme mechanical loads!
- Avoid extreme mechanical loads on the display!
- To clean the display, turn off the power! Use a damp cloth only.
- Avoid direct exposure to moisture and excessive heat on the device!
- Do not cover the ventilation openings! Risk of fire!
- Don't mount the unit directly above headlights!

The MasterPort 2

General Overview

The *MasterPort 2* is the successor to the popular *MasterPort*, which can be found in many lighting systems in Europe. In the second generation LLS extended significantly the capabilities of the node for lighting networks with the ability to act as voltage supplier for devices in the lighting system. In addition to the new, even more powerful CPUs the new encoder for menu settings is striking.

Using a new CPU the conversion of network protocols from Ethernet to DMX are executed faster. As before the protocols Art-Net, sACN, AVAB/IPX, AVAB/UDP, ShowNet are supported. Now the *MasterPort 2* supports RDM and also Art-Net3 networks.

With changing the menu buttons to rotary/push encoder for menu control, the menu has been edited in its structure and adapted to the new setting options. The overlook of the menu interface is much easier and using much comfortable. The menu itself has been extended to major configuration settings and makes the *MasterPort 2* ready for future developments.

Like many other devices of LLS also, the *MasterPort 2 PSU* is designed explicitly for use close to the stage. This means that it is passively cooled and therefore totally silent, the display configuration can be switched off and, not least, the LLS *MasterPort 2* can be completely configured remotely by the software *LSS ConfigCore*.

One device – two designs

The *MasterPort 2* is available in two versions, each in three different connector designs. As built-in it can be used as a component of multifunctional channels, or in junction boxes and distribution boards. In the Portable version the *MasterPort 2* is supplied with a surface mounting box for wall mounting.



MasterPort2 as built-in version



MasterPort 2 as Portable version

Functional overview

DMX

Connectors

The LSS *MasterPort 2* is available with three DMX connector designs:

- 4x DMX-Out, 5pin XLR female
- 2x DMX-Out, 5pin XLR female / 2x DMX-In, 5pin XLR male
- 4x DMX-In, 5pin XLR male

In all designs the DMX ports are electrical isolated bey opto-coupler.

DMX Outputs

For all DMX outputs the following parameters can be set:

- Response to reception loss of all sources (power off, hold, send zeros)
- Break length 90 ... 999 μ S
- Mark After Break 20 ... 999 μ S

So the *MasterPort 2* is adjustable to each component.



The *MasterPort 2* can only be used as a protocol converter between DMX and Ethernet-based network protocols. For conversions of Ethernet to Ethernet a LSS *MasterGate* must be used!

DMX Inputs

For all DMX inputs the following parameters are set by manufacturer:

- Maximum data rate: Up to 44/s = protocol length 22,4ms
- Minimum Mark After Break: 4 μ s
- Timeout until data loss: 2s.

All DMX signals are processed by the controller logical and evaluated.

Ethernet

Data transfer rate

The *MasterPort 2* is characterized by high throughput and low latency (delay) in both directions. The Ethernet interface supports up to 100MBit/s and the internal CPU runs on a very fast real-time multitasking operating system. So a maximum throughput of more than 1000 network packets per second is possible.

Ethernet protocols

The LSS *MasterPort 2* supports the following protocols:

- Art-Net
- AVAB/UDP
- sACN
- ShowNet
- AVAB/IPX

The default Ethernet protocol of the MasterPort 2 is the non-proprietary Art-Net of Artistic Licence. The current protocol version is 1.4bd III.

IP parameters

For all TCP/IP based protocols you can still define the following parameters:

- IP address manually / Art-Net 2.xxx / Art-Net 10.xxx / DHCP
- IP subnet mask
- Gateway IP

Merge settings

The *MasterPort 2* is able to merge up to four channels on HTP when they send on the same subnet / universe. This distinguishes this device from most of other nodes. For instance Art-Net supports one or two transmitters only.

Priorities are supported, if permitted by the lighting protocol. But proprietary extensions, such as "Priorities per circle", will be not supported.

Remote configuration

For all devices of LSS the freeware *LSS ConfigCore* is recommended. All features of the *MasterPort 2* and other LSS devices, but also Art-Net compatible devices of other manufacturers will be supported. Only with this freeware it is possible to find all devices on the network and configure the *MasterPort 2* fully remotely.

Because the *MasterPort 2* is an Art-Net compatible device itself so it works fine with Art-Net software tools of other manufacturers, especially DMX Workshop (download at www.artisticlicence.com). Of course, like all other Art-Net devices the *MasterPort 2* has an own OEM ID (identified and supported by DMX Workshop version 3.57 and higher). Using this tool, also a restricted remote configuration is possible. By using DMX Workshop note Art-Net can only configure a subset of the *MasterPort 2*.

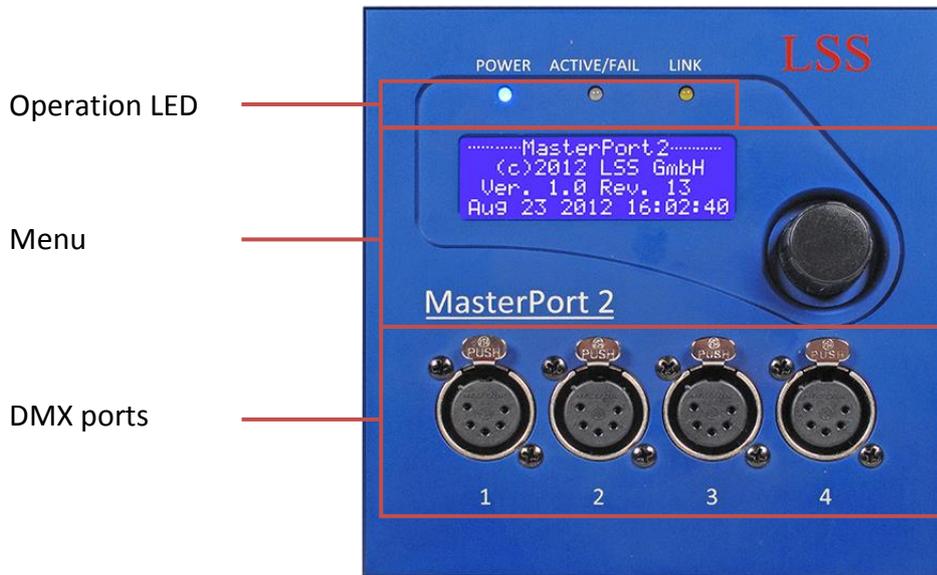


If other protocols than Art-Net will be set the *MasterPort 2* will be always configurable with ConfigCore. Providing that the PC with ConfigCore is in the same IP address range like the *MasterPort 2*.

Screens and Configuration

Device overview

At the front side of the *LSS MasterPort 2* the DMX-Ports and area of configuration are situated.



Connectors

The connectors of the *LSS MasterPort 2* are located directly on the device. For all connection designs all DMX ports are disposed on the front side. The RJ45 connector and the power supply of the built-in devices are at the rear of the device. The power supply is realized via terminal connector.



Portable devices for surface mounting the RJ45 connector and the power supply are situated sideways. A blue powerCon is used for power supply.

Types of power supply - PoE or external power supply

The power supply of the *MasterPort 2* can be realized either via Power-over-Ethernet (PoE) or with an external power supply. With PoE the power supply can be ensured by end-span devices (eg directly PoE-capable switches) or midspan devices (units between switch and end device).

PoE has priority, if the *MasterPort 2* is connected on both types of power supply.

Operation LED

The LEDs on the front panel displays the operating status of the *MasterPort 2*.

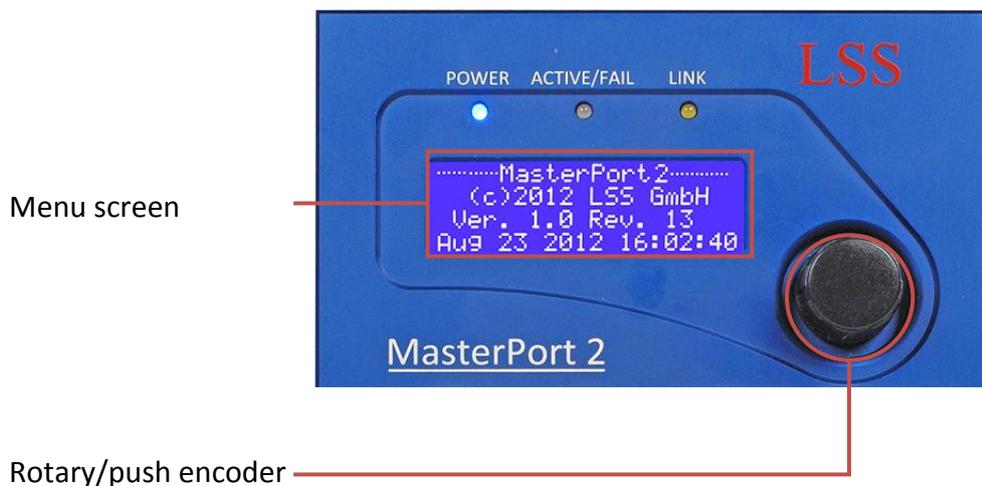
LED	Colour	Meaning
Power	Blue	On: Operation voltage available Off: Operation voltage is not available
LINK/DATA	Yellow	On: Ethernet-LINK enabled, no Data Flash: Ethernet-LINK enabled, running Data transfer Off: Ethernet-LINK is not enabled
ACTIVE/FAIL	Green	DMX display for all DMX ports On: At least one DMX port is running Blink: At least one port has no data and HOLD last received data Flash: At least one port has no data and sends ZERO Out: All ports are turned off
	Red	Displays error messages Blink: Software error. Inform service! On: Combined error. Inform service!

Inside the device, further diagnostic LEDs are provided. These are intended for service and maintenance.

Menu settings

The LSS *MasterPort 2* can be configured locally by a convenient menu system. The menu is displayed on a brilliant blue-white 20x4 LCD screen with energy-saving LED backlit and a long life. Use the screen saver! It's increasing the life of the display by a multiple.

The individual menu settings are selected and set by using a rotary/push encoder.



Use the screen saver! This increases the life of the display by a multiple.



You can adjust the contrast of the display in the menu. Readjustment is usually not necessary, because the display is already temperature compensated.

Configuration of the MasterPort 2

Instructions for the configuration

Design and selection

The menu structure of the *MasterPort 2* is arranged hierarchically. It started with the First Level, from which the access is made to the main menu. From the main menu, the other submenus are divided thematically into levels.

Menu selection

Turning the rotary/push encoder selects the various menu submenus and settings by a wandering . A quick push on the encoder opens this submenu or confirms the setting.

Changing settings

The selected parameter is shown with an **inverse** flashing first character and can now be changed by turning the encoder. Pressing it again takes on the setting. Changed parameters are active immediately.

Confirming the "" the Master Port 2 PSU controller return to the parent menu. Before the menu is displayed, you will be asked if you want to save the changed parameters.

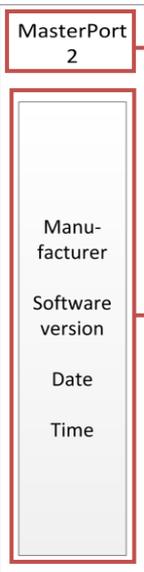
Save settings

To save the set parameters confirm the request with "Yes". The modified parameters are stored permanently. With "No" you will return to the parent menu, set parameters will not saved, even though they had already been suspended temporarily.

Is the encoder in an adjustable period not used, the First Level will be activated. Simultaneously the access of the device will be locked and the typed password will be deleted to prevent unauthorized manipulation. Any unsaved changes of parameters in the currently open menu will be lost!

Legend for the scheme of the menu

The structure of the menu and the configuration options are described below schematically. The used symbols have the following meanings:

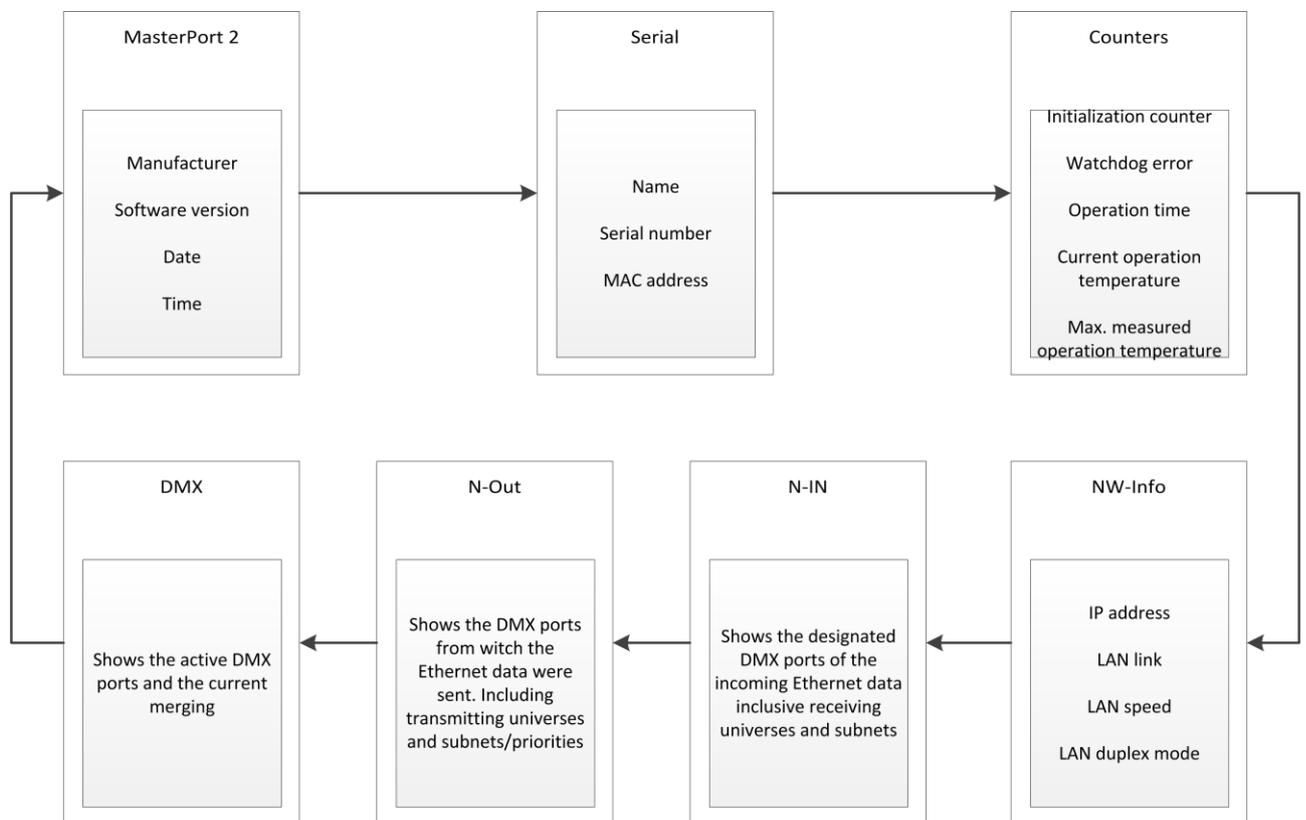
Symbol	Meaning
	Display Menu name Shows settable parameters
↻	Rotate encoder to select
⤵	Push the Encoder
→	Shows the menu path

First Level

The First Level of the menu of the *MasterPort 2* scrolls through different diagnostic pages. These pages give a quick overview of different settings and the operating status of the device.

A rotation of the encoder interrupts the automatic scroll. Further rotations display the diagnostic pages manually. The automatic scroll is displayed by means of a flashing  icon top right. The icon changes in  when switching to manual scroll.

It is possible to replace the First Level by other displays. Further information are on menu Options.



Main menu

PIN request

All submenus, such as display, configuration and other settings menus, are accessed from the main menu. If a PIN has been assigned, it will be requested before the main menu appears:

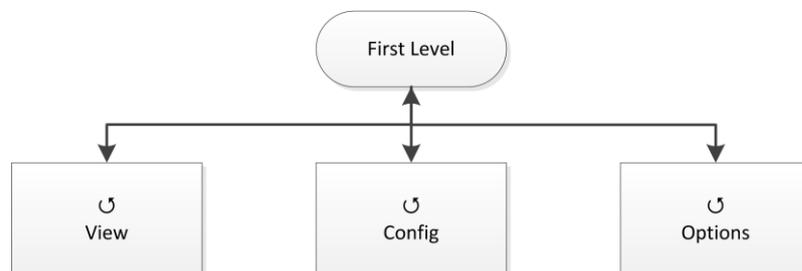


▶Pin: *****

Using the encoder enters the PIN-code input. For safety appears before and after scrolling [*****] will be displayed only.

Structure of the main menu

All submenus will be accessed from the main menu. To access the main menu from the First Level push the encoder for one second.

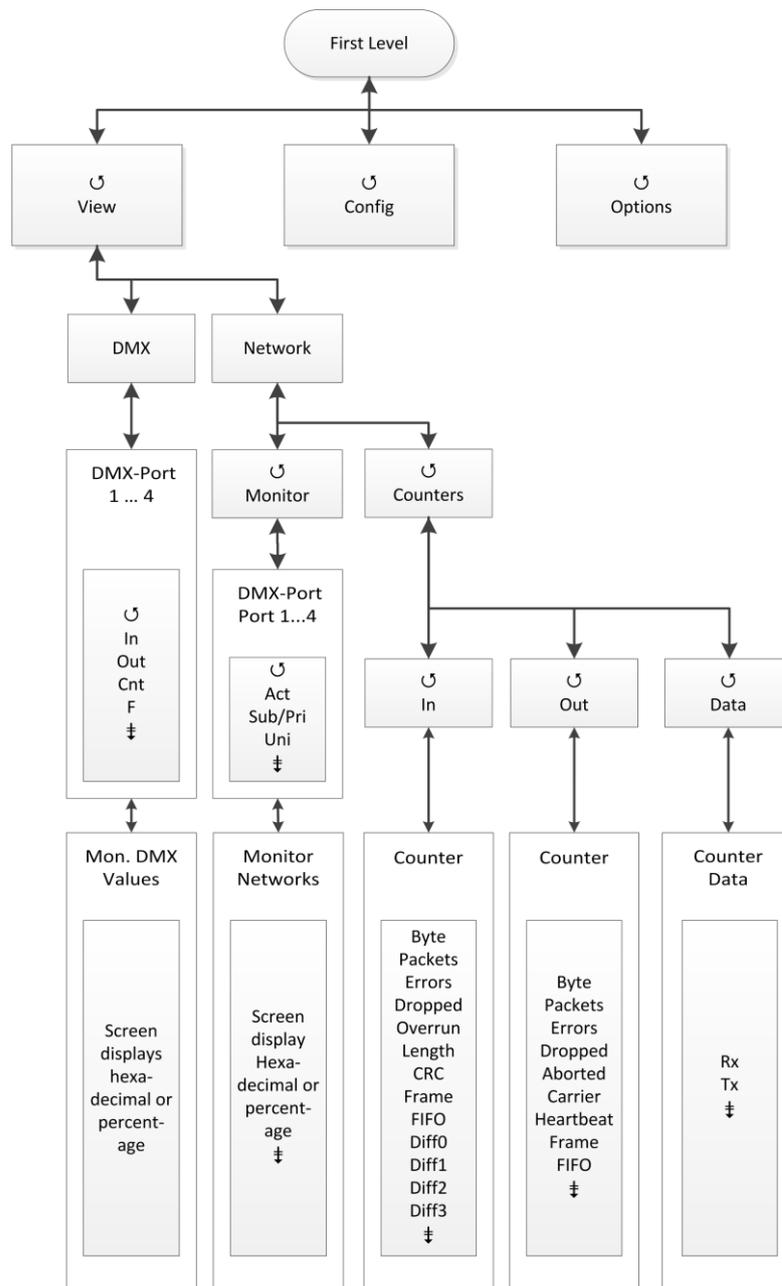


Submenu	Meaning
View	Network and DMX monitors
Config	Configuration of the MasterPort 2
Options	Configuration of optional settings
◀	Back to First Level

View menu

The displays in the View Menu will give you an overview of the current state of the MasterPort 2. Current events, data-in-and output and the merge behaviour are presented. The displays in the View Menu are in real time. So they can be used easily as a monitoring and diagnostic tool.

Structure of the view menu



View→DMX

This monitor provides an overview of the activities in the DMX ports. The submenus for all ports and the signals for each bit are represented in hexadecimal or percentage.

Submenu	Meaning
DMX 1...4	DMX-Port 1...4
IN	The icon is only available, when DMX-In ports are equipped. Full: On the DMX-In a correct DMX protocol is received E: DMX protocol on the input is invalid (start code or timing) Empty: No signal on the DMX input
OUT	The icon is only available, when DMX-Out ports are equipped. Full: At the DMX-Out a signal with DMX protocol is sent H: DMX-Out is on HOLD and holds the last data Z: DMX-Out is on HOLD and sends zero values Empty: DMX-Out is switched off
Cnt	Displays the number of packets sent per second.
F	Displays the frame rate per second.
	Calls up submenu
	Return to parent menu

View→Network

View→Network→Monitor

This monitor displays the current settings of the DMX ports.

Selection	Meaning
1...4	DMX Port 1...4
Act	Full: on this subnet/universe combination light data will be received Empty: on this subnet/universe combination are no light data
Sub	Logical subnet (depends on the used protocol) A “-“ is displayed if the DMX-Port is disabled in the routing menu or the used protocol has no subnets.
Uni	Universe (depends on the used protocol) A “-“ is displayed if the DMX-Port is disabled in the routing menu or the used protocol has no universes.
	Calls up submenu
	Return to parent menu

View→Network→Counter

This submenu shows monitors that provide an overview of incoming and outgoing data and data packets. The monitors display very comprehensive information. This information can be used for network diagnostics.

Selection	Meaning
In	Calls up received data network counter
Out	Calls up sent data network counter
Data	Calls up data packets counter
	Calls up counter
	Return to parent menu

View→Network→Counter→In/Out

Selection	Meaning
kByte	Total received kByte
Packets	Total received packets
Errors	Total RX error
Dropped	Total dropped packets
Overrun (In only)	Total overrun
Aborted (Out only)	Total aborted packets
Length (In only)	Total length error
Carrier (Out only)	Total lost carrier
CRC (In only)	Total CRC errors
Heartbt (Out only)	Total lost Ethernet heartbeat
Frame	Total frame errors
FIFO	Total FIFO overflow
Diff0	Counter the loss of packets in the network
Diff1	Counter the loss of packets in the network
Diff2	Counter the loss of packets in the network
Diff3	Counter the loss of packets in the network
	Return to parent menu

View→Network→Counter→Data

Selection	Meaning
Rx	Received data volumes
Tx	Sent data volumes
Pack./s	Packets per second
kByte	Amount of data in kByte
	Return to parent menu

View→PSU

This submenu shows monitors that provide an overview of current and voltage supply to the PSU ports. Each PSU port has its own monitor.

Selection	Meaning
Port 1	Calls up monitor PSU port 1
Port 2	Calls up monitor PSU port 2
Port 3	Calls up monitor PSU port 3
Port 4	Calls up monitor PSU port 4
	Calls up monitor
	Return to parent menu

View→PSU→Port x

Selection	Meaning
Line 2	
x.x V (left)	Shows PSU input voltage
x.x V (centre)	Shows voltage at PSU port
x.x A	Shows load current
x.x A!	Shows load current approaches set switch threshold
Line 3	
Mode	Shows the set action when switch threshold is reached
On/Off (right)	Shows the current switching state of the PSU port
Line 4 (following indicators never occur simultaneously)	
No load	There are no loads. All voltages within the parameters.
Normal load	A load is connected to the PSU port. The PSU port operates within the set and allowed parameters.
24V supply failure	24V PSU power supply is not available.
24V out of range!	The outgoing PSU voltage is out of the factory parameters. Check power supply!
24V from outside!	Energetic recovery! Check connection! The device may be destroyed!
Current Overload	The PSU-port has been automatically disabled. The load current was either higher than the switch threshold or higher than 5A.
Short / Overtemp!	The PSU-port has been automatically disabled. A short circuit is present, or a temperature above the safety parameters were measured.
	Return to parent menu

Configuration menu

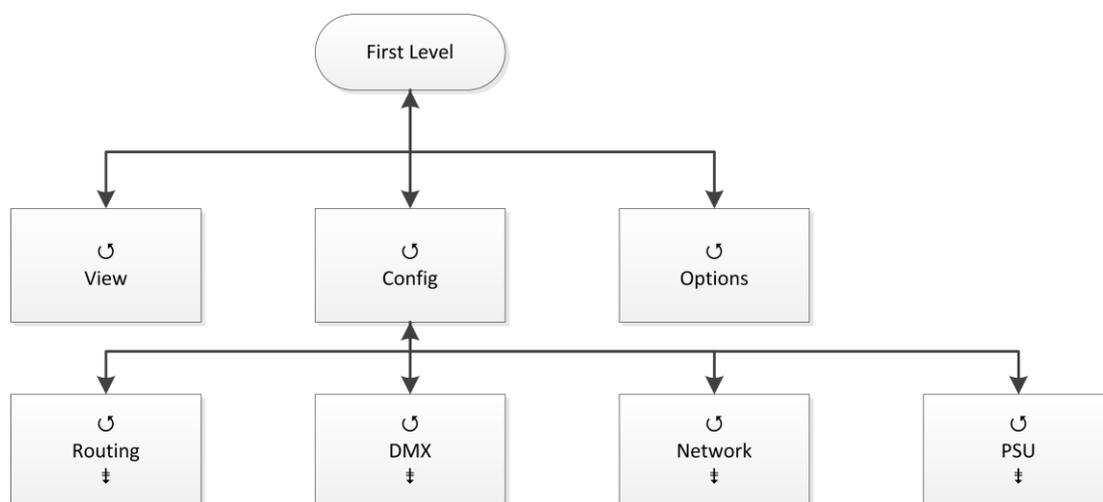
The range of setting options of the MasterPort 2 can be changed easily in the configuration menu. Any change in the configuration needs to be confirmed. This is for your safety and that of the equipment.



Please note:

Any change in the settings can have far-reaching consequences for your lighting system. The following descriptions of the configuration options require that you have experience and knowledge in the configuration of DMX and Ethernet protocols.

Structure of the Configuration menu



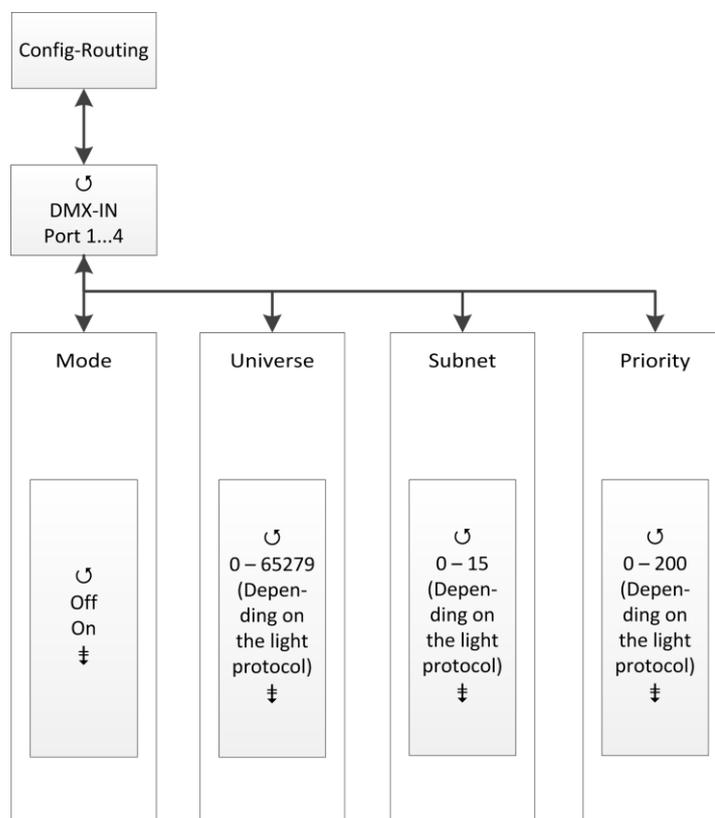
Submenu	Setting options
Routing	Merge settings
DMX	DMX settings
Network	Ethernet settings
PSU	PSU settings
	Calls up submenu
	Return to parent menu

Config→Routing

In the menu Routing the merging settings will be set. . The Master Port 2 is able to merge from Ethernet→DMX and also from DMX→Ethernet. Each merging direction has its own submenu. The selected DMX port will decide which submenu appears.

Merge settings for DMX inputs

The settings for merging of DMX → Ethernet and for the DMX inputs are made in this submenu. Received DMX data will send to Ethernet on the set subnets/universes (according to the selected transmission protocol).



Selection	Meaning
Mode	Off: DMX-In is diseabled, no data are send to the Ethernet On: DMX-In is enabled, data are send to the Ethernet
Universe	Setting transmission universe (depending in transmission protocol)
Subnet	Setting transmission subnet (depending in transmission protocol)
Priority	Setting transmission priority (depending in transmission protocol)
▶	Calls up submenu
◀	Return to parent menu

Are several DMX inputs set to the same subnet/universe, all data sources will be merged by the MasterPort 2 and transmitted as one common universe via Ethernet. Except the set minimum transmission rate, changed values will be transmitted only.

If you use protocols with different priorities, so AVAB/UDP or sACN, the protocol with the highest priority will be send.



This menu is displayed only when DMX inputs are available on the device and they were selected in the menu.

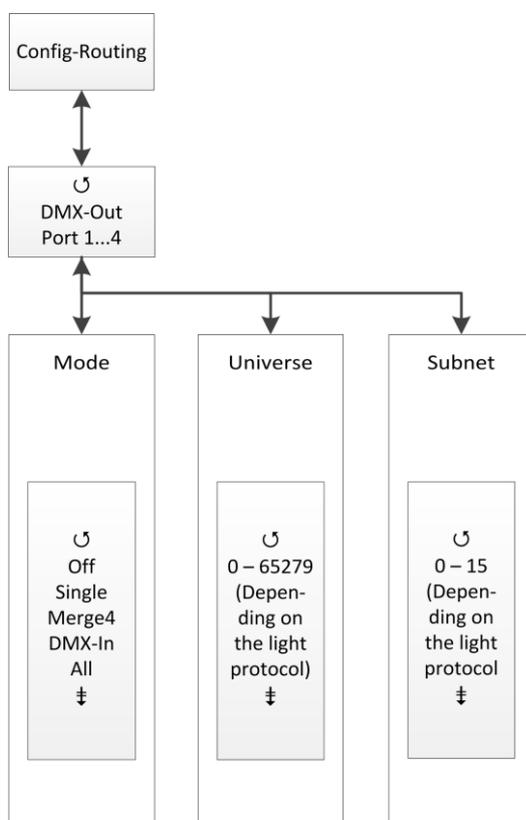
Merge settings for DMX outputs

The settings for merging of Ethernet → DMX and for the DMX outputs are made in this submenu. Received Ethernet data will send to DMX on the set subnets/universes (according to the selected transmission protocol).

DMX outputs are active when the MasterPort 2 receives via Ethernet at least one data source on the set subnet/universe. Up to four identical sources can be HTP merged.



The settings for the DMX outputs in case of data reception loss will be set in the following menu Config→DMX.



This menu is displayed only when DMX outputs are available on the device and they were selected in the menu.

Selection	Meaning
Mode	<p>Off: Ethernet will not receive. DMX-Out is disabled.</p> <p>Single: The first active data source is used until it fails with a time out. Then the data of another active source on the same subnet and universe are used. The data-source detection in place for</p> <ul style="list-style-type: none"> - AVAB / IPX by direct evaluation of the MAC address - sACN by the device ID - All other protocols through the IP address of the data source. This must be specific to each data source. <p>Merge4: Data from up to four data sources can be merged (HTP - Highest Takes Precedence). If more than four sources transmit on the same subnet and universe, the data of the source(s) coming up after the first four will be ignored. If one of the first four data sources fails, automatically advances the data source from the ignored, which first sends data after the failure (principle "First come, first serve").</p> <p>DMX-In x: DMX data from the selected input will be used only.</p> <p>All: All data from Ethernet and DMX-In will be used.</p>
Universe	Setting of the sending universe (depends on the protocol)
Subnet	Setting of the sending subnet (depends on the protocol)
▶	Change settings
◀	Return to parent menu / Save settings

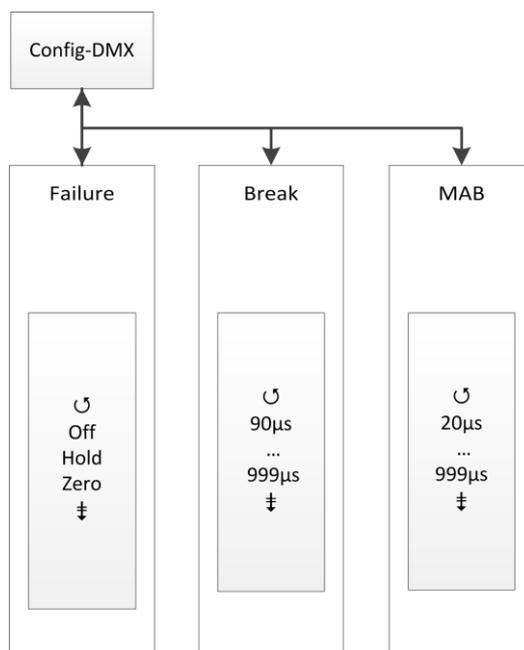
For protocols with priorities are the following features:

Protocol	Priority treatment
AVAB/UDP	<p>Priority 1 ... 200: The data source with the highest priority value wins. Several data sources with the same highest priority are merged (HTP). Data sources that send 0 will always be merged (HTP) with data source(s) with the highest priority.</p>
sACN	<p>Priority 1 ... 200: The data source with the highest priority value wins. Several data sources with the same highest priority are merged (HTP). Data sources that send 0 are treated as priority 100</p>

Config→DMX

This submenu sets the following settings:

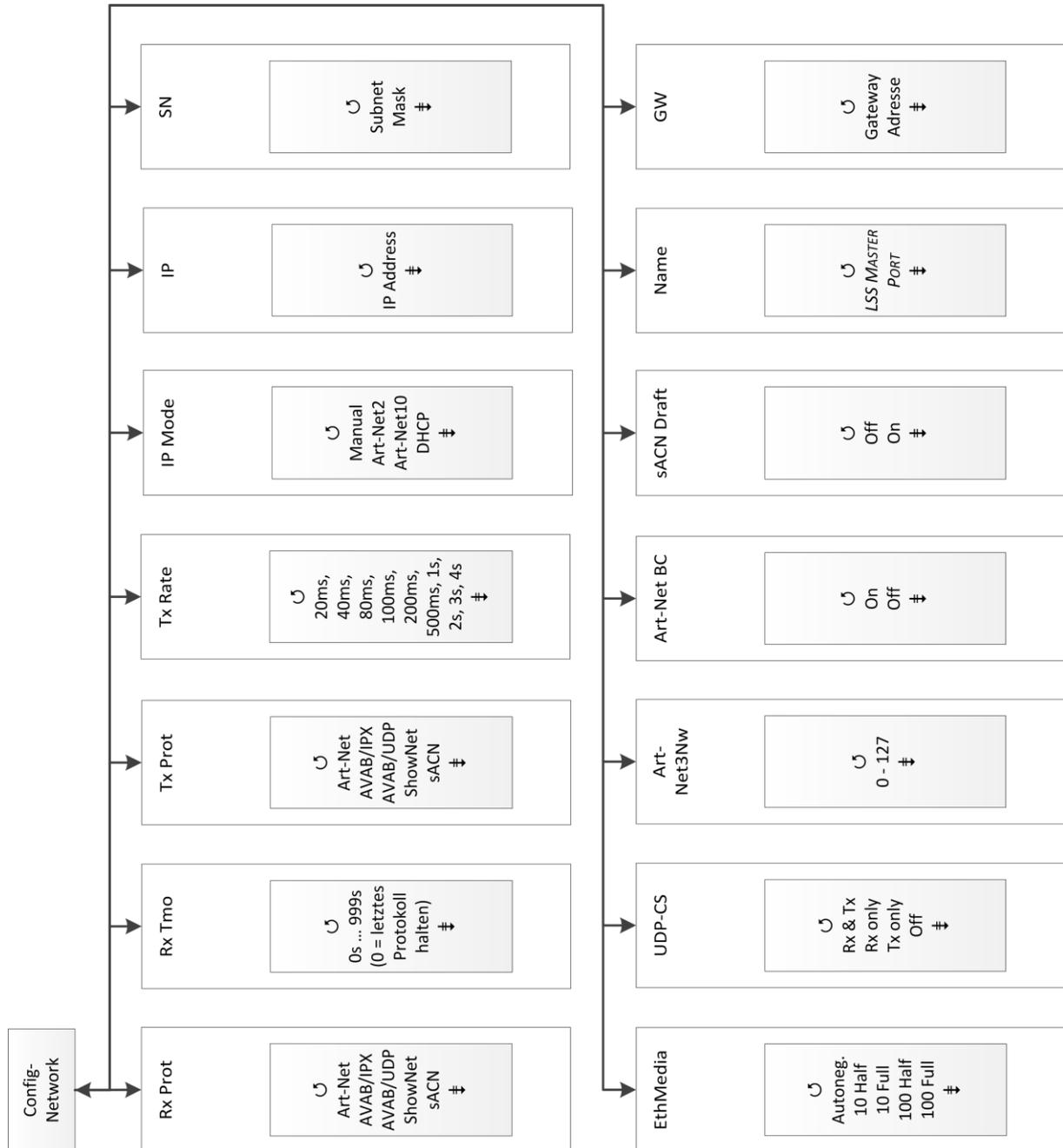
- Behaviour of DMX ports in case of data reception loss
- Setting the timings for the DMX transmission (Mark-after-break, etc.)



Selection	Meaning
Failure	In case of data reception loss: Off: The DMX port will be disabled. Hold: Last received value will be hold and transmitted unchanged Zero: Data packets with the value "0" are transmitted
Break	Setting the break length of 90 to 999µs
MAB	Setting the Mark-after-Break length of 20 to 999µs
▶	Change settings
◀	Return to parent menu / Save settings

Config → Network

In the submenu “Network” all protocols based on Ethernet will be set:

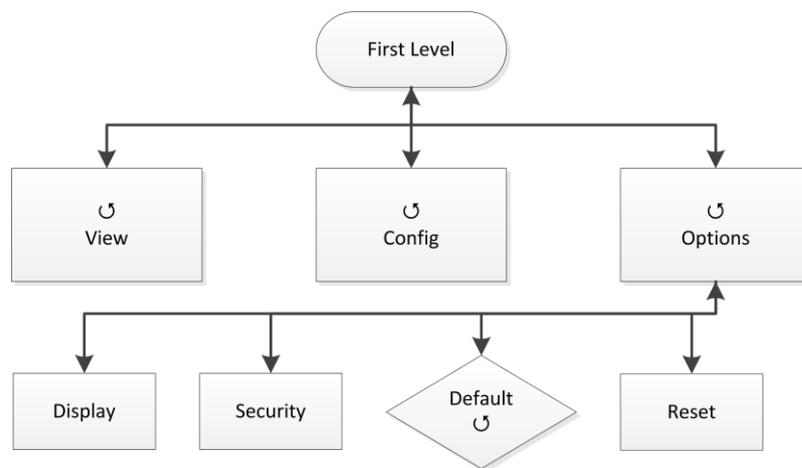


Selection	Meaning
Rx Prot	Setting the receiving data protocol: <ul style="list-style-type: none"> • Art-Net • AVAB/IPX • AVAB/UDP • ShowNet • sACN
Rx Tmo	Setting the timeout for receiving data 1 to 999s
Tx Prot	Setting the transmission data protocol: <ul style="list-style-type: none"> • Art-Net • AVAB/IPX • AVAB/UDP • ShowNet • sACN
Tx Rate	Setting the minimum transmission rate for data packets, if there is no changing of the values: 20ms, 40ms, 80ms, 100ms, 200ms, 500ms, 1s, 2s, 3s, 4s
IP Mode	Getting the IP address: Manual: Free adjustment <i>Art-Net 2</i> : <i>Art-Net</i> address for 2 network <i>Art-Net 10</i> : <i>Art-Net</i> address for 10 network DHCP: If a DHCP server is on the network
IP	IP address Manual adjustment is possible when "IP Mode = Manual"
SN	Netmask Manual adjustment is possible when "IP Mode = Manual"
GW	Gateway Usually changing the preset address is not necessary.
<i>Name</i>	Setting the Art-Net short name for naming the <i>MasterPort 2</i> , eg Location "backstage"
sACN Draft	Setting the supported version of sACN Off <i>MasterPort 2</i> sends sACN according to E1.31 2009 On <i>MasterPort 2</i> sendet sACN according to E1.31 R0 Draft
Art-Net BC	Art-Net is sent as broadcast. Its necessary for the control of ADB systems.
Art-Net3Nw	Setting the IP address Art-Net3–networks. 0: Art-Net3 is disabled. 1 to 127: Art-Net3 is active and the number indicates the IP address.

Options

In this menu additional settings of the MasterPort 2 will be set.

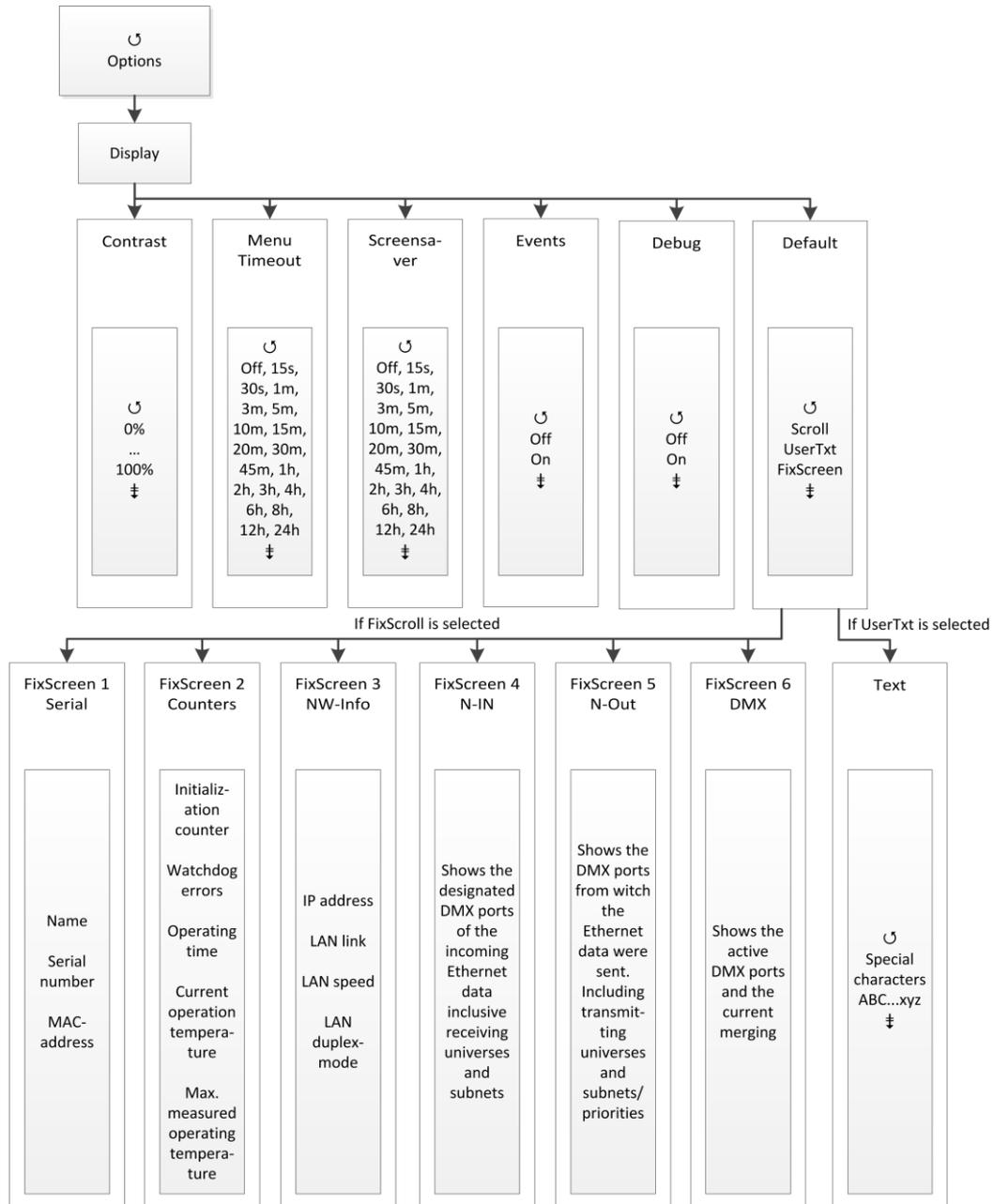
Structure of the Options menu



Selection	Meaning
Display	Screen and displaying settings
Security	Access and remote settings
Default	Restore factory settings
Reset	Restart CPU manually
▶	Calls up submenu
◀	Return to parent menu

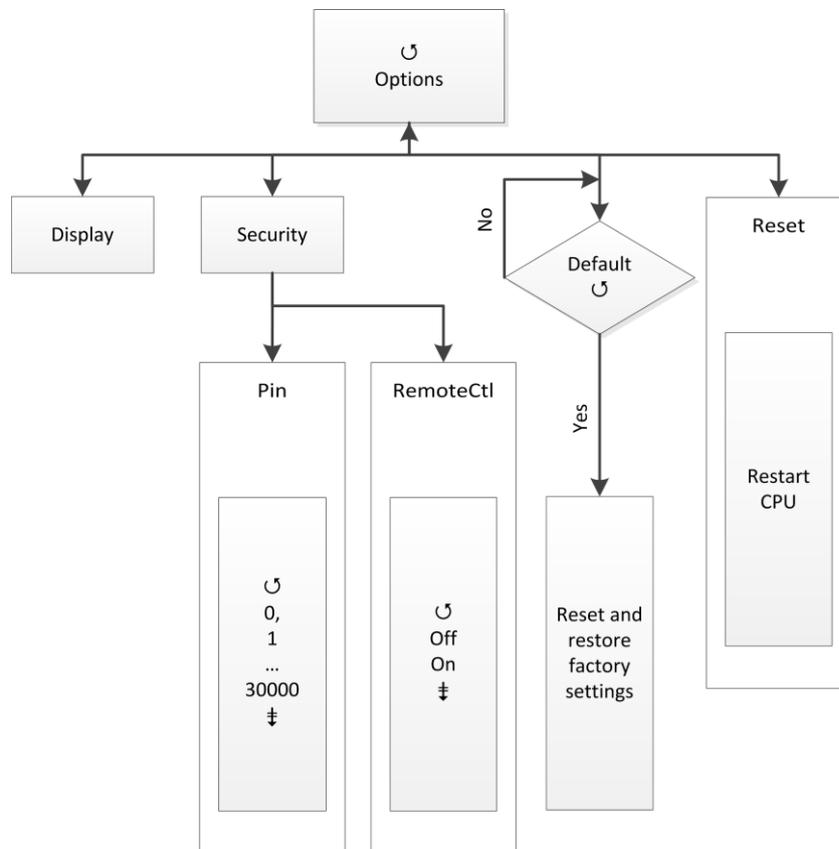
Options → Display

The settings for the screen and displays will be set in this submenu.



Selection	Meaning
Contrast	Setting the contrast
MenuTimeout	Timeout setting for the return to the First Level, when the encoder is not used. (OFF, 15s, 30s, 1m, 3m, 5m, 10m, 15m, 20m, 30m, 45m, 1h, 2h, 3h, 4h, 6h, 8h, 12h, 24h)
ScreenSaver	Timeout setting for the screensaver. After the set time the screensaver turns off the screen. This measure increases the lifetime of the display significantly. Inputs by the encoder or by remote control and events turn on the screen. (OFF, 15s, 30s, 1m, 3m, 5m, 10m, 15m, 20m, 30m, 45m, 1h, 2h, 3h, 4h, 6h, 8h, 12h, 24h)
Events	Changes to the DMX or Ethernet can trigger events, which can be automatically displayed on the screen. This can lead to disruptive effects of light. On: Changes turn on the screen und will be displayed Off: Changes have no effect on the screen
Debug	On: Turn on the debugger Off: Turn off the debugger
Default	Replaces the display First Level by following options: Scroll: "First Level" scrolls through diagnostic pages UserTxt: Displaying a user-specified text. When activated, below the line a new input mask for text input is displayed. FixScreen: A specific diagnostic page from the "First Level" is displayed permanently. When enabled, the row below a selection of the diagnostic pages will appear. 1: Serial – shows device and software details 2: Counters – shows different counters and measured data 3: NW-Info – shows Ethernet details 4: N-In – Overview of receiving Ethernet data 5: DMX – Overview of transmitted DMX data 6: PSU-State – Shows output voltage and current per port
	Change settings
	Return to parent menu / Save settings

Structure of Options submenus



Options→Security

In this menu the security setting will be set.

Selection	Meaning
Pin	PIN for access main menu 0...30000s (0 = off)
Remote	On: Access by remote is possible Off: Access by remote is not possible
◀	Change settings
▶	Return to parent menu / Save settings



The system offers a range of 30,000 possible pins. But absolute security cannot be guaranteed! To prevent unauthorized access, additional specific safety measures must be taken.

Options→Factory Defaults

All settings of the MasterPort 2 can be restored to the factory settings. To prevent data loss, you have to confirm the security request twice.

Selection	Meaning
No	Restore abort
Yes	Restore the factory setting of the last firmware update
<input type="checkbox"/>	Change settings
<input type="checkbox"/>	Return to parent menu / Save settings

Options→Reset

By selecting a CPU reset is triggered. After the reset the previous saved settings are loaded.

If you change the following settings in the configuration, the CPU will automatically reset:

- Receiving protocol
- IP mode
- Netmask
- Restore factory defaults
- Transmission protocol
- IP address
- Gateway

Configuration with LSS ConfigCore

Configuration software ConfigCore

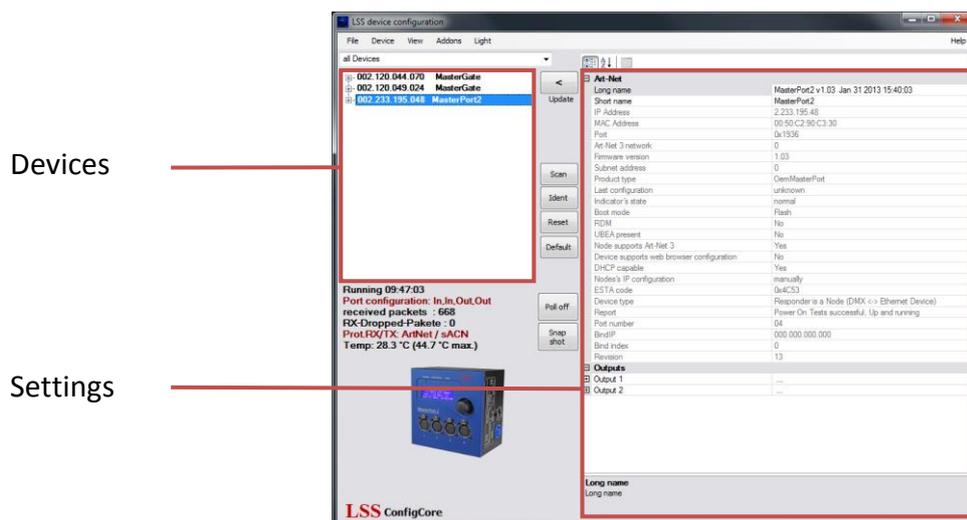
The configuration of the LSS Master Port 2 PSU can also be done via the configuration software LSS ConfigCore. ConfigCore is a freeware and available on the homepage of LSS. ConfigCore only supports Microsoft Windows.

To configure a *MasterPort with 2 PSU* ConfigCore, two preconditions must be fulfilled:

- ConfigCore must be installed on a PC
- The PC and the MasterPort 2 must be in the same range of IP addresses and the same subnet

Connecting the MasterPort 2 with ConfigCore

ConfigCore recognizes the MasterPort 2 immediately when it is in the same subnet



Devices area

All devices found by ConfigCore are listed in this area. LSS devices have a “+” icon in the beginning of the IP address. Clicking this icon will open a menu tree. This allows access to special settings.

Setting area

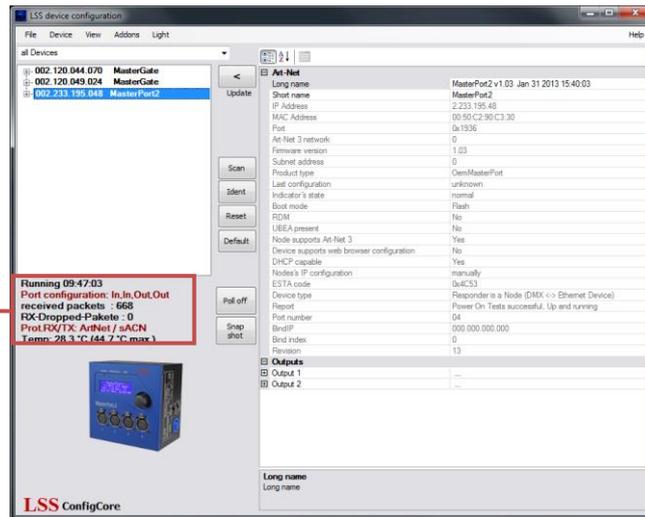
All settings of the selected device are displayed here.

Status area

In this area the following information will be displayed:

- Reception protocol
- Remote IP
- Master address
- Number of devices
- Number of devices in data exchange

Status

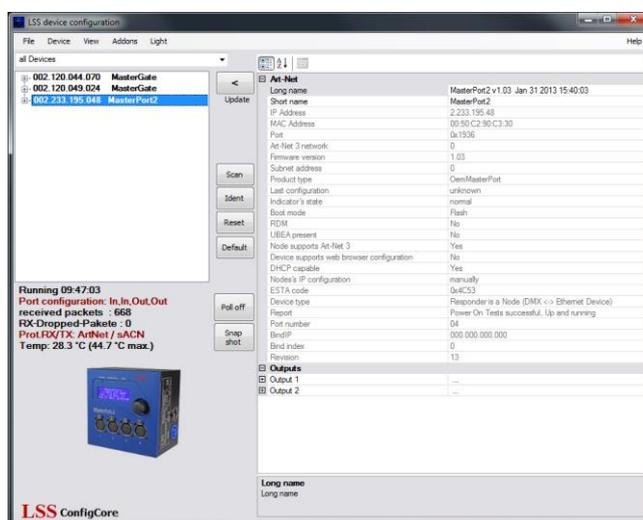


ConfigCore menus

Clicking the “+” icon calls up a menu tree. In the menu tree the submenus are coloured red. In the setting area depending on the selected menu various settings are displayed.

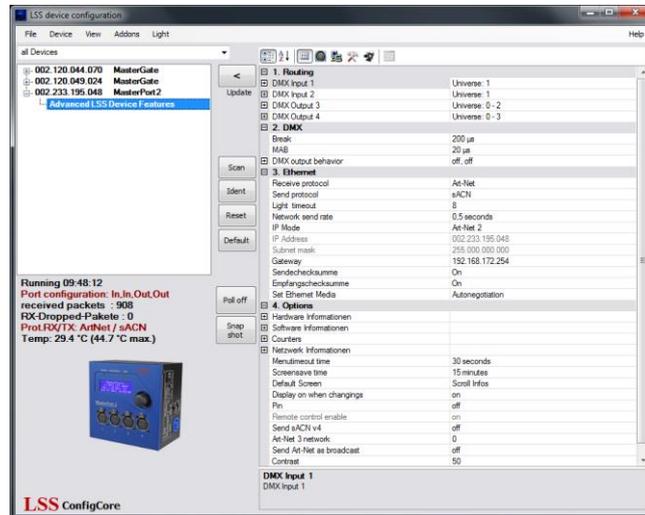
Main menu

The main menu gives an overview of the basic properties. Greyed entries are information only. The Art-Net short and long names can be changed only. To change the name the relevant name line must be selected. Enter the new description. To apply the changes use the button “Update”.



Advanced LSS Device Features

Das Untermenü "Advanced LSS Device Features" beinhaltet alle Konfigurationsparameter, die auch aus dem internen Menü des *MasterPort 2* bekannt sind.



Remote Device Management (RDM)

With firmware 1.03 the LSS *MasterPort 2* supports RDM and offers several features for this Protocol. These can be set in different points of the submenu "Advanced LSS device features" and activated.

RDM should only be used if more RDM devices are located in the network, in particular on the Ethernet side. If this is not the case, you should disable all RDM functions.

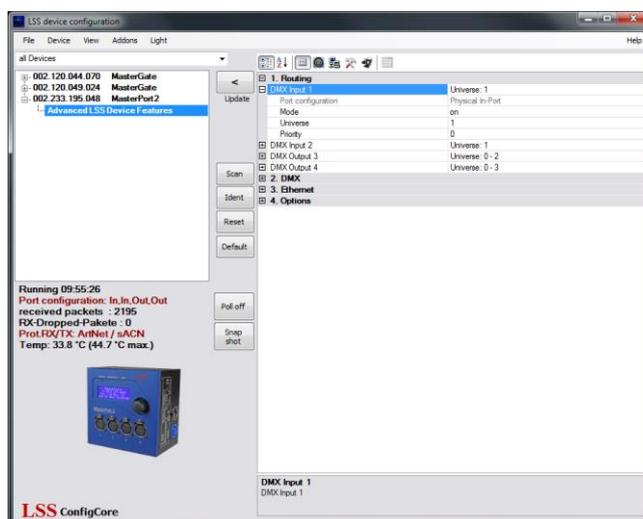
For this reason in the following are no descriptions for the RDM features.

Routing

The submenu Routing corresponds to the device menu Config → Routing. Here the DMX ports are turned on and assigned to the Ethernet subnets and Universes. Also here the merging settings are set.

DMX In

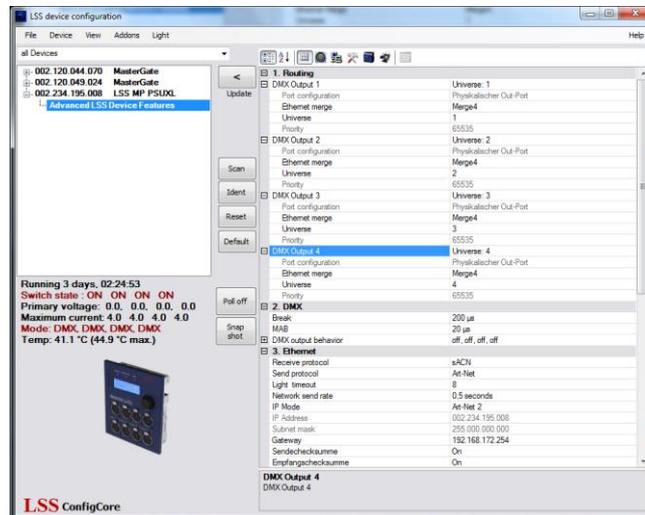
The settings for DMX inputs are made in this submenu. Received data will sent out to the Ethernet on the set subnets/universes (according to the selected transmission protocol).



Selection	Bedeutung
Mode	Off: Ethernet wird nicht gesendet, DMX-In abgeschaltet On: Ethernet wird gesendet, wenn DMX-In aktiv
Universe	Einstellung des Sende-Universes (lichtprotokollabhängig)
Subnet	Einstellung des Sende-Subnets (lichtprotokollabhängig)
Priorität	Einstellung der Sende-Priorität (lichtprotokollabhängig)

DMX-Out

The DMX port is active when the MasterPort 2 receives at least one data source on the set Subnet / Universe via Ethernet. Up to four data sources can be merged HTP.



Selection	Meaning
Ethernet merge	<p>Off: Ethernet will not receive. DMX-Out is disabled.</p> <p>Single: The first active data source is used until it fails with a time out. Then the data of another active source on the same subnet and universe are used. The data-source detection in place for</p> <ul style="list-style-type: none"> - AVAB / IPX by direct evaluation of the MAC address - sACN by the device ID - All other protocols through the IP address of the data source. This must be specific to each data source. <p>Merge4: Data from up to four data sources can be merged (HTP - Highest Takes Precedence). If more than four sources transmit on the same subnet and universe, the data of the source(s) coming up after the first four will be ignored. If one of the first four data sources fails, automatically advances the data source from the ignored, which first sends data after the failure (principle "First come, first serve").</p>
Universe	Setting of the sending universe (depends on the protocol)
Subnet	Setting of the sending subnet (depends on the protocol)

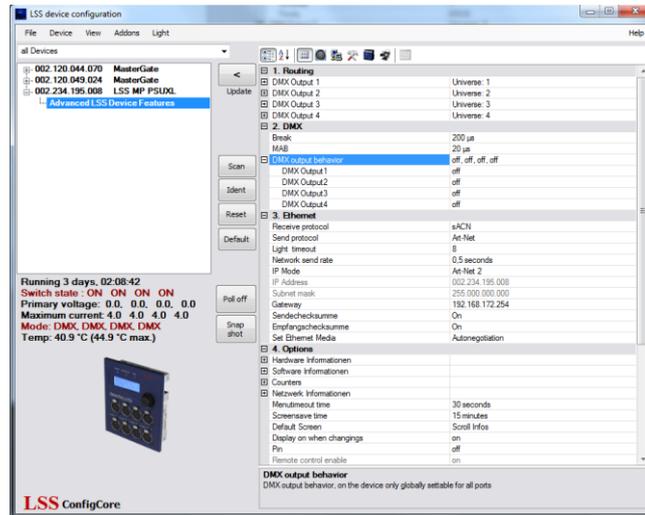
For protocols with priorities are the following features:

Protocol	Priority treatment
AVAB/UDP	Priority 1 ... 200: The data source with the highest priority value wins. Several data sources with the same highest priority are merged (HTP). Data sources that send 0 will always be merged (HTP) with data source(s) with the highest priority.
sACN	Priority 1 ... 200: The data source with the highest priority value wins. Several data sources with the same highest priority are merged (HTP). Data sources that send 0 are treated as priority 100

DMX

The submenu DMX corresponds to the device menu Config → DMX. This submenu sets the following settings:

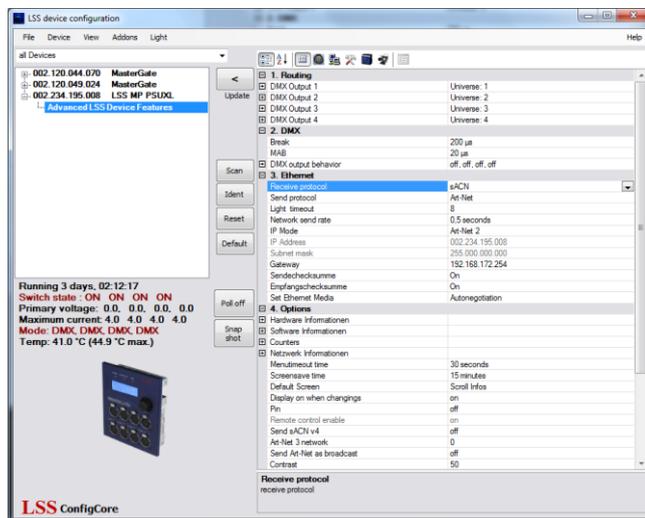
- Behaviour of DMX ports in case of data reception loss
- Setting the timings for the DMX transmission (Mark-after-break, etc.)



Selection	Meaning
Break	Setting the break length of 90 to 999µs
MAB	Setting the Mark-after-Break length of 20 to 999µs
DMX output behaviour	In case of data reception loss: Off: The DMX port will be disabled. Hold: Last received value will be hold and transmitted unchanged Zero: Data packets with the value "0" are transmitted

Ethernet

The submenu Ethernet corresponds to the device menu Config → Network. This submenu sets the following settings:



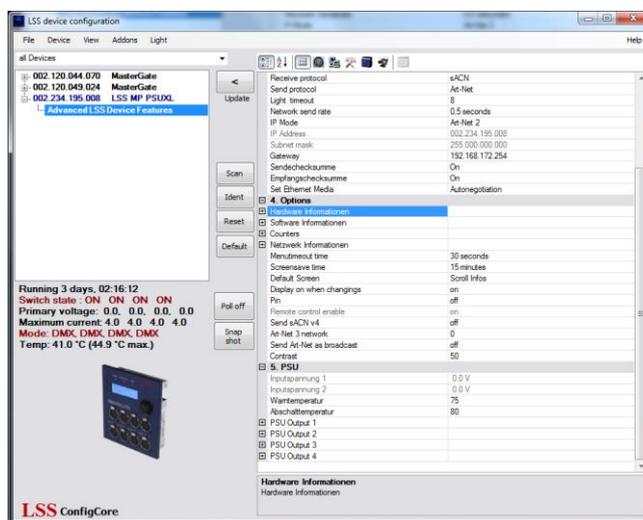
Selection	Meaning
Receive protocol	Setting the receiving data protocol: <ul style="list-style-type: none"> • Art-Net • AVAB/IPX • AVAB/UDP • ShowNet • sACN
Send protocol	Setting the transmission data protocol: <ul style="list-style-type: none"> • Art-Net • AVAB/IPX • AVAB/UDP • ShowNet • sACN
Light timeout	Setting the timeout for receiving data 1 to 999s
Network send rate	Setting the minimum transmission rate for data packets, if there is no changing of the values: 20ms, 40ms, 80ms, 100ms, 200ms, 500ms, 1s, 2s, 3s, 4s
IP Mode	Getting the IP address: Manual: Free adjustment Art-Net 2: Art-Net address for 2 network Art-Net 10: Art-Net address for 10 network DHCP: If a DHCP server is on the network
IP Address	IP address If "IP Mode = Manual" manual adjustment is possible.
Subnet mask	Netmask If "IP Mode = Manual" manual adjustment is possible.
GW	Gateway Usually changing the preset address is not necessary.

Selection	Meaning
Sendecheck-summe	Setting to calculate the checksum of transmitted UDP packets On Enables checksum Off Disabled checksum
Empfangscheck-summe	Setting to calculate the checksum of received UDP packets On Enables checksum Off Disabled checksum
Set Ethernet media	Setting the transmission rate Autonegotiation: Enables automatic detection of transmission rate Set network Parameters: Set speed and direction parameters manually 10 Half Enables 10MBit/s Half Duplex 10 Full Enables 10MBit/s Full Duplex 100 Half Enables 100MBit/s Half Duplex 100 Full Enables 100MBit/s Full Duplex
Direction control	Half Duplex Enables half duplex Full Duplex: Enables full duplex
Network Speed	10 MBit Enables 10MBit/s 100 MBit Enables 100MBit/s

Selection	Meaning
<i>Name</i>	Setting the Art-Net short name for naming the <i>MasterPort 2</i> , eg Location "backstage"
sACN Draft	Setting the supported version of sACN Off <i>MasterPort 2</i> sends sACN according to E1.31 2009 On <i>MasterPort 2</i> sendet sACN according to E1.31 R0 Draft
Art-Net BC	Art-Net is sent as broadcast. Its necessary for the control of ADB systems.
Art-Net3Nw	Setting the IP address Art-Net3–networks. 0: Art-Net3 is disabled. 1 to 127: Art-Net3 is active and the number indicates the IP address.

Optionen

In the Options menu you will find first four pages of information about the hardware, software, and operating counter about the network. Following basic device settings can be specified. This part of this submenu corresponds to the Options menu in the device.

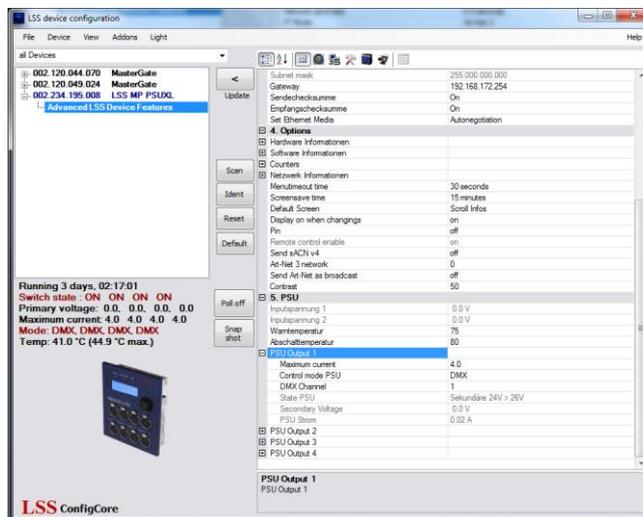


Selection	Meaning
Menutimeout time	Timeout setting for the return to the First Level, when the encoder is not used. (OFF, 15s, 30s, 1m, 3m, 5m, 10m, 15m, 20m, 30m, 45m, 1h, 2h, 3h, 4h, 6h, 8h, 12h, 24h)
Screensave time	Timeout setting for the screensaver. After the set time the screensaver turns off the screen. This measure increases the lifetime of the display significantly. Inputs by the encoder or by remote control and events turn on the screen. (OFF, 15s, 30s, 1m, 3m, 5m, 10m, 15m, 20m, 30m, 45m, 1h, 2h, 3h, 4h, 6h, 8h, 12h, 24h)
Default screen	Replaces the display First Level by following options: Scroll: "First Level" scrolls through diagnostic pages UserTxt: Displaying a user-specified text. When activated, below the line a new input mask for text input is displayed. BigAdr:
Display when changings	This submenu corresponds with the submenu Events. Changes to the DMX or Ethernet can trigger events, which can be automatically displayed on the screen. This can lead to disruptive effects of light. On: Changes turn on the screen und will be displayed Off: Changes have no effect on the screen

Selection	Meaning
Pin	PIN for access main menu 0...30000s (0 = off)
Send sACN v4	Setting the supported version of sACN On <i>MasterPort 2</i> sends sACN according to E1.31 2009 Off <i>MasterPort 2</i> sendet sACN according to E1.31 R0 Draft
Art-Net3 Network	Setting the IP address Art-Net3–networks. 0: Art-Net3 is disabled. 1 to 127: Art-Net3 is active and the number indicates the IP address.
Send Art-Net as Broadcast	Art-Net is sent as broadcast. Its necessary for the control of ADB systems.
Contrast	Setting the contrast

PSU

The submenu PSU corresponds to the device menu Config → PSU. This submenu sets the following settings:



Selection	Meaning
Maximum current	Setting of the threshold for the current monitoring.
Control mode PSU	<p>Setting the switching behaviour</p> <p>On: Service mode! Do not use in normal operation!</p> <p>Sense: The Power-DMX port is automatically switched off when the set current limit or the maximum current of 5A is exceeded. The manual adjustment of the limit is set in the submenu MaxCurr.</p> <p>DMX: Here the DMX address is set. Via this address the Power-DMX port is controlled. Current monitoring is active and corresponds to the settings of "Sense".</p> <p>Off: The Power-DMX port is disabled manually.</p>
DMX Channel	Setting the DMX address for the control of the Power-DMX port.



Never use the switch setting "ON" in continuous operation! This setting is for service purposes only! A continuous load of more than 5A may destroy the MasterPort 2 and the entire lighting system!



Reset the current monitor remotely when a DMX address for the port was set
 Is the Power-DMX port automatically switched off because the set switching threshold is exceeded, the port can reset remotely. Providing that a DMX address for the port was set, the port must be switched off and on again remotely. All settings are retained.

MasterPort - Groups

Introduction

The Master Port Grouping is an elegant way to control several devices simultaneously. Setting changes during an event can already be saved in advance as an XML file. This is then used to load even more.



If you use this method of setting, make sure that the stored files always represent an image of your infrastructure. Devices that have changed you should always be replaced in the stored settings (see below).

In addition the MasterPort grouping is also a simple backup/restore method.

Creating a new group

First set all devices on the required settings. Then call up the submenu "Tools" ConfigCore menu "MasterPort Groups".



Click the button „New Group“.

Give your group a meaningful name. On the left side all available MasterPorts are listed. Select the desired devices and add them to the group (“>”).



With the icon ("<") you can deselect unused devices from the group. Green point in front of the entries means these devices are accessible and can be programmed.

Saving groups

Is the selection of the group completely, you can save it with the "Save" button. The storage format is XML. Using an XML editor, you can view the file or change. The file name is "LSS_MP_<Name>. Xml". Like all other XML files, the master port group files are located in the application folder of ConfigCore.

Loading existing group

Open the submenu "Master Port Groups" in the menu "Tools". Select your group by double-clicking.

Delete group

Old groups can be deleted with the Del key. These lists have a context menu. In the context menu groups can be loaded or deleted too.

Changing groups

Devices that were not found on the network have a red dot. You can replace them by fondered devices.

This means if new devices with the same IP but different MAC address will be used, an error message will be displayed. In this case, remove the entry with the red dot from the right list and add the new device to the group list. After saving the group is up to date.

Default settings

The factory settings of the *MasterPort 2*:

- Data protocol: Art-Net (receiving and transmitting)
- IP-Mode: Art-Net 2 network
- IP address: According to Art-Net (2.x.y.z)
- Net mask: 255.0.0.0
- Gateway: 192.168.172.254
- Minimum transmission rate (Tx rate): 1/s
- Receiving rate (Rx rate): 8 s
- Routing DMX-Ports 1...4: subnet 0, universe 0...3
- Routing DMX-In: Ethernet transmission ON, priority 0
- Routing DMX-Out: Ethernet receiving: MERGE4
- DMX-Out behaviour in case of data loss: OFF
- DMX-Out timing: Break: 200 μ
MAB: 20 μ
- Art-Net short name: LSS MasterPort 2
- Art-Net long name: MasterPort 2 (c)2012 LSS GmbH Version x.xx
- Screensaver: 15 minutes
- Events: OFF
- Pin request: OFF
- Art-Net remote control: ON

Service

Firmware update

LSS ConfigCore

The firmware update of the LSS *MasterPort 2 PSU* must be done with LSS ConfigCore. ConfigCore is a freeware and available on the homepage of LSS. ConfigCore only supports Microsoft Windows.

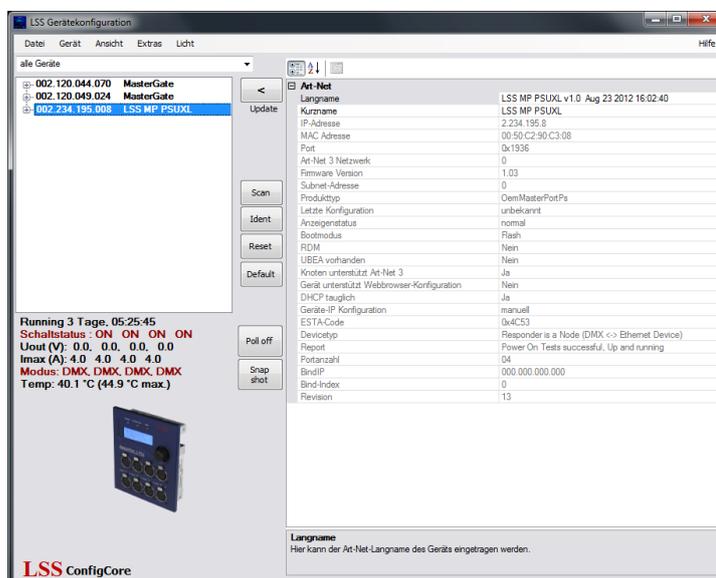
To configure a *MasterPort with 2 PSU* ConfigCore, two preconditions must be fulfilled:

- ConfigCore must be installed on a PC
- The PC and the MasterPort 2 must be in the same range of IP addresses and the same subnet

An update can also be done using a LSS *FileMaster*. On a *FileMaster* ConfigCore is already pre-installed and the server is always in the same subnet as the *MasterPort 2s*.

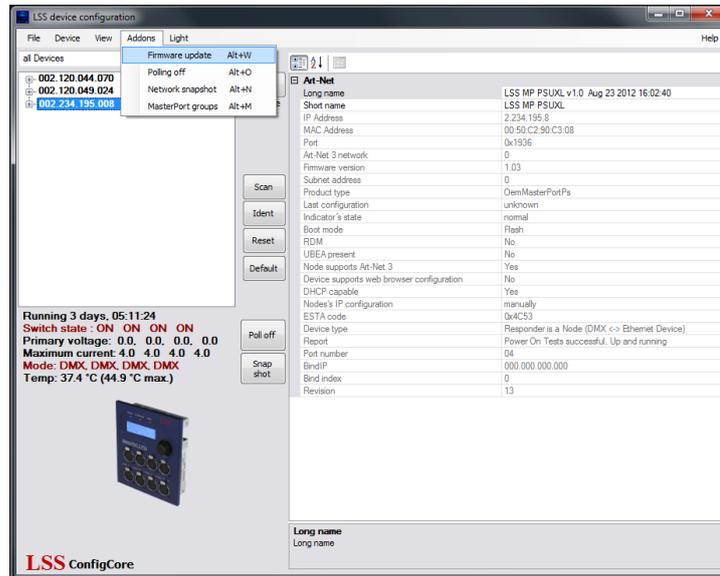
Connecting with ConfigCore

ConfigCore recognizes the *MasterPort 2* immediately when both are in the same subnet.

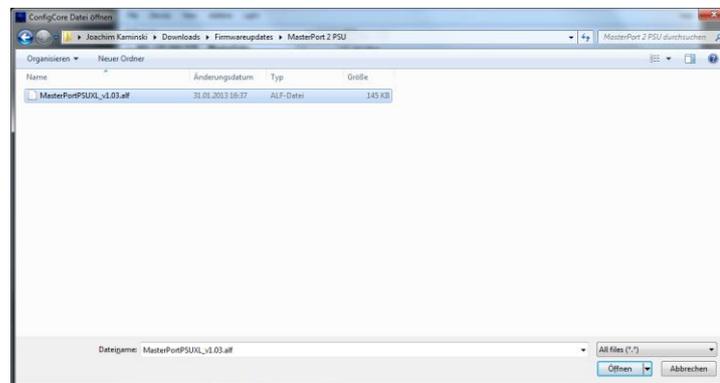


Updating firmware

To initiate the update, select the MasterPort 2 in the device pane. Open the scroll-down menu "Extras" and click on "Update Firmware".

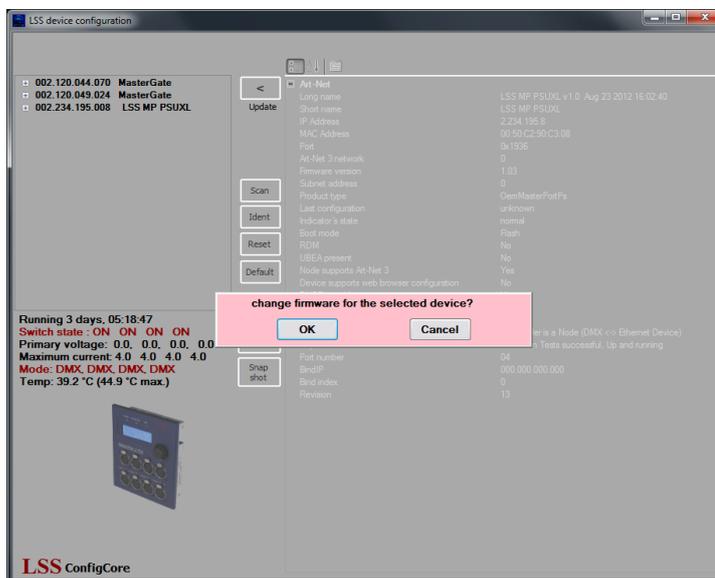


This will open the Explorer.

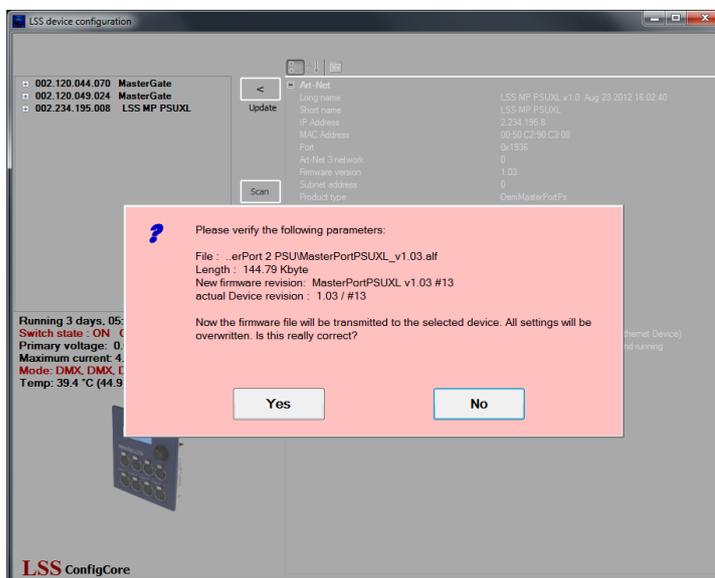


Firmware updates are provided as alf-files. The name of the file must contain the name of device and the version number. Download the file you want.

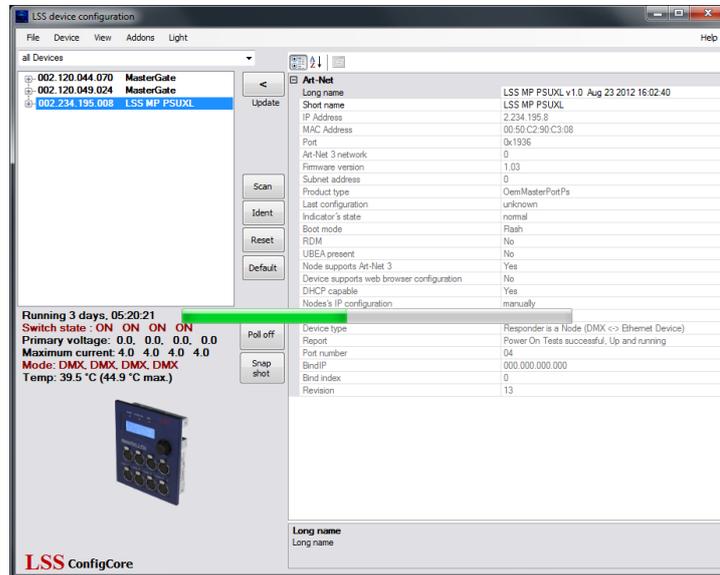
If the file is loaded, a popup with a security request opens.



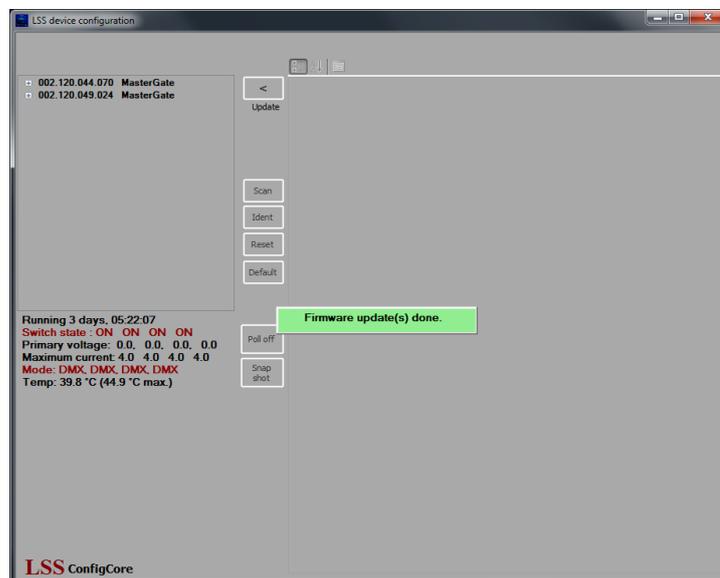
Confirm this request and a second security request follows. In this pop-up shows in addition the version numbers of the installed and the update version



After confirmation the second request the update will start. A progress bar shows the progression of the installation.



When the update is done a confirmation of a successfully updating or failure is displayed.



At the end of the update, the control unit of the *MasterPort 2* is reset. After reset in ConfigCore still the old Art-Net device name and the old version number is displayed. That is normal until loading the default settings. The device display always shows the current used software version.

Error messages/failed update

If the update fails or an error message is displayed, please check the following:

- Did you use the latest version of LSS ConfigCore? If not, please update ConfigCore.
- Have you updated to the device with the suitable file?

There are still problems please contact the service.

Contact

If problems with the operation of the LSS Master Port 2 PSU occur, the descriptions and information in this guide should help for troubleshooting and debugging. If this is not the case and you need further assistance, please contact the LSS service.

In contacting you should have available the following information:

- Location of the entire system and position of the MasterPort 2
- Detailed description of the fault
- Full description of troubleshooting until now
- Description of related system or equipment problems

Contact:

LSS GmbH

Licht-, Steuer- und Schaltanlagenbau GmbH

Am Eichenberg 1

D-04600 Altenburg

Phone: +49 3447 861611

Fax: +49 3447 861779

mail@lss-lighting.de

Appendix

Appendix A

Technical specifications

General technical specifications

Construction types:	<ul style="list-style-type: none"> - Built-in device for panel mounting with central or internal power supplies - Built-in device for LSS dimmer channels with central power supply - Built-in device with case for surface mount with central power supply - Portable with safety bars and internal power supply 								
Dimensions B x H x T:	<table> <tr> <td>Built-in device for panel mounting:</td> <td>130 x 68 x 155mm</td> </tr> <tr> <td>Built-in device for LSS dimmer:</td> <td>130 x 68 x 150mm</td> </tr> <tr> <td>Built-in device with case for surface mount:</td> <td>200 x 76 x 155mm</td> </tr> <tr> <td>Portable with safety bars:</td> <td>215 x 213 x 175mm</td> </tr> </table>	Built-in device for panel mounting:	130 x 68 x 155mm	Built-in device for LSS dimmer:	130 x 68 x 150mm	Built-in device with case for surface mount:	200 x 76 x 155mm	Portable with safety bars:	215 x 213 x 175mm
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Built-in device with case for surface mount:	200 x 76 x 155mm								
Portable with safety bars:	215 x 213 x 175mm								
Weight:	<table> <tr> <td>Built-in device for panel mounting:</td> <td>0,65kg</td> </tr> <tr> <td>Built-in device for LSS dimmer:</td> <td>0,63kg</td> </tr> <tr> <td>Built-in device with case:</td> <td>2,8kg</td> </tr> <tr> <td>Portable with safety bars:</td> <td>4,7kg</td> </tr> </table>	Built-in device for panel mounting:	0,65kg	Built-in device for LSS dimmer:	0,63kg	Built-in device with case:	2,8kg	Portable with safety bars:	4,7kg
Built-in device for panel mounting:	0,65kg								
Built-in device for LSS dimmer:	0,63kg								
Built-in device with case:	2,8kg								
Portable with safety bars:	4,7kg								
EMC standards:	EN 55022, class B, FCC part 15, level B								
RoHS-directive:	Confirm								
CPU type:	Infineon XE167								
Frequency:	80 MHz								
Cooling:	lüfterlos, passiv								
Power supply:	24V DC or IEEE 802.3af								
Screen:	Blue text-based with 20x4 symbols & white background light								
Power supply PSU:	24V DC								
Operating temperature:	0° - 40°C								
Power consumption:	7- 14W								

Interfaces

Data-DMX:	4x 5pin XLR, female
Power-DMX:	4x 4pin XLR, female
Ethernet:	RJ-45, 100BaseTx and Power-over-Ethernet (IEEE 802.3af)

Network

DMX

General

DMX protocol:	DMX-512
Standards:	USITT 1990, DIN 56930-2, ANSI E1.11
Baud rate:	250 kbps
Outputs:	individually optical-isolated (Isolated according to ANSI E1.11 A1)
Isolation:	Optocoupler
Isolation voltage:	1000V DC
Insulation resistance:	$10^9 \Omega$
EMC:	Filter circuit state of the art at all inputs and outputs
Termination:	Factory internally

Receiving

Start code:	=0 light protocol (in display ●) <>0 no light protocol, RDM (in display E)
Minimum protocol length:	Start code only
Maximum protocol length:	Startcode + 512 values (More than 512 values will be lost)
Minimum pass through delay:	44 μ s
Maximum pass through delay:	22,5 ms
Receiving timeout:	2 s
Max. distance between two protocols:	2 s
Minimum realized break:	48 μ s
Maximum permissible break:	1,95 s

Transmitting

Start code:	0
Protocol length:	Startcode + 512 values
Minimum protocol time:	22,4 ms
Transmitted protocols per second:	44
Break length:	90...999 μ s (adjustable)
Mark after Break:	20...999 μ s (adjustable)
Break after Startcode:	25 μ s

Ethernet

General

Interface:	10/100 BaseT (IEEE 802.3u, 802.3x)
Speed:	10 MBit/s, 100MBit/s; autonegotiation
Duplex mode:	half, full, autonegotiation Auto-MDI/MDIX
Displaying:	Link-LED, Data-LED, speed and duplex mode will be displayed in the screen
Light protocols:	<i>Art-Net (ArtisticLicence)</i> <i>AVAB-IPX (AVAB, transtechnik, LDDE,...)</i> <i>AVAB/UDP (transtechnik)</i> <i>ShowNet (Strand Lighting)</i> <i>sACN (ANSI E1.31)</i>
Further network protocols:	ARP, IP, IPX, UDP, IGMPv2

Receiving

Maximum packet rate:	>1000/s (1 light frame/packet)
Minimum pass through delay:	4 μ s
Maximaum pass through delay:	22,7 ms
Max. distance between two protocols:	1...999 s (HOLD setable for DMX outs)

Transmitting

Send rate changing of the values:	maximum every 20 ms
Send rate no changing of the values:	20 ms to 4 s (adjustable)

Pinouts

DMX

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.

Ethernet

Ethernet port supports Power over Ethernet according to IEEE802.3af.

Pin	Belegung
1	Rx +
2	Rx -
3	Tx +
4	V +
5	V +
6	Tx -
7	V -
8	V -
S	Cable shield

Order numbers

5063:

4x DMX out and 4x DMX-DataPower-Out