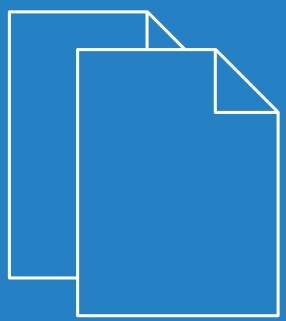
SECURE. NETWORKS.

LCOS LX 4.00

Menu Reference



05/2019

LANCOM Systems

Contents

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Products from LANCOM Systems include software developed by the "OpenSSL Project" for use in the "OpenSSL Toolkit" (*www.openssl.org*).

Products from include cryptographic software written by Eric Young (*eay@cryptsoft.com*).

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1 Introduction

1.1 Components of the documentation

The documentation of your device consists of the following parts:

Installation Guide

The Quickstart user guide answers the following questions:

- Which software has to be installed to carry out a configuration?
- How is the device connected up?
- How can the device be contacted with LANconfig or WEBconfig?
- How is the device assigned to the LANCOM Management Cloud?
- How do I start the Setup Wizard (e.g. to set up Internet access)?
- How do I reset the device?
- Where can I find information and support?

Quick Reference Guide

The Quick Reference Guide contains all the information you need to put your device into operation. It also contains all of the important technical specifications.

Reference manual

The Reference Manual goes into detail on topics that apply to a variety of models. The descriptions in the Reference Manual are based predominantly to the configuration with LANconfig.

Menu Reference Guide

The Menu Reference Guide comprehensively describes all of the parameters in LCOS LX. This guide is an aid to users during the configuration of devices by means of the CLI. Each parameter is described briefly and the possible values for input are listed, as are the default values.

All documents for your product which are not shipped in printed form are available as a PDF file from *www.lancom-systems.com/downloads*.

1.2 LCOS LX, an operating system from LANCOM

LCOS LX is the operating system for certain LANCOM access points and parts of the LANCOM family of operating systems. The LANCOM operating systems are the trusted basis for the entire LANCOM product portfolio. Each operating system embodies the LANCOM values of security, reliability and future viability.

- **Maximum security for your networks**

  as each LANCOM operating system is carefully maintained and developed in-house and with the accustomed quality. They are all guaranteed backdoor-free.

- **Reliability of the highest order**

  as they receive regular release updates, security updates, and major releases over their entire product lifetime.

- **Future viability for your networks**

according to the LANCOM Lifecycle Policy, i.e. they are free of charge for all LANCOM products and come with major new features.

1.3 Validity

The functions and settings described in this manual are not all supported by all models or all firmware versions.

1.4 CLI access

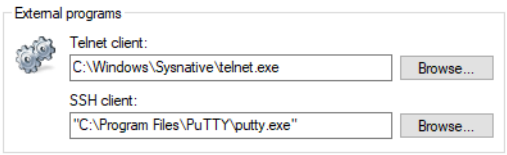
Access to the LCOS LX command-line interface (CLI) is via SSH. Use an SSH client such as PuTTY to connect to the IP address of the device.

Access credentials for a device in its delivery state are:

Username: root

Password: <Empty> (no password is set)

In LANconfig you configure your preferred SSH client under **Tools** > **Options** > **Extras** > **SSH client**:



To open an SSH session, use the context menu of the device and go to **WEBconfig / Console session** > **Open SSH session**.

1.5 Command-line interface – menu structure

The LCOS LX command-line interface is structured as follows:

Status

Contains the status and statistics of all internal modules in the device. These are not described here as we recommend that you use the GUI available in WEBconfig.

Setup

Contains all adjustable parameters of all internal modules in the device. See *Setup*.

Other

Contains actions such as resetting or rebooting. See *Other*.

1.6 Command-line interface – command summary

The command-line interface is operated with the following commands.

Which commands are available depends upon the equipment of the device.

Changes to the configuration are not immediately boot-persistent. They have to be saved explicitly by using the command `flash`.

Table 1: Overview of all commands available at the command line

Command	Description
`add [<Path>]`	Adds a row to the table.
`cd <Path>`	Changes the current menu or directory.
`del <Path>`	Deletes the value or the table row in the branch of the menu tree referenced by `<Path>`.
`do <Path> [<Parameter>]`	Executes the action in the current or referenced directory. If the action has additional parameters, they can be added at the end.
`flash`	Store the configuration Changes to the configuration are not immediately boot-persistent. They have to be saved explicitly by using the command `flash`.
`ls [<Path>]`	Displays the contents of the current directory or path.
`passwd <Password>`	Changes the password of the current user account.
`set <Index> {Column} <Value>`	Sets the value of a table row in a specific column to <Value>.
`set <Path> <Value(s)>`	Sets the value or values of a specific path to the specified value(s).
`show diag [<Parameter>]`	Output diagnostic information on the CLI.
`show 3rd-party-licenses`	Output the device license information on the CLI.
`trace [--log] [+|-|#|?] <Parameter>`	Starts (+) or stops (–) a trace command to output diagnosis data. `#` switches between different trace outputs and `?` displays a help text. The parameter `--log` restricts the output to “historical” log information.

Legend

- Characters and brackets:
  - Objects, in this case dynamic or situation-dependent, are in angle brackets.
  - Round brackets group command components, for a better overview.
  - Vertical lines (pipes) separate alternative inputs.
  - Square brackets describe optional switches.

  It follows that all command components that are not in square brackets are necessary information.
- `<Path>`:
  - Describes the path name for a menu or parameter, separated by "/".
  - `..` means: one level higher
  - `.` means: the current level

- `<Value>`:
  - Describes a possible input value.
  - `""` is a blank input value
- `<Name>`:
  - Describes a character sequence of [0…9] [A…Z] [a…z] [_].
  - The first character cannot be a digit.
  - There is no difference between small letters and capital letters.
- `<Filter>`:
  - The output of some commands can be restricted by entering a filter expression. Filtering does not occur line by line, but in blocks, depending on the command.
  - A filter expression starts with the "@" symbol by itself and ends either at the end of the line or at a ";" (semicolon) to end the current command.
  - A filter expression also consists of one or more search patterns, which are separated by blank spaces and preceded either by no operator (OR pattern), a "+" operator (AND pattern) or a "-" operator (NOT pattern).
  - For the execution of the command, an information block is output exactly when at least one of the "OR" patterns, all "AND" patterns or none of the "NOT" patterns matches. Capitalization is ignored.
  - For a search pattern to contain characters for structuring in the filter syntax (e.g., blank characters), then the entire search pattern can be enclosed in "". Alternatively, the symbol "\" can be placed before the special characters. If you want to search for a quotation mark (") or "\", another "\" symbol has to be placed in front of it.

    Entering the start of the word, if it is unique, is sufficient.

Explanations for addressing, syntax and command input

- All commands and directory/parameter names can be entered using their short-forms as long as they are unambiguous. For example, the command `cd setup` can be shortened to `cd se`. The input `cd /s` is not valid, however, since it corresponds to both `cd /Setup` and `cd /Status`.
- The values in a table row can alternatively be addressed via the column name or the position number in curly brackets. The command `set ?` in the table shows the name, the possible input values and the position number for each column.
- Multiple values in a table row can be changed with **one** command, for example in the WLAN networks (`/Setup/WLAN/Network`):
  - `add Guest Guest 1234567890` creates a new network named Guest, SSID Guest, and key 1234567890.

    The order of the values must correspond to their order in the table. Values that should not be changed can be specified with a *.
  - `set Guest * 0987654321` changes the value Key in the network Guest. Using the * leaves the SSID unchanged.
  - `set Guest {Key} 1234567890` sets the value Key in the network Guest. Individual columns can be referenced by the column name in parentheses.
- Names that contain spaces must be enclosed within quotation marks (“”).

Command-specific help

- A command-specific help function is available for actions and commands (call the function with a question mark as the argument). For example, `show ?` displays the options available with the show command.

2 Setup

This menu allows you to adjust the settings for this device.

Console path:

/

2.1 Name

Configure the device name here. For display purposes only.

Console path:

Setup

Possible values:

Max. 64 characters from `[A-Z][a-z][0-9]@{|}~!$%&'()+-,/:;<=>?[\]^_.`

Default:

empty

2.2 Config

Contains the general configuration settings.

Console path:

Setup

2.2.1 Comment-1

Comment on this device. For display purposes only.

Console path:

Setup > **Config**

Possible values:

Max. 255 characters from `[A-Z][a-z][0-9]@{|}~!$%&'()+-,/:;<=>?[\]^_. `

Default:

empty

2.2.2 Comment-2

Comment on this device. For display purposes only.

Console path:

Setup > **Config**

Possible values:

Max. 255 characters from `[A-Z][a-z][0-9]@{|}~!$%&'()+-,/:;<=>?[\]^_. `

Default:

empty

2.2.3 Comment-3

Comment on this device. For display purposes only.

Console path:

Setup > **Config**

Possible values:

Max. 255 characters from `[A-Z][a-z][0-9]@{|}~!$%&'()+-,/:;<=>?[\]^_. `

Default:

empty

2.2.4 Comment-4

Comment on this device. For display purposes only.

Console path:

Setup > **Config**

Possible values:

Max. 255 characters from `[A-Z][a-z][0-9]@{|}~!$%&'()+-,/:;<=>?[\]^_. `

Default:

empty

2.2.5 Comment-5

Comment on this device. For display purposes only.

Console path:

Setup > **Config**

Possible values:

Max. 255 characters from `[A-Z][a-z][0-9]@{|}~!$%&'()+-,/:;<=>?[\]^_. `

Default:

empty

2.2.6 Comment-6

Comment on this device. For display purposes only.

Console path:

Setup > **Config**

Possible values:

Max. 255 characters from `[A-Z][a-z][0-9]@{|}~!$%&'()+-,/:;<=>?[\]^_. ``

Default:

empty

2.2.7 Comment-7

Comment on this device. For display purposes only.

Console path:

Setup > **Config**

Possible values:

Max. 255 characters from `[A-Z][a-z][0-9]@{|}~!$%&'()+-,/:;<=>?[\]^_. ``

Default:

empty

2.2.8 Comment-8

Comment on this device. For display purposes only.

Console path:

Setup > **Config**

Possible values:

Max. 255 characters from `[A-Z][a-z][0-9]@{|}~!$%&'()+-,/:;<=>?[\]^_. ``

Default:

empty

2.2.9 Location

Location of the device. For display purposes only.

Console path:

Setup > **Config**

Possible values:

Max. 255 characters from `[A-Z][a-z][0-9]@{|}~!$%&'()+-,/:;<=>?[\]^_. `

Default:

empty

2.2.10 Administrator

Name of the device administrator. For display purposes only.

Console path:

Setup > **Config**

Possible values:

Max. 255 characters from `[A-Z][a-z][0-9]@{|}~!$%&'()+-,/:;<=>?[\]^_. `

Default:

empty

2.2.11 LED-Mode

Set the operating mode for the LEDs.

Refer to the Quick Reference Guide for device-specific details about LED signaling.

Console path:

Setup > **Config**

Possible values:

On

The LED(s) of the device are permanently in operation and signal the operating state.

Off

The LED(s) of the device are switched off immediately after starting.

Timed-Off

The LED(s) of the device will shut off after a configurable time (**LED-Off-Seconds**).

Default:

On

2.2.12 Admins

Use this table to create administrators with restricted rights.

The root administrator always has all rights.

Console path:

Setup > **Config**

Name

Login name of the administrator in this row of the table.

Console path:

Setup > **Config** > **Admins**

Possible values:

Max. 16 characters from `[A-Z][a-z][0-9]-.`

Function-Rights

Here you activate the administrator's function rights in this row of the table.

Console path:

Setup > **Config** > **Admins**

Possible values:

Basic
Admin-Management

Rights

The rights of the administrator in this row of the table.

Console path:

Setup > **Config** > **Admins**

Possible values:

None
Admin-RO-Limit
Admin-RW-Limit
Admin-RO
Admin-RW
Supervisor

Hashed-Password

Hash value of the administrator password in this row of the table.

Console path:

Setup > **Config** > **Admins**

Possible values:

Max. 255 characters from `[A-Z][a-z][0-9]@{|}~!$%&'()+-,/:;<=>?[\]^_.`

2.2.13 LED-Off-Seconds

Set a time in seconds after the device starts, after which the LED(s) of the device are switched off if the **LED-Mode** is set to **Timed-Off**.

Console path:

Setup > **Config**

Possible values:

Max. 4 characters from `[0-9]`

Default:

300

2.2.14 LED-Test

This can be used to test the device LED. It will then illuminate in the corresponding color.

Console path:

Setup > **Config**

Possible values:

Off
Red
Green
Blue
All
No-Test

Default:

No-Test

2.2.15 Root-Hashed

Hash value of the password of the root administrator.

Console path:

Setup > **Config**

Possible values:

Max. 255 characters from `[A-Z][a-z][0-9]@{|}~!$%&'()+-,/:;<=>?[\]^_.`

2.3 Time

Contains the general configuration settings for the time setting.

Console path:

Setup

2.3.1 Timezone

Configure the time zone for the location of the device.

Console path:

Setup > **Time**

Possible values:

UTC
Europe/Berlin
Europe/Vienna
Europe/Zurich
Europe/London
Europe/Prague
Europe/Warsaw
Europe/Zagreb
Europe/Copenhagen
Europe/Paris
Europe/Helsinki
Europe/Tallinn
Europe/Athens
Europe/Budapest
Europe/Dublin
Europe/Rome
Europe/Riga
Europe/Vilnius
Europe/Luxembourg
Europe/Malta
Europe/Amsterdam
Europe/Nicosia
Europe/Lisbon
Europe/Bucharest
Europe/Bratislava
Europe/Ljubljana
Europe/Madrid
Europe/Stockholm
Europe/Brussels
Europe/Sofia
US/Alaska
US/Pacific
US/Mountain
US/Central
US/Eastern
Pacific/Auckland
Pacific/Honolulu
Australia/Brisbane
Australia/Sydney
Australia/Perth
Australia/Darwin
Australia/Adelaide

Default:

UTC

2.3.2 NTP

Use this menu to configure an NTP server.

Console path:

Setup > **Time**

Operating

Enable the configured NTP server.

Console path:

Setup > **Time** > **NTP**

Possible values:

No

Do not use an NTP server.

Yes

The NTP server set under **Server** is used to set the date and time.

Default:

No

Server

Enter the address of the NTP server.

Console path:

Setup > **Time** > **NTP**

Possible values:

Max. 64 characters from `[A-Z][a-z][0-9]@{|}~!$%&'()+-,/:;<=>?[\]^_.`

Default:

empty

2.4 WLAN

Configuration settings for the WLAN parameters

Console path:

Setup

2.4.1 Network

Here you configure the general settings for the WLAN networks (SSIDs) that are broadcast. Add a line to the table for each WLAN network. By default, the table is empty.

Console path:

Setup > **WLAN**

Network-Name

Configure a meaningful name for the WLAN network here. This **internal** identifier is used to reference the interface configuration from other parts of the configuration.

This is **not** the name of the SSID and is not displayed by the clients.

Console path:

Setup > **WLAN** > **Network**

Possible values:

Max. 64 characters from `[A-Z][a-z][0-9]@{|}~!$%&'()+-,/:;<=>?[\]^_.`

SSID-Name

Here you configure the name of the SSID to be broadcast. This name is displayed on the wireless clients when searching for WLAN networks.

Console path:

Setup > **WLAN** > **Network**

Possible values:

Max. 32 characters from `[A-Z][a-z][0-9]@{|}~!$%&'()+-,/:;<=>?[\]^ _.`

Closed network

Here you configure whether this SSID is displayed to clients searching for a network.

If the SSID broadcast is suppressed, the access point will not respond to probe requests with an empty SSID. In this case, establishing a connection requires the SSID to be explicitly entered into and configured on the client.

Console path:

Setup > **WLAN** > **Network**

Possible values:

No

Show SSID.

Yes

Do not show SSID.

Max-Stations

This number determines the number of clients that can log on to the WLAN network simultaneously before further requesting clients are rejected.

Console path:

Setup > **WLAN** > **Network**

Possible values:

0 … 512

Special values:

0

The value "0" means that there is no limit, so unlimited number of clients can be logged in at the same time (up to a possible hardware-related limit).

Inter-station traffic

Depending on the application, it may be required that the WLAN clients connected to an access point can—or expressly cannot—communicate with other clients. Here you configure whether communication between the WLAN clients on the WLAN network should be allowed.

Console path:

Setup > **WLAN** > **Network**

Possible values:

No

Communication between the WLAN clients on the WLAN network is not permitted.

Yes

Communication between the WLAN clients on the WLAN network is permitted.

Min-Client-Strength

Here you configure the minimum signal strength in percent that a client must "show" at the access point in order for it to be able to connect to the WLAN.

Console path:

Setup > **WLAN** > **Network**

Possible values:

0 … 100

Special values:

0

The value "0" means that there is no minimum signal strength requirement and clients are always allowed to connect.

Summaric-Tx-Limit-Kbit/s

Here you set a WLAN bandwidth limit that applies to the entire WLAN network. All of the logged in clients can only receive data with the transmission rate configured here. The transmission direction is considered relative to the access point, so “Tx” means the transmission rate from the access point to the client. This setting affects the download rate at the client.

Console path:

Setup > **WLAN** > **Network**

Possible values:

Max. 10 characters from `[0-9]`

Special values:

0

The value “0” means that no limitation is active.

Summaric-Rx-Limit-Kbit/s

Here you set a WLAN bandwidth limit that applies to the entire WLAN network. All of the logged in clients can only send data with the transmission rate configured here. The transmission direction is considered relative to the access point, so “Rx” means the transmission rate from the client to the access point. This setting affects the upload rate at the client.

Console path:

Setup > **WLAN** > **Network**

Possible values:

Max. 10 characters from `[0-9]`

Special values:

0

The value “0” means that no limitation is active.

Key

Configure the pre-shared key (PSK) used for the WLAN network here.

This entry only applies if an encryption profile using WPA(2)-PSK is selected. If 802.1X is used, the entry has no effect and the field can be left blank.

Console path:

Setup > **WLAN** > **Network**

Possible values:

8 to 63 characters `WPA key`

Radios

Configure here the WLAN frequencies that the SSID is to be broadcast on.

Console path:

Setup > **WLAN** > **Network**

Possible values:

2.4GHz+5GHz

The SSID is broadcast on the frequencies 2.4 GHz and 5 GHz.

2.4GHz

The SSID is only broadcast on the 2.4-GHz frequency.

5GHz

The SSID is only broadcast on the 5-GHz frequency.

None

The SSID will not be broadcast. This can be used as a general on/off switch for the SSID.

Encryption-Profile

Here you configure an encryption profile from the methods available under **Setup** > **WLAN** > **Encryption**. This profile defines which authentication and encryption method should be used for the SSID.

Console path:

Setup > **WLAN** > **Network**

Possible values:

Max. 64 characters from `[A-Z][a-z][0-9]@{|}~!$%&'()+-,/:;<=>?[\]^_.`

VLAN-ID

This VLAN ID is used to tag the data packets arriving from the WLAN and heading for the LAN. Similarly, packets with this VLAN ID arriving from the LAN are directed to the WLAN and are de-tagged.

This operating mode corresponds to what is normally known as the “Access” tagging mode, since it is assumed that wireless clients usually transmit data untagged. Tagging mode cannot be adjusted.

Console path:

Setup > **WLAN** > **Network**

Possible values:

0 … 4095

Special values:

0

The default value 0 means that no VLAN is used.

2.4.2 Country

Here you configure the country where the device is operated. Depending on this, the appropriate regulatory limits are set automatically.

Console path:

Setup > **WLAN**

Possible values:

Australia
Austria
Belgium
Bulgaria
Croatia
Cyprus
Czech-Republic
Denmark
Estonia
Finland
France
Germany
Greece
Hungary
Ireland
Italy
Latvia
Lithuania
Luxembourg
Malta
Netherlands
New-Zealand
Poland
Portugal
Romania
Slovakia
Slovenia
Spain
Sweden
Switzerland
United-Kingdom
United-States
Europe

2.4.3 Encryption

Here you configure the settings for the encryption and authentication on the WLAN networks. A variety of encryption profiles are stored by default and these can be used for the configuration of the WLAN networks.

Console path:

Setup > **WLAN**

Profile-Name

Choose a meaningful name for the encryption profile here. This internal identifier is used to reference the encryption profile from other parts of the configuration.

Console path:

Setup > **WLAN** > **Encryption**

Possible values:

Max. 64 characters from `[A-Z][a-z][0-9]@{|}~!$%&'()+-,/:;<=>?[\]^_.`

Encryption

Here you configure whether the WLAN network should be encrypted or if no encryption should be used (Open Network).

Console path:

Setup > **WLAN** > **Encryption**

Possible values:

No

Do not use encryption.

Yes

Use encryption.

Method

Here you configure the encryption method.

The WEP process no longer provides adequate security and should only be used to integrate legacy clients that do not support a newer security method. If this is the case, we recommend that you isolate the WEP clients in their own VLAN to keep them separate from the rest of the WLAN infrastructure.

Console path:

Setup > **WLAN** > **Encryption**

Possible values:

WEP-40-Bits

AES with 40 bits key length

WEP-104-Bits

AES with 104 bits key length

WEP-128-Bits

AES with 128 bits key length

WEP-40-Bits-802.1X

AES with 40 bits key length and 802.1X

Note that 802.1X requires a RADIUS server profile to be specified as well.

WEP-104-Bits-802.1X

AES with 104 bits key length and 802.1X

Note that 802.1X requires a RADIUS server profile to be specified as well.

WEP-128-Bits-802.1X

AES with 128 bits key length and 802.1X

Note that 802.1X requires a RADIUS server profile to be specified as well.

802.11i-WPA-PSK

WPA(2) with Pre-Shared-Key

802.11i-WPA-802.1X

WPA(2) with 802.1X

Note that 802.1X requires a RADIUS server profile to be specified as well.

WPA-Version

Here you configure the WPA version used for the encryption methods **802.11i WPA-PSK** and **802.11i WPA 802.1X**.

We exclusively recommend the use of WPA2.

Console path:

Setup > **WLAN** > **Encryption**

Possible values:

WPA1

WPA version 1 is used exclusively.

WPA2

WPA version 2 is used exclusively.

WPA1/2

Whether the encryption method WPA 1 or 2 is used depends on the capabilities of the client.

WPA-Rekeying-Cycle

Here you configure the time in seconds after which the access point performs rekeying when operating WPA(2).

Console path:

Setup > **WLAN** > **Encryption**

Possible values:

Max. 32 characters from `[0-9]`

Special values:

0

The value “0” means that no rekeying is performed.

WPA1-Session-Keytypes

Here you configure the session key type to be used for WPA version 1. This also influences the encryption method used.

Operating TKIP is only recommended when using older WLAN clients which do not support AES.

If a WLAN network uses only WEP or WPA with TKIP for encryption, the WLAN clients connected to it achieve a maximum gross data rate of 54 Mbps.

Console path:

Setup > **WLAN** > **Encryption**

Possible values:

TKIP

TKIP encryption is used.

AES

AES encryption is used.

TKIP/AES

Whether the encryption method TKIP or AES is used depends on the capabilities of the client.

WPA2-Session-Keytypes

Here you configure the session key type to be used for WPA version 2. This also influences the encryption method used.

Operating TKIP is only recommended when using older WLAN clients which do not support AES.

If a WLAN network uses only WEP or WPA with TKIP for encryption, the WLAN clients connected to it achieve a maximum gross data rate of 54 Mbps.

Console path:

Setup > **WLAN** > **Encryption**

Possible values:

TKIP

TKIP encryption is used.

AES

AES encryption is used.

TKIP/AES

Whether the encryption method TKIP or AES is used depends on the capabilities of the client.

RADIUS-Server-Profile

Here you configure the RADIUS server profile used when operating 802.1X. No input is required when using PSK-based encryption methods.

Console path:

Setup > **WLAN** > **Encryption**

Possible values:

Max. 64 characters from `[A-Z][a-z][0-9]@{|}~!$%&'()+-,/:;<=>?[\]^_.`

2.4.4 Radio-Settings

Here you configure all of the settings relating to the physical radio parameters. By default, there is an entry in the table for every physical WLAN radio for modification as required.

Console path:

Setup > **WLAN**

Ifc

The internal name of the WLAN radio. This cannot be changed.

Console path:

Setup > **WLAN** > **Radio-Settings**

5GHz-Mode

Here you configure the mode used for 5-GHz radio operation. This directly affects the available data rates. If a restriction is set here, a client attempting to login triggers a check to see whether the modes used by the client match with those configured here. Depending on this, the login is allowed or denied. The following modes are available:

Maximum compatibility and performance is available by setting the mode to **Auto**.

Console path:

Setup > **WLAN** > **Radio-Settings**

Possible values:

11an-mixed

The modes 802.11a and 802.11n are used.

11anac-mixed

The modes 802.11a, 802.11n and 802.11ac are used.

11nac-mixed

The modes 802.11n and 802.11ac are used.

11ac-only

Only the 802.11ac mode is used.

Auto

All modes supported by the device are used.

Radio band

Here you configure whether this radio module works in the 2.4-GHz or 5-GHz spectrum.

Console path:

Setup > **WLAN** > **Radio-Settings**

Possible values:

2.4GHz

The radio module works in the 2.4-GHz spectrum.

5GHz

The radio module works in the 5-GHz spectrum.

Sub-Band

Here you configure which sub-bands are used in the 5-GHz mode.

WLAN channels 120, 124 and 128 are not used because these channels are reserved for the primary user RADAR.

Console path:

Setup > **WLAN** > **Radio-Settings**

Possible values:

Band-1

Only sub-band 1 is used. This corresponds to the WLAN channels 36, 40, 44, 48, 52, 56, 60 and 64.

Band-2

Only sub-band 2 is used. This corresponds to the WLAN channels 100, 104, 108, 112, 116, 132, 136 and 140.

Band-1+2

Sub-bands 1 and 2 are used.

Channel

Here you configure the channel to be used for WLAN radio operations.

In 5-GHz mode, the channel set here represents a preferred channel. However, since the 5-GHz band requires the use of Dynamic Frequency Selection (DFS), there is no guarantee that the preferred channel will be used.

Console path:

Setup > **WLAN** > **Radio-Settings**

Possible values:

Max. 10 characters from `[0-9]`

Special values:

0

The value “0” allows the automatic selection of a suitable channel.

2.4GHz-Mode

Here you configure the mode used for 2.4-GHz radio operation. This directly affects the available data rates. If a restriction is set here, a client attempting to login triggers a check to see whether the modes used by the client match with those configured here. Depending on this, the login is allowed or denied.

Maximum compatibility and performance is available by setting the mode to **Auto**.

Console path:

Setup > **WLAN** > **Radio-Settings**

Possible values:

11bg-mixed
The modes 802.11b and 802.11g are used.

11g-only
Only the 802.11g mode is used.

11bgn-mixed
The modes 802.11b, 802.11g and 802.11n are used.

11gn-mixed
The modes 802.11g and 802.11n are used.

Auto
All modes supported by the device are used.

Channel-List

Here you configure a comma-separated list of further WLAN channels. Automatic channel selection selects a channel from this list, rather than from the full range of supported WLAN channels.

Console path:

Setup > **WLAN** > **Radio-Settings**

Possible values:

Max. 64 characters from `[A-Z][a-z][0-9]@{|}~!$%&'()+-,/:;<=>?[\]^_.`

Max.-Channel-Bandwidth

Here you configure the maximum allowed channel bandwidth.

Console path:

Setup > **WLAN** > **Radio-Settings**

Possible values:

20MHz
The channel bandwidth is always 20 MHz.

40MHz

Depending on the environment, channel bandwidth is up to 40 MHz, but this can also fall back to 20 MHz.

80MHz

Depending on the environment, channel bandwidth is up to 80 MHz, but this can also fall back to 40 MHz or 20 MHz.

Auto

For a 2.4-GHz radio the channel bandwidth of 20 MHz is always used. For a 5-GHz radio the maximum possible channel bandwidth (up to 80 MHz) is always used, depending on the environment.

Exclude-DFS-Channels

Here you configure whether to use channels in the 5-GHz band that require Dynamic Frequency Selection (DFS).

If these channels are excluded here, the channels still available in the 5-GHz band are 36, 40, 44 and 48. Since DFS is not required for these channels, they can be set with the option **Exclude-DFS-Channels** in the radio channel and also in the **Channel-List**.

Console path:

Setup > **WLAN** > **Radio-Settings**

Possible values:

No

Use channels reserved for DFS.

Yes

Do not use channels reserved for DFS.

2.5 IEEE802.1X

Configuration settings of the parameters for IEEE 802.1X.

Console path:

Setup

2.5.1 RADIUS server

Here you configure the settings for RADIUS server profiles to be used with WLAN networks that operate 802.1X for authentication

Console path:

Setup > **IEEE802.1X**

Name

Choose a meaningful name for the RADIUS server profile here. This internal identifier is used to reference the RADIUS server profile from other parts of the configuration.

Console path:

Setup > **IEEE802.1X** > **RADIUS-Server**

Possible values:

Max. 64 characters from `[A-Z][a-z][0-9]@{|}~!$%&'()+-,/:;<=>?[\]^_.`

Port

Select the (UDP) port used to contact the RADIUS server.

This is usually the port 1812 (RADIUS authentication).

Console path:

Setup > **IEEE802.1X** > **RADIUS-Server**

Possible values:

0 … 65535

Secret

Here you configure the secret used to encrypt the traffic between the device and the RADIUS server. This secret must also be stored on the RADIUS server.

Console path:

Setup > **IEEE802.1X** > **RADIUS-Server**

Possible values:

Max. 64 characters from `[A-Z][a-z][0-9]@{|}~!$%&'()+-,/:;<=>?[\]^_.`

Backup

Here you configure a backup profile, which will be used if the RADIUS server in the profile configured here cannot be reached.

Console path:

Setup > **IEEE802.1X** > **RADIUS-Server**

Possible values:

Max. 64 characters from `[A-Z][a-z][0-9]@{|}~!$%&'()+-,/:;<=>?[\]^_.`

Server-IP-Address

Here you configure the host name or IP address where the RADIUS server is to be reached.

Console path:

Setup > **IEEE802.1X** > **RADIUS-Server**

Possible values:

Max. 64 characters from `IPv4 or IPv6 address`

2.6 IP-Configuration

Parameter for the IP configuration of the device.

Console path:

Setup

2.6.1 Static-Parameters

IP and network configuration settings that apply when you use static IP addresses.

The settings made in this table only come into effect if the IPv4 or IPv6 address source for the corresponding LAN interface is set to **static**. Otherwise all of the necessary information is retrieved via DHCP, for example, in which case no configuration is required here.

Console path:

Setup > **IP-Configuration**

Interface-Name

Enter the name of the interface, which the other settings made here refer to.

Console path:

Setup > **IP-Configuration** > **Static-Parameters**

Possible values:

Max. 64 characters from `INTRANET`

IPv4-Gateway

Here you configure the IPv4 gateway for the referenced interface.

Console path:

Setup > **IP-Configuration** > **Static-Parameters**

Possible values:

Max. 16 characters from `IPv4 address: a.b.c.d`

IPv6-Gateway

Here you configure the IPv6 gateway for the referenced interface.

Console path:

Setup > **IP-Configuration** > **Static-Parameters**

Possible values:

Max. 44 characters from `IPv6 address: a:b:c::d`

Primary-IPv4-DNS

Here you configure the primary IPv4 DNS gateway for the referenced interface.

Console path:

Setup > **IP-Configuration** > **Static-Parameters**

Possible values:

Max. 16 characters from `IPv4 address: a.b.c.d`

Secondary-IPv4-DNS

Here you configure the secondary IPv4 DNS gateway for the referenced interface.

Console path:

Setup > **IP-Configuration** > **Static-Parameters**

Possible values:

Max. 16 characters from `IPv4 address: a.b.c.d`

Primary-IPv6-DNS

Here you configure the primary IPv6 DNS gateway for the referenced interface.

Console path:

Setup > **IP-Configuration** > **Static-Parameters**

Possible values:

Max. 44 characters from `IPv6 address: a:b:c::d`

Secondary-IPv6-DNS

Here you configure the secondary IPv6 DNS gateway for the referenced interface.

Console path:

Setup > **IP-Configuration** > **Static-Parameters**

Possible values:

Max. 44 characters from `IPv6 address: a:b:c::d`

2.6.2 LAN-Interfaces

Here you specify basic configuration options relating to your device's own IP settings and network access.

Console path:

Setup > **IP-Configuration**

Interface-Name

Set a meaningful name for the interface here. This name is used to reference the interface configuration from other parts of the configuration.

Console path:

Setup > **IP-Configuration** > **LAN-Interfaces**

Possible values:

Max. 64 characters from `INTRANET`

Interface-ID

The internal identifier for the interface. This cannot be modified.

Console path:

Setup > **IP-Configuration** > **LAN-Interfaces**

VLAN-ID

Here you specify a VLAN ID for which the interface should be active and accessible.

Console path:

Setup > **IP-Configuration** > **LAN-Interfaces**

Possible values:

0 … 4095

Special values:

0

The default value 0 means that no VLAN is used.

IPv4-Address-Source

Here you select how the IPv4 address of the interface is to be obtained.

Console path:

Setup > **IP-Configuration** > **LAN-Interfaces**

Possible values:

DHCP

The IP address is retrieved via DHCP.

Static

The static IP address configured for the interface is used.

IPv6-Address-Source

Here you select how the IPv6 address of the interface is to be obtained.

Console path:

Setup > **IP-Configuration** > **LAN-Interfaces**

Possible values:

Router-Advertisement

The IPv6 address is derived from router advertisements that the device receives on the respective interface.

If the flag in the router advertisement is set to Other and/or Managed, additional configuration options are obtained via DHCPv6—even if the address source is set to **Router-Advertisement**.

DHCPv6

The IPv6 address is obtained via DHCPv6.

Static

The static IPv6 address configured for the interface is used.

Static-IPv4-Address

Here you configure the IP address to be used when the **IPv4-Address-Source** is set to **Static**. Add the subnet mask in CIDR notation (e.g. "/24") as a suffix.

Console path:

Setup > **IP-Configuration** > **LAN-Interfaces**

Possible values:

Max. 19 characters from `IPv4 address: a.b.c.d/xx`

Static-IPv6-Address

Here you configure the IP address to be used when the **IPv6-Address-Source** is set to **Static**. Add the subnet mask in CIDR notation (e.g. "/64") as a suffix.

Console path:

Setup > **IP-Configuration** > **LAN-Interfaces**

Possible values:

Max. 44 characters from `IPv6 address: a:b:c::d/64`

Comment

Here you can enter a comment about the interface configuration.

Console path:

Setup > **IP-Configuration** > **LAN-Interfaces**

Possible values:

Max. 32 characters from `[A-Z][a-z][0-9]@{|}~!$%&'()+-,/:;<=>?[\]^_.`

2.7 LMC

Settings for the configuration and monitoring of your device via the LANCOM Management Cloud (LMC).

Console path:

Setup

2.7.1 Operating

Specify whether the device should be managed via the LMC.

Console path:

Setup > **LMC**

Possible values:

No

The device does not connect to the LMC.

Yes

The LMC manages the device.

Default:

Yes

2.7.2 LMC domain

Enter the domain name for the LMC here. By default, the domain is set to the Public LMC for the first connection. If you wish to manage your device with your own Management Cloud ("Private Cloud" or "on-premises installation"), please enter your LMC domain.

Console path:

Setup > **LMC**

Possible values:

Max. 255 characters from `[A-Z][a-z][0-9]@{|}~!$%&'()+-,/:;<=>?[\]^_.`

2.7.3 Rollout-Project-ID

Enter the project ID of this device in the LMC. The first time the device connects to the LMC, it will be assigned accordingly.

Console path:

Setup > **LMC**

Possible values:

Max. 36 characters from `[A-Z][a-z][0-9]@{|}~!$%&'()+-,/:;<=>?[\]^_.`

2.7.4 Rollout-Location-ID

Enter the location of this device in the LMC. The first time the device connects to the LMC, it will be assigned accordingly.

Console path:

Setup > **LMC**

Possible values:

Max. 36 characters from `[A-Z][a-z][0-9]@{|}~!$%&'()+-,/:;<=>?[\]^_.`

2.7.5 Rollout-Device-Role

Enter the role assigned to this device in the LMC. The first time the device connects to the LMC, it will be assigned accordingly.

Console path:

Setup > **LMC**

Possible values:

Max. 36 characters from `[A-Z][a-z][0-9]@{|}~!$%&'()+-,/:;<=>?[\]^_.`

2.7.6 Pairing-Token

Here you enter the activation code that you created for pairing with the LMC.

Console path:

Setup > **LMC**

Possible values:

Max. 36 characters from `^[1-9A-NP-Z-]{24,47}$|^$`

3 Other

This menu contains additional functions from the LCOS LX menu tree.

Console path:

/

3.1 Reset-Config

This action allows you to reset the configuration.

Example: `do Reset-Config`

Console path:

Other

3.2 Reboot

This action is used to restart the device.

Example: `do Reboot`

Console path:

Other