



The Synchronization Experts.



MANUAL

IMS-LNE-GBE Setup Guide

Hot-Plug Module

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Meinberg Funkuhren GmbH & Co. KG

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1 Imprint

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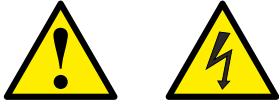
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2 Safety Instructions for hot pluggable Modules



Check before every maintenance work on the system:

- If a data backup is required?
- Is a backup required, verify the data recovery which is done by this backup.
- Make sure to avoid any static discharge while working – use a grounding cable and/or antistatic gloves during installation and removal of hot pluggable components.
- If you are replacing a hot pluggable power supply, unplug the power cable prior to removing the module from the case.
- Never open a power supply. In power supplies dangerous voltages can still remain even after disconnection from the power supply. Always send power supplies back to the manufacturer for maintenance.

Exchange of hot-swap components

- Ensure that components which will be replaced during operation, always be treated with the utmost care. Avoid contact with live components.
- Electrostatic discharge can damage electronic components. For this reason, ensure protection against electrostatic discharges by wearing anti-static shoes while working with the system.
- Take care when removing and installing the hot-plug modules. Always work with the utmost caution. Touch the modules only at the edges.
- Place the module out of the box or after removal from the system with the component side to the top on a grounded and static-free surface.
- Storage of an IMS module must be done in a dry place.
- Installation or removal from hot-swap components only by authorized personnel!

2.1 Additional Safety Hints



This manual contains important information for the installation and operation of this device as well as for your safety. Make sure to read carefully before installing and commissioning the device.

Certain operating conditions may require the observance of additional safety regulations not covered by this manual. Nonobservance of this manual will lead to a significant abatement of the security provided by this device. Security of the facility where this product is integrated lies in the responsibility of the installer.

The device must be used only for purpose named in this manual, any other use especially operation above the limits specified in this document is considered as improper use.

Keep all documents provided with the device for later reference.

This manual is exclusively for qualified electricians or by a qualified electrician trained personnel who are familiar with the applicable national standards and specifications, in particular for the construction of high voltage devices.

2.2 Supply Voltage



WARNING!

This device is powered by a dangerous voltage. Nonobservance of the safety instructions of this manual may lead to serious damage to persons and property and to danger to life! Installation, commissioning, maintenance and operation of this device are to be carried out by qualified personnel only.

The general safety instructions and standards (e.g. IEC, DIN, VDE, EN) for installation and work with high voltage equipment as well as the respective national standards and laws must be observed.

NONOBSERVANCE MAY LEAD TO SERIOUS DAMAGE TO PERSONS AND PROPERTY AND TO DANGER TO LIFE!

The device may not be opened. Repair services may only be carried out by the manufacturer.

Supply lines for this device must be equipped via an appropriate switch that must be mounted close to the device and must be marked as a mains switch for the device.

To ensure safe operation supply mains connected to this device must be equipped with a fuse and a fault-current circuit breaker according to the applicable national standards for safe operation.

The device must be connected to a protective earth with low grounding resistance according to the applicable national rules.

2.3 Cabling



WARNING!

DANGER TO LIFE BY ELECTRICAL SHOCK! NO LIVE WORKING!

Wiring or any other work done the connectors particularly when connectors are opened may never be carried out when the installation is energized. All connectors must be covered to prevent from accidental contact to life parts.

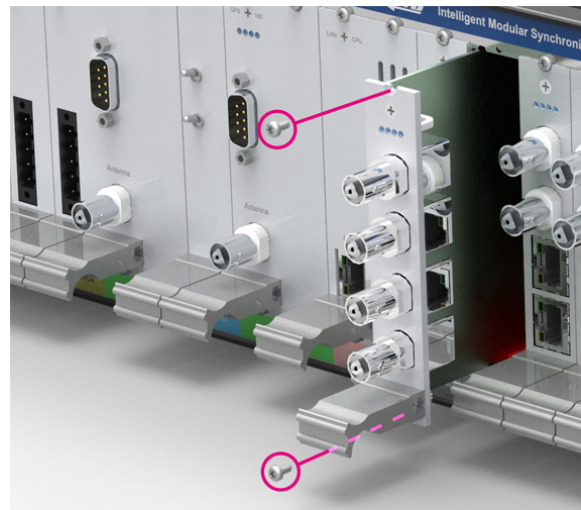
ALWAYS ENSURE A PROPER INSTALLATION!

3 Replacement or Installation of a Hot-pluggable IMS Module

If the system is supplied with an antenna and antenna cable, it is advisable to first mount the antenna in a suitable location (see chapter Antenna Mounting) and lay the antenna cable.

Please use a Torx screwdriver (T8 x 60) for removal and installation of the module.

1. Follow the safety instructions at the beginning of this manual!
1. Remove the two marked Torx screws from the module holder plate or the cover plate of the empty slot.
2. (Only for an already built-in module)
Pull the module carefully out of the holding rail. Note that the module is firmly anchored in the connector block of the housing. You need a certain amount of force to release the module from this link. Once the connection to the connector block of the system's backplane is loosened, the module can be easily pulled out.
3. When installing the new IMS module, please ensure that the board is correctly inserted into the two guide rails of the system housing. Non-observance can cause damage to the module and the chassis. Make sure that the module is securely locked into the connector block before you fasten the two screws.
4. Now you can put the installed module into operation.



Attachment points of an 1U IMS system

3.1 Important Hints for hot-pluggable IMS Modules

The following points should be strictly observed when replacing IMS modules during operation. Not all IMS modules are fully hot-pluggable. Of course, it is not possible to replace a power supply unit of a non-redundant system without first having installed a second power source in operational mode.

The following applies to the individual IMS slots:

PWR:	"hot swappable"	If you operate your system with only one power supply, a second power supply must be installed before removing/replacing it to keep your system functioning.
I/O, ESI and MRI Slots:	"hot swappable".	
CLK1, CLK2:	"hot swappable"	Afer the exchange or the installation of a clock module a rescan of the reference clocks (Rescan Refclocks) must be executed in the web interface menu "System".
CPU	<u>not</u> "hot swappable"	The central management unit must be disconnected from mains before replacement.
RSC/SPT	<u>not</u> "hot swappable"	The RSC switching card must be disconnected from the mains before the replacement.

4 LNE-GbE: Network Expansion with Gigabit Support and SFP Option

Link speed: 10/100/1000 Mbita

Connector Type: 8P8C (RJ45)

Cable: CAT 5.0

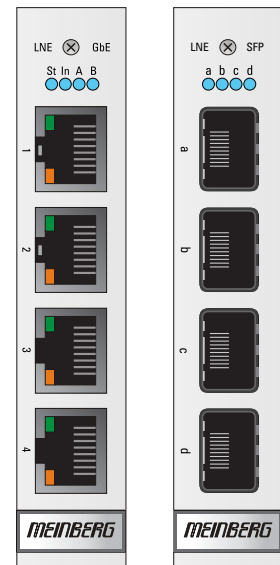
Duplex Modes: Half/Full/Autonegotiaton

LED Indicators

LED St: Init lights blue during initialisation

LED In - LED B: Shows the state of the four LAN ports after initialisation
 green normal operation
 red defective LAN port

*Figure right:
LNE-GbE and LNE-GbE with SFP Option*



Option: LNE-SFP

Interface: 1000BASE-T SFP

Cable: Multimode Fiber
 GI 50/125 μ m or GI 62,5/125 μ m gradient fiber

Singlemode Fiber
 E9/125 μ m monomode fiber

Link Speed Electrical: 1000 Base-T
 Fiber optical: 1000-FX

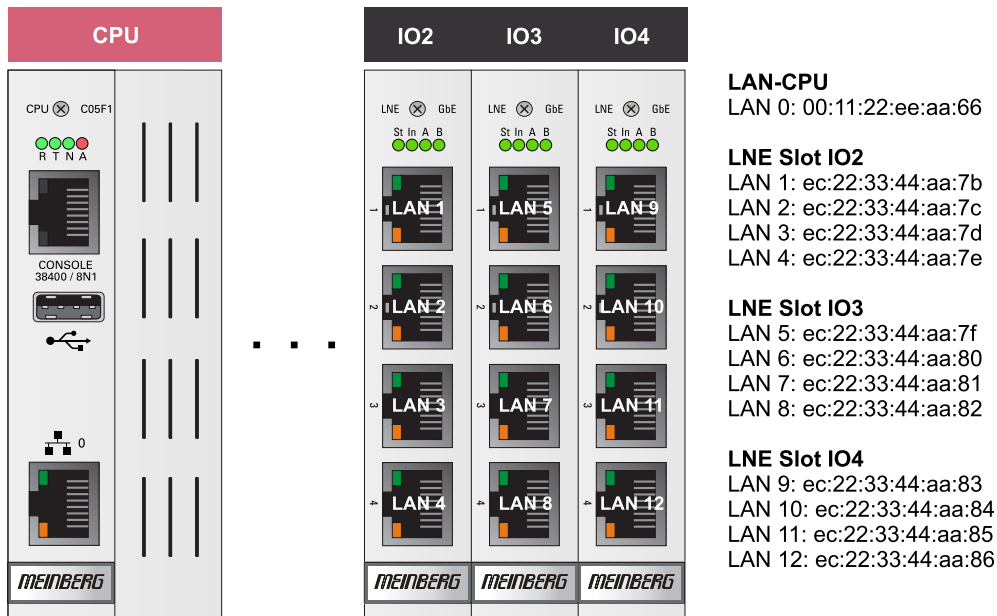


Recommended and tested Transceivers from other Vendors

Mode	Vendor/Type	Distance
MULTI MODE:	AVAGO AFBR-5710PZ	550 m
	FINISAR FTLF8524P3BNL	500 m
SINGLE MODE:	AVAGO AFCT-5710PZ	10 km
	FINISAR FTLF1318P3BTL	10 km
	SMARTOPTICS SO-SFP-L120D-C63	80 km
RJ-45:	AVAGO ABCU-5740RZ	100 m
	FINISAR FCLF8521P2BTL	100 m

LAN interface alignment with several LNE modules in operation:

Basically, the physical network ports are assigned according to the MAC address order. Thus, the uppermost interface on a LNE module has the lowest and the bottommost interface has the highest MAC address, respectively. Let’s take an example where three LNE modules are inserted in a device. Then the logical order of network interfaces assigned in a webinterface follows the MAC address order of LNE modules, disregarding the I/O slot order by which the modules are inserted.



In a factory assembling, LNE modules are sorted in an ascending order starting from left to right (see the corresponding figure above). LAN 0 is therefore always the first network interface of the LAN-CPU.

4.1 LNE-GBE Configuration via the Web Interface

If the LNE-GBE operates in an LANTIME system, all network settings can be configured via the web interface then.

The screenshot shows the 'Physical Network Configuration' web interface. It features a table with columns for 'Interface', 'LAN0', and 'LAN1'. The 'Bonding' dropdown menu is open, showing options like 'Assigned to Bond 1', 'Assigned to Bond 0', 'Assigned to Bond 2', 'Assigned to Bond 3', 'Assigned to Bond 4', 'Assigned to PRP 0', 'Assigned to PRP 1', 'Assigned to PRP 2', 'Assigned to PRP 3', and 'Assigned to PRP 4'. The 'Assigned to Bond 1' option is highlighted in blue.

Interface	LAN0	LAN1
Net Link Mode	AUTO	AUTO
Monitor Interface	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Bonding	Assigned to Bond 1	Assigned to Bond 1
Bonding Status	ACTIVE	PASSIVE
IPv6 Mode	Activated	Deactivated
MAC Address	00:13:95:2e:cd:f8	ec:46:70:02:00:e3
Assigned Virtual Interfaces	01	02
Port Power Status	ON	ON

Physical Network Configuration

Net Link Mode: The network interfaces LAN1 - LAN4 (LNE-GBE) can be used in 1000 MBIT HALF / FULL duplex mode.

Indicate Link: LED indication for the selected physical interface, only if a front display with function keys is available.

Bonding: to optimize the reliability and the use of a of higher bandwidth.

PRP: As of LANTIME firmware version 7.0, PRP can also be conveniently set via the web interface menu "Network → Physical Network Configuration". Select the same PRP group for at least two interfaces in the drop-down menu "Bonding".

IPv6 Mode: This mode must be activated here.

MAC-Address: Displays the unique MAC address of the physical interface.

Assigned Virtual Interfaces: In the Ethernet Interfaces menu (see below) virtual network interfaces can be added.

Menu Interfaces

Network Interfaces

Add Interface

Interface 01 - bond1:0

IPv4 IPv6 Misc VLAN Cluster

Interface 02 - bond1:1

IPv4 IPv6 Misc VLAN Cluster

Interface 03 - bond1:2

IPv4 IPv6 Misc VLAN Cluster

Assigned Interface

LAN1

Virtual Interface

Delete Interface

MAC Address

ec:46:70:02:00:e3

Label

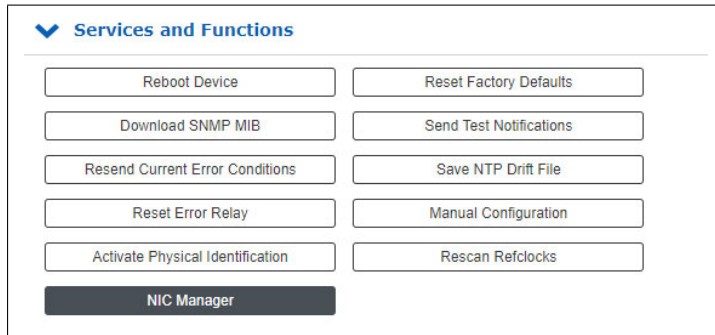
- IPv4: Manually adjustment of all important parameters such as TCP / IP address, subnet mask and gateway. The DHCP client can also be activated here for automatic network configurations.
- Misc: With the tab Misc the virtual interface can be assigned to a physical interface.
- VLAN: With VLAN, this function can be enabled and configured.
- Cluster: The cluster function can be activated with this submenu and additional Parameters such as multicast or unicast mode, TCP / IP address and subnet mask can be set up here.

4.2 Adding / Removing an LANTIME Network Extension LNE

An LNE module can be installed in each MRI/ESI or IO Slot of a LANTIME IMS device.

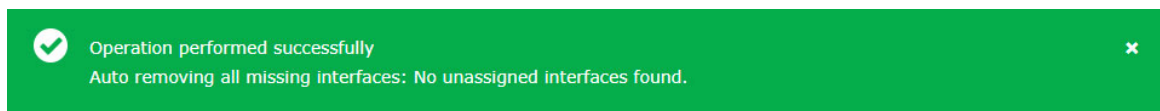
Adding a LANTIME Network Extension

After installing the LNE module, please start the web interface. In the menu "System → Services and Functions" press the button **NIC Manager** then . With this function you add all new physical network interfaces to the system's network configuration. Now it is ensured that the IMS module is correctly installed and recognized by the system.

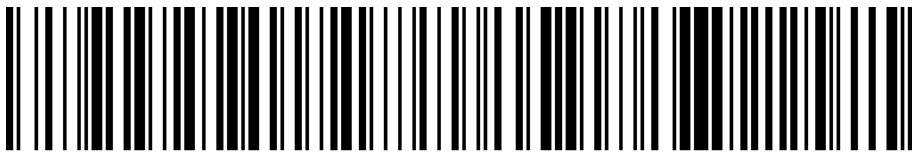


Remove a LANTIME Network Extension LNE

To remove a LNE network extension from the LANTIME system, the card must first be removed. However, the removed LNE interfaces are still listed in the network configuration. The "NIC Manager" can be used to update the network configuration in this case as well.



After successfully running the "NIC Manager", only the actually existing interfaces are displayed in the web interface. A system restart is not necessary.



IMS-LNE-GBE_QSG_260220