



MANUAL

IMS-CPU Setup Guide
IMS CPU-C15G2

May 29, 2024

Meinberg Funkuhren GmbH & Co. KG

Table of Contents

1	Imprint	1				
2	Copyright and Liability Exclusion					
3	Important Safety Information3.1 Appropriate Usage3.2 Product Documentation3.3 Safety during Installation3.4 Safety when Handling SFP Modules	4 5				
4	Important Product Information 4.1 CE Marking	6 6				
5	Replacement or Installation of a Hot-pluggable IMS Module 5.1 Important Information Regarding Hot-Pluggable IMS Modules	9 10				
6	Technical Specifications - IMS CPU-C15G2 6.1 Main Menu	11 13				
7	RoHS Conformity	14				

1 Imprint

Meinberg Funkuhren GmbH & Co. KG Lange Wand 9, 31812 Bad Pyrmont, Germany

Phone: + 49 (0) 52 81 - 93 09 - 0 Fax: + 49 (0) 52 81 - 93 09 - 230

Website: https://www.meinbergglobal.com

Email: info@meinberg.de

Date: May 29, 2024

2 Copyright and Liability Exclusion

Except where otherwise stated, the contents of this document, including text and images of all types and translations thereof, are the intellectual property and copyright of Meinberg Funkuhren GmbH & Co. KG ("Meinberg" in the following) and are subject to German copyright law. All reproduction, dissemination, modification, or exploitation is prohibited unless express consent to this effect is provided in writing by Meinberg. The provisions of copyright law apply accordingly.

Any third-party content in this document has been included in accordance with the rights and with the consent of its copyright owners.

A non-exclusive license is granted to redistribute this document (for example, on a website offering free-of-charge access to an archive of product manuals), provided that the document is only distributed in its entirety, that it is not modified in any way, that no fee is demanded for access to it, and that this notice is left in its complete and unchanged form.

At the time of writing of this document, reasonable effort was made to carefully review links to third-party websites to ensure that they were compliant with the laws of the Federal Republic of Germany and relevant to the subject matter of the document. Meinberg accepts no liability for the content of websites not created or maintained by Meinberg, and does not warrant that the content of such external websites is suitable or correct for any given purpose.

While Meinberg makes every effort to ensure that this document is complete, suitable for purpose, and free of material errors or omissions, and periodically reviews its library of manuals to reflect developments and changing standards, Meinberg does not warrant that this specific document is up-to-date, comprehensive, or free of errors. Updated manuals are provided at www.meinbergglobal.com and www.meinbergsupport.com.

You may also write to **techsupport@meinberg.de** to request an updated version at any time or provide feedback on errors or suggested improvements, which we are grateful to receive.

Meinberg reserves the right to make changes of any type to this document at any time as is necessary for the purpose of improving its products and services and ensuring compliance with applicable standards, laws & regulations.

3 Important Safety Information

The safety information provided in this chapter as well as specific safety warnings provided at relevant points in this manual must be observed during every installation and operation procedure of the device, as well as its removal from service.

Any safety information affixed to the product itself must also be observed.



Any failure to observe this safety information, these safety warnings, and other safety-critical operating instructions in the product documentation, or any other improper usage of the product may result in unpredictable behavior from the product, and may result in injury or death.

Depending on your specific device configuration and installed options, some safety information may not be applicable to your device.

Meinberg accepts no responsibility for injury or death arising from a failure to observe the safety information, warnings, and safety-critical instructions provided in the product documentation.

It is the responsibility of the operator to ensure that the product is safely and properly used.

Should you require additional assistance or advice on safety-related matters for your product, Meinberg's Technical Support team will be happy to assist you at any time. Simply send a mail to techsupport@meinberg.de.

3.1 Appropriate Usage



The device must only be used appropriately in accordance with the specifications of the product documentation! Appropriate usage is defined exclusively by this manual as well as any other relevant documentation provided directly by Meinberg.

Appropriate usage includes in particular compliance with specified limits! The device's operating parameters must never exceed or fall below these limits!

3.2 Product Documentation

The information in this manual is intended for readers with an appropriate degree of safety awareness.

The following are deemed to possess such an appropriate degree of safety awareness:

- skilled personnel with a familiarity with relevant national safety standards and regulations,
- instructed personnel having received suitable instruction from skilled personnel on relevant national safety standards and regulations



Read the product manual carefully and completely before you set the product up for use.

If any of the safety information in the product documentation is unclear for you, do **not** continue with the set-up or operation of the device!

Safety standards and regulations change on a regular basis and Meinberg updates the corresponding safety information and warnings to reflect these changes. It is therefore recommended to regularly visit the Meinberg website at https://www.meinbergglobal.com or the Meinberg Customer Portal at https://meinberg.support to download up-to-date manuals.

Please keep all product documentation, including this manual, in a safe place in a digital or printed format to ensure that it is always easily accessible.

Meinberg's Technical Support team is also always available at **techsupport@meinberg.de** if you require additional assistance or advice on safety aspects of your system.

3.3 Safety during Installation

This rack-mounted device has been designed and tested in accordance with the requirements of the standard IEC 62368-1 (*Audio/Video, Information and Communication Technology Equipment—Part 1: Safety Requirements*). Where the rack-mounted device is to be installed in a larger unit (such as an electrical enclosure), additional requirements in the IEC 62368-1 standard may apply that must be observed and complied with. General requirements regarding the safety of electrical equipment (such as IEC, VDE, DIN, ANSI) and applicable national standards must be observed in particular.

The device has been developed for use in industrial or commercial environments and may only be used in such environments. In environments at risk of high environmental conductivity ("high pollution degree" according to IEC 60664-1), additional measures such as installation of the device in an air-conditioned electrical enclosure may be necessary.



If the unit has been brought into the usage area from a cold environment, condensation may develop; in this case, wait until the unit has adjusted to the temperature and is completely dry before setting it up.

When unpacking & setting up the equipment, and before operating it, be sure to read the information on installing the hardware and the specifications of the device. These include in particular dimensions, electrical characteristics, and necessary environmental conditions.

Fire safety standards must be upheld with the device in its installed state—never block or obstruct ventilation openings and/or the intakes or openings of active cooling solutions.

The device with the highest mass should be installed at the lowest position in the rack in order to position the center of gravity of the rack as a whole as low as possible and minimize the risk of the rack tipping over. Further devices should be installed from the bottom, working your way up.

The device must be protected against mechanical & physical stresses such as vibration or shock.

Never drill holes into the device to mount it! If you are experiencing difficulties with rack installation, contact Meinberg's Technical Support team for assistance!

Inspect the device housing before installation. The device housing must be free of any damage when it is installed.

3.4 Safety when Handling SFP Modules

The fiber-optic SFP modules recommended by Meinberg are equipped with a Class 1 laser.





- Only use fiber-optic SFP modules that are compliant with the definition of a Class 1 laser in accordance with IEC standard 60825-1. Fiber-optic products that are not compliant with this standard may emit radiation capable of causing eye injuries.
- Never look into an unconnected connector of a fiber-optic cable or an unconnected SFP port.
- Unused fiber-optic connectors should always be fitted with a suitable protective cap.
- The safety information and manufacturer specifications relating to the SFP modules used must be heeded.
- The SFP module used must be capable of providing protection against voltage spikes in accordance with IEC 62368-1.
- The SFP module used must be tested and certified in accordance with applicable standards.

4 Important Product Information

4.1 CE Marking

This product bears the CE mark as is required to introduce the product into the EU Single Market.



The use of this mark is a declaration that the product is compliant with all requirements of the EU directives effective and applicable as at the time of manufacture of the product.

4.2 UKCA Marking

This product bears the British UKCA mark as is required to introduce the product into the United Kingdom (excluding Northern Ireland, where the CE marking remains valid).



The use of this mark is a declaration that the product is in conformity with all requirements of the UK statutory instruments applicable and effective as at the time of manufacture of the product.

4.3 Ensuring the Optimum Operation of Your Device

- Ensure that ventilation slots are not obscured or blocked by dust, or else heat may build up inside the device. While the system is designed to shut down safely and automatically in the event of temperature limits being exceeded, the risk of malfunctions and product damage following overheating cannot be entirely eliminated.
- The device is only deemed to be appropriately used and EMC limits (electromagnetic compatibility) are
 only deemed to be complied with while the device housing is fully assembled in order to ensure that
 requirements pertaining to cooling, fire safety, electrical shielding and (electro)magnetic shielding are
 upheld.

4.4 Maintenance and Modifications



Important!

Before performing any maintenance work on or authorized modification to your Meinberg system, we recommend making a backup of any stored configuration data (e.g., to a USB flash drive from the Web Interface).

4.5 Prevention of ESD Damage



An ESDS device (electrostatic discharge-sensitive device) is any device at risk of damage or malfunction due to electrostatic discharge (ESD) and thus requires special measures to prevent such damage or malfunction. Systems and modules with ESDS components usually bear this symbol.

Precautionary measures should be taken to protect ESDS components from damage and malfunction.

- Before removing or installing a module, ground your body first (for example, by touching a grounded object) before touching ESDS components.
- Ensure that you wear a grounding strap on your wrist when handling such ESDS components. This strap must in turn be attached to an uncoated, non-conductive metal part of the system.
- Use only tools and equipment that are free of static electricity.
- Ensure that your clothing is suitable for the handling of ESDS components. In particular, do not wear garments that are susceptible to electrostatic discharges (wool, polyester). Ensure that your shoes enable a low-resistance path for electrostatic charges to dissipate to the ground.
- Only touch or hold ESDS components by the edges. Never touch any pins or conductors on the ESDS components.
- When removing or installing ESDS components, avoid coming into contact with persons who are not grounded. Such contact may compromise your connection with the grounding conductor and thus also compromise the ESDS component's protection from any static charges you may be carrying.
- Always store ESDS components in ESD-proof ("antistatic") bags. These bags must not be damaged in
 any way. ESD-proof bags that are crumpled or have holes cannot provide effective protection against
 electrostatic discharges. ESD-proof bags must have a sufficient electrical resistance and must not be
 made of conductive metals if the ESDS component has a lithium battery fitted on it.

4.6 Disposal

Disposal of Packaging Materials



The packaging materials that we use are fully recyclable:

Material	Use for	Disposal
Polystyrene	Packaging frame/filling material	Recycling Depot
PE-LD (Low-density polyethylene)	Accessories packaging, bubble wrap	Recycling Depot
Cardboard	Shipping packaging, accessories	Paper Recycling

For information on the proper disposal of packaging materials in your specific country, please inquire with your local waste disposal company or authority.

Disposal of the Device



This product falls under the labeling obligations of the Waste Electrical and Electronic Equipment Directive 2012/19/EU ("WEEE Directive") and thus bears this WEEE symbol. The presence of this symbol indicates that this electronic product may only be disposed of in accordance with the following provisions.



Important!

<u>Do not</u> dispose of the product via the household waste. Inquire with your local waste disposal company or authority on how to best dispose of the product if necessary.

This product is considered to be a "B2B" product for the purposes of the WEEE Directive and is also classified as "IT and Telecommunications Equipment" in accordance with Annex I of the Directive.

It can be returned to Meinberg for disposal. Any transportation expenses for returning this product (at end-of-life) must be covered by the end user, while Meinberg will bear the costs for the waste disposal itself. If you wish for Meinberg to handle disposal for you, please get in touch with us. Otherwise, please use the return and collection systems provided within your country to ensure that your device is disposed of in a compliant fashion to protect the environment and conserve valuable resources.

5 Replacement or Installation of a Hot-pluggable IMS Module

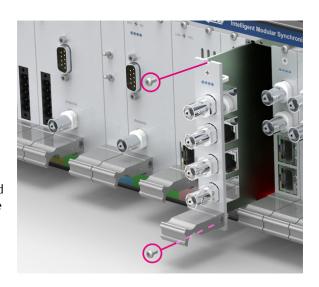
If the system is supplied with an antenna and antenna cable, it is advisable to first mount the antenna in a suitable location (see chapter Antenna Mounting) and lay the antenna cable.

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!
- 2. Remove the two marked Torx screws from the module holder plate or the cover plate of the empty slot.

3. Note when removing!

Pull the module carefully out of the guide 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.



4. Note during installation!

Please ensure that the module is correctly inserted into the two guide rails of the system housing as otherwise damage to the module and the housing could be caused. Make sure that the module is securely locked into the connector block before you fasten the two screws.

5. Now you can put the installed module into operation.



Attachment points of an 1U IMS system

5.1 Important Information Regarding Hot-Pluggable IMS Modules

The following information should be strictly observed when replacing IMS modules during operation. Not all IMS modules are fully hot-pluggable. For example, it is naturally not possible to replace a power supply unit in a system without PSU redundancy without first having installed a second power supply unit while the system is in operation.

The following rules apply for the individual IMS slots:

PWR Slot: "Hot-Swappable" If you operate your system with only one power

supply unit, a second power supply unit must be installed before removing or replacing it in order to

keep your system operational.

I/O, ESI, and MRI

Slots:

"Hot-Pluggable"

CLK1, CLK2 Slots: "Hot-Pluggable" When a clock module is replaced or installed, it is

important to rescan the reference clocks ("Rescan Refclocks") in the "System" menu of the Web

Interface.

RSC/SPT Slots: "Hot-Pluggable" It will not be possible for your IMS system to

switch between signal generators while the

RSC/SPT is not installed.

CPU Slot: "Not Hot-Pluggable" Before the CPU is removed, the IMS system must

be powered down.

Please note that after powering on and rebooting the LANTIME Operating System, the configuration of some IMS modules may be reset to factory

defaults!



Information:

The NTP service and access to the Web Interface will be unavailable while the CPU is not installed. Management and monitoring functions will also be disabled.

6 Technical Specifications - IMS CPU-C15G2

As the central management and control element, the CPU module in an LANTIME system is responsible for management, configuration and alarm notifications. It additionally provides NTP and SNTP services on its network interface. The CPU-C15G2 is equipped with two integrated network interfaces, additional network ports can be added by installing LNE modules.

Processor: Intel® AtomTM Processor E Series

(2 Cores, 1.33GHz, TDP 3W)

Main Memory: onboard 2 GB

Cache Memory: 1MB 2nd Level Cache

Flash Disk: 4 GB

Network

Connector: $1 \times 10/100/1000$ Base-T with RJ45-Jack

 $1 \times 1000 Base-T$ with SFP-Jack

Serial Interface: RJ45 connector

console: 38400 / 8N1,

connection via CAB-CONSOLE cable

USB Port: install firmware upgrades

backup and restore configuration files

copy security keys lock / unlock front keys

Operating System: GNU/Linux 4.x

State LEDs: LAN 0 Interface

LED - Connect, Activity and Speed of the network connection

LAN-CPU

R - Reference Time T - Time Service N - Network A - Alarm



Supported Protocols:

Network Time Protocol (NTP): NTP v2 (RFC 1119), NTP v3 (RFC 1305), NTP v4 (RFC 5905)

SNTP v3 (RFC 1769), SNTP v4 (RFC 4330)

OSI Layer 2 (Data Link Layer): PRP (IEC 62439-3)

OSI Layer 3 (Network Layer): IPv4, IPv6

OSI Layer 4 (Transport Layer): TCP, UDP, TIME (RFC 868),

DAYTIME (RFC 867), SYSLOG

OSI Layer 7 (Application Layer): HTTP / HTTPS (RC 2616), DHCP,

FTP, NTPv3 / NTPv4, SNTP,

RADIUS, TACACS, FTP,

SSH (incl. SFTP, SCP) - SSH v1.3 / SSH v1.5 / SSH v2 (OpenSSH),

SNMPv1 (RFC 1157) /

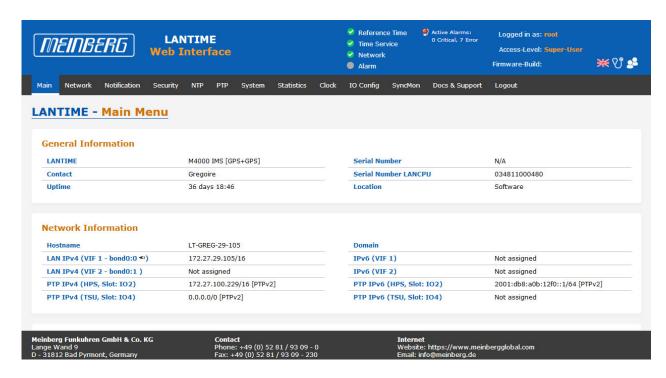
SNMPv2c (RFC 1901-1908) / SNMP v3 (RFC 3411-3418), Telnet (RFC 854-RFC 861)

Environmental:

Ambient Temperature: $0 \dots 50^{\circ}\text{C} / 32 \dots 122^{\circ}\text{F}$

Humidity: Max. 85%

6.1 Main Menu



The LANTIME webinterface provides you with configuration options and status information of your LANTIME system accesssed via Web GUI. The main page contains an overview of the most important configuration and status parameters for the system.

- Information about LANTIME model and software
- Network information
- Receiver status
- NTP status
- PTP status (option)
- Last messages
- Statistics (NTP/MRS Performance, NTP Access ...)
- Extended Statistics (MRS external reference input signals)
- Documentation (Manuals), support information

The field in the lower section shows the last messages of the system with a timestamp added. The newest messages are on top of the list. This is the content of the file /var/log/lantime_messages, which is created after every start of the system (and is lost after a power off or reboot).

By using the navigation on top of the page you can reach a number of configuration menus. All further information about management and monitoring with the LANTIME CPU can be found in our LANTIME firmware manual.

Download the latest LTOS firmware manual at: http://www.mbg.link/doce-fw-ltos

7 RoHS Conformity

Conformity with EU Directive 2011/65/EU (RoHS)

We hereby declare that this product is compliant with the European Union Directive 2011/65/EU and its delegated directive 2015/863/EU "Restrictions of Hazardous Substances in Electrical and Electronic Equipment" and that no impermissible substances are present in our products pursuant to these Directives.

We warrant that our electrical and electronic products sold in the EU do not contain lead, cadmium, mercury, hexavalent chromium, polybrominated biphenyls (PBBs), polybrominated diphenyl ethers (PBDEs), bis(2-ethylhexyl)phthalat (DEHP), benzyl butyl phthalate (BBP), dibutyl phthalate (DBP), or diisobutyl phthalate (DIBP) above the legal limits.



