



The Synchronization Experts.



## MANUAL

### IMS BPE-3050 Setup Guide

#### Hot-Plug Module

October 19, 2023

Meinberg Funkuhren GmbH & Co. KG



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# 1 Imprint

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## 3 Presentation Conventions in this Manual

### 3.1 Conventions for the Presentation of Critical Safety Warnings

Warnings are indicated with the following warning boxes, using the following signal words, colors, and symbols:



#### Caution!

This signal word indicates a hazard with a **low risk level**. Such a notice refers to a procedure or other action that may result in **minor injury** if not observed or if improperly performed.



#### Warning!

This signal word indicates a hazard with a **medium risk level**. Such a notice refers to a procedure or other action that may result in **serious injury or even death** if not observed or if improperly performed.



#### Danger!

This signal word indicates a hazard with a **high risk level**. Such a notice refers to a procedure or other action that will very likely result in **serious injury or even death** if not observed or if improperly performed.

## 3.2 Secondary Symbols Used in Safety Warnings

Some warning boxes may feature a secondary symbol that emphasizes the defining nature of a hazard or risk.



The presence of an "electrical hazard" symbol is indicative of a risk of electric shock or lightning strike.



The presence of a "fall hazard" symbol is indicative of a risk of falling when performing work at height.



This "laser hazard" symbol is indicative of a risk relating to laser radiation.

## 3.3 Conventions for the Presentation of Other Important Information

Beyond the above safety-related warning boxes, the following warning and information boxes are also used to indicate risks of product damage, data loss, and information security breaches, and also to provide general information for the sake of clarity, convenience, and optimum operation:



### Important!

Warnings of risks of product damage, data loss, and also information security risks are indicated with this type of warning box.



### Information:

Additional information that may be relevant for improving efficiency or avoiding confusion or misunderstandings is provided in this form.

### 3.4 Generally Applicable Symbols

The following symbols and pictograms are also used in a broader context in this manual and on the product.



The presence of the "ESD" symbol is indicative of a risk of product damage caused by electrostatic discharge.



Direct Current (DC) (*symbol definition IEC 60417-5031*)



Alternating Current (AC) (*symbol definition IEC 60417-5032*)



Ground Connection (*symbol definition IEC 60417-5017*)



Protective Earth Connection (*symbol definition IEC 60417-5019*)



Disconnect All Power Connectors (*symbol definition IEC 60417-6172*)



## 4 Important Safety Information



Please ensure that IMS modules designed for "hot-plugging" (modules that are removable and insertable while a system is in operation) are always handled with the utmost care.

**Before performing any maintenance work on the system:**

- We recommend making a backup of any stored configurations (e.g. using a USB flash drive or from the Web UI)
- Take note of the chapter "Prevention of ESD Damage".
- Take note of the chapter "Power Supply".

### 4.1 Product Documentation

Detailed product documentation is provided on a USB flash drive delivered with the Meinberg system. The manuals can also be downloaded from the Meinberg website at <https://www.meinbergglobal.com>, where you can enter your system name into the search box at the top of the page to find the relevant manual. Alternatively, contact Meinberg Support for further assistance.

The "Docs & Support" menu on the Web Interface also provides user manuals for time server administrators.



This manual contains important safety instructions for the installation and operation of the device. Please read this manual thoroughly before using the device.

This device may only be used for the purpose described in this manual. In particular, the specified operating limits of the device must be heeded. The person setting up the device is responsible for safety matters in relation to any larger system in which the device is installed!

Failure to observe these instructions may have an adverse impact on device safety!

Please keep this manual in a safe place.

#### Target Readership

This manual is only intended to be used by qualified electricians, or by persons who have been appropriately instructed by a qualified electrician and who are familiar with applicable national standards and with safety rules & regulations. This device may only be installed, set up, and operated by qualified personnel.

## 4.2 Prevention of ESD Damage



### ATTENTION!

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



### Symbol Indicating Devices with ESDS Components

The following measures will help to protect ESDS components from damage and malfunction.

#### When preparing to dismantle or install devices:

Ground your body (for example, by touching a grounded object) before touching sensitive devices.

Ensure that you wear a grounding strap on your wrist when handling such devices. These straps must in turn be attached to an uncoated, non-conductive metal part of the system.

Use only tools and devices that are free of static electricity.

#### When transporting devices:

Devices must only be touched or held by the edges. Never touch any pins or conductors on the device.

#### When dismantling or installing devices:

Avoid coming into contact with persons who are not grounded. Such contact may compromise your connection with the earth conductor and thus also compromise the device's protection from any static charges you may be carrying.

#### When storing devices:

Always store devices 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 device has a lithium battery fitted on it.

## 4.3 Power Supply



### WARNING!

The IMS system in which the module is used is operated at a dangerous voltage. Please refer to your IMS Manual for more information about safety.

When removing a hot-pluggable power supply unit, always disconnect its power cable before removing it from the IMS system.

Never open a power supply unit—there may still be hazardous residual voltages present even after disconnection from the mains supply. In the event that a power supply unit is no longer working (e.g. defective), please return it to Meinberg for repair.

Failure to observe these safety instructions may result in serious injury and/or property damage. The IMS system must only be installed, set up, and operated by qualified personnel.

## 4.4 Cabling



### WARNING!

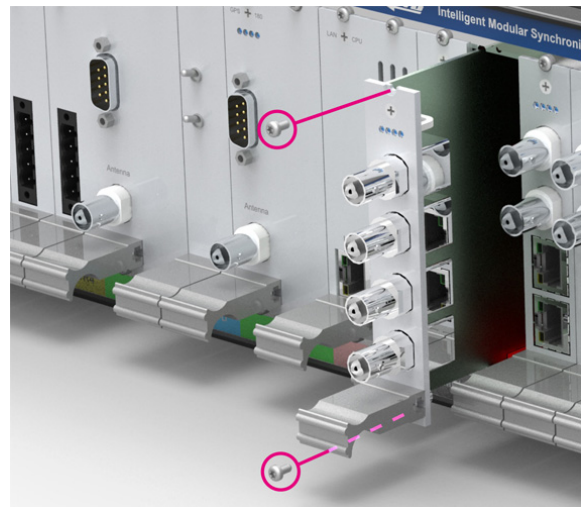
Danger of death from electric shock! Never work on cables while the power is live! Always disconnect the cables from the devices at **both** ends before working on the plugs and terminals of connected cables!

## 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:

<b>PWR Slot:</b>	"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.
<b>I/O, ESI, and MRI Slots:</b>	"Hot-Pluggable"	
<b>CLK1, CLK2 Slots:</b>	"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.
<b>RSC/SPT Slots:</b>	"Hot-Pluggable"	It will not be possible for your IMS system to switch between signal generators while the RSC/SPT is not installed.
<b>CPU Slot:</b>	" <u>Not</u> 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 BPE-3050 - Backplane Port Expander

**Output Signals:** 2 outputs - D-SUB9 female / RS422 level programmable pulses - configured via the pre-connected clock module (PPO 1) (Cyclic Pulse, Timer, PPS, PPM, PPH, DCF77 Marks, TimeSync, DCLS Time Code, Freq.Synth)

**Power Requirements:** 5 V  $\pm$ 5%, 150 mA

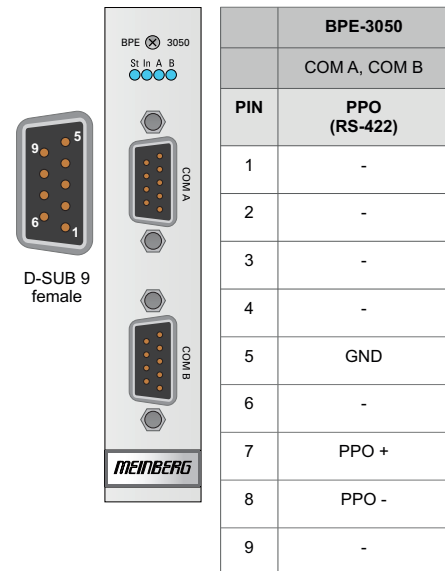
### Status Indicators

LED St: BPE status  
 LED In: Status of the backplane's output signals  
 LED A: BPE status - output signal COM A  
 LED B: BPE status - output signal COM B

**Initialisation:** LED St: blue until USB is configured  
 LED In - LED B: off until USB is configured

**USB is configured:** LED St: blue  
 LED In - LED B:  
 0,5 sec. red -> 0,5 sec. yellow ->  
 0,5 sec. green -> 0,5 sec. off

**Normal Operation:** LED St. + LED In: green  
 LED A: green, if the desired signal is present on output COM A  
 LED B: green, if the desired signal is present on output COM B



*Figure right: BPE-3050  
 PPO\_1 (Clock) via D-SUB9 female connectors*

## 6.1 Configuring an BPE expansion card via the Web Interface

A simple BPE expansion card usually gets its signals directly from the internal backplane of the system. The output signals of the card are pre-configured according to customer requirements.

If an output signal has to be changed, this must be done via the pre-connected receiver – in the menu "Clock → Switch Card" if you have a redundant system or in the menu "Clock → Receiver" in systems with only a single receiver. The BPE modules have no direct configuration options. This information is also displayed in the "IO Config" menu.

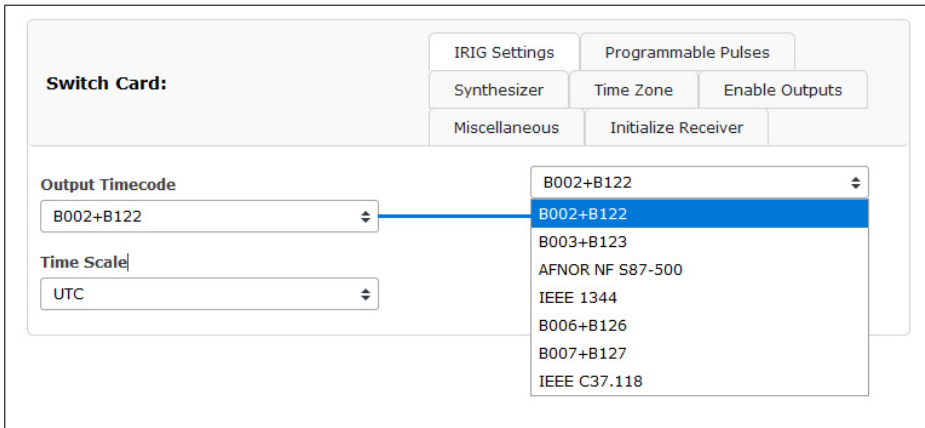


Figure: menu "Clock → Switch Card → IRIG Settings"

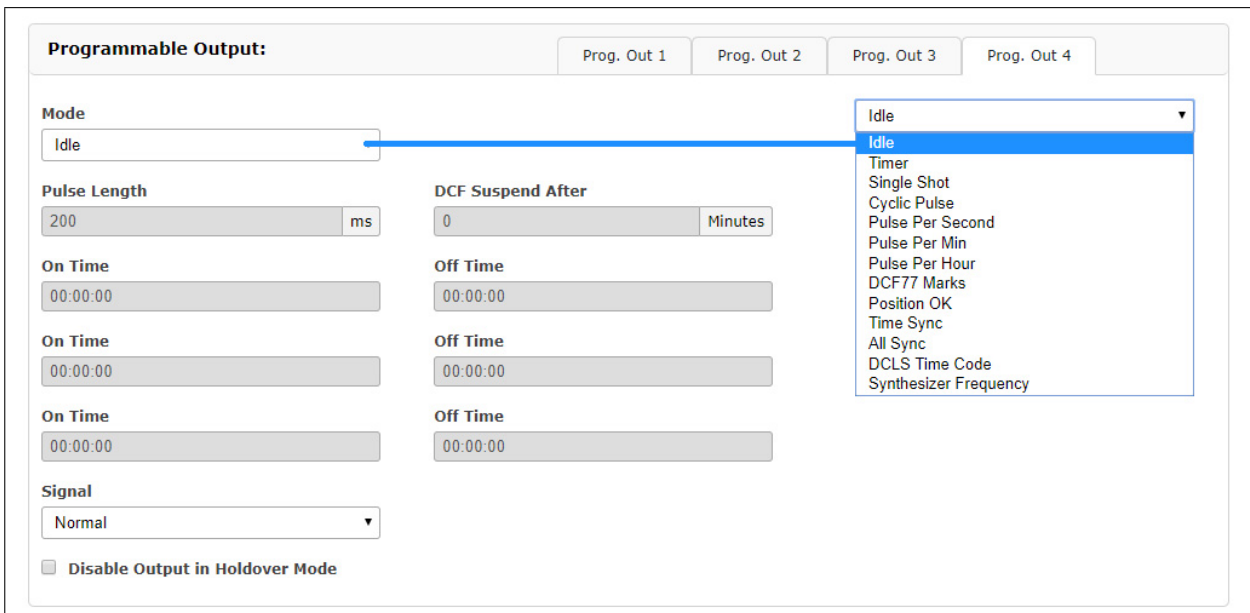


Figure: menu "Clock → Programmable Pulses → Selection of Pulse per Second"

**Please Note:**

The BPE-3050 has two outputs via D-SUB9 connectors. Both outputs are connected to the programmable output 1 (Prog. Out 1) of the reference clock. This means that the same output signal is always present at both connectors.

## 7 RoHS and WEEE

### Compliance 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". We ensure that 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.



### WEEE status of the product

This product is handled as a B2B (Business to Business) category product. To ensure that the product is disposed of in a WEEE-compliant fashion, it may be returned to the manufacturer. 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.







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