The Synchronization Experts.

MANUAL

BPE-8000 Series

Setup Guide

14th August 2019

Meinberg Funkuhren GmbH & Co. KG

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1 Imprint

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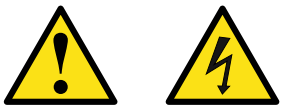
2 Safety Instructions for hot pluggable Modules



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 opteration 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! Installtion, 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 manufaturer.

Supply lines for this decice 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 decice 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!

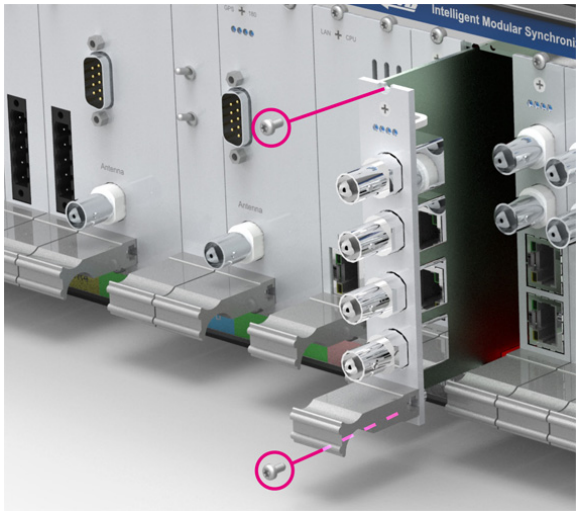
3 Replacement or Installation of a Hot-pluggable IMS Module

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

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:

I/O, ESI and MRI Slots = "hot swappable".

CLK1, CLK2 = "hot swappable" but a rescan of the reference clocks (Rescan Refclocks) must be executed in the web interface menu "System" after the exchange or installation of a clock module.

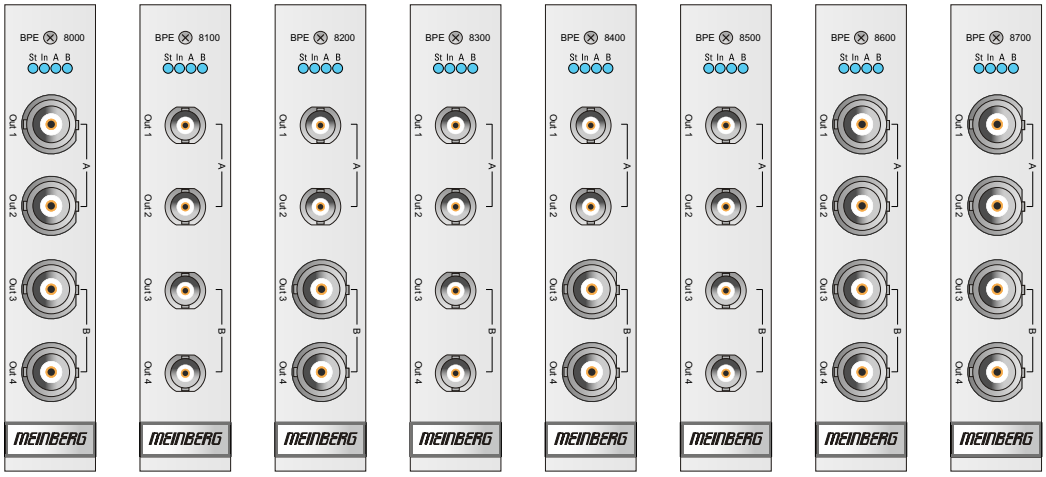
CPU = The central management unit is not "hot swappable", i.e. the system must be disconnected from mains before replacement.

RSC/SPT = The RSC switching card is not "hot swappable", i.e. the system must be disconnected from the mains before replacement.

4 BPE-8000 - Switchable Backplane Port Expander

Output Signals:	adjustable via the web interface (TTL or Fiber Optical): PPS, 10MHz, 2048 kHz, TC-DCLS, Progr. Pulses or fixed: 2.048 MHz (ITU G.703-15), TC-AM
Power Requirements:	5 V +-5%, 150 mA / BNC 5 V +-5%, 150 mA / FO
Status Indicators	
LED St:	BPE status
LED In:	Status of the backplane's output signals
LED A:	BPE status - output signals (1 + 2)
LED B:	BPE status - output signals (3 + 4)
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 1 and output 2 LED B: green, if the desired signal is present on output 3 and output 4

Available BPE-8000 Models



BPE Module	Connectors	Signal Outputs
BPE-8000	4x BNC female	TTL
BPE-8100	4x ST	Fiber Optic - Multimode
BPE-8200	2x ST, 2x BNC female	2x Fiber Optic - Multimode, 2x TTL
BPE-8300	4x ST	Fiber Optic - Singlemode
BPE-8400	2x ST, 2x BNC female	2x Fiber Optic - Singlemode, 2x TTL
BPE-8500	4x ST	2x Fiber Optic - Multimode, 2x Fiber Optic - Singlemode
BPE-8600	4x BNC female	2.048 MHz (ITU G.703-15 - 75 Ω unbalanced) *
BPE-8700	4x BNC female	3x TTL, 1x Modulated Time Code - TC-AM **

* Fixed outputs, no signal selection possible.

** BNC sockets Out 1 - Out 3 are freely programmable, Out 4 is permanently set to TC AM.

4.1 Configuring an BPE-8000 expansion card via the Web Interface

Via the web interface or the Meinberg Device Manager (MDU), the following signals can be distributed to the BNC connectors (TTL) or fiber optical connectors (ST) according to your choice: PPS, 10MHz, Time Code DCLS, 2048kHz and programmable pulse outputs PP 1 - PP 4 of the upstream reference source. With the programmable pulse outputs, each output channel of the pulse generator (IMS receiver) can now also be switched through to all available connectors of the BPE (for example PP 1 to Out 1 - Out 4 of the BPE).

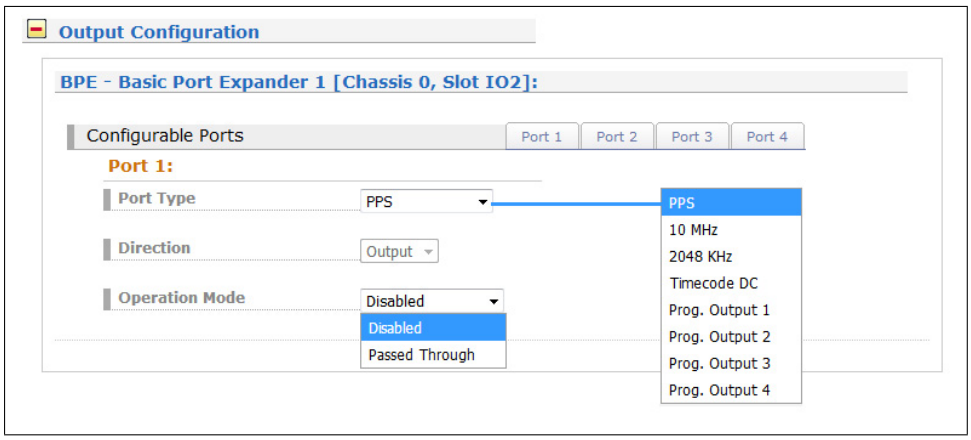


Figure: Web interface menu "IO Config → Output Configuration"

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