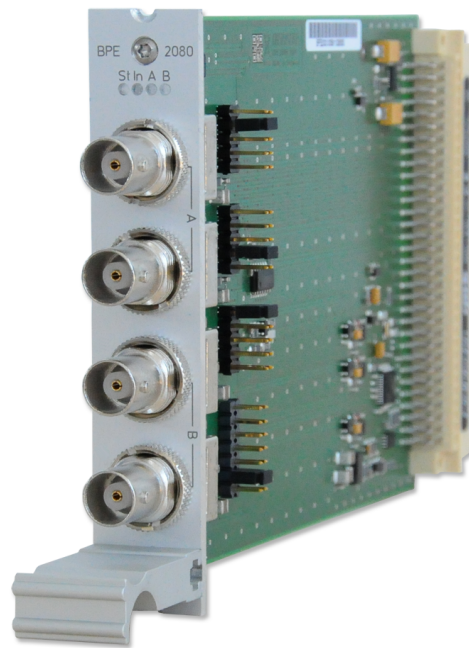




The Synchronization Experts.



## **MANUAL**

### **BPE-2000**

#### **Setup Guide**

19th November 2019

Meinberg Funkuhren GmbH & Co. KG



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# 1 Imprint

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Date: 2016-10-07

## 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.

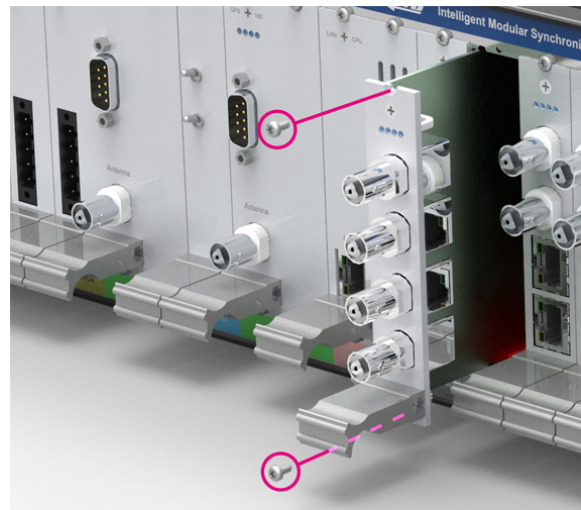
**ALWAYS ENSURE A PROPER INSTALLATION!**

## 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:

<b>PWR:</b>	"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.
<b>I/O, ESI and MRI Slots:</b>	"hot swappable".	
<b>CLK1, CLK2:</b>	"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".
<b>CPU</b>	<u>not</u> "hot swappable"	The central management unit must be disconnected from mains before replacement.
<b>RSC/SPT</b>	<u>not</u> "hot swappable"	The RSC switching card must be disconnected from the mains before the replacement.

## 4 BPE-2000 - Backplane Port Expander

**Output Signals:** fixed:  
PPS, 10MHz, TC-DCLS, 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)

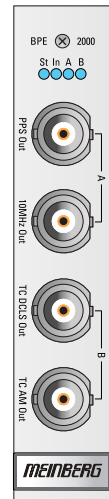
**Initialisation:** LED St: blue until USB is configured  
LED In - LED B: off until USB is configured

**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

### BPE Outputs

Out 1: PPS  
Out 2: 10MHz  
Out 3: TC DCLS  
Out 4: TC-AM



## 4.1 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.

**Switch Card**

**IRIG Settings**

IRIG Output Code: B002+B122

Time Scale: UTC

- + Time Zone
- + Enable Outputs
- + Programmable Pulses
- + Synthesizer
- + Initialize Receiver
- + Receiver Information

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

**Output Configuration**

**BPE - Basic Port Expander 1 [Chassis 0, Slot IO4]:**  
**This card has no configuration options available.**

**BPE - Basic Port Expander 2 [Chassis 0, Slot IO3]:**  
**This card has no configuration options available.**

**BPE - Basic Port Expander 3 [Chassis 0, Slot IO2]:**  
**This card has no configuration options available.**



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