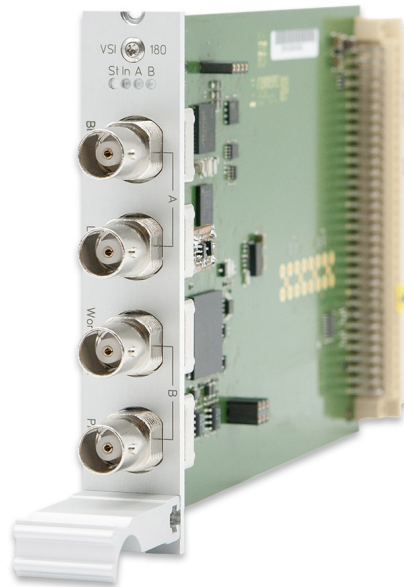




The Synchronization Experts.



SETUP GUIDE

IMS VSI180

Hot-Plug Module

29th March 2021

Meinberg Funkuhren GmbH & Co. KG

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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

Internet: <https://www.meinbergglobal.com>

Mail: info@meinberg.de

Date: 29.03.2021

2 Introduction

This Setup Guide is a systematically structured guideline which supports you during the set-up of your Meinberg product.

The IMS-VSI180 (Video Synchronization Input) is able to provide video signals as reference to an IMS clock module. It can process Black Burst (PAL) with VITC, LTC (Longitudinal Time and Control Code) as well as Word Clock frequencies.

Further, the module has a pulse per second input (1PPS) for synchronization of the receiver module.

Role as Black Burst-to-PTP converter

For example, the IMS-VSI180 allows users to set up a Black Burst to PTP converter with a LANTIME IMS system.

Requirement:

The system (e.g. LANTIME IMS-M1000) is equipped with a IMS-VSI180 and a HPS100 module configured as a PTP grandmaster. The clock module is synchronized via the video input signal and serves as an accurate and stable time base for the HPS100 module.

The LTOS7 manual provides a complete description of all configurations and status monitoring options of your Meinberg product.

Download LTOS7 firmware manual:

https://www.meinbergglobal.com/download/docs/manuals/english/ltos_7-02.pdf

Compatibility

The IMS-VSI180 is compatible with all LANTIME systems of the IMS family. It can be used as reference module in MRI and ESI slots.

3 Important Safety Hints



Please make sure that IMS modules that can be exchanged during operation are always handled with utmost care.

Before any maintenance work on the system:

- Backup of stored configurations is recommended (e.g. via USB stick or Web UI)
- Please note the chapter "Prevention of ESD damage".
- Please note the chapter "Supply voltage".

3.1 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.

3.2 Prevention of ESD Damage



ATTENTION!

The designation ESD (Electrostatic Sensitive Devices) refers to measures which are used to protect electrostatically endangered components from electrostatic discharge and thus to prevent destruction. Systems and assemblies with electrostatically endangered components usually have the following characteristics:



Indicator for assemblies with electrostatic endangered components

The following measures protect electrostatically endangered components from destruction:

Prepare removal and installation of assemblies

Unload yourself (for example, by touching a grounded object) before touching assemblies.

Ensure that you wear a grounding strap on the wrist when working with such assemblies, which you attach to an unpainted, non-conductive metal part of the system.

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

Transporting Assemblies

Assemblies may only be touched at the edge. Do not touch any pins or conductors on assemblies.

Installing and Removing Assemblies

Do not touch persons who are not grounded while removing or installing components. This could result in a loss of grounding protection from your electrostatic discharge.

Storing Assemblies

Always keep assemblies in ESD protective covers. These protective covers must be undamaged. ESD protective covers, which are extremely wrinkled or even have holes, no longer protect against electrostatic discharge.

ESD protective covers must not be low-resistance and metallically conductive if a lithium battery is installed on the assembly.

3.3 Supply Voltage



WARNING!

The IMS system in which the module is used operates at a dangerous voltage. The specific safety instructions can be found in the manual of the respective IMS System.

If the module is a hot-pluggable power supply unit, disconnect its power cable before removing it from the IMS System.

Never open a power supply unit cause dangerous voltages can even exist after it has been disconnected from the electrical supply. If a power supply is not working anymore, e.g. due to a defect, please send it back to Meinberg for necessary repairs.

Non-observance of these safety instructions can cause serious personal injury and material damage. Installation, initial start-up and operation of the IMS System may only be performed by qualified technical experts.

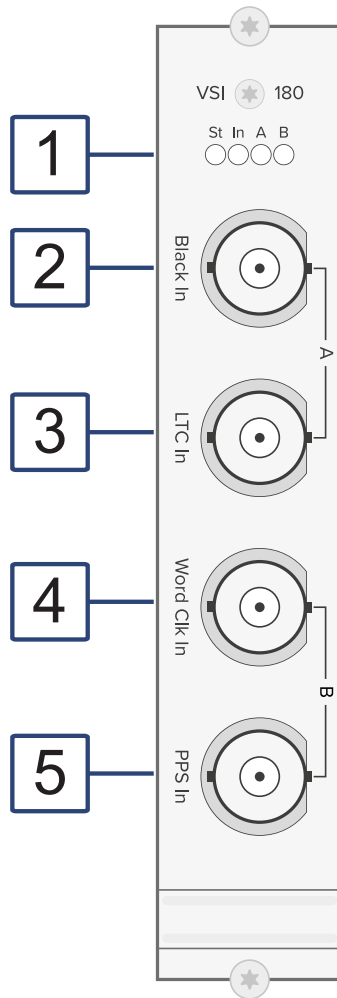
3.4 Cabling



WARNING!

Danger to life through electric shock! Never work with voltage applied! When working on the plugs and terminals of connected cables, always disconnect both sides of the cables from the respective devices!

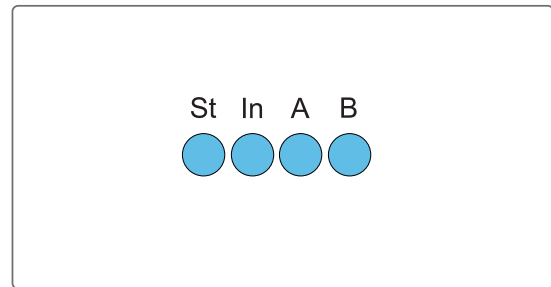
4 Front Connectors IMS VSI180



4.1 Status LEDs

Status indicator

LED St: Status of VSI180
 LED In: Synchronization status
 LED A: No function
 LED B: No function



The status messages of the LEDs result as follows..

LED St:

Blue During initialization
 Green During operation

LED In:

Shows status after initialization

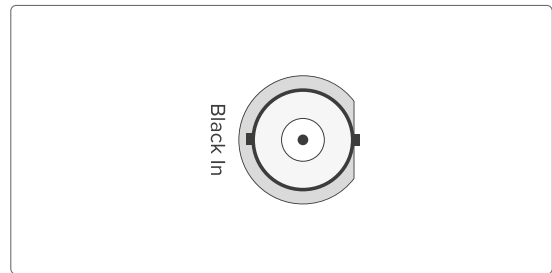
Green Accurate
 Green Flashing Timesync
 Yellow Insufficient quality of the reference signal.
 Red Reference signal not available / VSI180 is not synchronous

LED A - Status No function

LED B - Status No function

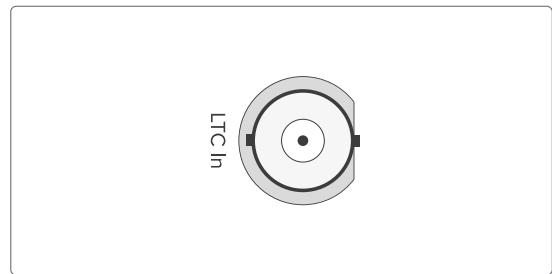
4.2 Blackburst Input

Input Signal	Black Burst (PAL) Input with VITC Reader Input with Prescaler mode (Frequency only)
Signal level:	300 mV _{ss} into 75 ohms (unbalanced)
Time Code Formats:	PAL SMPTE259M / ITU-R BT.470-6 SMPTE12M-1 / SMPTE ST309M
Connection type:	BNC female connector
Cable:	Coaxial cable, shielded



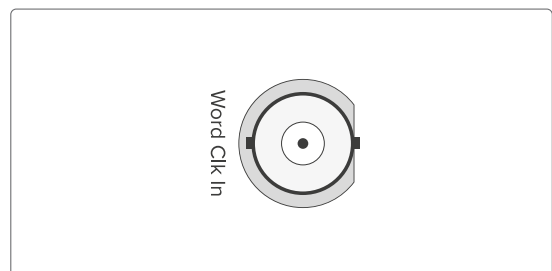
4.3 LTC Input

Input Signal:	LTC Reader (25 fps)
Connection type:	BNC female
Cable:	shielded coax line



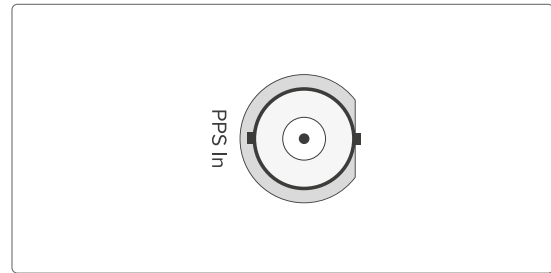
4.4 Word Clock Input

Input signal:	Word Clock Input with programmable frequency range
Signal level:	TTL
Frequency range:	1 kHz - 10 MHz
Connection type:	BNC female
Cable:	Coaxial cable, shielded



4.5 Pulse Per Second Input

Input signal	PPS (pulse per second)
Signal level:	TTL
Pulse length:	$\geq 5 \mu\text{s}$, active high
Connection type:	BNC, female
Cable:	shielded coax line



5 Before you start

5.1 Scope of Delivery

Unpack the IMS-VS1180 carefully and check the scope of delivery against the enclosed packing list to ensure that no parts are missing. If any of the listed items are missing, please contact our sales department: sales@meinberg.de

Check the system for shipping damage. If the system is damaged or cannot be put into operation, contact Meinberg immediately. Only the recipient (the person or company receiving the system) can assert a claim against freight forwarder for shipping damage.

Meinberg recommends that you keep the original packaging materials for possible future transport.

5.2 Disposal of Packaging Materials



The packaging materials we use are fully recyclable:

Material	Use for	Disposal
Cardboard	Shipping packaging, accessories packaging	Paper recycling
Foil	Shipping packaging, accessories packaging	Household waste or recycling depot

6 System Installation

6.1 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 plugable".	
CLK1, CLK2:	"hot plugable"	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".
RSC/SPT:	"hot plugable"	The switching function or the distribution of generated signals is interrupted while the RSC/SPT is disconnected.

CPU: "hot plugable"



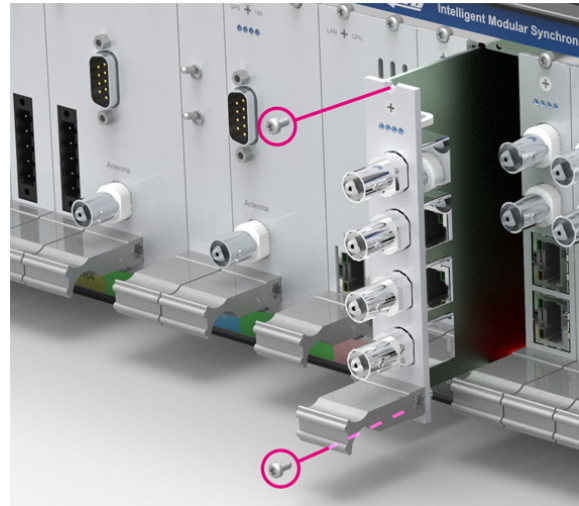
The NTP service and access to the web interface are interrupted while the CPU is disconnected. Also the management and monitoring functions are no longer available.

6.2 Installation of hot-pluggable IMS modules.

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

6.3 Connecting the System

The following schematic diagram shows an IMS-LANTIME M1000, which is synchronized by a VSI input card (Black Burst → PTP converter).

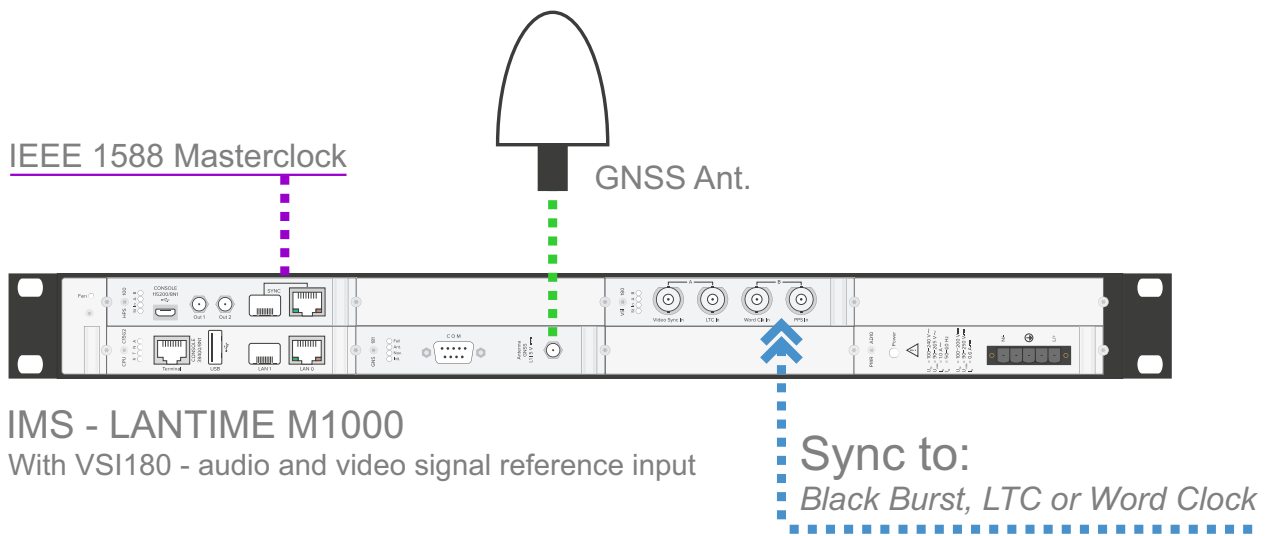


Figure: M1000 with HPS in master mode - synchronized by audio/video signal generator

7 Configuration of VSI180 via Webinterface

VSI - Video Signal Input References

Menü "IO Config → Input Configuration → VSI-Module"

LANTIME - IO Configuration

- ▶ [Input Configuration](#)
- ▶ [Output Configuration](#)
- ▶ [Status](#)
- ▶ [Information](#)

Video Sync Interface: configurable Inputs

VSI - Video Sync Interface 1 [Chassis 0, Slot ES11] Input 1 Input 2 Input 3 Input 4

Input Type
Video In

Format
PAL (625i)

Epoch
TAI D1970-01-01 T00:00:00

Signal Source
Single-ended signal input

Time Code Modes
None

Time Code Line
6

Label

Input 1:	Video Sync In
Format:	PAL 625i
Epoch:	TAI
Signal Source:	Single-ended signal input
Time Code Modes:	VITC
Time Code Line:	6 - 22

VSI - Video Sync Interface 1 [Chassis 0, Slot ESI1] Input 1 Input 2 Input 3 Input 4

Input Type
 LTC In

Type
 LTC 25FPS

Label

Input 2: LTC In
Type: LTC 25 FPS (Frames per Second)

VSI - Video Sync Interface 1 [Chassis 0, Slot ESI1] Input 1 Input 2 Input 3 Input 4

Output Type
 Freq. In

Frequency

Maximum Slip
 Cycles

Label

Input 3: Word Clk In
Frequency: 1 kHz - 10 MHz
Max Slip: 0.5 - 3.0 oscillations

VSI - Video Sync Interface 1 [Chassis 0, Slot ESI1] Input 1 Input 2 Input 3 Input 4

Port Type
 PPS

Direction
 Input

Operation Mode
 Always enabled

Label

Input 4: PPS In
Pulse length: $\geq 5\mu s$, active high

7.1 Status Monitoring of the IMS-VSI

The submenu "Status" of the "IO Config" allows you to view the status of each port of the installed IMS-VSI module. In addition, the current operating temperature of the module is displayed in this menu.

VSI - Video Sync Interface 1 [Chassis 0, Slot ESI1]		
Output	Type	Status
Port 1	GPIO	Input signal is currently lost
Port 2	GPIO	Input signal is currently lost
Port 3	GPIO	Input signal is avail
Port 4	PPS	Input signal is avail

Temperature Sensor 1	Temperature Sensor 2	Current Consumption Sensor 1
Current: 33.25°C	Current: 34.75°C	Current: 0.30A

8 RoHS and WEEE

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

We hereby declare that this product is conform to the European 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), and polybrominated diphenyl ethers (PBDEs), Bis (2-ethylhexyl)phthalat (DEHP), Benzylbutylphthalat (BBP), Dibutylphthalat (DBP), Diisobutylphthalat (DIBP), above the legal threshold.



WEEE status of the product

This product is handled as a B2B (Business to Business) category product. In order to secure a WEEE compliant waste disposal it has to be returned to the manufacturer. Any transportation expenses for returning this product (at its end of life) have to be incurred by the end user, whereas Meinberg will bear the costs for the waste disposal itself.

