vsm LTC Interface

User Manual

Version: 4.0/1

Edition: 31 March 2017

Revision History

Version	Edition	Changes	Firmware Version
1	2014-05-20	Initial draft	0.11
2	2014-06-13	Initial Release	0.11
4.0/1	2017-03-31	New Overview graphics & template	0.11

To obtain the latest documentation and software downloads, please visit:

www.lawo.com/downloads

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1. Welcome

About this Manual

This document describes how to install and setup the **vsm LTC Time Sync Interface** within a VSM system.

Note that a system may comprise several software and hardware components.

Other useful documents include the:

- **vsm Software User Manual** - more about **vsmStudio**, the main configuration and administration tool, plus other software components: **vsmPanel**, **vsmWebPanel**, **vsmTimeSync**, etc.
- **vsm Gear User Manuals** - more about other hardware panel and interface options.

All Lawo manuals are available from the **Download-Center** at www.lawo.com (after **Login**).

Look out for the following which indicate:

Notes - points of clarification.

Tips - useful tips and short cuts.

Warnings

Alert you when an action should *always* be observed.

Lawo User Registration

For access to the **Download-Center** and to receive regular product updates, please register at:

www.lawo.com/user-registration.

2. Important Safety Instructions

General Safety

Warning

Exposure to excessive sound pressure levels can lead to impaired hearing and cause damage to the ear.

Please read and observe ALL of the following notes:

- Check all of the hardware devices for transport damage.
- Any devices showing signs of mechanical damage or damage from the spillage of liquids MUST NOT be connected to the mains supply or disconnected from the mains immediately by pulling out the power lead.
- All devices MUST be grounded. Grounding connectors are provided on all devices. In addition, all low-voltage devices external to the system must also be grounded before operation.
- For Scandinavian countries, ALWAYS use a grounded mains connection, to prevent the device from being grounded through Ethernet or other signal connections.
- Do NOT use the system at extreme temperatures - observe the temperature range and humidity specified in the installation instructions.
- Do NOT expose devices to liquids which may drip or splash.
- Do NOT place objects filled with liquids, such as vases, upon a device.
- Only service staff may replace batteries.
- CAUTION: Danger of explosion if battery is incorrectly replaced - Replace only with the same or equivalent type.

Servicing of components inside a device MUST only be carried out by qualified service personnel according to the following guidelines:

- Before removing parts of the casing, shields, etc. the device MUST be switched off and disconnected from all mains.
- Before opening a device, the power supply capacitor MUST be discharged with a suitable resistor.
- Components that carry heavy electrical loads, such as power transistors and resistors, should NOT be touched until cool to avoid burns.

Servicing unprotected powered devices may only be carried out by qualified service personnel at their own risk. The following instructions MUST be observed:

- NEVER touch bare wires or circuitry.
- Use insulated tools ONLY.
- DO NOT touch metal semi-conductor casings as they can bear high voltages.

Eye Safety

Warning

This equipment may use Class 1 Laser products which emit invisible laser radiation that may lead to eye injury.

- NEVER look directly into optical components or optical fibre cables.
- Fit protection caps to close any unused optical components.
- Connect all optical fibre cables BEFORE turning on the equipment.

Defective Parts/Modules

Warning

vsm LTC Time Sync Interface contains no user-serviceable parts. Therefore DO NOT open the devices other than to perform the procedures described in this manual.

In the event of a hardware defect, please send the system component to your local service representative together with a detailed description of the fault. We would like to remind you to please check carefully whether the failure is caused by erroneous configuration, operation or connection before sending parts for repair. Please contact our service department before sending parts for repair.

First Aid (in the case of electric shock)

Warning

DO NOT touch the person or his/her clothing before power is turned off, otherwise you risk sustaining an electric shock yourself.

Separate the person as quickly as possible from the electric power source as follows:

- Switch off the equipment.
- Unplug or disconnect the mains cable.
- Move the person away from the power source by using dry insulating material (such as wood or plastic).

If the person is unconscious:

- Check their pulse and reanimate if their respiration is poor.
- Lay the body down and turn it to one side. Call for a doctor immediately.

Having sustained an electric shock, ALWAYS consult a doctor.

3. Introduction

The **vsm LTC Time Sync** is an interface between a longitudinal time code signal and a USB port. The LTC signal can be used to provide a PC or server with timecode synchronisation through the LTC. The LTC Time Sync unit comes with an additional video-sync input, which is currently not used to synchronize vsmStudio server with vTimeSync. The device accepts all LTC signals according SMPTE 12M (-1/-2)/EBU timecode standard. The interface supports PAL/NTSC-Standard, but **no NTSC-Drop-Frame-Mode.**

Features:

- 2 LTC time code input via SUB-D15 female for PAL/NTSC-Standard.
- 2 Serial RS232 port “output” via SUB-D9 female for redundancy application only.
- 2 USB ports via USB device connector for Interface with vTimeSync on vsm server.
- 2 video sync input (black burst) 75 Ohm via BNC.

4. Overview

LTC Time Sync Unit Dual

Number of ports	2 x LTC longitudinal timecode audio signal according to SMPTE 12M (-1/-2)
Communication port	2xUSB
Dimensions	483mm x 43,7mm x 125,4mm (WxHxD):1RU
Weight	approx. 1,4KG
Power Consumption	<2,1W @12VDC/0,17A max(2x)
Working Environment	0°C-60°C non-condensing humidity

5. Operating Conditions

This device is built to be used in a non-condensing environment within a temperature range of 0-60°C. Under or overshooting this working temperature range may cause fast aging of components or even malfunction of the whole device.

Spillage of any liquids e.g. coffee, coke, water... onto/into the device may cause damage.

The storage temperature of the device must be within -20°C to 60°C with a maximum of 75% non-condensing relative humidity at 60°C @ 0VDC supply-voltage.

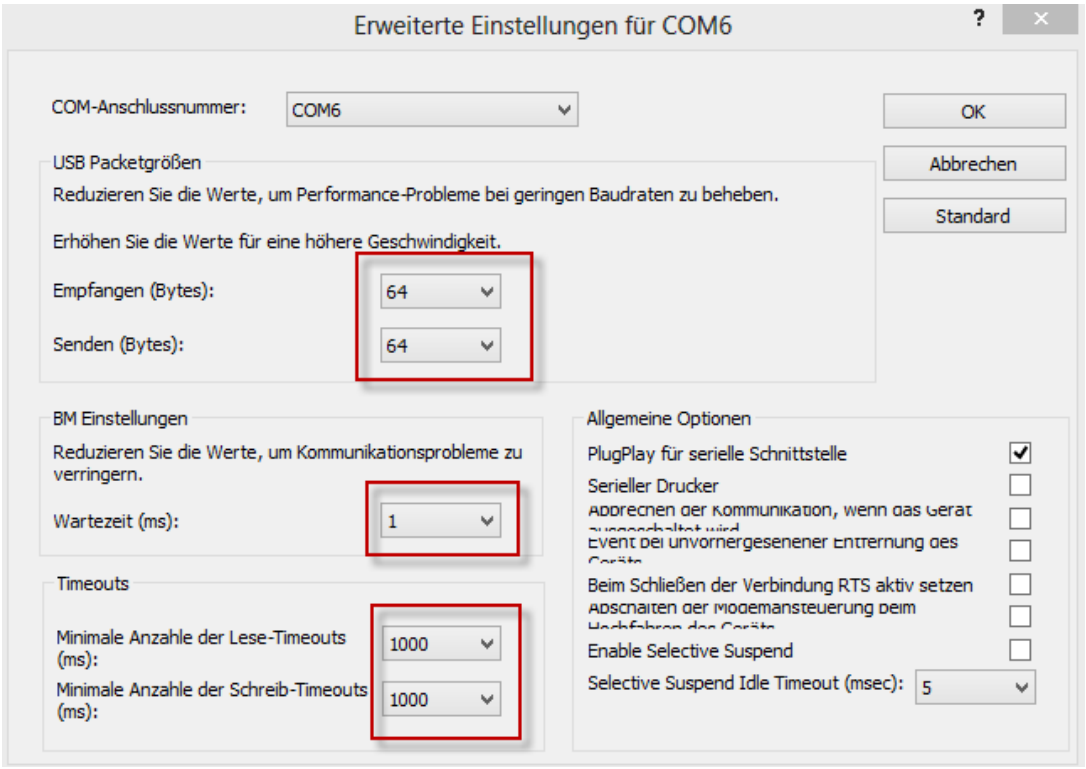
DO NOT throw, drop or bend the unit and make sure that there is no strong permanent mechanical pressure on any side of the housing at any time.

Before installing or using this device, always read and observe the Important Safety Instructions.

6. Preparing for Operation

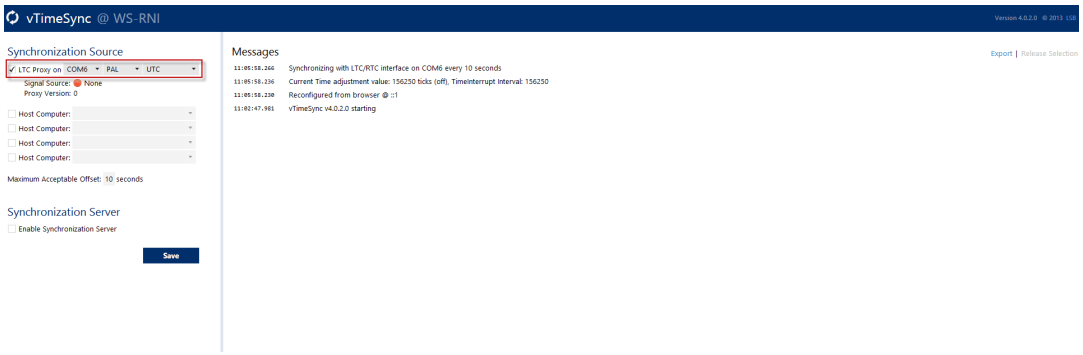
All servers running vTimeSync (the synchronisation application for VSM Studio) will be shipped with pre-installed and pre-configured USB driver. If you need to install the USB driver please download the latest version here or contact our support team.

First properly install the USB driver and connect the LTC Time Sync unit to the server. If Windows has detected the LTC Time Sync unit go to “Device Manager/Ports (COM & LTP)/COM port number (LTC IF)”. Find the Tab “Port Settings” and go to Advanced Settings. Now configure the LTC Time Sync unit USB port as the following, press “OK” and restart Windows if needed.



Now connect the LTC signal to the device. After ca. 30 seconds the device will show at the front status LEDs the LTC online state.

Open the “Gui.html” file in the vTimeSync installation folder or use this link to setup the COM Port for vTimeSync as following:

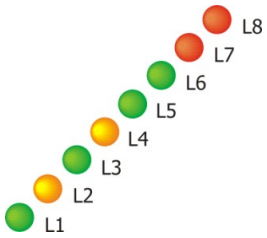


If the “Signal Source” LED turns green and the “Proxy Version” shows a valid Firmware Version, vTimeSync has established a valid connection to the LTC Time Sync unit. For further information about vTimeSync read the corresponding manual.

7. Technical Specifications

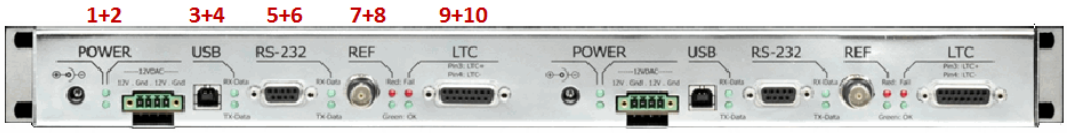
7.1 Status LEDs

Legend for the front status LED



Green (L1): Power/Ready
Yellow (L2): Physical connection to PC established
Green (L3): RTC available
Yellow (L4): Backup source operation
Green (L5): V-Sync online
Green (L6): LTC online
Red (L7): V-Sync error
Red (L8): LTC error

Legend for the rear status LED's



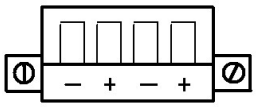
Green/Green (1+2): Power good (internal regulator)
Green/Green (3+4): RX/TX indicator for USB port
Green/Green (5+6): RX/TX indicator for RS232 port
Red/Green (7+8): Video sync reference status, red: fail; green: ok
Red/Green (9+10): LTC status information, red: fail; green: ok

7.2 Connectors

7.2.1 Power

Connector for 12 V DC-supply: 4-Pin connector (MC 1,5/ 4-STF-3,81) locked with two screws.

(Mounted on power-supply delivered with each LTC interface)



12 Volt
DC IN

It is understood that if NOT using the original Power-Supply-Unit, you need to make sure that there is only one single 12V DC-supply with a maximum tolerance of 3% within the 12V. It has to be taken care, that the external supply uses a circuit-breaker, fuse or another kind of short-circuit-protection to never allow a current >5A @12VDC per device. Do NOT connect the device at reverse polarity at any time.

7.2.2 LTC

Sub-D15 female

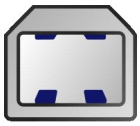
The output-impedance of the LTC-generator should be as small as possible; the level is preferred to be adjustable. The LTC-interface input-level must be within SMPTE-restriction 12M: [SMPTE 12M-1995 < 50 W/**1 - 2 Vpp (max. 0.5 - 4.5 Vpp),** following EBU Tech. 3097-E < 30 W/**0.5 - 4.5 Vpp**].

Pin	Signal	Comments
1	NC	-
2	NC	-
3	LTC-A	LTC data + (HOT)
4	LTC-B	LTC data - (COLD)
5	GND*	AC-coupled ground (GND)
6	NC	-
7	NC	-
8	NC	-
9	NC	-
10	NC	-
11	NC	-
12	NC	-
13	NC	-
14	NC	-
15	NC	-

7.2.3 USB

USB device

For interconnection with vTimeSync use enclosed “A” to “B” type USB cord only. A maximum USB-cable-length of 2.0m (6.5 feet) is permitted.



Pin	Signal	Comments
1	VCC	+ 5V
2	D-	Data -
3	D+	Data +
4	GND	GND

7.2.4 Serial Redundancy Interface

Sub-D9 male RS232 (EIA RS232D 2.1.7)

For redundancy purposes of dual LTC-interface only. Only use provided redundancy-cable delivered with redundant unit.

Pin	Signal	Comments
1	NC	-
2	RxD	Receive Data input
3	TxD	Transmit Data output
4	NC	-
5	GND	Ground (shield)
6	NC	-
7	NC	-
8	NC	-
9	NC	-

7.2.5 REF Input/Blackburst

BNC 75 Ohm (PAL/NTSC/SECAM)

The video-sync-input (REF-input) is an optional input only and is currently not used for time synchronisation.

If this optional REF-Input is used, make sure to do proper wiring. Use video-cable (RG59) for interconnection only.

Avoid long cabling-traces.

Pin	Signal	Comments
1	Composite	Positive video signal
2	Drain	Shield (GND)