

vsm Crosspoint Interface

User Manual

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Revision History

Version	Edition	Changes	Firmware Version
1	2014-05-20	Initial draft	2.19
2	2014-06-13	Initial release	2.19
4.0/1	2017-03-31	New Overview graphics & template	2.25

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1. Welcome

About this Manual

This document describes how to install and setup the **vsm Crosspoint 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 *a/ways* 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 Crosspoint 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 Crosspoint Interface** is specifically designed to connect to Grass Valley routers via the Cross Point-Bus to vsmStudio. In case of power-loss, the Crosspoint Interface stores the latest crosspoints to non-volatile memory, so there is no loss of crosspoints if power cycled.

The connection between the Crosspoint Interface and vsmStudio is established through Ethernet. For redundancy, two Crosspoint Interfaces can be connected together to one Grass Valley unit. An internal handler will calculate which interface is the master and which is the slave, so if one interface fails, the other one will take over communication.

An optional REF-signal input for black-burst reference and an LTC-input on the rear of the Crosspoint Interface unit is implemented for future use.

4. Overview

Crosspoint Interface



Number of ports	1 x XPT-Bus for GrassValley routers
Options	Redundant System
Communication port	1 x Ethernet
Dimensions	483mm x 43,7mm x 225mm (WxHxD):1RU
Weight	approx. 2,1KG
Power Consumption	<4W @12VDC/0,33A max
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 Lawo devices will be shipped with DHCP enabled network configuration. If you don't have a DHCP network ask your administrator for static network settings and edit the "Network" section if required.

Do the following settings in VSM Discover: 

Network	
Dhcp Address	False
Fixed 100MBit-Full Duplex	False
Gateway	192.168.16.5
IP Address	192.168.17.128
IP Mask	255.255.248.0
Mac Address	00-13-16-01-07-99
Mode	100MBit-Full Duplex
Network Name	Mops-CrossPoint

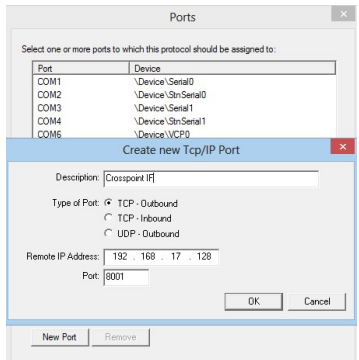
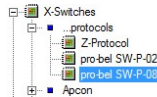
Press the "Apply" button if you are sure you have entered the settings correctly. The device will automatically perform a reboot to apply the network configuration.

To connect a device to vsmStudio enter the IP Address of Server 1 – 4 (depending on how many vsmStudio servers are configured) in the "Application" section. This connection will also be used for any future firmware updates. If the system is working in redundant mode, connect both devices to Server 1 – 4 as the crosspoint synchronisation needs a valid time reference from vsmStudio to both units.

Application	
Server 1	192.168.17.38
Server 2	192.168.17.39
Server 3	192.168.17.40
Server 4	192.168.17.41

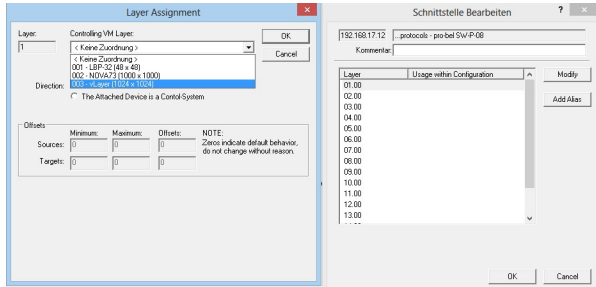
Now the device can be configured with vsmStudio:

- Go to "Communication Ports" and make a new connection. 
- Navigate to pro-bel SW-P-08 protocol.
- On Next Page select "New Port".
- Use the device IP Address and TCP-Port 8001 to create an outbound vsmStudio connection to the Crosspoint Interface and press "OK".
- Select the created port and press "Finish".



- Assign the router ID to a corresponding vsmStudio layer (up to 16 layer) and acknowledge all windows.

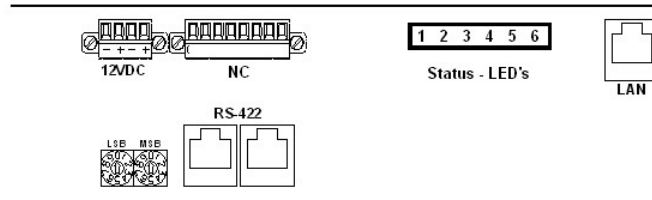
The created port should now appear in the "Communication Ports" list with a green LED.



7. Technical Specifications

7.1 Status LEDs

7.1.1 Rear Status LEDs CPU



- 1 Blue: Blinks, Data transfer to vsmStudio.
- 2 Red: Blinks, no Connection to vsmStudio.
- 3 Green: Light, 5V internal voltage OK.
- 4 Green: Light, 3,3V internal voltage OK.
- 5 Orange: Light, physical connection to LAN.
- 6 Green: Blinks, Data transfer via LAN.

7.1.2 Rear Status LED XTP-Bus

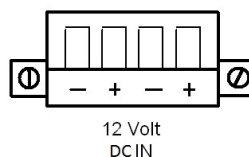
(R/G/B):

- Blinks fast red: loading stored crosspoints from EEPROM, initializing.
- Blinks blue: XPT-Bus ready, no valid connection to GV-Router detected.
- Blinks blue and green alternately: valid communication to GV-Router.

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.

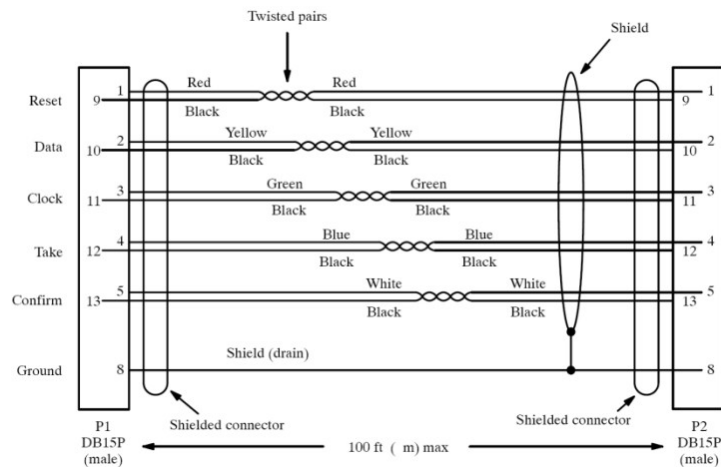


It is understood that if NOT using the original Power-Supply-Unit, you need to make sure that there is only one single 12V DC-supply with a maximum tolerance of 3% within the 12V. It has to be taken care, that the external supply uses a circuit-breaker, fuse or another kind of short-circuit-protection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

7.2.2 XPT-Bus

Connectors for XPT-Bus data drive for Grass Valley Routers and redundant interface:

XPT-Bus interface between Crosspoint Interface and Grass Valley Router.



XPT-Bus Termination:

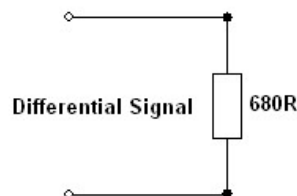
In the middle of the two 15-pin SUB-D connectors for the XPT-Bus on the rear side of the Crosspoint Interface there are 2 dip-switches for enabling termination on SUB-D-connector.

The termination of the connector can be enabled separately for the two XPT-connectors.

The termination should only be used for optional termination-purposes for very long cable-traces in very noisy environment.

This termination-option is not needed in most cases; therefore the DIP-switches should remain “off” as a default setting.

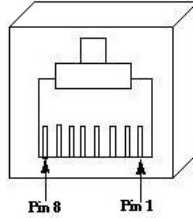
Circuit diagram for **optional** termination of XPT-Bus:



7.2.3 Redundancy on Crosspoint IF

To build a redundant interface you need to connect two Crosspoint Interfaces by the enclosed 15-pin SUB-D Crosspoint-redundancy cable. You also need the 25-pin SUB-D TMIO-cable and the RJ-45 redundancy cable.

1 x RS422 via RJ45 connector *for redundant option only*. Use enclosed RJ-45-redundancy cable only.



Pin		Comments
1	NC	-
2	NC	-
3	Rx+	Receive Data input
4	Tx+	Transmit Data output
5	Tx-	Transmit Data output
6	Rx-	Receive Data input
7	NC	-
8	NC	-

Serial Baud Rate will be configured automatically by the device to 115200 Baud.

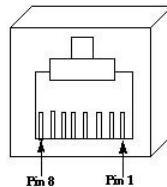
1 x TMIO via SUB-D25 connector *for redundant option only*. Use enclosed SUB-D25 male/male cable only.

7.2.4 Ethernet

Ethernet communication port to vsmStudio

For standard operation each device is connected to an Ethernet-switch where the individual port of the switch should be set to “Auto-Negotiation”. If you have communication-problems with “Auto-Negotiation” mode, set this individual port of the Ethernet-Switch to “100Mbit Full Duplex-Mode” also setting the Crosspoint Interface device in vsmDiscover to “Fixed 100MBit-Full Duplex: True”

RJ45 Ethernet



Pin	Signal	Color of a standard TIA-568A-shielded twisted pair patch cable (CAT5 or higher)
1	TX+	white/green
2	TX-	green
3	RX+	white/orange
4	NC	blue
5	NC	white/blue
6	RX-	orange
7	NC	white/brown
8	NC	brown

Notice for wiring:

NC: No connection; do not connect to any signal or supply.

Only use shielded CAT5 (or higher standard) -specified networkable. Refer to TIA-568A or TIA-568B for wiring.

Do not use cable-traces longer than 100m (328ft) between the device and the network-switch for 100BASE-T communication.

Make sure to comply to wiring standards and use shielded RJ45-plugs for shielded cable on both ends of the line.