vsm Under Monitor Display

User Manual

Version: 4.0/1

Edition: 31 March 2017

Revision History

Version	Edition	Changes	Firmware Version
1	2014-05-20	Initial draft	1.15
2	2014-06-13	Initial Release	1.15
4.0/1	2017-03-31	New Overview graphics & template	1.15

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

www.lawo.com/downloads

Table of Contents

1. Welcome

About this Manual

This document describes how to install and setup the **vsm Under Monitor Display (UMD)** 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 Under Monitor Display (UMD) 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 Under Monitor Display (UMD)** displays information such as labels and tally quickly, clearly and precisely. The UMD layout can be configured freely with the vsmStudio assigned via IDs. The special surface avoids finger prints and reflection. Text can be displayed in variable sizes, character sets, centred and inverse. Four external Tally hardware inputs can be used for individually customised messages to be displayed during stand-alone use.

There are two different UMD types available: a 19-inch UMD-SD, and a ½19-inch UMD-SD. The 19-inch UMD-SD has a resolution of 170*7 pixels. It consists of a graphical matrix, which can be divided in up to 16 freely definable segments. Each of these segments can be labelled and also display red, green and yellow Tally. The ½19-inch UMD-SD has a resolution of 80*7 pixels.

4. Overview

UMD-SD 19”

Number of Pixel	170x7 (X/Y) + 1 Line of red/green/yellow-Tally
Communication port	RS422 (Ethernet communication via SmartHub)
Dimensions	483mm x 43,7mm x 33,2mm (WxHxD):1RU
Weight	approx. 0,7KG
Power Consumption	< 5,8W @12VDC/0,48A max
Working Environment	0°C-50°C non-condensing humidity

UMD-SD ½ - 19”

Number of Pixel	80x7 (X/Y) + 1 Line of red/green/yellow-Tally
Communication port	RS422 (Ethernet communication via SmartHub)
Dimensions	260mm x 43,7mm x 33,2mm (WxHxD):1RU/2
Weight	approx. 0,4KG
Power Consumption	< 3,1W @12VDC/0,26A max
Working Environment	0°C-50°C non-condensing humidity

5. Operating Conditions

This device is built to be used in a non-condensing environment within a temperature range of 0-50°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.

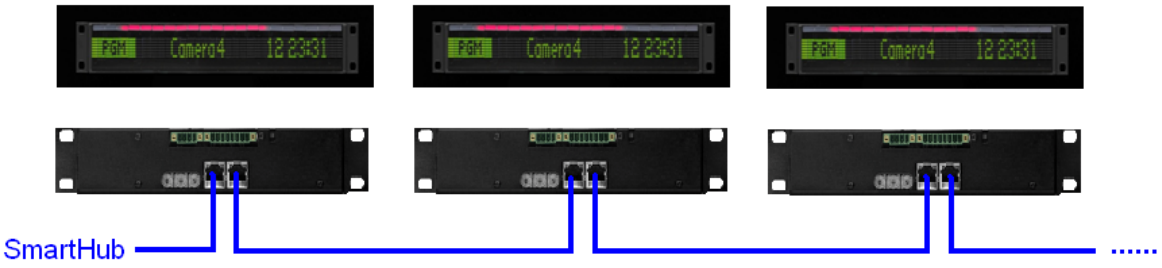
DO NOT throw, drop or bend the unit and make sure that there is no strong permanent mechanical pressure on any side of the housing at any time.

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

6. Preparing for Operation

First configure a Smarthub port as UMD-Proxy as described in the VSM-SmartHub User Manual and setup the bus address on the rear side of the UMD.

If there is more than one UMD in the chain, consider following daisy chain rules for the RS422 bus:

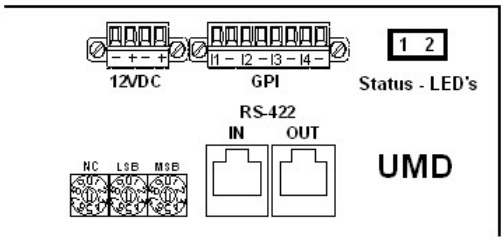


- Do not use cable-traces longer than 100m (328ft) for one complete RS422 chain.
- Do not Y-connect the RS422-traces.
- Loop UMDs through UMDs in an RS422 chain using standard 1:1 network cable.
- Use separate PSUs for each UMD to minimize single point of failure.
- Only use enclosed PSUs or alike for UMDs for proper operation.
- It’s not recommended to chain more than 32 UMDs in one RS422-trace.

7. Technical Specifications

7.1 Status LEDs

Rear-view

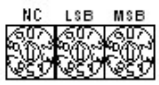


1 Red: Blinks: Life-pulse/Incoming data.

2 Green: Light, internal voltage OK.

7.2 Addressing the UMDs

Each UMD has rotary encoders on the rear side of the UMD for applying a unique address in each RS422-chain.

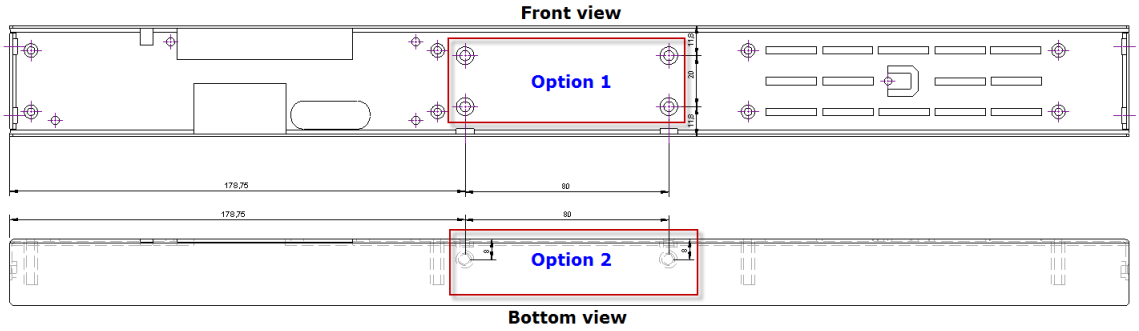


Valid addressing for each unique UMD can be done between 0...EF [hex] which will be 0...239 [dec].

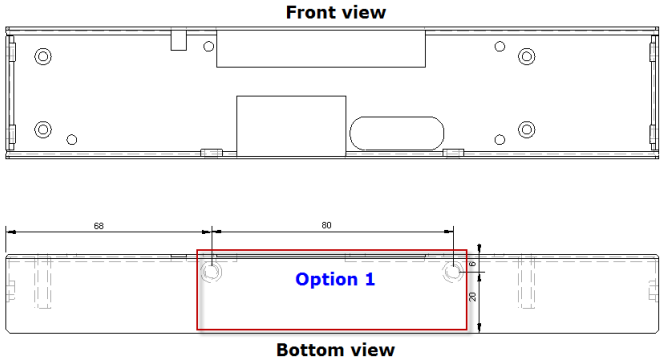
7.3 Mounting UMDs

Each UMD will be shipped rack-mount ready. In addition to the rack-mount the UMD SD 19" has two and the UMD SD ½ - 19" one alternative mounting option.

UMD SD 19":



UMD SD ½ - 19":



7.4 Connectors

7.4.1 Power

All UMDs work with 12V low ripple direct current (12VDC). The power consumption of the 12V-line depends on the amount of pixels illuminated and also if text is displayed inverted.

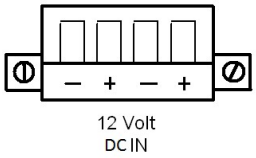
We suggest to only using the enclosed capsuled single power supply for each UMD.

Each enclosed power-supply provides 12V low ripple direct current up to 5A (60W), so there is enough headroom for proper operation.

Make sure that the 12VDC-cable-traces are no longer than 2.0m between power-supply and UMD.

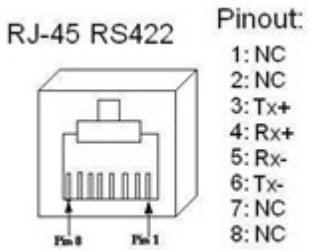
Connector for 12 V DC-supply: 4-Pin connector (MC 1,5/ 4-STF-3,81) locked with two screws.

(Mounted on power-supply delivered with each UMD)



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.

7.4.2 Serial Interface



Connectors on rear side of UMD for serial data:

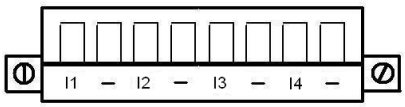
- 1 x RS422 via RJ45 connector
- 1 x RS422 (loop through) via RJ45 connector
- Serial Baud Rate will be configured automatically by the master device (SmartHub) to 115200 Baud.

RS422 is a differential signal transfer. Each Tx and each Rx line has both a positive and a negative pole. It is therefore absolutely necessary that twisted pair is used for Tx and Rx is used. UMD connections can easily be done by preconfigured standard shielded network cable (CAT5 or higher standard). To avoid potential difference between devices, shielded cable and shielded plugs with ground potential on both sides should be used. (Metalized plug-covers of RJ-45-plugs to touch ground-flange of RJ-45 connectors). Wrong wiring, wrong cables, wrong use of twisted pair and non-shielded traces lead to short working distances.Bad connection at one of the core in twisted pair traces may lead to a working unit, which seems to be working fine, but sometimes loses connection or showing strange behaviour. Always use a cable-tester before installing vsmGear-products to make sure that there will be no unsuspected trouble with connected devices. Also check correct wiring of wire-shield-traces.

7.4.3 GPI Interface

Connector for GPI: 8-Pin connector locked with two screws (MC 1,5/ 8-STF-3,81)

(Separate plug not included for standard UMD delivery)



GPI - Interface

Each UMD features four galvanically isolated GPI-inputs as external Tally hardware inputs, they can be used for individually customised messages to be displayed during stand-alone use.

This Interface is a small signal interface only, and uses same ground potential.

To avoid damage, do not exceed 12VDC for each input, if supplying external voltage.

The galvanically isolated DC Inputs are able to be “set” by either shorting the individual input to ground on ground-pin right next to it, or, by supplying any DC-voltage up to 12V and undershooting 5VDC respective to ground.

8. Cleaning the Display

The best way to clean the finger-print-save UMD-front is to use a soft cloth and smooth window-cleaner-fluid. Do not expose the window-cleaner directly to the UMD, but to the cloth and then wipe softly over the UMD-front.

Do not use polish remover, oil, alcoholic- or gasoline based cleaner for the UMDs as this will destroy the plexiglass front cover.