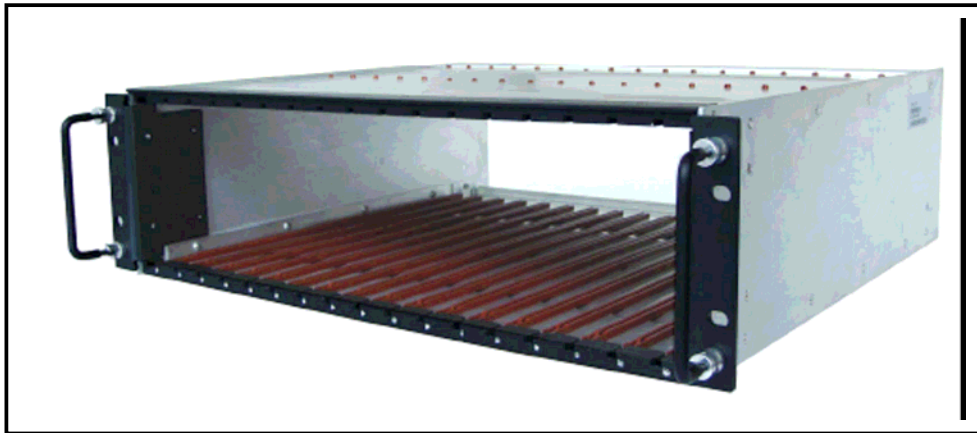




# Product Operation Manual

## *VL-CH CHASSIS*

*Ver 1.0*



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# 1. Introduction

## 1.1 Overview

The VL-CH is a standard 19-inch width chassis. The chassis is 3 rack units high and has 17 slots to accommodate modules. A backplane interface can provide inter-module communication and power distribution.

## 1.2 Features

- 3RU high, 19-inch width standard chassis
- GR-63-CORE compatible
- High module density
- Up to 15 application modules per chassis
- Hot-swap design

## 1.3 Specification

Operation Temperature	0 to 50 °C (32 to 122 °F)
Storage Temperature	-40 to 70 °C (-40 to 158 °F)
Relative Humidity	Max. 85% non-condensing
Mounting	19" EIA rack, 3RU space
Inside space	17 slots
Dimensions	44.1cm(W) x 13.2cm(H) x 41.2cm(D)
Weight	4kg

All specifications are subject to change without notice.

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## 2. Operation Panel Description

The components and features of the chassis are shown in Figure 2.1 and described in Table 2.1 and 2.2.

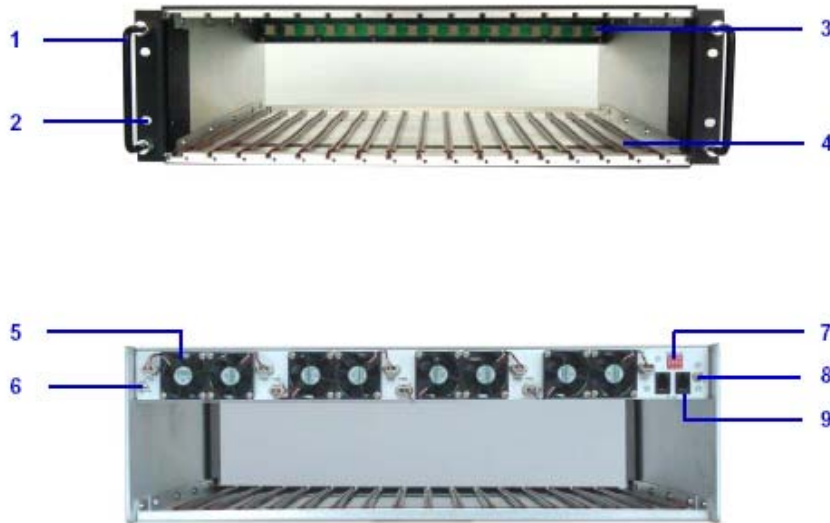


Figure 2.1 VL-CH Chassis Front and Rear View

Table 2.1 VL-CH Chassis Components

(Refer to Figure 2.1)

Component	Function
Chassis	The enclosure contains 17 slots for modules and the rear panel.
Front Panel	Includes handle and mounting hole
Rear Panel	Includes power and data bus PCB board.

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**Table 2.2 Chassis Controls and Connectors**

(Refer to Figure 2.1)

Item	Description	Function
1	<b>Handle</b>	Used for chassis install and uninstall
2	<b>Mounting hole</b>	Fix chassis to standard cabinet
3	<b>Backplane</b>	Provides signal and power connections to application modules
4	<b>Slot</b>	Guide for application module installation
5	<b>FAN</b>	Airflow for heat dissipation of the module
6	<b>Grounding screw</b>	For chassis grounding
7	<b>ID selector</b>	Select chassis ID for cascade application
8	<b>Grounding screw</b>	For chassis grounding
9	<b>RS485 port</b>	Provide connection port for cascade application

### 3. Unpacking and checking

All units were tested and inspected prior to shipment and at that time were found to be free of mechanical and electrical defects. However, upon receiving your products:

1. Examine all shipping containers for any damage due to transportation.
2. Unpack all modules and chassis.
3. Keep all packing materials until your inspection is complete. When possible, save the shipping container for future reshipment and/or storage.

If damage is discovered, file a claim with the carrier immediately and notify your Vale Systems Inc. representative as soon as possible. Products deemed defective by the original purchaser must be returned to Vale Systems Inc., prepaid in the original packing material (or equivalent) with a Return Material Authorization (RMA) from the Vale Systems Inc. Equipment Service Center.

### 4. Precautions

Failure to comply with these general safety precautions and with the specific precautions described elsewhere in this manual violates the safety standards of the design, manufacture, and intended use of the device. Vale Systems Inc. assumes no liability for the customer's failure to comply with these precautions.

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**CAUTION:** Ensure that the voltage visible through the Line Voltage Indicator window on the AC power entry port of the "VL-PS Power Supply module" corresponds to the line voltage available to the VL-CH chassis.

**CAUTION:** Do not operate the chassis outside of its maximum ratings. Doing so may result in unsatisfactory performance, unit failure, shortened unit life span, or a safety hazard.

**CAUTION:** Do not attempt to modify or service any part of this chassis not specifically referred to as replaceable in this manual. Doing so voids the warranty. Return the chassis to Vale Systems Inc. for service and repair.

**CAUTION:** No chassis should be operated in an ambient environment above 50°C (122°F).

**CAUTION:** Store the chassis away from corrosive materials, at a temperature between -40 and +70°C (-40 to +158°F), and with no more than 85% humidity, non-condensing.

## 5. VL-CH Chassis Installation and Initial Setup

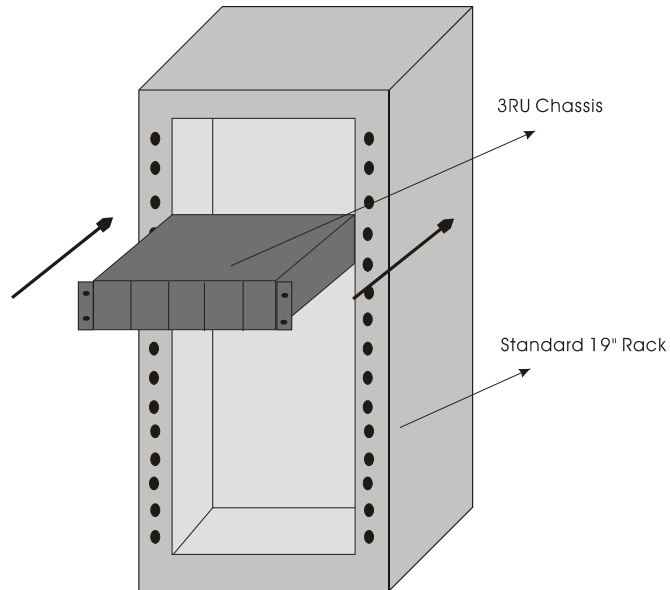
**CAUTION:** Two people are required to install the chassis due to the weight of a loaded chassis. The chassis should be installed without modules.

The chassis is designed to be installed into a standard EIA 19 inch rack.

1. Mount the chassis into the rack in an indoor environment (see Figure 5.1) following these guidelines:
  - Do not block the front or back panel of any chassis.
  - Maintain sufficient space in front of and behind the rack for air circulation
2. Align the mounting holes in each of the front flanges of the chassis with the holes in rack.
3. Install and tighten all four mounting flange screws securely. Refer to the rack manufacturer's recommended torque specifications.
4. If a VL-PS Power Supply module(s) will be installed in the VL-CH chassis, verify that the voltage visible through the Line Voltage Indicator window on the AC power entry port of the Power Supply module corresponds to the line voltage available to the chassis.
5. Install the Power Supply module(s) into the VL-CH chassis. The Power Supply module is a dual-width module requiring two adjacent slots (slot 1 can only be used for VL-EMS installation).
6. Set the Power switch on the front of the Power Supply module to the "ON" position. The Power indicator should light and the 8 cooling fans located on the rear panel of the chassis should run, indicating proper operation of the chassis.
7. Install all the appropriate modules into the chassis.

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**Figure 5.1 Install the chassis in a standard 19 inch Rack**



## 6. Configuring the VL-CH Chassis

### 6.1 Thermal Limits for Chassis Loading

The specified ambient operating temperature range for each module is listed in the specifications area at the end of each section throughout this manual. The minimum operating temperature range for all modules is from 0 to 50°C (32 to 122°F)

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## 6.2 Powering Considerations

Unless externally powered, the VL-CH chassis requires at least one Power Supply module. The Vale Systems Inc. **VL-PS** Power Supply modules produce 200 watts and is capable of powering all the plug-in modules installed in a **VL-CH** chassis. The power requirement for each module can be found in the specification table of each module in this manual. Otherwise perform one of the following:

- Install an additional Power Supply module in VL-CH chassis. Another power supply needs two additional adjacent empty slots.

The +24VDC output of the modular power supply is connected using steering diodes with another Power Supply module. The function of the steering circuit is to route power from the modular power supply(s).

## 7. Module Install

If a single **VL-PS** Power Supply module must be installed in the VL-CH chassis, refer to Section 6.2 for powering considerations.

**CAUTION:** Some components are sensitive to electrostatic discharge (ESD)! Use a grounding strap to prevent damage to electronic components by ESD. Do not touch any components not specifically referred to in these instructions.

**CAUTION:** Some module pins are sensitive to electrostatic discharge (ESD)! Use a grounding strap to prevent damage to the module by ESD.

**CAUTION:** Installing a module with bent pins will damage the backplane connector pins on the module and may damage the mating chassis backplane connector.

**CAUTION:** Slot 1 just only install in EMS module.

**Note:** Modules can be installed and removed with the chassis powered. A Power Supply module can also be placed in two adjacent slots.

**Tip:** It may be beneficial to install, connect, and configure one module at a time. Also, installing similar type modules (i.e. Forward Transmitters or Return Receivers) in groups can make the process easier because you will be dealing with the same types of connections and configurations.

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1. Inspect for bent pins on the backplane connector at the rear of the module. Straighten any bent pins before installing the module.
  2. Gently insert each module into a slot in the front of the chassis. Be careful to align the metal guide rails on the top and bottom of the module with the nylon guides in the interior of the chassis housing.
  3. Then lock the thumbscrew on the front of the module.
  4. Repeat Steps 1 through 3 to install the remaining modules in the chassis.
  5. Refer to Table 7.1 to configure the corresponding modules.

**Table 7.1 Module Configuration Reference**

<b>Modules</b>	<b>Part Number</b>
VL-PS Power Supply	VL-PS Series
VL-FTX 1310nm Forward Transmitter	VL-FTX Series
VL-EMS Network Management	VL-EMS Series
VL-RRX-04 Return Receiver	VL-RRX Series