# ES4100.1 Chassis VME64x

User's Guide

## Copyright



V1.0.0 R04 EN - 11.2013 TTN F 00K 700 314

# Contents

# 1 Introduction

This section contains information about the basic features and applications of the ES4100.1 Chassis VME64x.

## 1.1 Features

The ES4100.1 Chassis VME64x is designed to hold the VME boards. It is responsible for the mechanical mounting of the boards, the connection of the boards with the VMEbus, the power supply, and the cooling of the boards.

The chassis has the following features:

- 21 slots
- standard VMEbus and VME64x boards
- slots for standard eurocards (100 mm x 160 mm)
- slots separated at 4 HP intervals (22.3 mm)
- 160-pin backplane
- +3.3 V, +5 V, +12 V, and -12 V power supply
- power adapter with wide input voltage range
- controlled fan with fault indication
- 19"-geometry for case or cabinet mounting
- 4 U front panel height
- power switch, fuses, and fault indications on the front panel

The following figure shows the front panel and the position of the controls and displays.

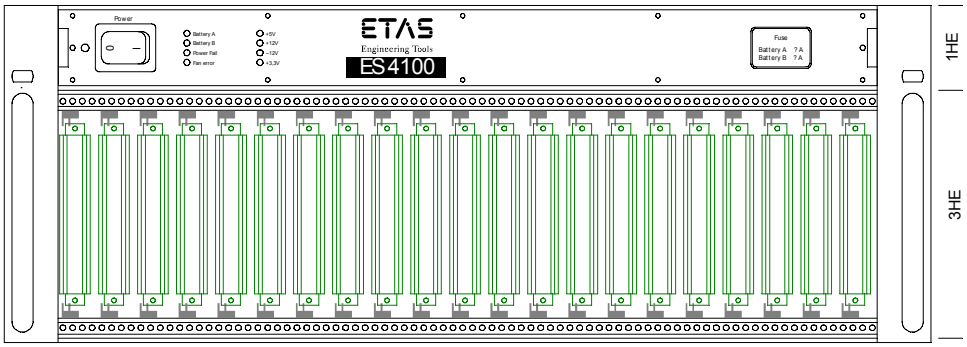


**Fig. 1-1** Front Panel

## 1.2 Applications

The ES4100.1 Chassis VME64x is designed to allow the construction of large VMEbus systems. Its active cooling system makes it suitable also for installing boards with high heat emission.

The chassis can be combined with all ES4000 series rack systems.

**Note**

*The ES4100.1 Chassis VME64x may be installed and operated by trained technical personnel only.*
*Improper installation and operation may damage the chassis and boards, and may cause a health hazard.*

# 2 Functional Description

This section contains a detailed description of the features of the ES4100.1 Chassis VME64x.

## 2.1 Mechanical Structure

The ES4100.1 Chassis VME64x is designed with 19" geometry and 4 U front panel height. The power switch, displays, and fuses are located on the front panel.

The figure below shows a cut-out section of the chassis.

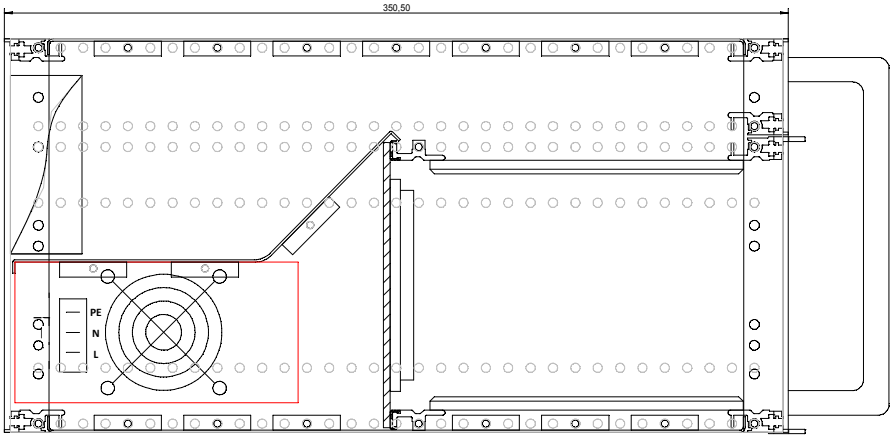


**Fig. 2-1** Cut-out Section of the Chassis

## 2.2 Display Elements

The front panel of the chassis has six LEDs and a control lamp in the power switch that show you various operating and error statuses.

| Display | Meaning |
|---|---|
| Power Switch | Power supply switched on and power voltage applied |
| Power Fail | The "ACFAIL" of the VME bus is active. |
| Fan Error | At least one fan has failed. |
| +5 V | The supply voltage +5 V is active. |
| +12 V | The supply voltage +12 V is active. |
| -12 V | The supply voltage -12 V is active. |
| +3.3 V | The supply voltage +3.3 V is active. |

**Tab. 2-1** Display on the Front Panel

## 2.3 Slots

The chassis provides 21 slots at intervals of 4 HP. The slots are designed for standard eurocards in 100 mm x 160 mm size. The front panel height of the plug-in boards measures 4 Us.

## 2.4 Backplane

The backplane of the chassis has 160 pins. The pin allocation complies with the extended VMEbus standard VME64x. Both VME-standard boards and extended VME64x-standard boards can be inserted.

The backplane also provides the two additional supply voltages ±V1 and ±V2 of the VME64x standard. These two supply voltages are supplied at the back of the chassis.

## 2.5 Power Supply Unit

The power supply unit provides the voltages +3.3 V, +5 V, +12 V, and -12 V. The power supply unit is designed as a wide range unit with an input voltage range of 100...240 V AC and a frequency range of 50...60 Hz.

The power supply line of the built-in AC unit is protected by two 6.3 A fuses – both the neutral conductor and the phase conductor have their own fuse.

The power supply is protected against overheating and features overcurrent protection at all output voltages.

## 2.6 Ventilation Fan

The chassis is equipped with thermo-controlled ventilation fans. The air mass flow adapts automatically to the heat emission of the boards and the ambient air temperature.

A visible alert on the front panel lights up if at least one fan has failed.

# 3 Operation

This section provides information about the installation and removal of the VMEbus boards, fuse replacement, and automatic overcurrent protection of the chassis.

## 3.1 Installation of VMEbus Boards

Some VMEbus boards need to be configured before they can be installed. The corresponding information can be found in the manuals of the VMEbus board.

**Note**

*The boards may only be configured and installed at a workplace that is protected against electrostatic discharges!*

**To install a board**

- Turn off the power to the chassis. Check that all devices connected with the chassis by cables have also been powered off.
- If the slot in which you want to install the board is protected by a cover, remove this cover.
- Insert the board into the slot. Make sure that the top and bottom of the board smoothly slide in the guide rails.
- Push the board in until the connector securely locks into place.
- Fasten the mounting screws for the front panel of the board.
- Connect the required cables with the front panel connectors.

## 3.2 Removal of VMEbus Boards

**Note**

*The boards may only be removed at a workplace that is protected against electrostatic discharges!*

**To remove a board**

- Turn off the power to the chassis. Check that all devices connected with the chassis by cables have also been powered off.
- Disconnect all connectors from the board you want to remove.
- Loosen the mounting screws at the top and bottom edge of the board's front panel.
- Grasp the handle of the board and pull the board carefully out.

- Insert the board into its storage package or an anti-static bag.
- Secure the slot with a protective cover.

## 3.3 Fuse Replacement

The power supply line of the built-in AC unit is protected by two T6.3 A/250 V (6.3x32 mm) fuses. Both the neutral conductor and the phase conductor have their own fuse.

**To replace the fuses for the built-in AC unit**

- Turn off the power to the chassis. Check that all devices connected with the chassis by cables have also been powered off.
- Disconnect the power cable of the chassis from the rubber socket.
- Use a suitable screwdriver to open the bayonet catch of the fuse holders at the rear of the chassis.
- Replace the defective fuse with a new fuse rated 6.3 A (slow)/250 V.
- Reinsert the fuse holder and lock the bayonet using a screwdriver.
- Reconnect the power cable.

## 3.4 Automatic Overcurrent Protection

The built-in AC unit of the chassis is provided with an automatic overcurrent protection. If the AC unit detects an overcurrent condition for an output voltage, it shuts down all outputs. The corresponding front panel LED goes dark. The AC unit's overcurrent protection can be reset by briefly powering it off.

**To reset the automatic overcurrent protection**

- Turn off the power to the chassis.
- Wait approximately one minute.
- Turn the power to the chassis back on.

**Note**

*If the automatic overcurrent protection cannot be reset, check the fuses at the rear of the chassis. A main fuse is defective if the control lamp in the power switch remains dark even when the chassis has been switched on.*

# 4 Connectors

This section contains information about the pin allocation of the connectors.

## 4.1 VME64x

The boards are connected using 160-pin VG multi-point connectors. The pins in rows a, b, and c correspond to the standard VMEbus.

| Pin | Row z | Row a | Row b | Row c | Row d |
|---|---|---|---|---|---|
| 1 | MPR | D00 | /BBSY | D08 | VPC |
| 2 | GND | D01 | /BCLR | D09 | GND |
| 3 | MCLK | D02 | /ACFAIL | D10 | +Batt_A |
| 4 | GND | D03 | /BG0IN | D11 | +Batt_B |
| 5 | MSD | D04 | /BG0OUT | D12 | RsvU |
| 6 | GND | D05 | /BG1IN | D13 | -UBatt |
| 7 | MMD | D06 | /BG1OUT | D14 | -UBatt |
| 8 | GND | D07 | /BG2IN | D15 | RsvU |
| 9 | MCTL | GND | /BG2OUT | GND | /GAP |
| 10 | GND | SYSCLK | /BG3IN | /SYSFAIL | /GA0 |
| 11 | /RESP | GND | /BG3OUT | /BERR | /GA1 |
| 12 | GND | /DS1 | /BR0 | /SysReset | +3.3 V |
| 13 | RsvBus | /DS0 | /BR1 | /LWORD | /GA2 |
| 14 | GND | /WRITE | /BR2 | AM5 | +3.3 V |
| 15 | RsvBus | GND | /BR3 | A23 | /GA3 |
| 16 | GND | /DTACK | AM0 | A22 | +3.3 V |
| 17 | RsvBus | GND | AM1 | A21 | /GA4 |
| 18 | GND | /AS | AM2 | A20 | +3.3 V |
| 19 | RsvBus | GND | AM3 | A19 | RsvBus |
| 20 | GND | /IACK | GND | A18 | +3.3 V |
| 21 | RsvBus | /IACKIN | SERA | A17 | RsvBus |
| 22 | GND | /IACKOUT | SERB | A16 | +3.3 V |
| 23 | RsvBus | AM4 | GND | A15 | RsvBus |
| 24 | GND | A07 | /IRQ7 | A14 | +3.3 V |
| 25 | RsvBus | A06 | /IRQ6 | A13 | RsvBus |
| 26 | GND | A05 | /IRQ5 | A12 | +3.3 V |
| 27 | RsvBus | A04 | /IRQ4 | A11 | LI-/I |
| 28 | GND | A03 | /IRQ3 | A10 | +3.3 V |
| 29 | RsvBus | A02 | /IRQ2 | A09 | LI-/O |

**Tab. 4-1** Pin Allocation VME64x

| Pin | Row z | Row a | Row b | Row c | Row d |
|---|---|---|---|---|---|
| 30 | GND | A01 | /IRQ1 | A08 | +3.3 V |
| 31 | RsvBus | -12 V | +5 V Stby | +12 V | GND |
| 32 | GND | +5 V | +5 V | +5 V | VPC |

**Tab. 4-1** Pin Allocation VME64x (Forts.)

# 5 Technical Data

This section contains the technical data of the ES4100 Chassis in tabular form.

*General Data*

| | |
|---|---|
| Mechanical structure | 19" chassis for cabinet mounting |
| Slots | 21 slots at 4 HP intervals for standard eurocards (100 mm x 160 mm) |

*Mechanical Data*

| | |
|---|---|
| Height | 4 U (177.2 mm) |
| Width | 19" (482.6 mm) |
| Depth | 350.0 mm w/o front handles<br>382.0 mm incl. front handles |

*Power Supply Unit*

| | |
|---|---|
| Output voltages | +3.3 V, max. 25 A<br>+5 V, max. 25 A<br>+12 V, max. 8 A<br>-12 V, max. 8 A |
| Input voltage range | 100...240 VAC<br>50...60 Hz |
| Connection | 3-pin rubber panel plug |
| Fuses | 2x T6.3 A/250 V (6.3x32 mm) |

*Backplane*

| | |
|---|---|
| Standard | VME64x |
| Number of pins | 160 per slot |
| Compatibility | Standard VMEbus, VME64x |

*Ventilation Fan*

| | |
|---|---|
| Control | Temperature sensor in the vicinity of the boards |
| Fault indication | Front panel LED |

# 6 ETAS Contact Addresses

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