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ES1000.3 Housing
ES1050.1 Battery Pack

User's Guide

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1 Introduction

1.1 Overview

1.1.1 ES1000.3 Housing

The ES1000.3 Housing with a VME64x backplane and power supply is the basis of ETAS' modular ES1000.3 experimental system. Rapid-prototyping as well as test and calibration applications can be run with the relevant ETAS interface boards of the ES1000 system.

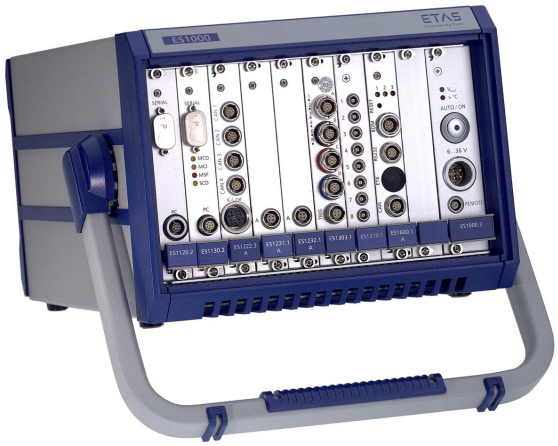


Fig. 1-1 ES1000.3 Housing

The most important features are:

- high-performance development and experimental platform for use in the lab and in the field
- automotive suitability
  - resistance to extreme environmental conditions (temperature, EMC), no need for a warm-up of the system for a winter test (see section 5.1.1 on page 33)
  - high mechanical stability and robustness
  - compact dimensions
  - simple handling
- support of industrial standards

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  - VME64x bus system with 9 slots (limitation: no provision of 3.3 V supply voltage)
  - possible to use ETAS interface boards to support all automotive hardware interfaces important for calibration
  - possible to use commercial and customized interface boards
- possible to control the ES1000.3 Power Supply remotely using remote interfaces
- supports combined operation with the ES1050.1 Battery Pack

1.1.2 ES1050.1 Battery Pack

The number of possible uses increases if the ETAS ES1000.3 experimental system is combined with an optional ETAS ES1050.1 Battery Pack:

- power is supplied to the experimental system making the system independent of the vehicle power supply or an external power supply and
- use of the ES1050.1 Battery Pack as a buffer to avoid drastic voltage changes particularly when running the ES1000.3 experimental system on the vehicle power supply.



Fig. 1-2 ES1000.3 Housing with an ES1050.1 Battery Pack

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The ETAS ES1050.1 Battery Pack is mounted directly on the ES1000.3 Housing creating one mechanical unit.

1.2 Block Diagram

The block diagram in Fig. 1-3 on page 9 shows the functions of the ES1000.3 Housing when used with an ES1050.1 Battery Pack.

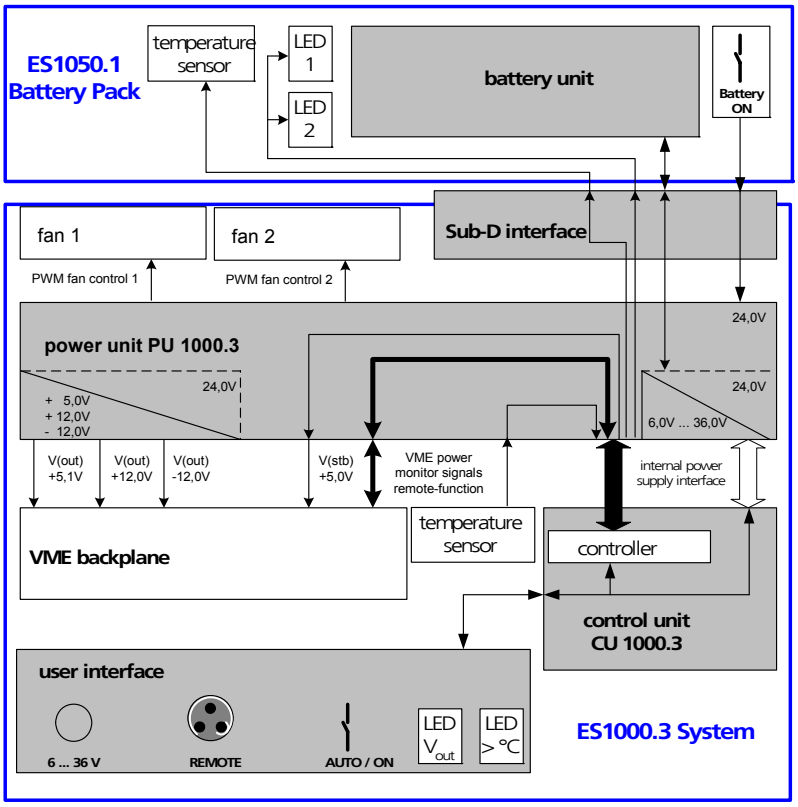


Fig. 1-3 Block Diagram of the ES1000.3 Housing with a Mounted ES1050.1 Battery Pack

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2 ES1000.3 Housing

2.1 Slots

The housing has 9 slots each 4 HP wide. The slots are designed to hold standard Eurocard-sized boards measuring 100 mm x 160 mm. The front panel height of the boards is 3 U.

2.2 Backplane

The actively terminated backplane of the housing has 9 free VME slots which comply with the VME64x specification. You can use boards which comply either with the VMEbus standard or the extended VME64x standard.

Note

The VME64x standard is only fulfilled to a certain extent as the 3.3 V supply voltage is not provided.

A slot is reserved for the power supply on the right-hand side of the ES1000.3 Housing.

2.3 ES1000.3 Power Supply

The ES1000.3 Housing power supply is also suitable for all automotive requirements. It has the following features:

- wide input voltage range (6 V to 36 V)
- transient filter (complying with ISO 7637-1)
- active reverse-connect protection
- output voltage monitoring
- temperature monitoring
- sustained-short-circuit-proof
- power monitor complying with VMEbus specification (ACFAIL/SYSRESET)
- possible to control the ES1000.3 Power Supply remotely using remote interfaces
- charge function for the ES1050.1 Battery Pack

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The following figure shows the front panel of the power supply control unit:

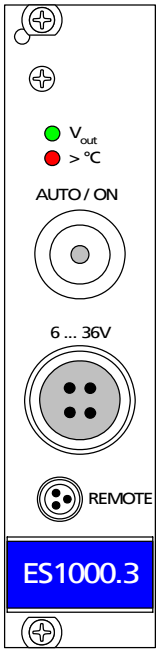


Fig. 2-1 Front Panel of the ES1000.3 Power Supply Control Unit

2.3.1 Control Elements

The "AUTO / ON" switch on the front panel is used to switch between the operating modes automatic and normal of the power supply.

The LED display in the operating mode switch ("AUTO / ON") shows the operating status of the ES1000.3 Power Supply (see section 2.3.2 on page 12).

2.3.2 Display Elements

There are two LED displays on the front panel of the power supply control unit (V_{out}) and (> °C) as well as an LED display in the operating mode switch.

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They indicate the following operating statuses of the ES1000.3 Power Supply:

Display Element	Status	Meaning
> °C	Off	Interior housing temperature: Normal
	On	Interior housing temperature: Increased, automatic deactivation of the output voltages if the temperature continues to rise.
V_{out}	On	Output voltages of the system: Within the defined limits
	Off	Output voltages of the system: Overcurrent condition fulfilled, all output voltages deactivated
AUTO / ON	Off	Automatic operation of the ES1000.3 Power Supply
	On	Normal operation of the ES1000.3 Power Supply

2.3.3 Power Supply Interface

The ES1000.3 Power Supply can provide the power supply to the ES1000.3 system in different ways:

- power supplied by the vehicle power supply,
- power supplied by an external power supply or
- power supplied by an optional ES1050.1 Battery Pack.

Power Supplied by the Vehicle Power Supply / External Power Supply

Note

To guarantee a wide input voltage range, the power supply interface on the power supply control unit of the ES1000.3 is not fused. It must therefore be fused externally.

The power supply interface on the ES1000.3 Power Supply Control Unit is connected to a voltage source using the K100 cable. This supplies an input DC voltage of 8 V - 36 V for continuous operation of the device.

For a short time (one minute at the most) it is possible to operate the device with a supply voltage of 6V to 8V.

Note

In continuous operation at high ambient temperatures (greater than 60 °C), the input voltage should be at least 8 V.

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When used on the road, the system has to be supplied via the "continuous plus" of the vehicle power supply.

Power Supplied by the ES1050.1 Battery Pack

The ES1000.3 system can be operated with an external ES1050.1 Battery Pack. The necessary mechanical and electrical interfaces are under the top cover of the ES1000.3.

2.3.4 Automatic Overcurrent Deactivation

The ES1000.3 Housing power supply has an automatic overcurrent deactivation. As soon as an overcurrent condition is detected for one of the output voltages, all outputs are disabled. The V_{out} LED on the front panel of the power supply control unit goes out.

2.3.5 Remote Interface

If the ES1000.3 Power Supply is in automatic mode, the remote interface can be used to activate/deactivate the power supply (see section 4.3.3 on page 29).

Note

The remote interface cannot be used to switch the ES1000.3 Power Supply on/off during independent battery pack operation of the ES1000.3 Housing.

2.3.6 Service Interface

When a PC is connected to the service interface, the ES1000.3 firmware can be updated if necessary. The service software necessary for the update can be downloaded from the ETAS website.

The service interface is not accessible from the front but within the ES1000.3 Housing on the left on the power supply control unit directly on the circuit board. To be able to use the service interface, you have to remove any boards inserted next to the power supply control unit. The service interface is a serial RS232 standard interface. You need a fully equipped null-modem cable (see Fig. 5-8 on page 41) to connect the service interface and the PC. On the ES1000.3 side, this cable has to have a SUB-D9 socket (female).

2.4 Fan

The housing has two thermally controlled fans. The amount of air supplied is automatically adjusted according to the heat output of the boards and the ambient temperature.

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2.5 Attaching the ES1000.3

If necessary, the ES1000.3 Housing can be attached mechanically in the vehicle, e.g. using a securing strap, and thus made stable. The structure of the ES1000.3 Housing makes it possible for it to be attached either with or without the ES1050.1 Battery Pack.

If you are operating the device using a battery pack and the securing strap is attached to the ES1000.3 Housing as shown in Fig. 2-2 on page 15, it is possible to change the battery pack without removing the securing mechanism.

If you want to make it possible to change the battery pack on an attached ES1000.3 Housing, preparations must be made for mounting the battery pack. The steps described in section 3.2.1 on page 19 must have been completed before the ES1000.3 Housing is attached with the securing strap. The battery pack is then connected to the ES1000.3 Housing (see section 3.2.2 on page 20).



Fig. 2-2 Attaching the ES1000.3 Housing

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3 ES1050.1 Battery Pack



Fig. 3-1 ES1050.1 Battery Pack

3.1 Features

3.1.1 Control Elements

On the front of the battery pack, there is a "Battery ON" switch which, together with the "AUTO / ON" switch on the ES1000.3 Power Supply, is used to activate battery operation of the ES1000.3 (see section 4.3.5 on page 30).

3.1.2 Display Elements

The charge status of the ES1050.1 Battery Pack is queried approximately every 2 minutes. Charge status display is only reliable once the battery pack has been mounted on the ES1000.3, a supply voltage has been activated and this period of time has elapsed. The current battery pack charge status is indicated by two LEDs on the front of the battery pack.

Meaning	**Charge Status**	**Display Element "Charge status"**	**Display Element "Battery full"**
Charge	< 80 %	Flashing yellow (code 1)	Off
	> 80 %	Yellow	Off
	Full	Off	Flashing green (code 3)
Discharge	> 80 %	Off	Green
	< 80 % > 30 %	Yellow	Green
	< 30 %	Flashing yellow (code 1)	Green
Error		Flashing yellow (code 2)	Off

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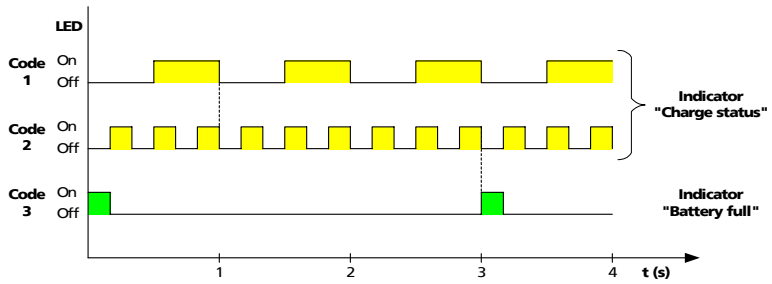


Fig. 3-2 Flashing Codes of the LEDs "Charge status" and "Battery full"

3.1.3 Battery Pack Interface

If the ES1050.1 Battery Pack is mounted on the ES1000.3 Housing, all necessary electrical connections between the housing and the battery pack are established via a socket on the top of the housing and a connector on the bottom of the Battery Pack.

3.1.4 Fuse Protection

There are two fuseholders on the back of the battery pack equipped with a fuse for battery operation and a backup fuse.

3.2 Assembly

You do not need any tools to mount the battery pack on the ES1000.3 Housing. The mechanical connection establishes all necessary electrical connections between the ES1000.3 Housing and the ES1050.1 Battery Pack simultaneously.

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3.2.1 Preparing the ES1000.3 Housing

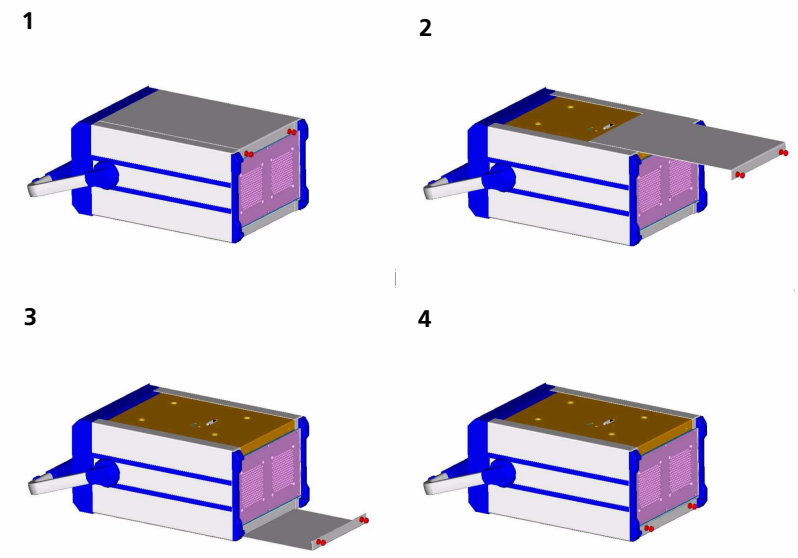


Fig. 3-3 Preparing the ES1000.3 Housing

To prepare the ES1000.3 Housing

1. Switch off the power supply to the housing. Make sure that all devices connected to the housing by cable are switched off.

   When carrying out the steps listed below, look at Fig. 3-3 on page 19.
2. Unscrew the two mounting screws at the back of the top cover.
3. Slide the top cover out to the back and remove it from the housing.
4. Turn the top cover upside down so that the external side is now facing downwards.
5. Slide the top cover in the front of the frame on the underside of the housing.
6. Tighten the two mounting screws of the cover into the housing.

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3.2.2 Connecting the Battery Pack to the ES1000.3 Housing

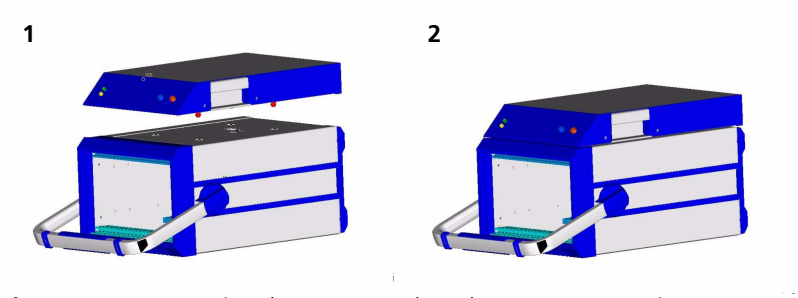


Fig. 3-4 Connecting the Battery Pack to the ES1000.3 Housing

To connect to the ES1000.3 Housing

1. Position the battery pack above the housing as shown in Fig. 3-4 on page 20.

   The sloping front of the battery pack should be facing the same way as the front of the ES1000.3 housing.

2. Snap the battery pack onto the housing using its guide pins. Press hard on the battery pack from above (see Fig. 3-5 on page 21).

   The battery pack and the housing are now connected to each other mechanically. All necessary electrical connections between the housing and the battery pack are established simultaneously via a socket on the top of the housing and a connector on the bottom of the battery pack.

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Fig. 3-5 Snapping in the Battery Pack Guide Pins

3.3 Dismantling

You do not need any tools to remove the battery pack from the ES1000.3 Housing. Interrupting the mechanical connection simultaneously disconnects all electrical connections between the ES1000.3 Housing and the ES1050.1 Battery Pack.

3.3.1 Removing the Battery Pack from the ES1000.3 Housing

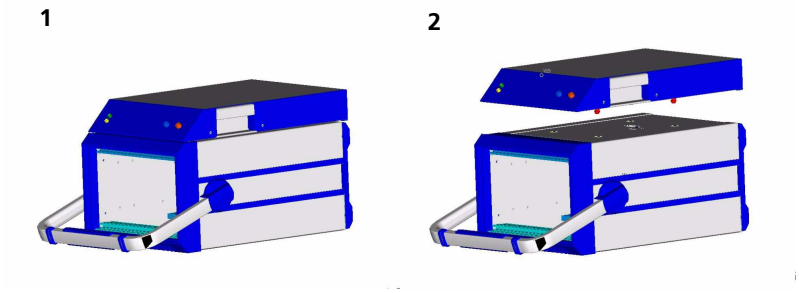


Fig. 3-6 Removing the Battery Pack from the ES1000.3 Housing

To remove the battery pack from the ES1000.3 Housing

When carrying out the steps listed below, look at Fig. 3-6 on page 21.

1. Using your left hand, press down the middle of the battery pack onto the ES1000.3 Housing.

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2. Firmly pull out the right-hand handle of the battery pack. A spring mechanism forces the battery pack up when it is released. The battery pack guide pins snap out of the housing.

   The battery pack and the housing are now mechanically separated. All electrical connections between the ES1000.3 Housing and the ES1050.1 Battery Pack (socket on the top of the housing and a connector on the bottom of the battery pack) are disconnected simultaneously.

3. Keep the battery pack somewhere safe.

3.3.2 Closing the ES1000.3 Housing

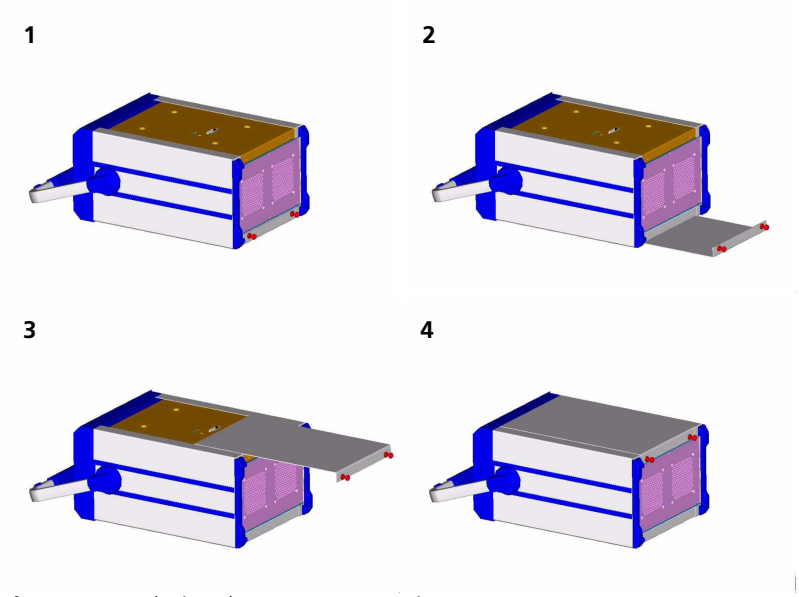


Fig. 3-7 Closing the ES1000.3 Housing

To close the ES1000.3 Housing

When carrying out the steps listed below, look at Fig. 3-7 on page 22.

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1. Unscrew the two mounting screws at the back of the top cover which is currently mounted on the bottom of the housing.
2. Slide the top cover out to the back and remove it from the housing.
3. Turn the external side of the top cover upside down so the external side is now facing upwards.
4. Slide the top cover in the front of the frame on the top of the housing.
5. Tighten the two mounting screws of the cover into the housing.

   The housing is now operational.

3.4 Charging the Battery Pack

Charging the battery pack is temperature-compensated. For safety reasons, charging cannot take place when the temperature is over + 40 ° C.

Note

Warning: Electrochemically speaking, batteries are permanently active and carry voltages. Therefore never directly connect the battery pole to the SUB-D connector and never connect it in parallel without a load resistance.

3.4.1 Initial Charging

When you receive your ES1050.1 Battery Pack, it is already charged.

Note

If the battery pack is kept in storage for a long period of time, it should be recharged at least every 6 months.

3.4.2 Charging at the Battery Pack Interface of the ES1000.3 Housing

The ES1000.3 Power Supply automatically charges the ES1050.1 Battery Pack via the ES1000.3 battery pack interface as soon as an external voltage source is applied (automatic operation) or when the ES1000.3 is operating normally.

Note

Please note that this may discharge a vehicle battery connected to the ES1000.3!

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The current charge status is indicated by two LEDs on the front of the battery pack (see section 3.1.2 on page 17).

Charging the battery pack at the battery pack interface of the ES1000.3 can only be prevented by

- interrupting the power supply of the power supply control unit of the ES1000.3, e.g. by removing the K100 cable, or
- removing the ES1050.1 Battery Pack from the ES1000.3 Housing.

The ES1000.3 is fully operational during charging.

Charging the ES1050.1 Battery Pack at the battery pack interface of the ES1000.3 Housing is temperature-compensated and works efficiently in a temperature range from 0 °C to +40 °C.

3.4.3 Charging with an External Charger

The ES1050.1 Battery Pack can also be charged independently of the ES1000.3 Housing. A special external ETAS charger is used for this purpose; it is supplied with mains voltage. This plug-in power supply is connected to the SUB-D connector on the bottom of the battery pack.

Note

The ES1050.1 Battery Pack must not be operated, charged or stored on one of its long narrow sides, either standing or lying. This also applies when the battery pack is mounted on the ES1000.3 Housing.

The ES1050.1 Battery Pack should be charged with an external charger at room temperature.

3.5 Operation and Storage

Operating and storing the ES1050.1 Battery Pack at very high or very low temperatures may well considerably reduce its service life.

The ES1050.1 Battery Pack should not be stored for more than 6 hours at low temperatures (< -20 °C). Storing at negative temperatures is only permissible when the battery pack is charged > 80%. This is shown by the yellow "Charge status" LED on the battery pack (see section 3.1.2 on page 17).

When discharged, the battery pack must be removed immediately from a low-temperature environment and must be recharged to avoid the battery pack being damaged.

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Note

The ES1050.1 Battery Pack must not be operated, charged or stored on one of its long narrow sides, either standing or lying. This also applies when the battery pack is mounted on the ES1000.3 Housing.

Note

If the battery pack is kept in storage for a long period of time, it should be recharged at least every 6 months.

Note

Never store the battery pack uncharged over a long period of time.

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4 Operation

4.1 Inserting VMEbus boards

Some VMEbus boards have to be configured before they can be inserted. For more information, consult the relevant board manual.

Note

The boards can only be configured and installed at a workplace that is protected against static discharge.

To insert a board

1. Switch off the power supply to the housing. Make sure that all devices connected to the housing by cable are powered off too.
2. If the slot you want to use for the board is protected by a cover, remove it.
3. Insert the board into the slot. Make sure that the board runs in both the top and bottom guide rails.
4. Slide the board in until the connector snaps in.
5. Screw in the mounting screws for the front panel of the board.
6. Establish any necessary cable connections to the connectors of the front panel.

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4.2 Removing VMEbus boards

Note

The boards can only be removed at a workplace that is protected against static discharge.

To remove a board

1. Switch off the power supply to the housing. Make sure that all devices connected to the housing by cable are powered off too.
2. Disconnect all connections from the board you want to remove.
3. Unscrew the mounting screws at the very top and bottom edge of the front panel of the board.
4. Carefully pull out the board using its handle.
5. Pack the board in its transport packaging or an anti-static bag.
6. Close the slot with a cover.

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4.3 Operating Modes of the ES1000.3 Power Supply

4.3.1 Overview

The ES1000.3 Power Supply can be operated either in normal or automatic operating mode. In automatic mode, it is possible to control the ES1000.3 Power Supply remotely. Operation is also possible using an ES1050.1 Battery Pack.

4.3.2 Switching Operating Mode

To switch operating mode

- Press the "AUTO / ON" switch on the front panel of the ES1000.3 Power Supply Control Unit.

  The current operating mode is changed. There is a change of operating mode from automatic to normal or vice versa.

4.3.3 Automatic Operating Mode

To activate the ES1000.3 Power Supply

- Connect the device to an external voltage source (vehicle power supply, external power supply).

  The ES1000.3 Power Supply is switched on for about five seconds; setup is then executed and a standby supply voltage is activated.

  The power supply of the VME backplane has not been activated yet.

  The power supply is running in automatic mode.

  You can now operate the system remotely (see section 4.4.1 on page 31 and section 4.4.2 on page 32).

or

- Press the "AUTO / ON" switch (see section 4.3.4 on page 30).

  The power supply is now running in normal mode.

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4.3.4 Normal Operating Mode

To activate the "Normal" operating mode

- Press the "AUTO / ON" switch.

  The device is switched to "Normal" operating mode and the status LED inside the switch is lit.

  The power supply of the VME backplane is activated.

4.3.5 Using a Battery Pack

After the ES1050.1 Battery Pack has been mounted on the ES1000.3 Housing (see section 3.2 on page 18), the ES1000.3 system can be supplied with power by the battery pack.

The ES1000.3 takes its power from the battery pack either

- automatically when the input voltage drops below the permissible rate of the ES1000.3 Power Supply (buffer function) or
- by switching it on in standalone operation.

Only "Normal" mode is possible in standalone battery pack operation.

Note

In standalone battery pack operation, the remote interface cannot be used to power on/off the ES1000.3 Power Supply.

Powering On

To power on during battery pack operation

- Press the switch on the front of the battery pack.
- Keep the switch pressed in.
- Press the "AUTO / ON" switch.

  The ES1000.3 Power Supply is powered on and is supplied with power by the ES1050.1 Battery Pack.

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To power off during battery pack operation

- Press the "AUTO / ON" switch on the ES1000.3.

  The ES1000.3 Power Supply is powered off.

4.4 Remote Control of the ES1000.3 Power Supply

There are two different ways of remotely controlling the ES1000.3 Power Supply in "AUTO" operating mode (automatic operation):

- remotely using the ES1000.3 Power Supply Control Unit
- remotely using the ES1000.3 VMEbus (ES1120.x / ES1130.x in Slot 1 of the ES1000.3).

4.4.1 Remote Control using the ES1000.3 Power Supply Control Unit

With remote using the ES1000.3 Power Supply Control Unit, the 3-pin remote socket in the power supply control unit is used. The delivery scope of the ES1000.3 Housing includes a connector for the remote socket which is assembled by the customer for the appropriate use (see section 5.1.4 on page 35).

Remote Socket Pin	Meaning
Pin 2 to U_{BATT} (e.g. using terminal 15)	Remote function activated, power supply of the VME backplane activated
Pin 1 - Pin 3 bridged	Remote functions deactivated as explained in 4.4.1, Remote functions deactivated as explained in 4.4.2, Power supply of the VME backplane deactivated

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4.4.2 Remote Control using ES1120.x / ES1130.x in Slot 1 of the ES1000.3 Housing

Note

The use of this remote function is only possible with:

- *ES1120.3 and 1130.3 boards and their successors,*
- *ES1120.2 and 1130.2 boards after an update to ES1120.3 or ES1130.3 respectively.*
- *ES1120.1 and 1130.1 boards cannot use these functions.*

When the power supply is remotely controlled using the Ethernet connection of the ES1120.x / ES1130.x master card (remote via Slot 1 of the ES1000.3), the Ethernet communication between the relevant master card and the connected PC is evaluated. If, for example, a connected PC is booted and an Ethernet link detected, the ES1000.3 Power Supply is activated via the VMEbus.

Note

If Pin 1 is connected to Pin 3 at the remote socket of the power supply, this remote function is also deactivated.

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5 Technical Data

5.1 ES1000.3 Housing

5.1.1 Fulfilled Standards and Norms

- EN 50 081-1
- EN 55 022/B (IEC CISPR22)
- EN 55 011/B (IEC CISPR11:1997)
- EN 50 082-1
- EN 61 000-4-2 (IEC 61000-4-2)
- EN 61 000-4-3 (IEC 61000-4-3)
- EN 61 000-4-4 (IEC 61000-4-4)
- EN 61 000-4-5 (IEC 61000-4-5)
- EN 61 000-4-6 (IEC 61000-4-6)
- ENV50204

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5.1.2 General Data

Mechanical Data

Mechanical structure	19” housing
Height	180 mm
Width	235 mm
Depth	360 mm
Weight (only equipped with the power supply)	8.6 kg

Backplane

Standard	VME64x
No. of slots	9 slots each 4 HP wide for standard Euro-card-sized boards (100 mm x 160 mm)
Compatibility	Standard VMEbus VME64x (without 3.3 V supply voltage)

Fan

Control	Via the temperature sensor in the board area

Environmental Conditions

Ambient temperature during operation	- 40 ° C to + 70 ° C
Storage temperature	- 50 ° C to +85 ° C

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5.1.3 Electrical Data

Power Supply

Dimensions	19", 3 U, half width
Dimensions (L x W x H)	35.5 cm x 23.5 cm x 17.5 cm
Input voltage	6 to 36 V DC, at least 8 V for continuous operation
Power input	Typ. 50 to 100 W, max. 150 W (depending on the output power)
Output voltage/current	5 V : max. 15 A 12 V : max. 1 A
Residual ripple	< 50 mV_{ss}

Note

To provide a wide input voltage range, the power supply interface on the ES1000.3 Power Supply Control Unit is not fused. It must be protected externally.

5.1.4 Pin Assignment

Power Supply Interface

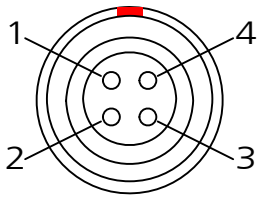


Fig. 5-1 Connector for the Power Supply Interface

Pin	Function	Pin	Function
1	U_{BATT}	3	Ground
2	U_{BATT}	4	Ground

Tab. 5-1 Power Supply Interface Pin Assignment

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Remote Interface Connector

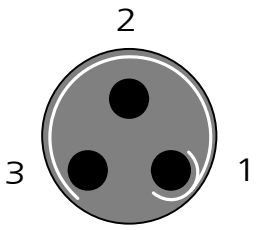


Fig. 5-2 Remote Interface Pin Assignment (Solder Side View)

Pin	Function
1	Locking of the remote interface
2	Remote
3	External operating voltage ground

Remote Interface Connector
LEMO FGG.OB.303.CLAD35

Service Interface

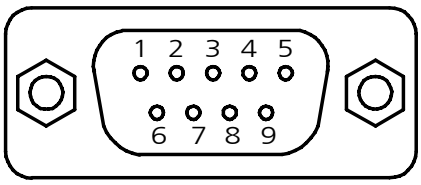


Fig. 5-3 Service Interface Pin Assignment (Solder Side View)

Pin	Description
2	RxD Receive Data
3	TxD Transmit Data
4	DTR Data Terminal Ready
5	GND System Ground

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Pin	Description
6 and 1	DSR Data Set Ready + DCD Data Carrier Detect
7	RTS Request To Send
8	CTS Clear To Data

5.2 ES1050.1 Battery Pack

5.2.1 General Data

Product Features	Property of the Batteries used
Battery type	Lead acid cells based on absorbing glass matt technology (AGM)
Operating mode	Maintenance-free operation
Standard housing material	Virtually flameproof in acc. with UL 94 HB
Dangerous goods	Not dangerous acc. to IATA
IEC 896-2	Conforms to IEC 896-2
Cyclability	At 50% average discharge depth more than 500 discharge/recharge cycles
Service life	At T = 25 °C approx. 6 years **Note** *An increase in temperature by 10 K halves the battery pack's service life.*

Mechanical Data

Height	50 mm
Width	237 mm
Depth	347 mm
Weight	7.3 kg

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Environmental Conditions

Ambient temperature during operation	- 40 ° C to +60 ° C
Storage temperature	0 ° C to + 60 ° C

5.2.2 Electrical Data

Fuse Protection

ES1050.1 Battery Pack fuse protection	T10L250V

Battery Pack Capacity

Battery pack capacity	7 Ah with 24 V output voltage

Charge Time After Complete Discharge

Charging using ES1000.3 Power Supply	12 to 16 hours
Charging using external power supply	Approx. 3.5 hours (at + 20° C)

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Discharge Behavior

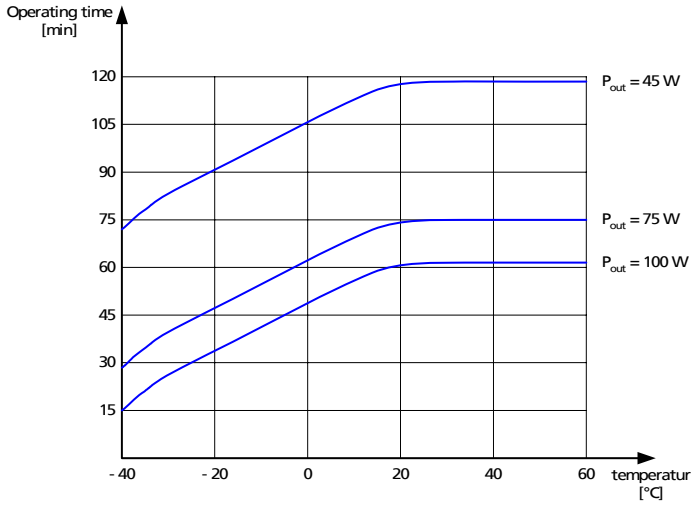


Fig. 5-4 Discharge Behavior

System Autonomy with Sample Configuration

The ES1000.3 System combined with an ES1050.1 Battery Pack can be used independent of the vehicle power supply or an external power supply.

The way of the equipment with interface boards and the ambient conditions determines the length of time of standalone operation.

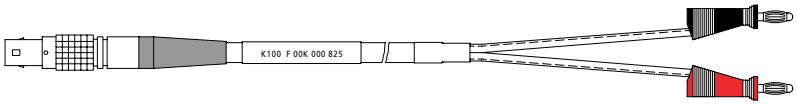
The table describes a sample of this interdependence.

System Autonomy	Ambient Temperature	ES1000.3 Configuration
2 hours	20° C / 68° F	ES1120.3, ES1130.3, ES1222.2, ES1232.1, ES1303.1 + ES1310.1

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5.3 Cables

5.3.1 K100 Cable



Side A Side B

Fig. 5-5 K100 Cable

Side A Connector	Side B Connector
LEMO FGJ.3B.304.CYMD92	KT425 multi-contact black; KT425 multi-contact red

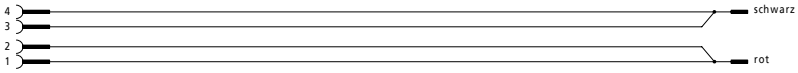


Fig. 5-6 K100 Cable Wiring

5.3.2 RS232 Cable (Null-Modem Cable)

Note

The standard cable required for the update is not supplied by ETAS. Please contact your local specialist dealer or have the cable made based on the following information.

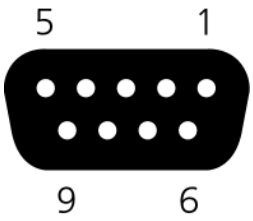


Fig. 5-7 Pin Assignment (Solder Side)

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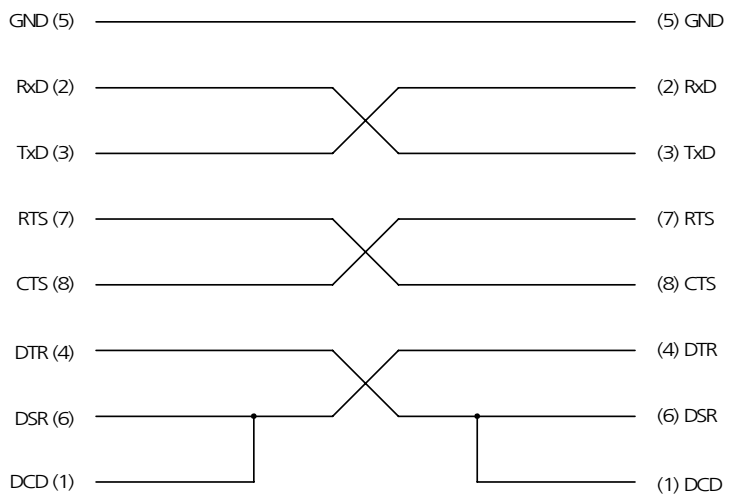


Fig. 5-8 Null-Modem Cable Wiring

Side A Connector	Side B Connector
SUB-D9 female	SUB-D9 female

Side A Connector			Side B Connector	
Description	**Pin**		**Pin**	**Description**
RxD Receive Data	2		3	TxD Transmit Data
TxD Transmit Data	3		2	RxD Receive Data
DTR Data Terminal Ready	4		6 and 1	DSR Data Set Ready + DCD Data Carrier Detect
GND System Ground	5		5	GND System Ground
DSR Data Set Ready + DCD Data Carrier Detect	6 and 1		4	DTR Data Terminal Ready
RTS Request To Send	7		8	CTS Clear To Data
CTS Clear To Data	8		7	RTS Request To Send

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6 Ordering Information

6.1 ES1000.3 Housing

6.1.1 Delivery Scope

Order Name	Short Name	Order Number
ES1000.3 Housing incl. power supply, power supply cable type 3 (K100), remote connector, documentation	ES1000.3	F-00K-103-091

Note

Please note that the ES1050.1 Battery Pack has to be ordered separately.

6.2 Accessories

6.2.1 Cable

Order Name	Short Name	Order Number
Power supply cable type 3	K100	F-00K-000-825

6.2.2 Delivery Scope

Order Name	Short Name	Order Number
ES1050.1 Battery Pack	ES1050.1	F-00K-103-093

6.2.3 Cable

Order Name	Remark
Remote connector (Lemo FGG.0B.303)	Available from your local Lemo distributors

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