

u.trust Anchor LAN V5 FIPS 140-3

Operating Manual



utimaco[®]

Imprint

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1 Introduction

Thank you for purchasing our u.trust Anchor LAN security system. It is a 19-inch network appliance with a hardware security module, the u.trust Anchor PCIe card, mounted inside. The u.trust Anchor LAN can be easily mounted in a 19-inch rack and integrated in a network. We hope you are satisfied with our product. Please do not hesitate to contact us if you have any questions or comments.

1.1 Downloading the Product Bundle

You can download all components that are required to operate the u.trust Anchor device from the Utimaco download portal.

Das Product Bundle kann von der folgenden Website heruntergeladen werden:

<https://support.hsm.utimaco.com/support/downloads/>



Für die Nutzung des Downloadportals ist eine Registrierung zwingend erforderlich, zudem muss der Bereich für ein bestimmtes Produkt, z.B. „SecurityServer Se Gen2“, freigeschaltet sein.

The product bundle includes user documentation, the Global Initial Admin Key, the Utimaco Root Certificate and the administration tools for the device.

1.2 About This Manual

In this operating manual you will find all the necessary information for using the hardware of the u.trust Anchor LAN as well as essential security instructions that are to be followed in order to ensure that the device can be operated safely.

1.2.1 Target Audience for This Manual

This manual is intended for Global Administrators who bring the u.trust Anchor LAN into service and manage it.


1.2.2 Document Conventions


We use the following document conventions:


Convention	Use	Example
Bold	Items of the Graphical User Interface (GUI), e.g., menu options	Press OK
<code>Monospaced</code>	Code that is given for explanation or as an example, file paths	<code>chsm-create</code>
<i>Italic</i>	References and important terms	See <i>Sample Chapter</i> in the <i>CryptoServer - Sample Manual</i>

Table 1: Document conventions


We use special icons to highlight the most important notes and information.

 Here, you find important safety information that should be followed.

 Here, you find additional notes or supplementary information.

 This message marks the result expected after the successful execution of an instruction.

1.3 Import and Export Regulations



The export and use of u.trust Anchor outside Germany is subject to the legal foreign trade regulations of the Federal Republic of Germany and requires the appropriate authorization. The import of u.trust Anchor is subject to the legal requirements or other regulations that apply in the particular destination (import license). Please contact your own national import authorities for more detailed information.

1.4 Damage in Transit

If you discover that the transport boxes are damaged when they arrive, please immediately contact your reseller or Utimaco IS GmbH. For address and telephone number, see [Contact Address for Support Queries](#). Please have the delivery note and the device's serial number ready.

1.5 Deliverables

The u.trust Anchor LAN deliverables include:

- One u.trust Anchor LAN with a u.trust Anchor PCIe card mounted inside



Figure 1 : LAN Appliance Front View

- Two power supply cables
- One PIN pad of type Utimaco cyberJack one (referred to below as PIN pad) to be used for the u.trust Anchor LAN administration. It must be connected to a USB port of the administration computer.



Figure 2 : Utimaco cyberJack one PIN Pad

- One micro USB cable for connecting the PIN pad
- One USB 2.0 extension cable for connecting the PIN pad
- One PIN pad stand

- Ten smartcards for administering the u.trust Anchor LAN



Figure 3 : Smartcard provided by Utimaco

- Optional: Two rack rails



Use only PIN pads and smartcards delivered by Utimaco IS GmbH for the u.trust Anchor LAN administration.

1.6 Security Guidelines

1.6.1 General Advice

We highly recommend using strong passwords consisting of at least eight random characters, which should include uppercase and lowercase letters, special characters and random numbers.

Keep the passwords secret, do not write them down anywhere and change them regularly.

We highly recommend checking the state of the battery at regular intervals.

1.6.2 Protected Operational Environment

Before you start operating the device, ensure that the system environment is highly secure by checking that:

- No secure seal is damaged.
- PIN, PUK (personal unblocking key) or password entry cannot be monitored.
- The device is securely stored and appropriately protected against unauthorized access.
- The PIN pad is securely stored, if purchased.
- The smartcards are securely stored, if purchased.
- Only trustworthy persons have physical-/network access.
 - The administration and configuration/setup of the u.trust Anchor shall be exclusively done by verified, trusted, authorized and well-trained persons.
- Only authorized changes to the software and the configuration of device are possible.
- Regular inspections are required to deter and detect tampering (including attempts to access side-channels, or to access connections between physically separate parts of the u.trust Anchor).
- The u.trust Anchor must be protected against the possibility of attacks that are based on emanations, like electromagnetic emanations or Simple Power Analysis (SPA) or Differential Power Analysis (DPA) attacks.

Additional measures for operating an u.trust Anchor PCIe card/using an administration computer with the client application:

The following information is relevant for operating an u.trust Anchor PCIe card, and for any host PC/server where the u.trust Anchor PCIe card is integrated and where Utimaco host APIs and tools are running:

- Only trustworthy persons have a physical and network access to the u.trust Anchor and to the administration computer.
 - The administration and configuration/setup of the administration computer shall be exclusively done by verified, trusted, authorized and well-trained persons.
 - The administration computer where the u.trust Anchor PCIe card is installed in shall be placed in a highly secured area that can be only reached by authorized people. Unauthorized persons shall not have any access to the administration computer. It shall be secured by an access control mechanism, for example, password and/or smartcard.
 - The following rules apply for the passwords:
 - The minimum recommended password length is eight characters.

- The password shall contain uppercase and lowercase letters, at least two special characters and numbers.
- The password shall be changed periodically, at least every three months.
- The administration computer shall be checked for malware prior to installing the u.trust Anchor card and the administration tools. Software that is not trustworthy and not required for the operation and administration of the u.trust Anchor shall be uninstalled.
- An antivirus software with the latest updates installed shall be running on the administration computer.
- We highly recommend using the administration computer exclusively for the operation and administration of the u.trust Anchor. There should be no Internet access and the remote computer administration should be restricted to a minimum.

2 General Safety Instructions



Please follow all the warnings, safety notes and instructions given on the device or in this manual. If you fail to do so, Utimaco will not accept any liability for any resulting damage caused.

The u.trust Anchor LAN contains a u.trust Anchor PCIe card. If the predefined limit values for its internal temperature are exceeded (or not reached), an alarm will be triggered and all the data on the u.trust Anchor will be deleted.



Before unpacking the device and bringing it into operation, please read the safety instructions below carefully to ensure that the device can be operated safely.

Always keep these instructions handy, in a safe place.

2.1 Moving and Storing

When moving and storing the device, please follow these instructions:

- Before moving the u.trust Anchor LAN, ensure that the power supply cables have been pulled out of the sockets and that all other connection cables have been unplugged from the other devices.
- u.trust Anchor LAN should only be moved and stored in its original packaging.
- You must make sure that u.trust Anchor LAN is always stored at temperatures between -10 °C and +55 °C (+14 °F to +131 °F).
- Although there is no motion detector in the u.trust Anchor LAN that could initiate the deletion of data, do not subject the device to impacts and vibrations or any other physical events that may damage the packaging.
- If the device is to be stored for a longer time period, ensure that the battery replacement time is not exceeded. For details, see [Batteries](#).
- Keep this manual together with your u.trust Anchor LAN so that it is handy if you need to reinstall the system.

2.2 Safely Transporting the u.trust Anchor LAN

Prerequisites

- Ensure that the requirements in [Moving and Storing](#) are fulfilled.
- Prepare the new location of the u.trust Anchor LAN according to [19" Rack](#), or [Desktop](#).

To ensure the safe transport of the u.trust Anchor LAN over long or short distances, proceed as follows:

1. Check the state of the external battery either using `csadm` or using the menu keys on the front panel of the u.trust Anchor LAN:

Example using `csadm`

```
csadm Dev=192.168.123.123 GetBattState
```

For using the the keys on the front panel, see [Checking the Battery State](#).

Verify the output for the external battery:

- If the external battery power is displayed as `ok`, for example:
`External Battery: ok (3.068 V)`
skip step 2.
- If the external battery power is displayed as `low`, for example:
`External Battery: low (2.650 V)`
continue with step 2.

2. Replace the external battery by a new one, see [Replacing the External Battery](#). Note that this external battery ensures the power supply of the u.trust Anchor PCIe card for at least 1,5 years.



If the carrier battery does not provide enough power either, do not replace it on your own. The carrier battery must only be replaced by an employee of Utimaco IS GmbH or one of its certified sales partners.

3. As a preparation for backing up databases described below, determine the Master Backup Key (MBK) that is used in MBK slot 3. To determine this MBK, perform the `csadm MBKListKeys` command according to section *MBKListKeys* in the u.trust Anchor - csadm Manual.
4. Note down the name of this MBK.



This MBK is used by the `csadm BackupDatabase` command to protect the backup file to be generated.

It is important to note down which MBK has been used because for a successful restoring of this backup file at a later date it is necessary that the same MBK is in MBK slot 3. Otherwise, for example, after the execution of a `csadm MBKImportKey` command or after an MBK rollover, the backup file is inaccessible, see *Master Backup Key Rollover* in the u.trust Anchor - csadm Manual for details.

5. Verify that all shares of this MBK are available as keyfiles or on smartcards. To verify MBK shares on a smartcard, perform the `csadm MBKCardInfo` command according to *MBKCardInfo* in the u.trust Anchor - csadm Manual.
6. Back up the following databases:
 - a. Backup users using the `csadm BackupUser` command. The user.db cannot be backed up anymore in new versions.
 - b. Cryptographic key database (CXIKEY.db)
 - c. Audit log signature key (auditkey.db), if available

To do so, perform the `csadm BackupDatabase` command according to *BackupDatabase* in the u.trust Anchor - csadm Manual.

Example

```
csadm LogonSign=ADMIN,:cs2:cjo:USB0 BackupDatabase=CXIKEY.db
BackupDatabase=auditkey.db
csadm LogonSign=ADMIN,:cs2:cjo:USB0 BackupUser=users.ubk
```

7. Switch off the u.trust Anchor LAN, see [Switching off the u.trust Anchor LAN](#).
8. Remove the u.trust Anchor LAN from the rack, see [Removing a u.trust Anchor LAN V5 from a Rack](#).

9. Put the u.trust Anchor LAN into the original packaging. If you need an original packaging, contact the manufacturer Utimaco IS GmbH.
10. Again, ensure that the requirements in [Moving and Storing](#) are fulfilled.
11. After reaching the destination, mount the u.trust Anchor LAN and bring it into service, see [Bringing into Service](#).

2.3 Environmental Temperature and Humidity

The u.trust Anchor LAN must only be operated and stored in a particular temperature/humidity range.

- You must make sure that u.trust Anchor LAN is always stored at temperatures between -10 °C and +55 °C (+14 °F to +131 °F).
- You must make sure that u.trust Anchor LAN with a mounted u.trust Anchor PCIe card is always operated at temperatures between +10 °C and +50 °C (+50 °F to +122 °F).
- You must make sure that u.trust Anchor LAN is always stored at a humidity between 10% to 95% relative humidity, non-condensing



If the environmental temperature is out of the permitted range, there is a risk that the device sensor will delete all the data on it.

For security reasons, the u.trust Anchor PCIe card implements a mechanism that actively protects the device from being used under extreme temperatures. For this purpose, the u.trust Anchor PCIe card implements a temperature sensor that is located inside the u.trust Anchor PCIe card and that permanently monitors the temperature to trigger an immediate action in case that the allowed range is exceeded. For the permitted temperature range of the temperature sensor, see *Power Supply and Temperature* in the *u.trust Anchor LAN V5 - Administration Manual*. This section describes in detail at which temperatures the u.trust Anchor LAN is shut down or even an alarm is triggered, and all sensitive data is deleted. There is therefore a risk that the u.trust Anchor LAN is shut down and deletes all sensitive data because a too low or too high environmental temperature indirectly brings the inside temperature out of the permitted range.

2.4 19" Rack

Brackets are attached to either side of the device so that u.trust Anchor LAN can be mounted on a 19" rack.

- You can use slide rails for the installation of the u.trust Anchor LAN in a 19" rack which you can purchase from the manufacturer Utimaco.
- To mount u.trust Anchor LAN in a 19" rack, simply attach the securing brackets to the 19" rack.
- The temperature inside the 19" rack may be higher than the temperature outside the 19" rack. This is particularly true if several devices are mounted on the same 19" rack. Please ensure that the temperature inside the 19" rack does not exceed the maximum permitted environmental temperature.
- Take care that, when you mount the device in a 19" rack, the ventilation slots (fan compartment grill on the front panel and grill openings on the rear side) are kept free to ensure that air circulates enough. Air is drawn in through the fan compartment grill on the front panel and it is blown out through all the grill openings on the rear side to cool the device.

For details about mounting on a rack, see [Mounting the u.trust Anchor LAN V5 in a 19" Rack](#).

2.5 Desktop

If you do not want to mount u.trust Anchor LAN in a 19" rack, please follow these instructions:

- Place the device on a secure, stable surface. Avoid impacts and blows to the device.
- Never operate u.trust Anchor LAN close to water or other liquids. Never spill liquid on the device.
- Do not place objects, articles of clothing or papers on the device itself.
- Protect u.trust Anchor LAN against humid or dusty environments, vibrations, extreme temperature variations and direct sunlight. Do not place the device next to heating units, air conditioning units, etc.
- Ensure that the maximum permitted environmental temperature is not exceeded.

- Ensure adequate ventilation. Never mount the device in a cabinet or similar object in which the circulation of air is impeded. The ventilation slots (fan compartment grill on the front panel and grill openings on the rear side) on the device must never be covered. Air is drawn in through the fan compartment grill on the front panel and it is blown out through all the grill openings on the rear side to cool the device.
- Do not connect the device to sockets that are switchable or have timers.
- Avoid connecting the device to electrical circuits to which other power-hungry devices (such as motors, air conditioning units, photocopiers etc.) are connected. This would put the device at risk of sudden power fluctuations.



This device has not been designed for use at a workstation within the user's field of vision. To avoid disturbing reflections, do not place this product at a workstation directly in the field of vision.

2.6 Power Supplies and Power Supply Cables

The u.trust Anchor LAN is equipped with two redundant power supplies. Please find further technical details in [Technical Data of u.trust Anchor LAN V5 \(AC Power Supply\)](#) and [Technical Data of u.trust Anchor LAN V5 \(DC Power Supply\)](#).



Check the power voltage. Connecting u.trust Anchor LAN to the incorrect power voltage may destroy the device.



Connect the two power cables to two different power circuits. This ensures that the u.trust Anchor LAN remains in operation continuously even if one of the power circuits fails.

- Check the electrical connections to the power circuits to ensure they will not be overloaded.
- Ensure that the device's electrical connection is properly earthed. If you connect several devices together, their total power consumption may exceed the total safe limit.

- Handle the power supply cables carefully. Always disconnect them by pulling on the plugs, not on the cables themselves. Pulling on the cables loosens the contacts and can cause problems.
- Protect the power supply cables against physical damage. Never place furniture or other heavy objects on the power supply cables and do not drop any sharp-edged or heavy objects on it.
- Do not tie knots in the power supply cables.

2.7 Opening the Device

The u.trust Anchor LAN must only be opened by the employees of Utimaco or certified sales partners.



If the u.trust Anchor LAN is opened by someone else, instead of an employee of Utimaco or a certified sales partner, Utimaco accepts no liability for any damage caused by opening the device.

However, if there is an urgent need to open the device, it is essential that the power supply plugs are removed from the sockets before the device is opened. Before opening the device please contact your reseller or directly us, the manufacturer Utimaco, see [Contact Address for Support Queries](#). Please have the delivery note and the serial number of the device at hand.

To ensure that u.trust Anchor LAN cannot be opened without anyone noticing, there are holographic security seals on the device itself.

- To avoid the risk of electrical shocks or fires, do not attempt to tamper with any components inside the device.
- Do not attempt to repair u.trust Anchor LAN in any way.
- If water, wires or other parts penetrate the device by accident, immediately disconnect the power supply cables and inform your dealer or Utimaco IS GmbH. If you operate the device in this condition, you risk either causing a fire, or electrical shocks.
- Do not insert any objects into the openings in the u.trust Anchor LAN casing because they may hit live components and cause a short circuit. This may result in a fire or a life-threatening electrical shock.
- Incorrect or improper use may seriously damage u.trust Anchor LAN.

2.8 Batteries

The u.trust Anchor LAN contains two batteries. These ensure that no security-critical data is lost or deleted in the u.trust Anchor in the event of a power failure or when the device is switched off. The external battery is located in the battery compartment of the u.trust Anchor LAN. The carrier battery is located on the u.trust Anchor PCIe card.



These batteries are not rechargeable.

Using the wrong batteries may cause an explosion! Utimaco IS GmbH accepts no liability for damage caused by using any other batteries except the ones recommended by Utimaco IS GmbH

2.8.1 External Battery in the Battery Compartment

The external battery located in the battery compartment behind a screw cap on the front panel of the u.trust Anchor LAN is a 3.6 V lithium battery (size AA) made by Saft of type LS14500 or similar type. It is directly connected to the u.trust Anchor.

This battery is already in use when the device is supplied.



The external battery provides a guaranteed power supply for the u.trust Anchor for at least 1.5 years if the device is not supplied with power via the power cables.

Check the status of this battery at regular intervals. When the battery reaches a critically low power level, it must be replaced.

Customers are permitted to change the external battery as described in [Replacing the External Battery](#).

2.8.2 Carrier Battery on the u.trust Anchor PCIe Card

On the u.trust Anchor PCIe card, which is mounted into the u.trust Anchor LAN there is a 3 V lithium battery – the carrier battery. It is a Panasonic CR2477 cell battery (3V, Lithium, Ø 24.5 mm, L = 7.7 mm) or equivalent. It powers the sensor and the erase circuit when the u.trust Anchor LAN is switched off and the external battery in the battery compartment does not have enough power to supply the u.trust Anchor PCIe card.



The carrier battery can power the u.trust Anchor PCIe card for at least 6 months.

The carrier battery must only be replaced by an employee of Utimaco or one of its certified sales partners.

2.9 Cleaning

- Clean u.trust Anchor LAN with a soft, clean cloth dampened with a mild soapy solution. Then dry the device with a clean dry cloth.
- If the device has become wet, wipe it with a clean, dry, soft cloth.
- Never use benzene, thinner, alcohol or other aggressive substances to clean the device.

3 Bringing into Service

Before you start up u.trust Anchor LAN, check whether all parts that belong to the delivery, as listed in [Deliverables](#) are present.

3.1 Prerequisites for Operation

Before you bring the u.trust Anchor LAN into service, make sure that the prerequisites listed below are fulfilled.

3.1.1 Software Requirements

You need a computer with one of the operating systems listed in the following table. On this computer, the administration software provided by Utimaco shall be installed.

<i>Operating System</i>	<i>CryptoServer</i>	<i>u.trust Anchor</i>
Windows x64		
Windows 10	✓	✓
Windows 11 (Pro)	✓	✓
Windows Server 2016	✓	✓
Windows Server 2019	✓	✓
Windows Server 2022 (Standard)	✓	✓
Linux x64		
Red Hat Enterprise Linux 8	✓	✓
Red Hat Enterprise Linux 9	✓	✓
SUSE Linux Enterprise Server 12	✓	✓
SUSE Linux Enterprise Server 15	✓	✓
Ubuntu 20.04 LTS	✓	✓
Ubuntu 22.04 LTS	✓	✓


Table 2: u.Trust Anchor Supported Operating Systems

3.1.2 General and Security Requirements for the Operational Environment

- The u.Trust Anchor LAN shall only be installed, operated, and stored in environments fulfilling the temperature and humidity requirements, see [Environmental Temperature and Humidity](#).
- Follow the security instructions specified in [Security Guidelines](#).

3.2 Checking the Integrity of the Delivery

Before delivery, the u.trust Anchor LAN is packed in a special security bag ensuring the tamper-evident transport. The security bag with the u.trust Anchor LAN inside is delivered to you in a package. After receiving the package, you must perform the following steps to ensure that the package has not been opened or exchanged during transport.

 If you discover any damages or discrepancies while performing the following steps, immediately contact Utimaco IS GmbH to get information about how to proceed, see [Contact Address for Support Queries](#).

Checking the Security Bag

The following figure shows the most important security-relevant features of the security bag assuring the secure tamper-evident transport.

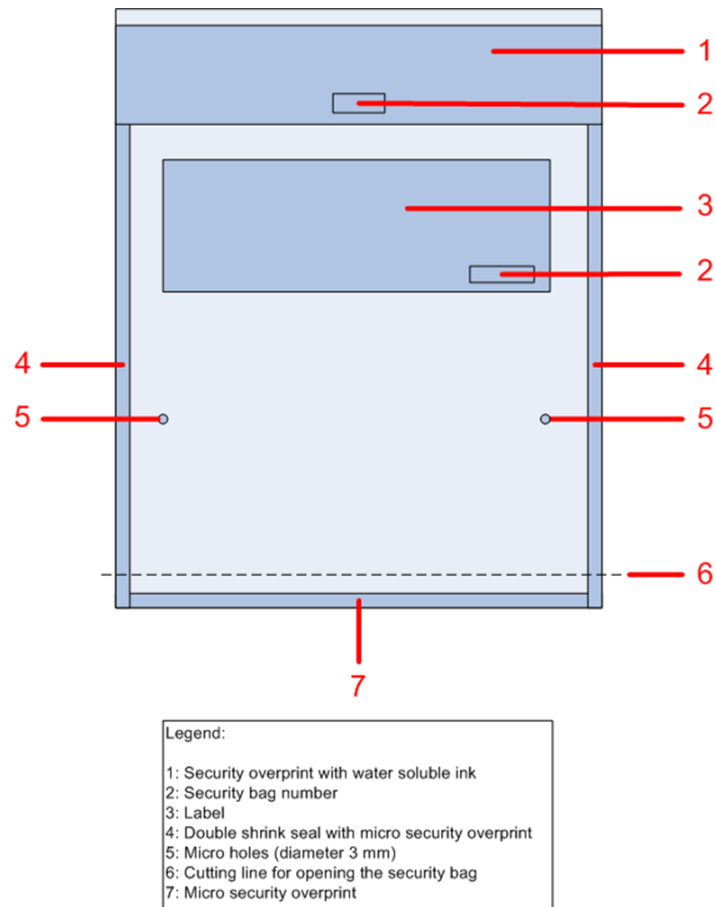


Figure 4 : Schematic view of a security bag



If you discover any damages or discrepancies while performing the following steps, immediately contact Utimaco IS GmbH to get information about how to proceed. The contact data is given in the chapter "Contact Address for Support Queries".

Check these features before you open the bag:

Check the intactness of the security overprint (item 1) on the upper side of the bag. Make sure it looks as shown in the next exemplary figure.

- **Intact security overprint**

The two blue stripes shall be continuous from the left side to the right side of the bag. In between the blue stripes, there is a transparent field equipped with a heat and cold

indicator. Furthermore, a security overprint is printed with black water-soluble ink over the blue stripes and the transparent field. The overprint has a special waved pattern and a variable text sequence. There are two pink vertical stripes, one on the left side of the transparent field and one on the right side of the transparent field. These stripes are indicated by red rectangles in the figure below.



Figure 5 : A sample of an intact security overprint

- The adhesive strip in light yellow or light pink is visible through the transparent field as shown below.



Figure 6 : A detail of a sample of an intact security overprint

- Yellow areas in the transparent field between the blue stripes are okay. For example, yellow spots as indicated by red rectangles as shown below are acceptable. They do not indicate a tamper attempt, especially if they are located in folds. Small folds, as indicated in the example figure by green rectangles, also do not indicate a tamper attempt, but can occur as part of the packaging process.



Figure 7 : Example for acceptable yellow spots and folds

- The following list shows some examples for possible damages on the security overprint that immediately indicate a tampered security bag. The items that are described in the text are indicated in the figures by red rectangles. If the security bag enclosing the u.trust Anchor you have received matches even slightly one of the items in the following list, immediately contact Utimaco IS GmbH to get information about how to proceed.

- **Slight red in the transparent field**

Do not open the security bag, if the transparent field between the two blue stripes contains a slightly red area.



Figure 8 : Example for a slight red in the transparent field

- **Pink in the transparent field**

Do not open the security bag, if there are additional pink areas in the transparent field between the two blue stripes. For example, a pink area might be a bar as shown below



Figure 9 : Example 1 for pink in the transparent field

or tiny spots as shown in the next figure.

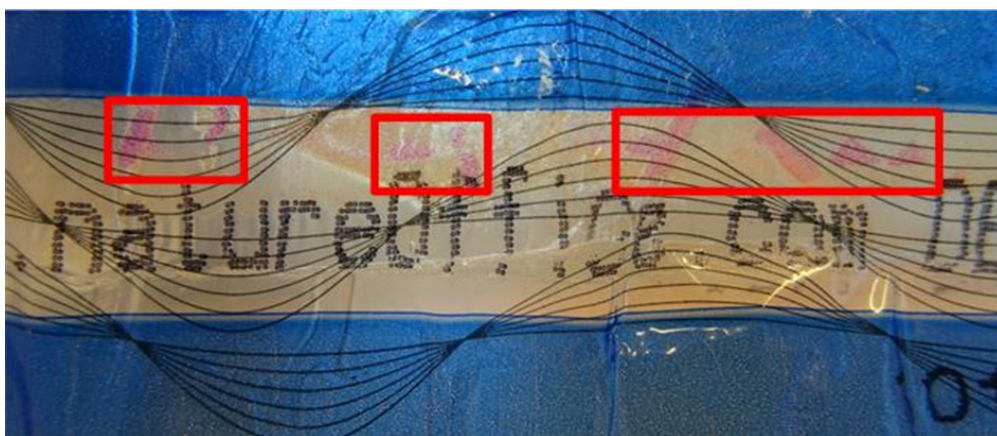


Figure 10 : Example 2 for pink in the transparent field

- **Text "STOP" in the blue stripes**

Do not open the security bag, if you see "STOP" written multiple times in white capital letters in one or both blue stripes. The figure shows only parts of this text.



Figure 11 : Example for "STOP" in the blue stripes

- **Damaged black security overprint**
Do not open the security bag, if the black security overprint is damaged. For example, parts of the black security overprint are simply missing



Figure 12 : Example 1 for a damaged black security overprint

or parts of the black security overprint appear blurred or almost transparent as shown below.

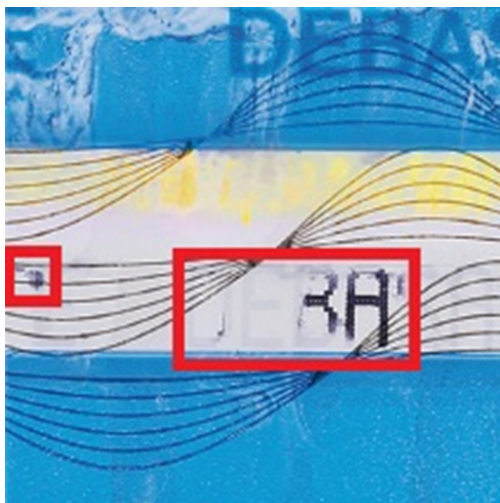


Figure 13 : Example 2 for a damaged black security overprint

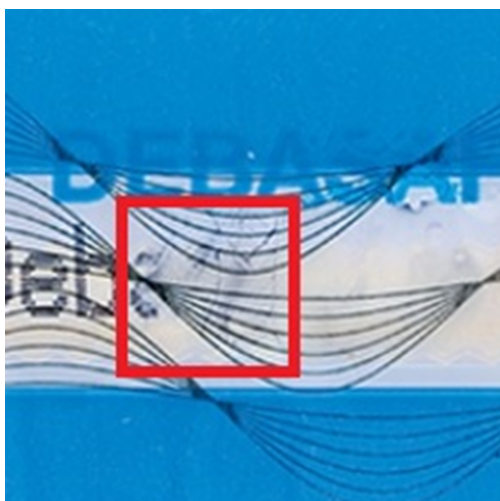


Figure 14 : Example 3 for a damaged black security overprint

- **Damaged blue stripe**

Do not open the security bag, if one or both blue stripes are damaged. For example, the blue color became blurred or appears to be scratched off.

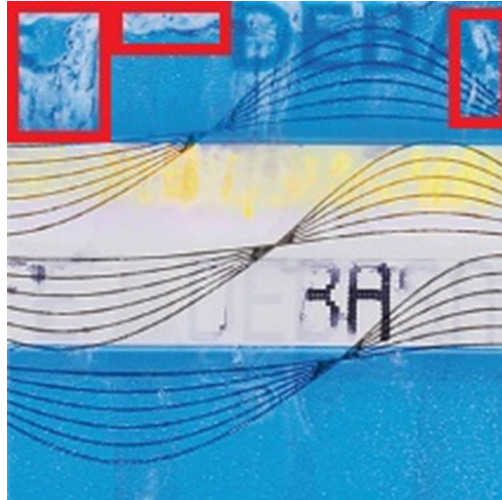
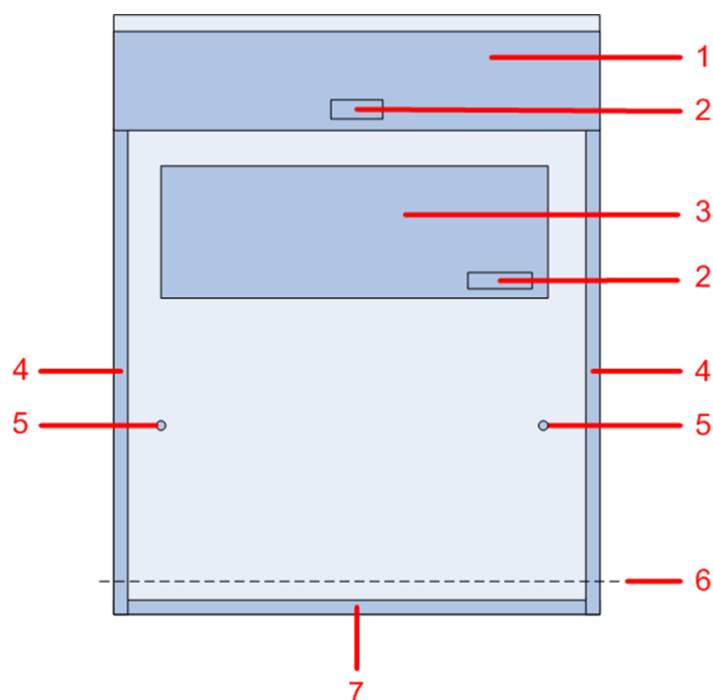


Figure 15 : Example 1 for a damaged blue stripe



Figure 16 : Example 2 for a damaged blue stripe

- Check the availability of the security bag number printed in the middle of the lower blue stripe and in the identification field. This number is shown as item 2.



Legend:	
1:	Security overprint with water soluble ink
2:	Security bag number
3:	Label
4:	Double shrink seal with micro security overprint
5:	Micro holes (diameter 3 mm)
6:	Cutting line for opening the security bag
7:	Micro security overprint

Figure 17 : Schematic view of a security bag

- Make sure that both numbers match the Security bag number specified in the delivery information sheet you have separately received attached to a digitally signed e-mail.
- Check the intactness of the double shrink seal with the micro security overprint (item 4 of the schematic) at both sides of the security bag. The next figure shows a more detailed view of the double shrink seal with the micro security overprint highlighted in a red frame.

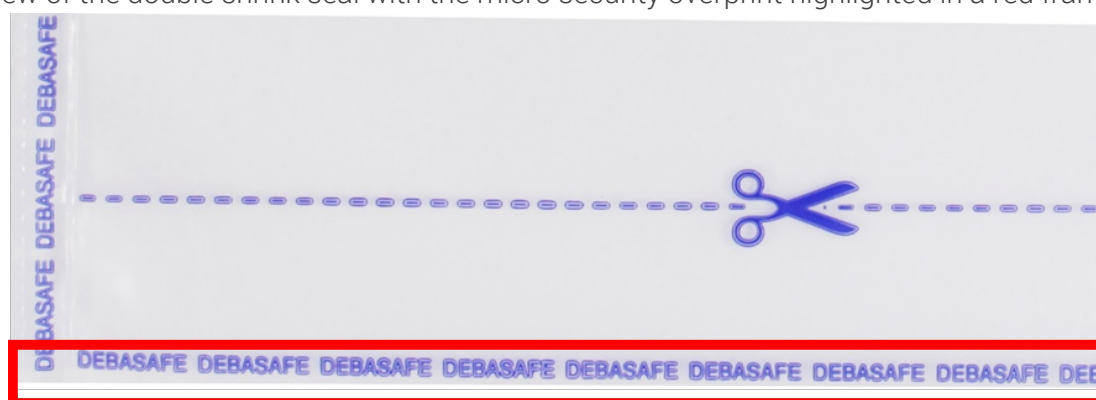


Figure 18 : Micro security overprint



If the micro security overprint is missing or damaged, do not open the bag. Immediately contact Utimaco IS GmbH to get information about how to proceed.

Checking the Device

1. Determine the completeness of the package content as specified in [Deliverables](#).
2. Check that the serial number of the integrated u.trust Anchor PCIe card is the same as the one listed in the delivery information sheet. The serial number - CSXXXXXX - is printed on a label on the slot bracket of the PCIe card at the rear side of the u.trust Anchor LAN.
3. Check that the serial number of the u.trust Anchor LAN matches the one contained in the delivery information sheet. This serial number is in format P5XXXXXXXXXX and is printed on a label on the bottom of the u.trust Anchor LAN.

Both the serial number of the u.trust Anchor LAN and the one of the PCIe card are printed on an extractable identification strip that you find on the front panel of the u.trust Anchor LAN as shown in the next image.



Figure 19 : Extractable identification strip on the u.trust Anchor LAN

⚠ There are two Utimaco seals placed on the top side of the u.trust Anchor LAN by the manufacturer: One on the left side and one on the right side. Additionally, a Utimaco hologram is placed on the right rear side. One of the Utimaco seals or the Utimaco hologram on the rear side of the u.trust Anchor LAN might sometimes get damaged by negligible displacements of the u.trust Anchor LAN housing during the transport. Normally, in this case there is no reason for security concerns. However, if on delivery both Utimaco seals and the Utimaco hologram on the rear side of the u.trust Anchor LAN are damaged or missing, this means that the housing of the u.trust Anchor LAN may have been illegally opened during the transport. Immediately contact Utimaco's customer support team to get information about how to proceed, see [Contact Address for Support Queries](#).

4. Remove the blue transport protection foil covering the top and the bottom side of the u.trust Anchor LAN.
5. Download the product bundle from the Utimaco download portal as described in [Downloading the Product Bundle](#).

Checking the smartcards

Check that the serial numbers printed on the delivered smartcards and shown for example in the figure below are the same as included in the delivery information sheet.



Figure 20 : Serial number of the smartcard

Checking the PIN pad

1. Check that the PIN pad is correctly sealed with two numbered security seals. The security seal numbers must match the ones specified in the delivery information sheet. Make sure that the serial numbers printed on the security seals of the PIN pad and its serial number match the ones specified in the delivery information sheet. All mentioned serial numbers can be found on the bottom of the PIN pad. An example is shown below.



Figure 21 : Serial number and Security seals of the PIN pad

2. Make sure that the connection cables do not show any sign of manipulation and allow connecting the PIN pad to a USB port of the administration computer.



Use only PIN pads delivered by Utimaco.



We recommend not using the PIN pad if any of the conditions above is not fulfilled.

Before delivery, the u.trust Anchor LAN is packed in a special security bag ensuring the tamper-evident transport. The security bag with the u.trust Anchor LAN inside is delivered to you in a package. After receiving the package, you must perform the following steps to ensure that the package has not been opened or exchanged during transport.



If you discover any damages or discrepancies while performing the following steps, immediately contact Utimaco IS GmbH to get information about how to proceed, see [Contact Address for Support Queries](#).



Further steps for HSM identification must be performed. Before these steps can be done, it is for technical reasons required to perform the installation of drivers and tools first, as described in [Bringing into Service](#). Please ensure that afterwards the mandatory next steps of HSM identification are executed. These are described in *Setup* the [u.trust Anchor - Administration Manual](#).

3.3 Mounting the u.trust Anchor LAN V5 in a 19" Rack

There are two options to mount a u.trust Anchor LAN V5 on a 19" rack:

- Mounting without using slide rails purchased from Utimaco IS GmbH
In this case, you use your own slide rails or other devices to mount the u.trust Anchor LAN V5 in a rack of your own responsibility. The corresponding procedure is not documented in this documentation. The following conditions must be considered when selecting a suitable location in the rack:
 - The temperature inside the 19" rack may be higher than the temperature outside the rack. This is particularly true if several devices are mounted on the same rack. Make sure that the temperature inside the rack does not exceed the maximum permitted environmental temperature, see [Environmental Temperature and Humidity, Technical Data of u.trust Anchor LAN V5 \(AC Power Supply\)](#), or [Technical Data of u.trust Anchor LAN V5 \(DC Power Supply\)](#).



If the temperature is out of the permitted range, all data on the u.trust Anchor PCIe card in the u.trust Anchor LAN V5 is deleted.

- When you mount the device on a rack, take care that the ventilation slots (fan compartment grill on the front panel and grill openings on the rear side) are kept free to ensure that air circulates enough. Air is drawn in through the fan compartment grill on the front panel and it is blown out through all the grill openings on the rear side to cool the device.
- Mounting with slide rails purchased from Utimaco IS GmbH
You can use telescopic slide rails, which you can purchase from the manufacturer, Utimaco IS GmbH, to mount the u.trust Anchor LAN on a 19" rack.



Figure 22 : Two slide rails

Each slide rail consists of an inner slide rail and an outer slide rail.



Figure 23 : Inner slide rail and outer slide rail

The inner slide rails will be mounted on the u.trust Anchor LAN, and the outer slide rails will be mounted on the rack. Then the u.trust Anchor LAN with the inner slide rails will be mounted on the outer slide rails.

Perform the following steps.

1. Verify that the telescopic slide rail is long enough for the depth of the rack. Two sizes of slide rails are available, 20" - 28" (for rack depth 51 cm - 71.5 cm) and 28" - 36" (for rack depth 71.5 cm - 91.5 cm).
2. Select a location in the rack where to position the u.trust Anchor LAN V5. Consider the following conditions.
 - The temperature inside the 19" rack may be higher than the temperature outside the rack. This is particularly true if several devices are mounted on the same rack. Make sure that the temperature inside the rack does not exceed the maximum permitted environmental temperature, see [Environmental Temperature and Humidity, Technical Data of u.trust Anchor LAN V5 \(AC Power Supply\)](#), or [Technical Data of u.trust Anchor LAN V5 \(DC Power Supply\)](#).



If the temperature is out of the permitted range, all data on the u.trust Anchor PCIe card in the u.trust Anchor LAN V5 is deleted.

- When you mount the device on a rack, take care that the ventilation slots (fan compartment grill on the front panel and grill openings on the rear side) are kept free to ensure that air circulates enough. Air is drawn in through the fan compartment grill on the front panel and it is blown out through all the grill openings on the rear side to cool the device.

3. Determine whether you have round or square style holes on the mounting posts of the rack.



Figure 24 : Square style hole mounting posts

4. The u.trust Anchor LAN V5 is delivered with two bags of screws.



Only use the screws in these two bags. Do not use the screws shipped with the slide rails.

- A bag labeled **2RALXX348000 SCREWS FOR RAIL 2X/4X**
This bag contains 2 lens head screws and 4 flat head screws. Both screw types are used to attach the u.trust Anchor LAN V5 to the inner slide rail. The flat head screws used here are tight-fit screws.

- A bag labeled **2RALXX187901 SCREWS FOR RACK 2X/8X**

This bag contains 2 long lens head screws and 8 short lens head screws.

The long screws are used to fix the position of the u.trust Anchor LAN V5 that is mounted on the inner and outer slide rails within the rack so that it cannot move.

If you have round style holes on the mounting posts of the rack, the short screws are used to attach the outer slide rail to the rack. However, if you have square style holes in the mounting posts, these short screws are not needed.

Verify that all needed screws listed above are available.

5. The slide rails have a bracket at each end to be mounted on a mounting post of the rack. The following figure shows a slide rail with a bracket in the square hole position and a slide rail with a bracket in the round hole position.

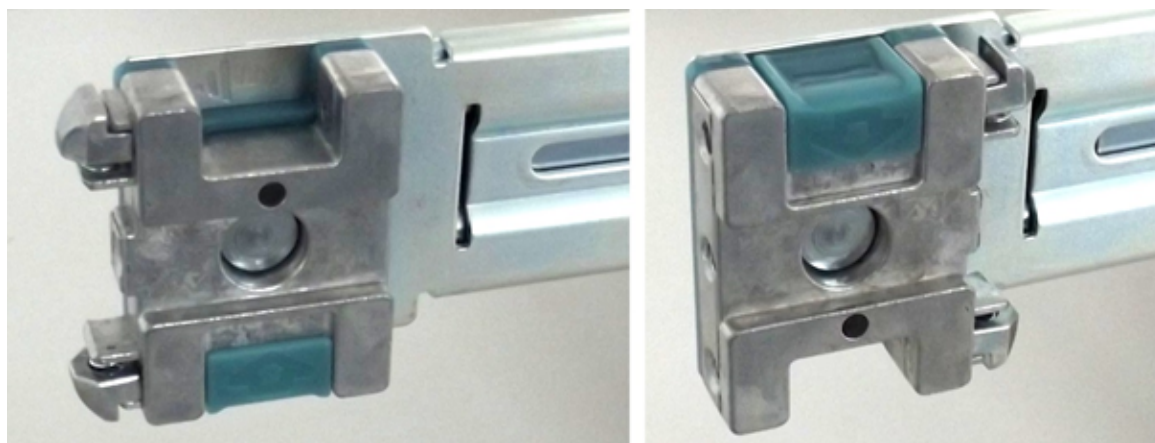


Figure 25 : Bracket in the square hole position and in the round hole position

6. If the bracket is not in the position you need, perform the following substeps.
 - a. Press the colored button, and rotate the bracket 180 degrees.

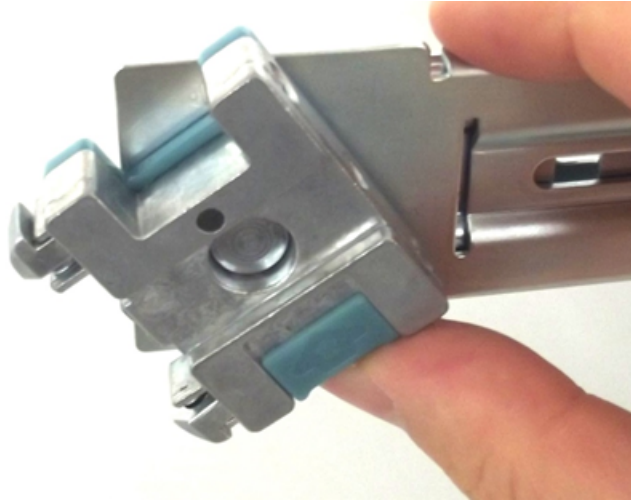


Figure 26 : Example: Rotating the bracket from square hole position to round hole position

If the bracket is difficult to rotate, press the colored button, keep it pressed, press the silver bolt on the inner side of the bracket with the tip of a screw driver, and rotate the bracket 180 degrees.

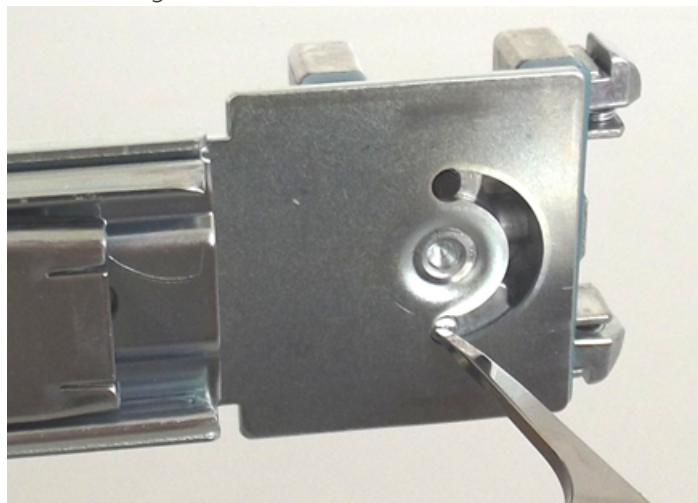


Figure 27 : Pressing the bolt on the inner side of the bracket

- b. Repeat step 6a) for the other end of the slide rail.
 - c. Repeat step 6a) for the ends of the second slide rail.
7. Move the inner slide rail outward. A locking mechanism stops the inner slide rail halfway through.

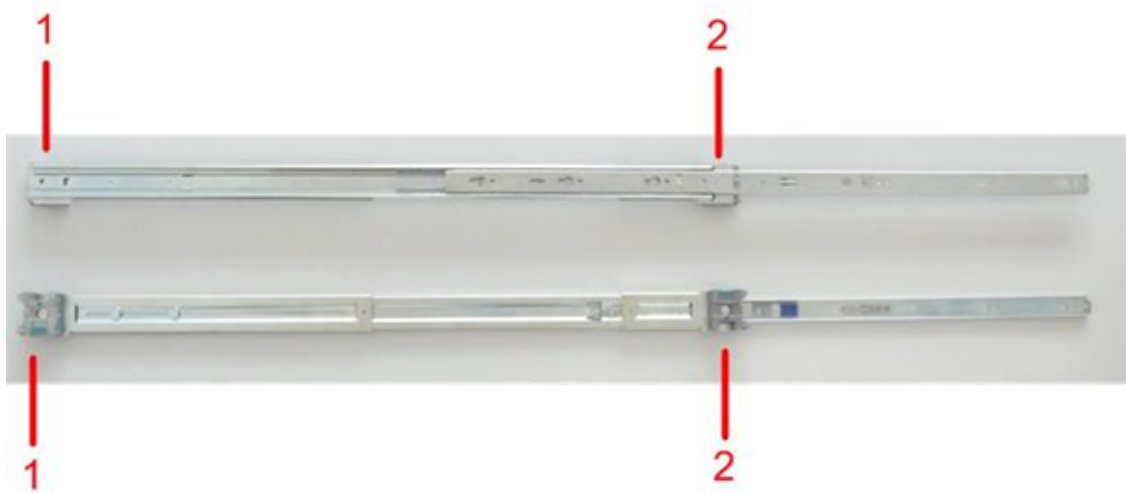


Figure 28 : Two slide rails in the locked position

1: Rear end of the outer slide rail

2: Front end of the outer slide rail

8. Note that the end (item 2 in the figure above) of the outer slide rail with the extended inner slide rail is the front end of the outer slide rail. This front end will be mounted on the front of the rack, and the rear end will be mounted on the rear of the rack.
9. There is a colored pin-lock latch on the outer side of the inner slide rail. Slide it outward.



Figure 29 : Sliding the pin-lock latch

10. If the mechanism is difficult to move, move the locking bolt on the inner side of the inner slide rail with the tip of a screwdriver while sliding the pin-lock latch.

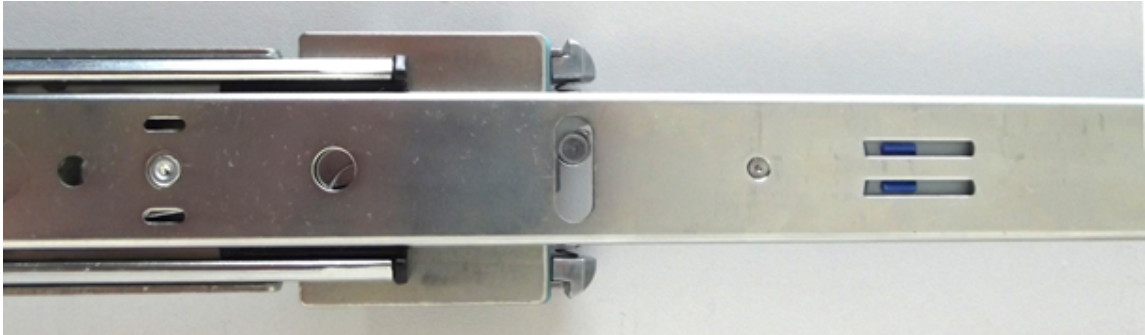


Figure 30 : Moving the locking bolt

11. While sliding the pin-lock latch outward, slide the inner slide rail outward, and remove the inner slide rail completely from the outer slide rail.



Figure 31 : Inner slide rail and outer slide rail

12. Remove the inner slide rail of the second slide rail as well from the outer slide rail.
13. The u.trust Anchor LAN V5 has 4 holes and 2 bolts on the left side and on the right side.

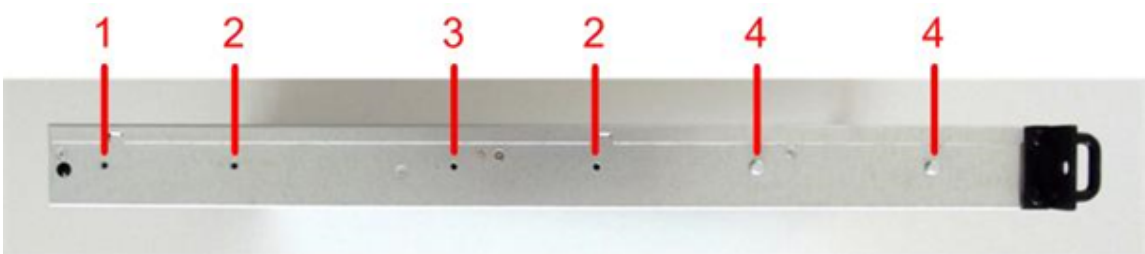


Figure 32 : Left side of the u.trust Anchor LAN V5

- 1: Hole for a lens head screw
- 2: Unused hole
- 3: Hole for a flat head screw
- 4: Bolt



The figures in this chapter show a 28"-36" long slide rail. If you use a 20"-28" long slide rail, there is only one unused hole and 2 holes for flat head screws.

14. Align the holes at the front end of the inner slide rail to the 2 bolts of the u.trust Anchor LAN V5, and move the inner slide rail forward to snap it in place.



Figure 33 : Aligning the inner slide rail



Figure 34 : Inner slide rail attached to the bolts

- 1: Hole for lens head screw
- 2: Hole for flat head screw
- 3: Bolt

If you use a 28"-36" long slide rail, 2 of the 4 holes remain visible. If you use a 20"-28" long slide rail, 3 of the 4 holes remain visible.

15. Tighten one lens head screw from the bag labeled **2RALXX348000 SCREWS FOR RAIL 2X/4X** in the hole at the rear end of the u.trust Anchor LAN V5.
If you use a 28"-36" long slide rail, tighten a flat head screw from the same bag in the remaining hole. If you use a 20"-28" long slide rail, tighten 2 flat head screws in the remaining 2 holes.



Figure 35 : Inner slide rail mounted on the u.trust Anchor LAN V5

16. Perform step 14 and 15 for the second inner rail and the right side of the u.trust Anchor LAN V5.
17. Verify once more which end of the outer slide rail is the front end and the rear end, see figure *Two slide rails in the locked position*.
18. If you have square style holes on the mounting posts of the rack, snap in the front and rear end of the outer slide rail to the front and rear mounting posts of the rack. Make sure that the outer slide rail is mounted horizontally.
19. If you have round style holes on the mounting posts of the rack, position the outer slide rail in the desired horizontal location of the rack, and use 4 short lens head screws from the bag labeled **2RALXX187901 SCREWS FOR RACK 2X/8X** to secure the outer slide rail in place. Consider that you mount the front end of the outer slide rail on the front mounting post and the rear end of the outer slide rail on the rear mounting post.
20. Mount the second outer slide rail on the rack.
21. Carefully align the inner slide rails attached to the u.trust Anchor LAN V5 with the notches of the outer slide rails attached to the rack. Once aligned, slide the u.trust Anchor LAN V5 toward the rack.



Two people are required to perform this step.

22. Push halfway through until it is in the locked position.



Figure 36 : u.trust Anchor LAN V5 in the locked position

23. Pull the pin-lock latches on both sides to release the locks and allow to slide the u.trust Anchor LAN V5 all the way to the rack until it reaches its final position



Figure 37 : u.trust Anchor LAN V5 in its final position

24. To secure the u.trust Anchor LAN V5 in place, attach the left bracket of the u.trust Anchor LAN V5 to the front bracket of the left outer slide rail by tightening a long lens head screw from the bag labeled 2RALXX187901 SCREWS FOR RACK 2X/8X. The left and right brackets of the u.trust Anchor LAN V5 are marked by red rectangles in the next figure.



Figure 38 : Brackets of the u.trust Anchor LAN V5

25. Perform step 35 for the right bracket as well.
26. Now the u.trust Anchor LAN V5 is mounted on the rack. Connecting the cables is described in the following chapters.



Figure 39 : u.trust Anchor LAN V5 mounted on a rack

3.4 Ports and Interfaces on the Rear Side

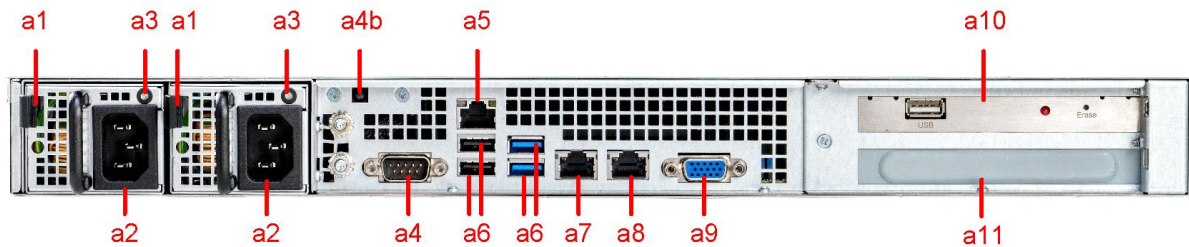
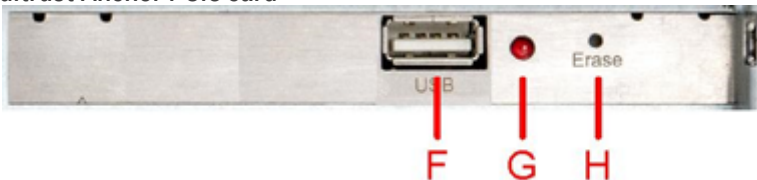


Figure 40 : u.trust Anchor LAN V5 (AC) – Sockets and ports on the rear side

Air is blown out through all the grill openings on the rear side to cool the device.

Port/Interface	Description
a1	Locking of the power supply module
a2	Power supply socket 100 V - 240 V (AC) Right power supply module = no. 1 Left power supply module = no. 2
a3	Control light for the operation status of a power supply module (Green: Normal operation).
a4	Serial port
a4b	Mute key for the signal tone that sounds if a power supply fails or is switched off
a5	Ethernet port 10/100/1000 (RJ45) / IPMI port (Intelligent Platform Management Interface), see <i>u.trust Anchor LAN V5 - Administration Manual</i> for details.
a6	USB port for the u.trust Anchor LAN
a7	eth0 Ethernet port 10/100/1000 (RJ45) The control lights of the eth0 Ethernet port have the following meanings: Upper left corner <ul style="list-style-type: none"> Green – 10/100 Mbit/s link Orange – 1000 Mbit/s link Upper right corner <ul style="list-style-type: none"> Yellow – Data traffic

Port/Interface	Description
a8	eth1 Ethernet port 10/100/1000 (RJ45) The control lights of the eth1 Ethernet port have the following meanings: Upper left corner <ul style="list-style-type: none"> Green – 10/100 Mbit/s link Orange – 1000 Mbit/s link Upper right corner <ul style="list-style-type: none"> Yellow – Data traffic
a9	VGA connector (screen)
a10	u.trust Anchor PCIe card  <p>Figure 41 : Sockets and ports on the rear side</p> <ul style="list-style-type: none"> F – USB 2.0 port of the u.trust Anchor PCIe card (not in use) G – LED flash light – indicates the activation of the Erase pushbutton H – Erase pushbutton
a11	As of CSLANOS v5.1, the lower PCIe slot can be optionally be equipped with, for example, a PCIe clock card, a copper network interface card or an optical fiber network interface card. See below for details.

The lower PCIe slot can be equipped with a PCIe clock card



Figure 42 : PCIe clock card on the rear side of u.trust Anchor LAN V5

Port/Interface	Description
a11	PCIe clock card
a12	Left BNC port for connecting the antenna. Do not use this port.
a13	Status LEDs
a14	Right BNC port for connecting the antenna
a15	Serial port of the PCIe clock card

The lower PCIe slot can be equipped with an optical fiber network interface card

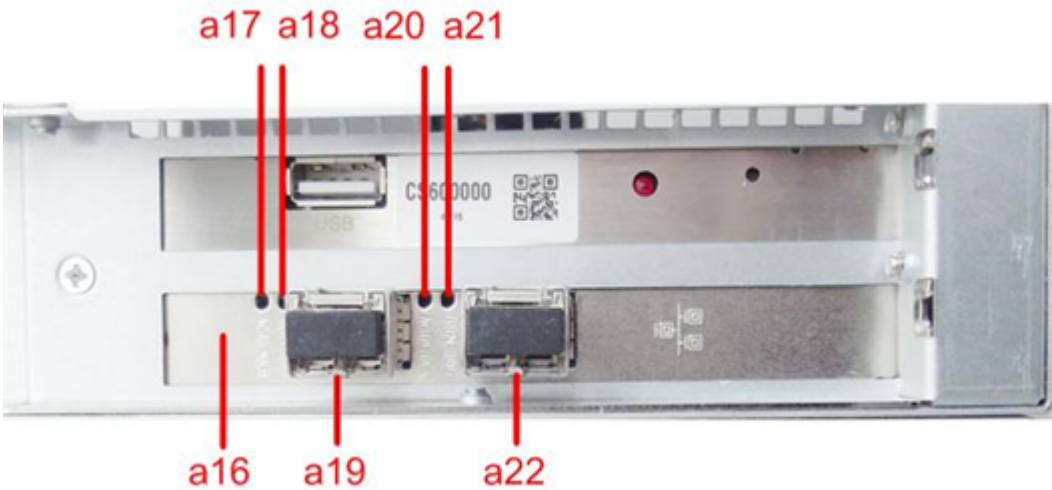


Figure 43 : Optical fiber network interface card on the rear side of u.trust Anchor LAN V5

Port/Interface	Description
a16	Optical fiber network interface card
a17	ACT/LNK B status LED
a18	GRN=10G status LED
a19	eth2 network port
a20	ACT/LNK A status LED
a21	GRN=10G status LED
a22	eth3 network port

The figure above shows an optical fiber network interface card with dummy plugs. The next figure shows the card without the dummy plugs.



Figure 44 : Optical fiber network interface card without dummy plugs

Depending on your situation, it might be necessary to remove the delivered SFP transceiver modules and replace them by the SFP transceiver modules you use (SFP: Small form-factor pluggable). The incorporated additional ethernet adapter X520-DA2 supports several SFP transceiver modules. The following SFP transceiver modules have been tested by the development:

- Intel FTLX8571D3BCV-IT Dual Rate 1000BASE-SX 1GbE
- Intel FTLX8571D3BCV-IT Dual Rate 10GBASE-SR 10GbE

The following tables list the supported optical SFP transceiver modules.

The following SFP transceiver modules with the peripheral type “SR Optic Modules” and the description “Intel Ethernet SFP+ SR Optics” are supported:

Product code	Supplier part number	Type
E10GSFPSR	FTLX8571D3BCV-IT	Dual Rate 1000BASE-SX 1GbE and 10GBASE-SR 10GbE
E10GSFPSR	AFBR-703SDZ-IN2	Dual Rate 1000BASE-SX 1GbE and 10GBASE-SR 10GbE
E10GSFPSR	FTLX8571D3BCVIT1	Dual Rate 1000BASE-SX 1GbE and 10GBASE-SR 10GbE
E10GSFPSR	FTLX8574D3BCV-IT	Dual Rate 1000BASE-SX 1GbE and 10GBASE-SR 10GbE
E10GSFPSR	AFBR-709DMZ-IN2	Dual Rate 1000BASE-SX 1GbE and 10GBASE-SR 10GbE
E10GSFPSR	AFBR-709DMZ-IN3	Dual Rate 1000BASE-SX 1GbE and 10GBASE-SR 10GbE
E10GSFPSRG1P5	FTLX8571D3BCV-I3	Dual Rate 1000BASE-SX 1GbE and 10GBASE-SR 10GbE
E10GSFPSRG1P5	FTLX8571D3BCVI31	Dual Rate 1000BASE-SX 1GbE and 10GBASE-SR 10GbE

Product code	Supplier part number	Type
E10GSFPSRG1P5	FTLX8574D3BCV-I3	Dual Rate 1000BASE-SX 1GbE and 10GBASE-SR 10GbE
E10GSFPSRG2P5	AFBR-709DMZ-IN7	Dual Rate 1000BASE-SX 1GbE and 10GBASE-SR 10GbE
E10GSFPSRG2P5	AFBR-710DMZ-IN2	Dual Rate 1000BASE-SX 1GbE and 10GBASE-SR 10GbE
E10GSFPSRG1P5	FTLX8574D3BCV-I5	Dual Rate 1000BASE-SX 1GbE and 10GBASE-SR 10GbE

Table 3: SFP transceiver modules with the peripheral type "SR Optic Modules" and the description "Intel Ethernet SFP+ SR Optics"

The following SFP transceiver modules with the peripheral type "SR Optic Modules" and the description "Intel Ethernet SFP+ Optics - SRX (Extended Temp)" are supported:

Product code	Supplier part number	Type
E10GSFPSRX	FTLX8574D3BNL-IT	Single Rate 10GBASE-SR 10GbE

Table 4: SFP transceiver modules with the peripheral type "SR Optic Modules" and the description "Intel Ethernet SFP+ Optics - SRX (Extended Temp)"

The following SFP transceiver modules with the peripheral type "LR Optic Modules" and the description "Intel Ethernet SFP+ LR Optics" are supported:

Product code	Supplier part number	Type
E10GSFPLR	FTLX1471D3BCV-I3	Dual Rate 1000BASE-LX 1GbE and 10GBASE-LR 10GbE
E10GSFPLR	FTLX1471D3BCVI31	Dual Rate 1000BASE-LX 1GbE and 10GBASE-LR 10GbE

Table 5: SFP transceiver modules with the peripheral type "LR Optic Modules" and the description "Intel Ethernet SFP+ LR Optics"

You find the complete list of supported SFP transceiver modules here:

<https://compatibleproducts.intel.com/ProductDetails?activeModule=Intel%C2%AE%20Ethernet&prdName=Intel%C2%AE%20Ethernet%20Converged%20Network%20Adapter%20X520-DA2>



Figure 45 : Optical fiber network interface card without SFP transceiver modules



Figure 46 : Dummy plugs and SFP transceiver modules

The lower PCIe slot can be equipped with a copper network interface card.



Figure 47 : Copper network interface card on the rear side of u.trust Anchor LAN V5

Port/Interface	Description
a23	Copper network interface card
a24	eth2 network port
a25	eth3 network port

The u.trust Anchor LAN V5 with direct current power supply differs on the rear side only by the power supply modules.

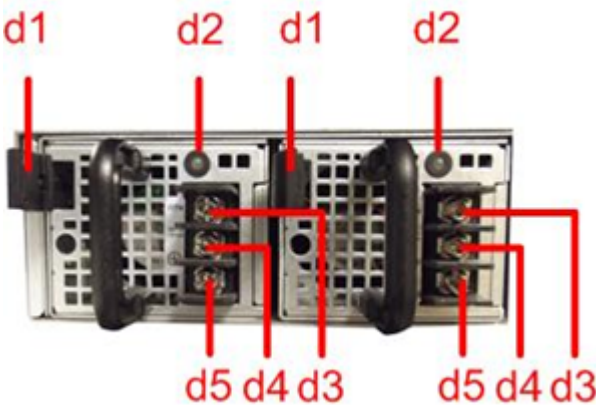


Figure 48 : u.trust Anchor LAN V5 (DC) – Power supply modules on the rear side

Port/Interface	Description
<i>d1</i>	Locking of the power supply module
<i>d2</i>	Control light for the operation status of a power supply module (Green: Normal operation).
<i>d3</i>	RTN (return connection)
<i>d4</i>	-36 to -72 Vdc, 12-6A
<i>d5</i>	Earth ground

3.5 Ports and Operating Elements on the Front Panel



Figure 49 : u.trust Anchor LAN V5 – Ports and operating elements on the front panel



Figure 50 : u.trust Anchor LAN V5 – Front panel with removed fan compartment grill

<i>Port/ Op. element</i>	<i>Description</i>
<i>f1</i>	Extractable identification strip with u.trust Anchor LAN serial number and u.trust Anchor serial number

f2	Battery compartment for the external battery of the u.trust Anchor LAN
f3	Fan compartment grill Air is drawn in through this fan compartment grill to cool the device.
f4	Two USB 2.0 ports (Host1 and Host2) of the u.trust Anchor LAN. Generally, these ports are used for connecting the delivered PIN pad.
f5	USB 2.0 port (HSM) of the u.trust Anchor used for the u.trust Anchor administration
f6	Display
f7	Buttons for u.trust Anchor LAN menu control
f8	On/off switch (Switch for turning on/off the u.trust Anchor LAN)
f9	Erase push-button for performing an external erase on the mounted u.trust Anchor
f10	Fan module containing two fans. They are administered as fan 5 and fan 6. Air is drawn in through this fan module to cool the device.
f11	Fan module containing two fans. They are administered as fan 3 and fan 4. Air is drawn in through this fan module to cool the device.
f12	Fan module containing two fans. They are administered as fan 1 and fan 2. Air is drawn in through this fan module to cool the device.

Table 6: u.trust Anchor LAN V5 Ports and Elements

3.5.1 Menu Control Buttons

There are the following menu control buttons:



Figure 51 : Menu control buttons of the u.trust Anchor LAN V5

Button	Function
ESC	Quit the currently displayed menu level or menu item
ENTER	Select the menu level or confirm the menu item
↑	Move up in the menu control
→	Move to the right in the menu control

Button	Function
↓	Move down in the menu control
←	Move to the left in the menu control

3.6 Switching on the u.trust Anchor LAN

1. Connect the power supply sockets on the rear side of u.trust Anchor LAN to a power supply using the cables supplied with the device.
2. Connect the **eth0** (a7) ethernet port on the rear side to your network with a twisted pair cable (RJ45).
3. Press the on/off switch on the front panel.

After a few seconds you will hear a short signal tone and the first messages are displayed. After approximately 90 seconds, the u.trust Anchor LAN is ready for use and alternating status information is displayed:

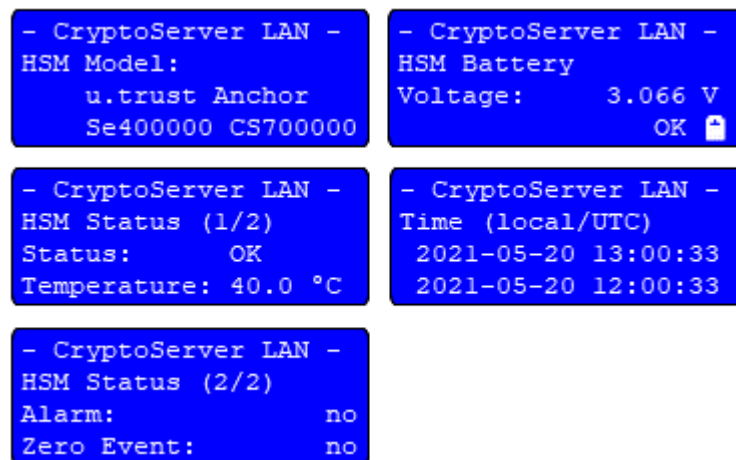


Figure 52 : Idle Screens

HSM Model: The u.trust Anchor model and the unique serial number of the u.trust Anchor PCIe card.

Temperature: The current temperature of the u.trust Anchor in °C.

HSM Battery: The voltage and the status of the carrier battery.

Time (local/UTC): The local time and the UTC (Coordinated Universal Time) of the u.trust Anchor LAN (not of the u.trust Anchor PCIe card).

4. Make sure that the second display shows **Status: OK**.



The u.trust Anchor LAN is switched on and ready for setup.

Next Steps

1. Change the password for user `root` and user `csagent`, see *Changing the Default Password of the System Users* in the *u.trust Anchor LAN V5 - Administration Manual*.
2. Configure the IP address for the u.trust Anchor LAN and for the default gateway, see *Setting up the IP Configuration* in the *u.trust Anchor LAN V5 - Administration Manual*.
3. Enable the SSH daemon, If you want to access the u.trust Anchor LAN remotely, see *Enabling the SSH Daemon* in the *u.trust Anchor LAN V5 - Administration Manual*.

3.7 Identification and Claiming of u.trust Anchor

Several procedures must be followed to ensure the safety and integrity of the device:

1. Verifying the Authenticity of the Device

Note that this step is optional. It is necessary if you want to verify the HSM is genuine and manufactured by Utimaco. This step is expressly recommended from a safety perspective and should be carried out before other certificates are uploaded.

2. Checking Component Versions

The device's hardware revision number, software version, and sensory controller version must be verified.

3. Changing the Authentication Token of the Global Initial Administrator

The Global Administrator must change the Global Initial Admin Key (GIAK) into an individual Global Admin Authentication Key (GAAK) to change the device state to *INITIALIZED*.

4. Importing an Initial Operator Secret

The Global Administrator must create a Wrapping Key, wrap the Operator Secret, and import the wrapped operator secret back to the device.

5. Importing an Operator Certificate

As a final step, an Operator Certificate must be imported by the Global Administrator.

All steps are described in detail in the sub-chapters of *Setup* in the [u.trust Anchor - Administration Manual](#).

4 Maintenance

The maintenance tasks that a customer is permitted to perform on the u.trust Anchor LAN are to check the power level of the batteries (carrier battery and external battery) and if necessary to change the external battery in the battery compartment, as well as to remove/swap a power supply or a fan.



When the external battery reaches a critically low power level, see [Checking the Battery Status](#), it must be replaced, see [Replacing the External Battery](#).

Apart from this, no maintenance tasks should be carried out on the u.trust Anchor LAN.



If you should open u.trust Anchor LAN for any other maintenance work, all liability claims against Utimaco IS GmbH become null and void.

4.1 Checking the Battery State

The u.trust Anchor LAN displays LOW when the external battery in the battery compartment or the carrier battery of the u.trust Anchor PCIe card reaches a critical power level.

To find out which of the batteries of the u.trust Anchor LAN has reached this critical power level by using the menu control of the u.trust Anchor LAN, follow these steps:

1. Press **ENTER**.
2. Press the ↓ key to select the **HSM admin.** menu item.
3. Press **ENTER**.
4. Press **ENTER** to select the **HSM Info** menu item.
5. Use the ↓ key to go to the **Battery State** menu item.
6. Press **ENTER**.

On the u.trust Anchor LAN display, the battery status is shown for example as follows:

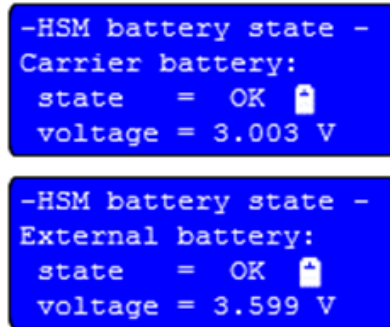


Figure 53 : u.trust Anchor LAN V5 display - Battery state

7. Use the ↓ key to go to the second part of the **Battery State** menu item.



If the system could not find out the battery status, because the u.trust Anchor register is currently being accessed by another process, you should try to find out the battery state again after waiting a few minutes.



In the case of u.trust Anchor LAN you can change the external battery.

The carrier battery of the u.trust Anchor PCIe card must only be replaced by the manufacturer, Utimaco IS GmbH or a certified sales partner.

- If the external battery state displayed is **LOW**, it means the power level of the u.trust Anchor external battery has sunk to a critical level. You must now immediately, and whilst the device is in operation, replace the external battery in the battery compartment.
- If the carrier battery state displayed is **LOW**, it means the power level of the carrier battery on the u.trust Anchor PCIe card has sunk to a critical level. In this case, contact Utimaco IS GmbH or a certified sales partner and have them replace the carrier battery.

4.2 Replacing the External Battery

To replace the external battery in the battery compartment of the u.trust Anchor LAN you will need a new 3.6 V lithium battery made by Saft of type LS14500 or similar type which you can purchase from Utimaco IS GmbH.



This battery is not rechargeable.

Using the wrong batteries may cause an explosion.

Utimaco IS GmbH accepts no responsibility for damage caused by any batteries other than those recommended by Utimaco IS GmbH.

Please ensure you dispose of spent batteries in accordance with the manufacturer's instructions and in an environmentally responsible manner.



You should replace the battery whilst the device is running normally so that the u.trust Anchor will continue to be supplied with power.

To replace the external battery proceed as follows:

1. Turn the black screw cap of the battery compartment counterclockwise to open it.



Figure 54 : Turning the screw cap of the battery compartment of the u.trust Anchor LAN V5

2. Open the battery compartment.



Figure 55 : Opening the battery compartment of the u.trust Anchor LAN V5

3. Remove the screw cap of the battery compartment.



Figure 56 : Removing the screw cap of the battery compartment

4. Take the battery out of the compartment.



Figure 57 : Removing the external battery of the u.trust Anchor LAN V5

5. Make sure the contacts of the new battery and the metal plate inside the black screw cap are clean and grease-free.
6. Now place the new battery in the battery compartment. Make sure that the positive pole of the battery contacts the black screw cap of the battery compartment.



Figure 58 : Placing the new battery in the battery compartment

7. Screw on the black screw cap of the battery compartment to close it, by slightly pushing the screw cap with your finger and turning it clockwise with the other hand.



Do not misthread the black screw cap when screwing it on battery compartment.



Figure 59 :

8. Check the battery state, see [Checking the Battery Status](#).



The battery power level shown in the display of the u.trust Anchor LAN is not updated very frequently. Therefore, we recommend you to wait for at least three minutes before checking the battery state.

If the state of the external battery is shown as **absence**, check that the new battery has been connected correctly.

4.3 Removing/Swapping a Power Supply Module

You can remove or swap out a power supply module (AC or DC) while the u.trust Anchor LAN is running normally.



Be sure to wear gloves when removing a power supply module to prevent being burned. The temperature of the failed power supply module might be around 50 ~ 60 °C.

If a power supply module fails, and needs to be replaced, follow these steps:

1. Disconnect the power cable from the relevant power supply module.



Figure 60 : The power supply modules on the rear side of the u.trust Anchor LAN V5

2. Press the locking of the power supply module to be changed.



Figure 61 : Pressing the locking of a power supply module

3. Use the handle to carefully pull the power supply module.



Figure 62 : Using the power supply handle

4. Pull the power supply module out of the u.trust Anchor LAN's case.



Figure 63 : Pulling the power supply module out of the case

5. Put the new power supply module in place.



Figure 64 : Putting the new power supply module in place

6. Press the handle to safely position the new power supply module in the case.



Figure 65 : Pressing the handle of the new power supply module

7. Plug the power cable into the new power supply module.



If you have installed the power supply module correctly and provided it with power, the green control light above the power supply socket lights up.

4.4 Removing/Swapping a Fan Module

You can remove or swap out a fan module while the u.trust Anchor LAN is running normally. A fan module consists of two fans. Single fans cannot be swapped.

Do not remove or swap two or three fan modules simultaneously.

If a fan fails, and needs to be replaced, follow these steps:

1. Turn the knurled screw of the fan compartment grill counterclockwise to open the cover.



Figure 66 : Turning the knurled screw

2. Open the fan compartment.



Figure 67 : Opening the fan compartment

3. Use the handle to carefully pull the fan module to be replaced out of the u.trust Anchor LAN's case.



Figure 68 : Pulling out the fan module

4. Put the new fan module in place.



Figure 69 : Putting the new fan module in place

5. Place the cover in its position.



Figure 70 : Placing the cover

6. Turn the knurled screw of the fan compartment clockwise to close the cover.

5 Switching off the u.trust Anchor LAN

You can switch off the u.trust Anchor LAN by using the menu control.



Before you switch off the u.trust Anchor LAN, please close all the applications that access it.

If you are currently working in a particular menu level or an input screen, quit this by pressing **ESC**. You may need to do this several times.

Use the menu control to switch off the u.trust Anchor LAN as follows:

1. Press **ENTER**.
2. Select the **CSLAN admin.** menu item.
3. Press **ENTER**.
4. Use the **↓** key to go to the **Shutdown** menu item.
5. Press **ENTER**.
6. Respond **[] Yes** to the confirmation prompt by pressing the **←** or the **→** key to insert the **x** in the brackets select **[x] Yes**.
7. Press **ENTER**.
This shuts down the device.

When the device is switched off, the message in the display panel disappears.



The u.trust Anchor LAN should be kept running constantly to prevent the batteries from being used.

If a system is inactive for a long period, the batteries will be used up. After a while, this can result in the u.trust Anchor PCIe card no longer being supplied with power, and all the data will be deleted. The resulting maintenance tasks are not covered by Utimaco IS GmbH's liability.

On the other hand, a brief interruption to the power supply (if the device is being moved around, etc.) does not place a serious demand on the batteries and consequently, there is no danger of data and settings, etc. being deleted.

6 Disposing of the u.trust Anchor LAN

In this chapter you can find out what you need to take into account when you want to dispose of your u.trust Anchor LAN.



Of course, you also have the option of returning the u.trust Anchor LAN that you no longer require to us, Utimaco IS GmbH, as the manufacturer. In this case, we will take care for disposing of the u.trust Anchor LAN and the batteries in an environmentally friendly way.

6.1 Deleting All Sensitive Data



You must delete all sensitive data in your u.trust Anchor LAN before disposing of it.

To delete all sensitive data in your u.trust Anchor LAN proceed as follows:

1. Push the **ERASE** button for at least 10 seconds by using an appropriate screwdriver.



Figure 71 : ERASE push-button for performing External Erase on a u.trust Anchor LAN V5



An External Erase has been performed on the u.trust Anchor, and an Alarm has been triggered.

2. Make sure that the u.trust Anchor is in **Maintenance Mode** and an alarm has been triggered. You can retrieve the u.trust Anchor status information by using the u.trust Anchor LAN menu control buttons:

- On the front panel, press **ENTER**.
- Use the **ENTER** key to open the **HSM admin.** menu item.
- Use the **↓** key to select **HSM Info** and press **ENTER** to open the menu item.
- Use the **↓** key to select **State** and press **ENTER** to open the menu item.

The following information is shown by way of example on the display of the u.trust Anchor LAN:

```

---- HSM state ----
mode   = Maintenance
state  = INITIALIZED
temp   = 30.0 °C

---- HSM state ----
temp   = 30.0 °C
alarm  = ON
bl_ver = 0.00.8.15

---- HSM state ----
bl_ver = 0.00.8.15
hw_ver = 5.01.3.1
uid     =

---- HSM state ----
uid     =
80 53 4D 33 | .SM2
33 03 21 22 | 21xS

---- HSM state ----
33 03 21 22 | 21xS
adm1 =

---- HSM state ----
adm1 =
53 65 31 35 | SE15
30 30 20 20 | 00
  
```

Figure 72 : u.trust Anchor LAN display – status output after deletion of sensitive data

Use the **↑** and **↓** keys to switch between the parts of the **State** menu item. In addition to the figure above, the **adm2** and **adm3** parameters are shown as well.



Regardless of whether you have performed an External Erase (pressing the ERASE push-button) or not, the following applies:

If you remove the u.trust Anchor PCIe card from the u.trust Anchor LAN and remove any battery from this PCIe card, the sensitive data on this PCIe card is deleted automatically in any case after a maximum of 30 minutes.

6.2 Removing a u.trust Anchor LAN V5 from a Rack

To remove a u.trust Anchor LAN V5 from a rack, proceed as follows:



The described procedure only applies if slide rails provided by Utimaco IS GmbH have been used for mounting the u.trust Anchor LAN V5 on the rack, see [Mounting the u.trust Anchor LAN V5 in a 19" Rack](#).

1. The following figure shows a u.trust Anchor LAN V5 in a rack. In this example, the rack has square style hole mounting posts.



Figure 73 : u.trust Anchor LAN V5 mounted on a rack

2. Switch off the u.trust Anchor LAN V5, see [Switching off the u.trust Anchor LAN](#).
3. Remove all cables connected to the u.trust Anchor LAN V5.
4. Remove both screws securing the u.trust Anchor LAN V5 in place from the left and right bracket of the u.trust Anchor LAN V5. The left and right brackets are marked by red rectangles in the next figure.



Figure 74 : Brackets of the u.trust Anchor LAN V5



Do not throw the screws away. Note down at which location the screws have been used. This is necessary in order not to confuse the different screw types. Exactly these screws are needed if the u.trust Anchor LAN V5 is mounted again on a rack. Do not use other screws. The same is valid for other screws that are mentioned below.

5. Pull the u.trust Anchor LAN V5 until it is in the locked position.



Figure 75 : u.trust Anchor LAN V5 in the locked position



Two people are required to perform the next step.

6. Pull the colored pin-lock latches on both sides to release the locks, and pull the u.trust Anchor LAN V5 all the way out of the rack.



Figure 76 : Releasing the pin-lock latch on the left side of the u.trust Anchor LAN V5

The two inner slide rails are mounted on the u.trust Anchor LAN. The two outer slide rails mounted on the rack.

7. If you use mounting posts with square type holes, press the colored button, and remove the outer rail from the rack.

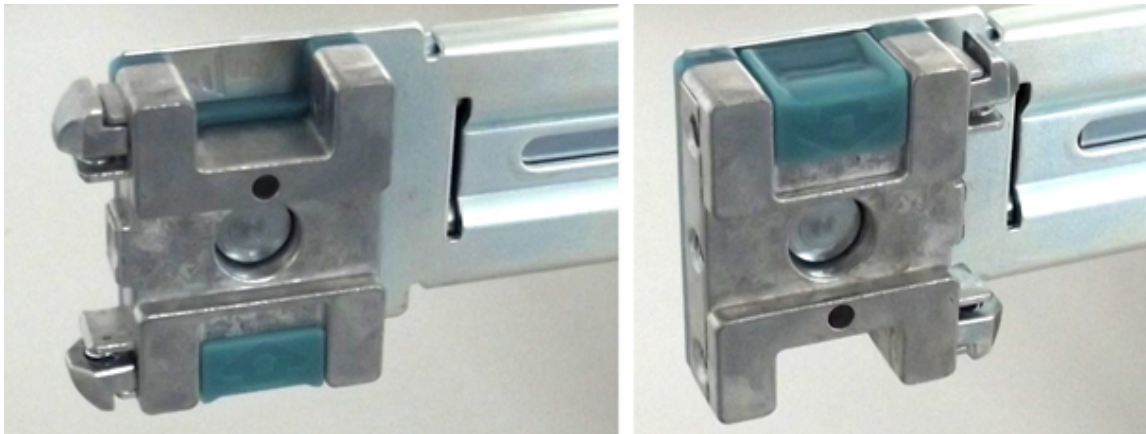


Figure 77 : Bracket in the square hole position and in the round hole position

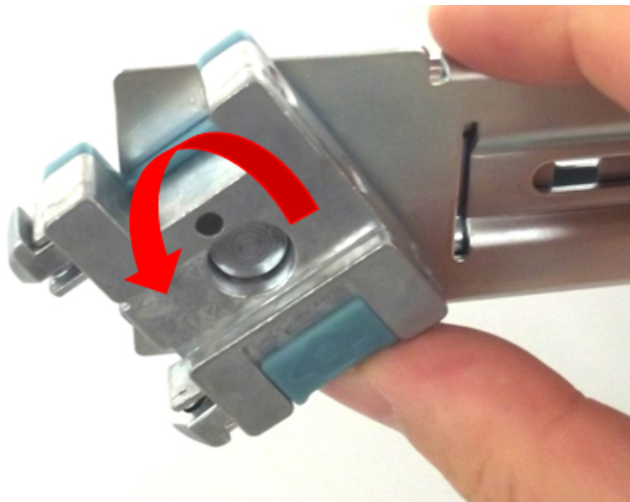


Figure 78 : Example: Rotating the bracket

If it is difficult to press the colored button, try to press the colored button, keep it pressed, press the silver bolt on the inner side of the bracket with the tip of a screw driver, and rotate the bracket.

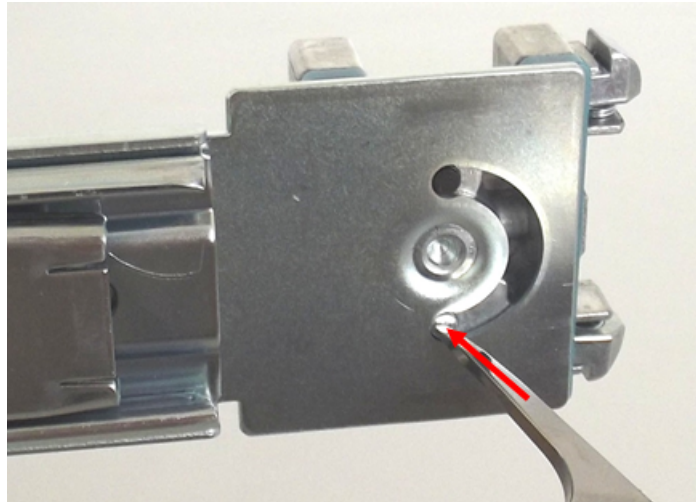


Figure 79 : Pressing the bolt on the inner side of the bracket

8. If the outer slide rail is mounted on the rack by using screws (round style holes on the mounting posts), remove these 4 screws, and remove the outer slide rail from the rack.
9. Remove the second outer slide rail from the rack.
10. The inner slide rail is still mounted on the u.trust Anchor LAN V5.



Figure 80 : Inner slide rail mounted on the u.trust Anchor LAN V5

There are two sizes of telescopic slide rails, 20"-28" and 28"-35". The figures of the slide rails in this documentation always show the large size.

11. If you use a 28"-35" long slide rail, it is mounted on the u.trust Anchor LAN V5 with 2 screws. If you use a 20"-28" long slide rail, it is mounted with 3 screws.

Note that one lens head screw is used. The other screws are flat head screws.

Remove all screws from the inner slide rail, and remove the inner slide rail from the u.trust Anchor LAN V5.

The inner slide rail is still separated from the outer slide rail.



Figure 81 : Inner slide rail and outer slide rail

12. Carefully align the inner slide rail with the notches in the outer slide rail. Once aligned, slide the inner slide rail toward the outer slide rail until the inner slide rail is in the locked position.



Figure 82 : Inner slide rail in locked position

13. There is a colored pin-lock latch on the outer side of the inner slide rail. Slide it outward.

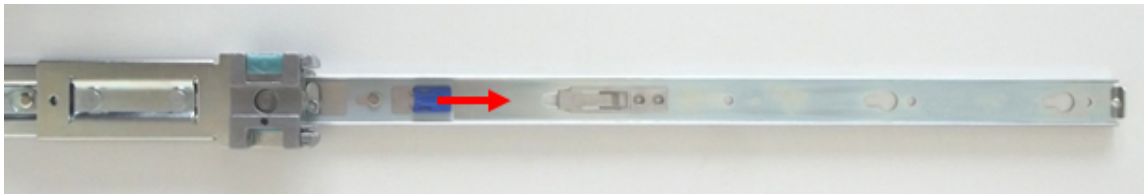


Figure 83 : Sliding the pin-lock latch outward

14. If the mechanism is difficult to move, move the locking bolt on the inner side of the inner slide rail with the tip of a screwdriver while sliding the pin-lock latch.

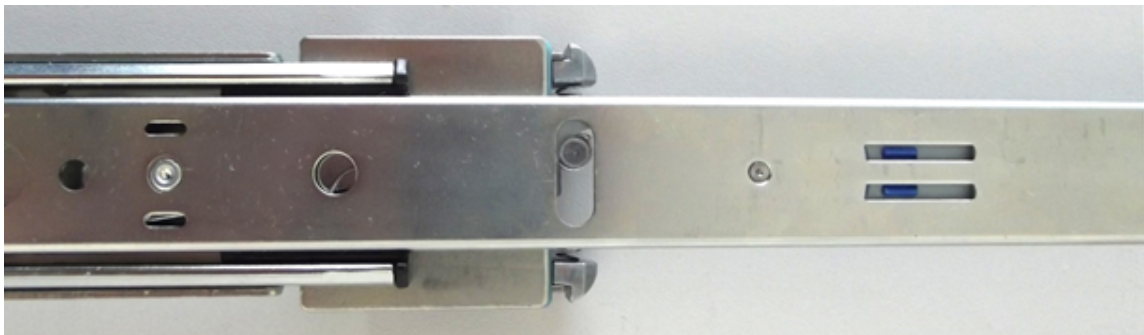


Figure 84 : Moving the locking bolt

15. While sliding the pin-lock latch outward, slide the inner slide rail inward until it is in its final position.
16. Do the same for the second inner rail and outer rail.



Figure 85 : Two slide rails

6.3 Disposing of Batteries

In the u.trust Anchor LAN you will find three batteries, which must be disposed of in an environmentally friendly way:

- The 3.6 V lithium battery made by Saft of type LS 14500 or similar type
The (external) battery is located inside the battery compartment. The battery compartment is accessible by the screw cap on the front panel of the u.trust Anchor LAN.
- The 3 V lithium battery is a Panasonic CR2477 cell battery (Ø 24.5 mm, L = 7.7 mm) or equivalent.
The (carrier) battery is located on the u.trust Anchor PCIe card inside the u.trust Anchor LAN.
- The 3 V lithium coin cell battery for the mainboard of the u.trust Anchor LAN.
This battery is located on the mainboard of the u.trust Anchor LAN.

Remove all batteries from the u.trust Anchor LAN and note the following general information about rechargeable and non-rechargeable batteries (in accordance with the German Notice Requirement according to §18 BattG, the Law concerning Batteries).



You are not permitted to throw away rechargeable or used batteries in the normal household waste. Consumers are obliged to bring batteries to a suitable municipal or commercial collection point. Rechargeable and used batteries can contain harmful materials or heavy metals that can damage the environment and health. Batteries are reused. They contain important raw materials such as iron, zinc, manganese or nickel.

You can either dispose of the u.trust Anchor LAN's battery at a suitable municipal or commercial collection point, or send it to us, Utimaco IS GmbH, as the manufacturer.

7 Technical Data of u.trust Anchor LAN V5 (AC Power Supply)

Dimensions	Height	44 mm (1 slot (height unit))
	Width	446 mm without attachment bracket (19" rack mount)
	Depth	533.4 mm excluding handles
Weight	10 kg	
Voltage	100 to 240 Vac, 50-60 Hertz, 5-3A x2	
Power supply	300 W x2	
Power consumption (effective/apparent)	Typically 45 W/66 VA, maximum 50 W/70 VA	
Heat dissipation	171 BTU/h	
Interfaces on the front side	1 x USB "Host1" and 1 x USB "Host2"	USB ports of the u.trust Anchor LAN
	1 x USB "HSM"	USB port of the u.trust Anchor PCIe card
Interfaces on the rear side	1 x DB15	VGA connector (screen)
	2 x RJ45	10/100/1000 Mbit Ethernet
	2 x USB	USB ports of the u.trust Anchor LAN
Interfaces on the u.trust Anchor slot bracket	1 x USB	USB port of the u.trust Anchor PCIe card
Environmental temperature	in operation	u.trust Anchor PCIe card: +10 °C to +50 °C (+50 °F to +122 °F)
	in storage	-10 °C to +55 °C (+14 °F to +131 °F)
Humidity	10% to 95% relative humidity, non-condensing	
MTBF	u.trust Anchor PCIe card: 389,797 hours, in acc. with Telcordia Issue 3, temperature 30°C, environment Ground Fixed, temperature 50°C for parts in potting material	
RoHS compliance	Yes	
WEEE	National register for waste electric equipment (Elektro-Altgeräte-Register EAR) DE65203472	

Conformity	<p>Electromagnetic compatibility: EN 55011:2009 + A1:2010 EN 55032:2015 / AC:2016 CISPR 32: 2015 (ed 2.0) / C1:2016 EN 61000-6-4: 2007 + A1:2011 EN 61000-3-2: 2014 EN 61000-3-3: 2013 EN 61000-6-2: 2005 / AC: 2005 (EN 55024:2010 + A1: 2015), IEC 61000-4-2: 2008; IEC 61000-4-3: 2006 + A1: 2007 + A2: 2010; IEC 61000-4-4: 2012; IEC 61000-4-5: 2014; IEC 61000-4-6: 2013; IEC 61000-4-8: 2009; IEC 61000-4-11: 2004 ETSI EN 300 386 V2.1.1 FCC 47 CFR Part 15 Class A</p> <p>Equipment safety: IEC/EN 60950-1 (CB scheme) UL</p> <p>Climatic and mechanical conditions: ETSI EN 300 019: Storage class 1.1, Transportation class 2.1 (with temperature range restricted to the storage environmental temperature given above), stationary use in environments that are protected from the weather class 3.1</p>
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8 Technical Data of u.trust Anchor LAN V5 (DC Power Supply)

Dimensions	Height	44 mm (1 slot (height unit))
	Width	446 mm without attachment bracket (19" rack mount)
	Depth	533.4 mm excluding handles
Weight	10 kg	
Voltage	-36 to -72 Vdc, 12-6A x2	
Power supply	300 W x2	
Power consumption	Typically 50 W, maximum 55 W	
Heat dissipation	188 BTU/h	
Interfaces on the front side	1 x USB "Host1" and 1 x USB "Host2"	USB ports of the u.trust Anchor LAN
	1 x USB "HSM"	USB port of the u.trust Anchor PCIe card
Interfaces on the rear side	1 x DB15	VGA connector (screen)
	2 x RJ45	10/100/1000 Mbit Ethernet
	2 x USB	USB port of the u.trust Anchor LAN
Interfaces on the u.trust Anchor slot bracket	1 x USB	USB port of the u.trust Anchor PCIe card
Environmental temperature	in operation	u.trust Anchor PCIe: +10 °C to +50 °C (+50 °F to + 122 °F)
	in storage	-10 °C to +55 °C (+14 °F to +131 °F)
Humidity	10% to 95% relative humidity, non-condensing	
MTBF	u.trust Anchor PCIe card: 389,797 hours, in acc. with Telcordia Issue 3, temperature 30°C, environment Ground Fixed, temperature 50°C for parts in potting material	
RoHS compliance	Yes	
WEEE	National register for waste electric equipment (Elektro-Altgeräte-Register EAR) DE65203472	

Conformity	<p>Electromagnetic compatibility: EN 55011:2009 + A1:2010 EN 55032:2015 / AC:2016 CISPR 32: 2015 (ed 2.0) / C1:2016 EN 61000-6-4: 2007 + A1:2011 EN 61000-3-2: 2014 EN 61000-3-3: 2013 EN 61000-6-2: 2005 / AC: 2005 (EN 55024:2010 + A1: 2015), IEC 61000-4-2: 2008; IEC 61000-4-3: 2006 + A1: 2007 + A2: 2010; IEC 61000-4-4: 2012; IEC 61000-4-5: 2014; IEC 61000-4-6: 2013; IEC 61000-4-8: 2009; IEC 61000-4-11: 2004 ETSI EN 300 386 V2.1.1 FCC 47 CFR Part 15 Class A</p> <p>Equipment safety: IEC/EN 60950-1 (CB scheme) UL</p> <p>Climatic and mechanical conditions: ETSI EN 300 019: Storage class 1.1, Transportation class 2.1 (with temperature range restricted to the storage environmental temperature given above), stationary use in environments that are protected from the weather class 3.1</p>
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9 Contact Address for Support Queries

You can reach us from Monday to Friday, 09.00 a.m. to 05.00 p.m., Central European Time (CET).

Utimaco IS GmbH
Germanusstr. 4
52080 Aachen
Germany

RMA Query

If you need to send the device back to Utimaco IS GmbH, please open a new RMA case (Return Merchandise Authorization). We request that you use the following web address. RMA cases cannot be opened by email or phone.

<https://support.hsm.utimaco.com/support/rma/new>

Other Support Queries

- Mail (preferred contact method)
support@utimaco.com
Attach the diagnostic information to your email.
- Web portal
<https://support.hsm.utimaco.com/support/cases/new/>
The diagnostic information will be requested in our response if necessary.
- By phone
AMERICAS +1-844-UTIMACO (+1 844-884-6226)
EMEA +49 800-627-3081
APAC +81 800-919-1301
The diagnostic information will be requested in our response if necessary.

10 References

<i>Title/Company</i>	<i>Document No.</i>
u.trust Anchor FIPS 140-3 - Administration Manual	2023-0027
u.trust Anchor FIPS 140-3 - csadm Manual	2023-0037