SIEMENS SIMATIC IPC Industrial Edge Device User Manual

SIEMENS SIMATIC IPC Industrial Edge

Device User Manual

SIEMENS

SIMATIC IPC Industrial Edge Device - Operation V1.3

Operating Manual

Legal information
Warning notice system

This manual contains notices you have to observe in order to ensure your personal safety, as well as to prevent

damage to property. The notices referring to your personal safety are highlighted in the manual by a safety alert symbol, notices referring only to property damage have no safety alert symbol. These notices shown below are graded according to the degree of danger.

⚠DANGER
indicates that death or severe personal injury **will** result if proper precautions are not taken.

⚠WARNING
indicates that death or severe personal injury **may** result if proper precautions are not taken.

⚠CAUTION
indicates that minor personal injury can result if proper precautions are not taken.

NOTICE
indicates that property damage can result if proper precautions are not taken.

If more than one degree of danger is present, the warning notice representing the highest degree of danger will be used. A notice warning of injury to persons with a safety alert symbol may also include a warning relating to property damage.

Qualified Personnel
The product/system described in this documentation may be operated only by **personnel qualified** for the specific task in accordance with the relevant documentation, in particular its warning notices and safety instructions.

Qualified personnel are those who, based on their training and experience, are capable of identifying risks and avoiding potential hazards when working with these products/systems.

Proper use of Siemens products
Note the following:

⚠WARNING
Siemens products may only be used for the applications described in the catalog and in the relevant technical d ocumentation. If products and components from other manufacturers are used, these must be recommended or approved by Siemens. Proper transport, storage, installation, assembly, commissioning, operation and maintena nce are required to ensure that the products operate safely and without any problems. The permissible ambient conditions must be complied with. The information in the relevant documentation must be observed.

Trademarks

Disclaimer of Liability
We have reviewed the contents of this publication to ensure consistency with the hardware and software described. Since variance cannot be precluded entirely, we cannot guarantee full consistency. However, the information in this publication is reviewed regularly and any necessary corrections are included in subsequent editions.

Contents

1 Preface

Purpose of this document
This documentation provides the basic information you need to manage and run the Industrial Edge Device OS.

This documentation is aimed at operators who, for example, commission and operate Edge Devices or install and run Edge Apps, as well as service and maintenance technicians who perform error analysis.

Basic knowledge required

- Solid knowledge of personal computers is
- Solid knowledge of Linux-based operating systems is
- Solid knowledge of IP-based networks is
- Solid knowledge of Docker is
- General knowledge in the field of IT is
- General knowledge in the field of automation technology is

Scope of this document

This operating manual is valid for Industrial Edge.

Convention
The term “Edge Device” is used in this documentation to designate hardware with a configured Industrial Edge Device OS.

Instead of the product designation “Industrial Edge Device”, the short form “Edge Device” is also used.

Figures
Picture components are marked with black position numbers on a white background: ①, ②, ③, etc.

2 Industrial security

Siemens provides products and solutions with industrial security functions that support the secure operation of plants, systems, machines and networks.

In order to protect plants, systems, machines and networks against cyber threats, it is necessary to implement – and continuously maintain – a holistic, state-of-the-art industrial security concept. Siemens' products and solutions constitute one element of such a concept.

Customers are responsible for preventing unauthorized access to their plants, systems, machines and networks. Such systems, machines and components should only be connected to an enterprise network or the internet if and to the extent such a connection is necessary and only when appropriate security measures (e.g. firewalls and/or network segmentation) are in place.

For additional information on industrial security measures that may be implemented, please visit (**http://www.siemens.com/industrialsecurity**).

Siemens' products and solutions undergo continuous development to make them more secure. Siemens strongly recommends that product updates are applied as soon as they are available and that the latest product versions are used. Use of product versions that are no longer supported, and failure to apply the latest updates may increase customer's exposure to cyber threats.

To stay informed about product updates, subscribe to the Siemens Industrial Security RSS Feed at (**https://support.industry.siemens.com/cs/start?**).

In addition, observe the security statements, which are also valid for this documentation, from the "Industrial Edge – Security overview (**https://support.industry.siemens.com/cs/us/en/view/109781002**)" manual.

3 Connecting an IPC Edge Device

You have the following options to connect the IPC Edge Device to the IEM:

- Connecting through an USB flash drive
- Connecting through the IPC Edge Device UI

Both options require the IPC Edge Device configuration file.

Requirements for adding an Edge Device

- The IPC Edge Device is switched
- The IPC Edge Device is connected to the local

3.1 Connecting the Edge Device through an USB flash drive

Requirement

- 1 USB flash drive is

- The Edge Device configuration file has been

Procedure

1. Copy the Edge Device configuration file on an USB flash Ensure that just 1 configuration file is saved to the USB flash drive. Otherwise, the connecting process causes problems and fails.
2. Insert the USB flash drive into the Edge The connecting process is being started automatically. The “Run” LED flashes green and the “Maintenance” LED flashes yellow.
3. Wait until the connecting process is When the Edge Device is connected successfully to the IEM, the “Run” LED lights up green.

Note
Connection successful

When the Edge Device is connected successfully to the IEM, the status indicator at the top of the Edge Device tile in the IEM switches to green and the IP address of the Edge Device is displayed under the name of the Edge Device.

To open the UI of the Edge Device, either click on the tile of the Edge Device, if the remote access is enabled, or enter the IP address of the Edge Device into your Internet browser.

Use the HTTPS protocol, for example “https://192.168.80.123”.

Note
Log file “conf-usb.log” and log file “services.log”

During the connecting process, the “conf-usb.log” and “services.log” files are created in the USB flash drive. In case of any errors, open these log files in a text editor for detailed information. In addition, you can check the steps of each service, if it was successful or not, in the “services.log” file.

Supported USB File Systems and Partition System Combinations

The following File Systems and Partitions are supported in the system:

- File Systems FAT32, NTFS and ext4 (Linux format)
- Partitions MBR, GPT

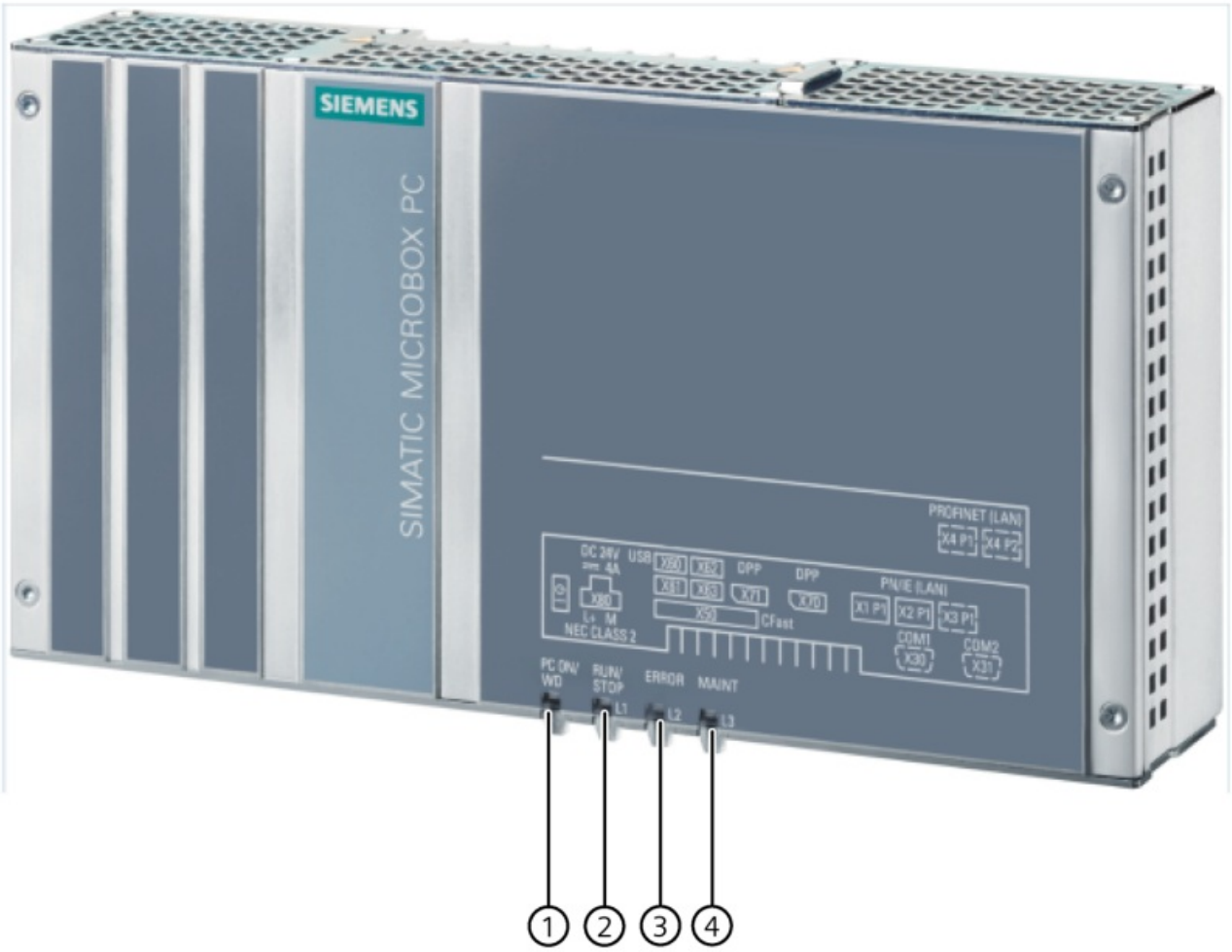
4 LED Status

The SIMATIC IPC227E (MLFB: 6ES7647-8BD31-0CW1) has 4 LEDs which represent the following status:

①	Power
②	Run
③	Error
④	Maintenance

Figure 4-1 SIMATIC IPC227E

The SIMATIC IPC427E (MLFB: 6AG4141-5BC30-0FW8) has 4 LEDs which represent the following status:



①	Power
②	Run
③	Error
④	Maintenance

Figure 4-2 SIMATIC IPC427E

List of all LED status

The following table lists all LED status changes of the Edge Device during several processes:

Process	**Description**	**Power**	**Run**	**Error**	**Maintenances**

Not connected to the IEM	When the Edge Device is not connected to the IEM, the “Run” LED flashes green.	Green	Green flashing	Off	Off
Connecting to the IEM	When the Edge Device is connecting to the IEM (after the USB flash drive is inserted), the “Run” LED flashes green and the “Maintenance” LED flashes orange.	Green	Green flashing	Off	Orange flashing
Connection to the IEM was successful	When the Edge Device is connected successfully to the IEM, the “Run” LED lights up green.	Green	Green	Off	Off
Connection to the IEM failed	When the connection to the IEM has failed, the “ Error” LED flashes red.	Green	Off	Red flashing	Off

IED-OS updates	When IED-OS updates are in progress, the “Maintenance” LED flashes orange.	Green	Off	Off	Orange flashing
During the hard reset of an Edge Device	When you initiate the hard reset, first the “Power” and “Run” LEDs light up green. After that, the “Power” LED lights up green and the “Run” LED flashes green. Then, all LEDs light up for a short time. Afterwards, the “Power” LED flashes orange. Then, the “Power” LED lights up green for a while. At the end, only the “Power” LED lights up green and the “Run” LED flashes green.	Orange flashing	Off	Off	Off
Hard reset was successful	When the “Power” LED lights up green and the “Run” LED flashes green, the hard reset was successful. The Edge Device is not connected anymore to the IEM in this case.	Green	Green flashing	Off	Off
During the system reset of an Edge Device	When you initiate the system reset, first the “Power” and “Run” LEDs light up green and after that, the “Error” and “Maintenance” LED light up red additionally. Then, the “Power” LED flashes orange. Afterwards, the “Power” LED lights up green and the “Run” LED flashes green. At the end, only the “Power” and “Run” LEDs light up green.	Orange flashing	Off	Off	Off

System reset was successful	When the “Power” and “Run” LEDs light up green, the system reset was successful. The Edge Device is still connected to the IEM in this case.	Green	Green	Off	Off
Shutting down the Edge Device	After you have shutdown the Edge Device, the “Power” LED lights up orange.	Orange	Off	Off	Off

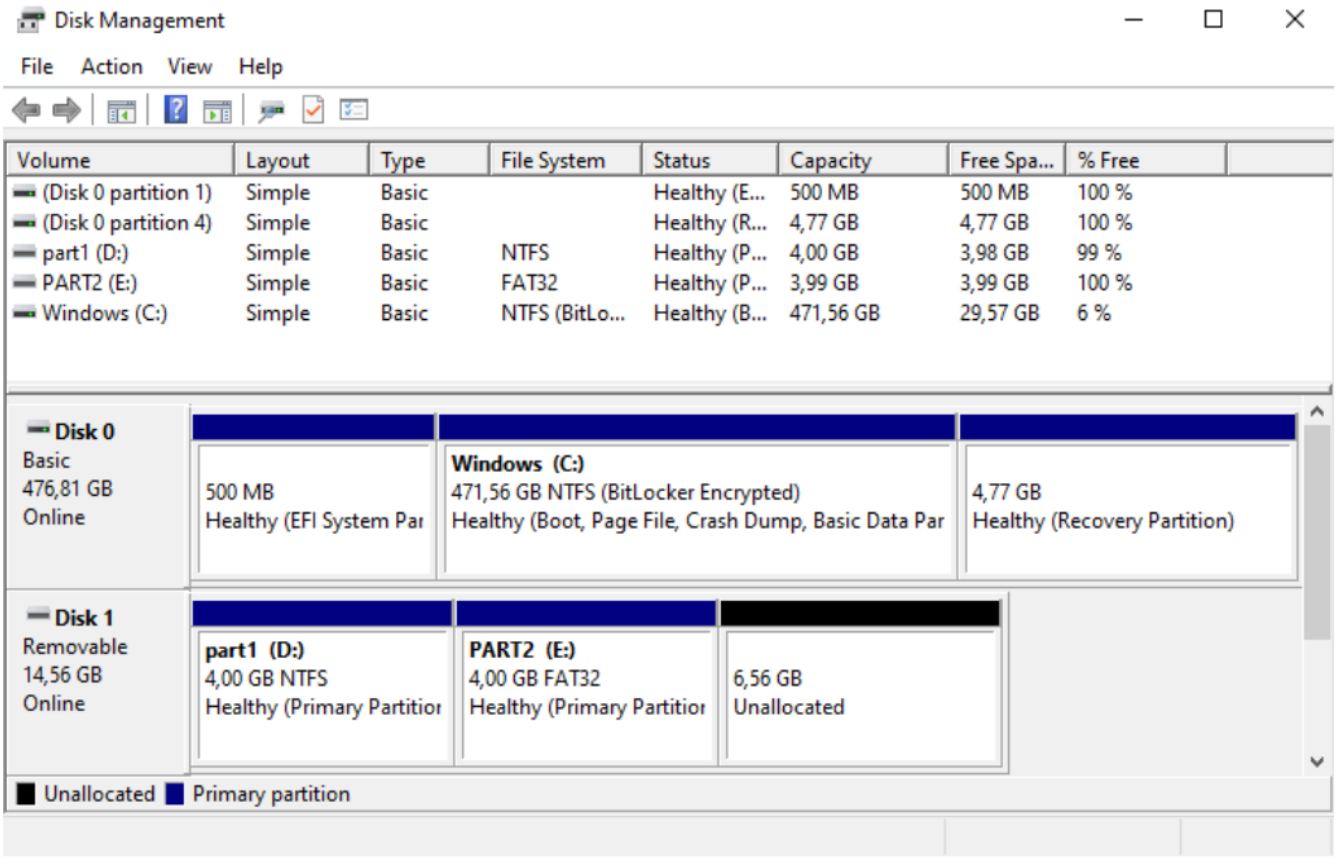
5 Preparing the USB stick

5.1 Preparing the USB stick for Windows

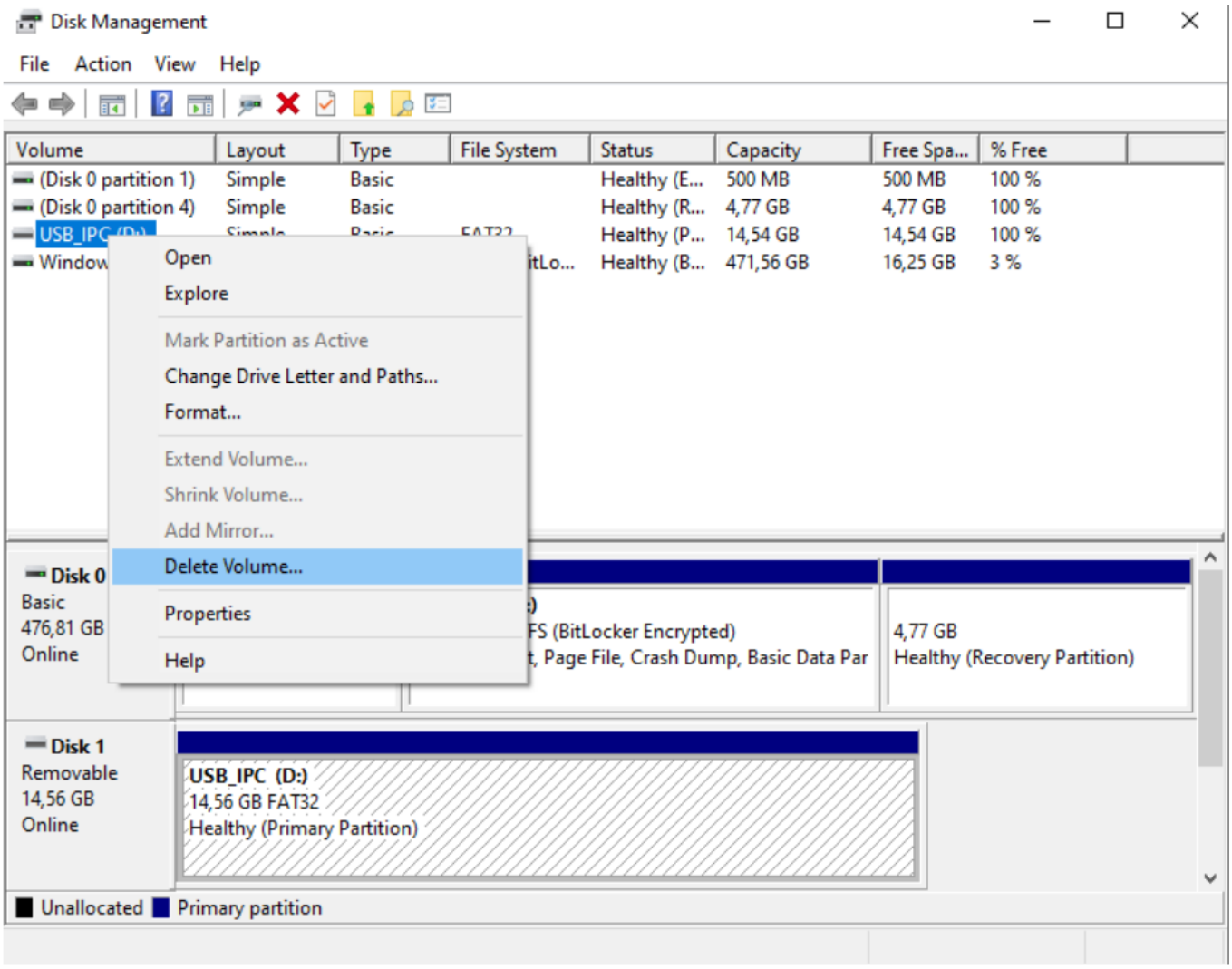
Requirement
USB flash drive’s size should be at least 4 GB.

Procedure

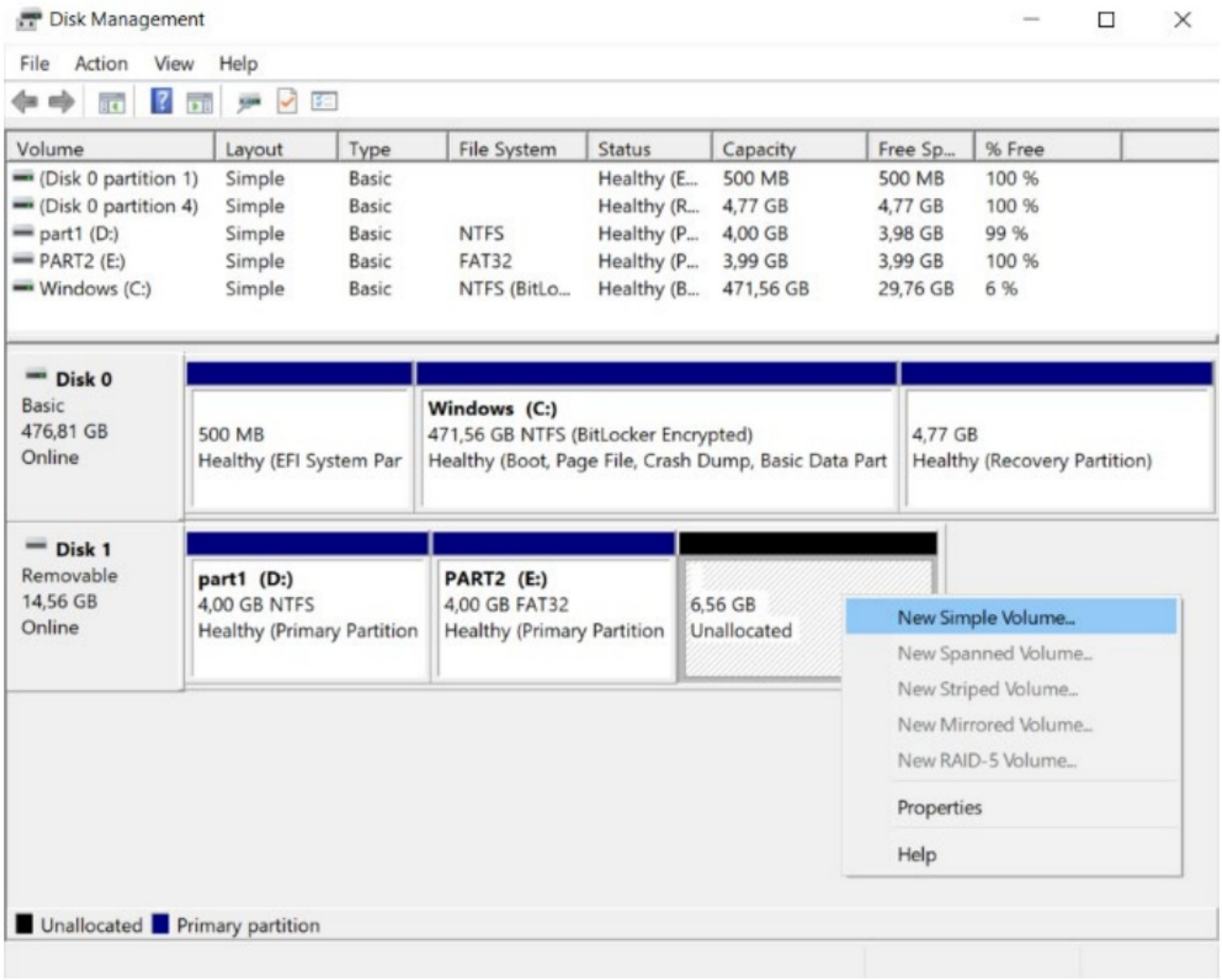
1. Plug USB stick to your Windows
2. Open “Create and format hard disk partitions” via “Start > Control Panel > System and Security > Administrative Tools”.
3. Check, if USB stick has at least 1 GB unallocated space and proceed with Step If not, remove other partitions/data in USB stick.



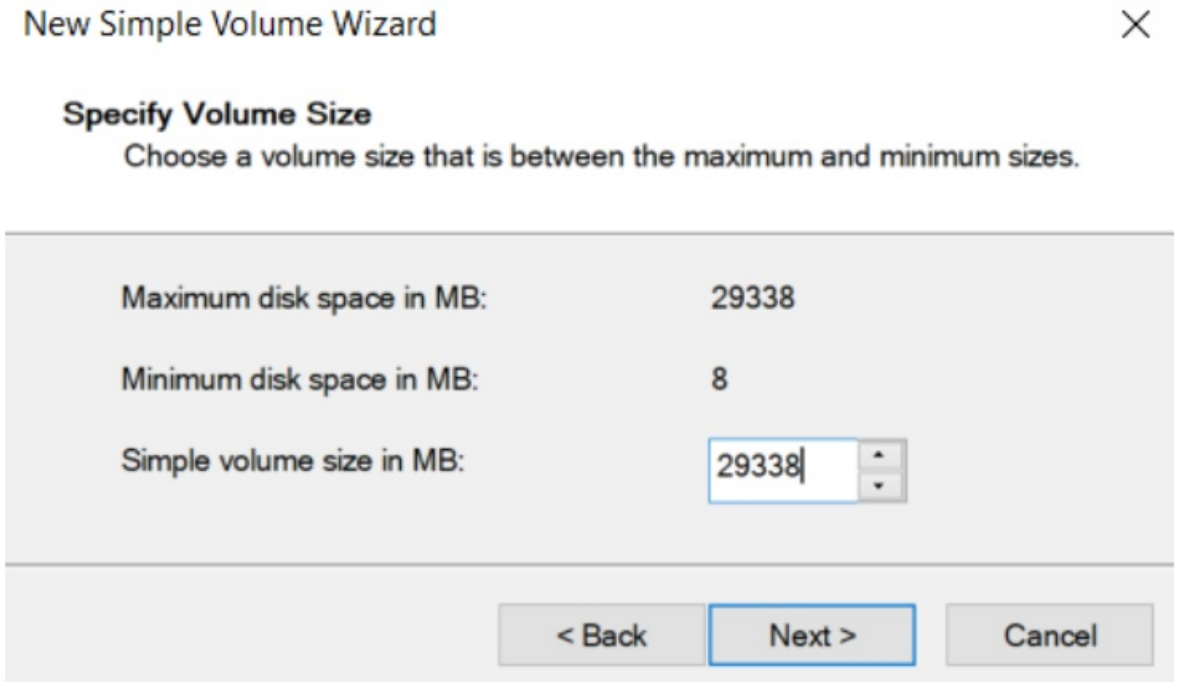
4. To delete a partition, right click on USB stick and click “Delete Volume…”. All files in USB stick will be deleted after this



5. To create a new volume on your USB stick, right click on the unallocated USB space and select “New Simple Volume…”.

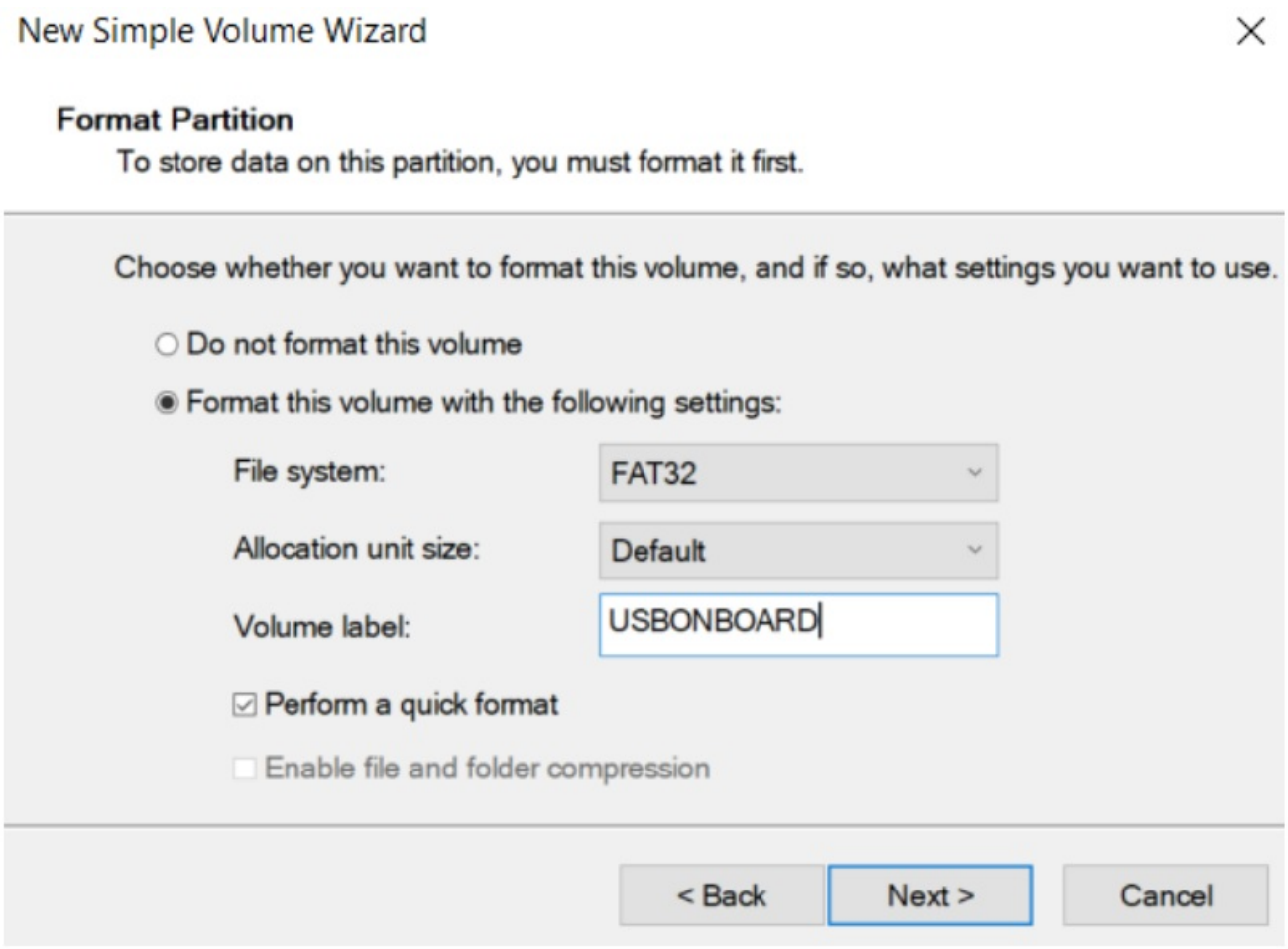


If USB stick has capacity more than 32 GB, set “Simple volume size in MB” less than 32768 MB (32 GB).



6. Confirm your entries with “Next” until “Format Partition” Select “File system” as “FAT32”.

7.



Enter “Volume Label” as “USBONBOARD”.

8. Confirm your entries with “Next” and “Finish”.
9. Copy onboard config file into USB partition named as “USBONBOARD”.

5.2 Preparing the USB stick for Linux

Requirement
USB flash drive’s size should be at least 4 GB.

Procedure

1. Plug USB stick to your Linux PC (real device or virtual-machine).We recommend using one of the Debian Linux based distributions (i.e. Debian Linux, Ubuntu).
2. Login as root or switch to If USB stick is mounted automatically, unmount USB-stick.
3. To check availability of package “e2fsprogs”, run command “apt list –installed | grep e2fsprogs”. If there is no package installed, install the package “e2fsprogs”.
4. To see partition of USB stick, run “lsblk” command The partition(s) are named like “/dev/sdb”.
5. To search unallocated space, run “fdisk <your_usb_stick>” Example: fdisk /dev/sdb
6. You need unallocated space which is bigger than 1 If there is no unallocated space bigger than 1 GB, delete partition by run “fdisk <your_usb_stick>” command. Press “d” and “w” for writing and exiting.
7. To create a new partition, run “fdisk <your_usb_stick>” Press “n” and confirm by pressing “ENTER” until end. Press “w” for writing and exiting.

```
Command (m for help): n
Partition type
   p   primary (0 primary, 0 extended, 4 free)
   e   extended (container for logical partitions)
Select (default p):

Using default response p.
Partition number (1-4, default 1):
First sector (2048-7892086, default 2048):
Last sector, +/-sectors or +/-size{K,M,G,T,P} (2048-7892086, default 78920

Created a new partition 1 of type 'Linux' and of size 3,8 GiB.
Partition #1 contains a ext4 signature.

Do you want to remove the signature? [Y]es/[N]o: Y

The signature will be removed by a write command.

Command (m for help): w
The partition table has been altered.
Calling ioctl() to re-read partition table.
Syncing disks.
```

8. To create ext4 file system, run command “mkfs.ext4 <usb_stick_partition_created_in_step8>”.
   Example: mkfs.ext4 /dev/sdb1

9. To label partition, run command “e2label <usb_stick_partition_created_in_step8> USBONBOARD”.

```
mke2fs 1.45.5 (07-Jan-2020)
Creating filesystem with 986254 4k blocks and 247008 inodes
Filesystem UUID: c477064b-bcb6-49f4-8f25-8dc59cc92983
Superblock backups stored on blocks:
        32768, 98304, 163840, 229376, 294912, 819200, 884736

Allocating group tables: done
Writing inode tables: done
Creating journal (16384 blocks): done
Writing superblocks and filesystem accounting information: done
```

Example: `e2label /dev/sdb1 USBONBOARD`

10. Unplug and relog the USB
11. Copy onboard config file into USB partition named as “USBONBOARD”.

6 Information and Warnings

Hard reset
It is not recommended to power-off the device during the hard reset process.

SIMATIC IPC Industrial Edge Device – Operation V1.3
Operating Manual, 09/2021, A5E51396302-AA

Documents / Resources

	**SIEMENS SIMATIC IPC Industrial Edge Device** [pdf] User Manual SIMATIC IPC, Industrial Edge Device

References

- SIOS
- SIOS
- User Manual