SIEMENS

SIMATIC IOT2050 Starterkit

Product Information

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 documentation. 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 maintenance 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

All names identified by ® are registered trademarks of Siemens AG. The remaining trademarks in this publication may be trademarks whose use by third parties for their own purposes could violate the rights of the owner.
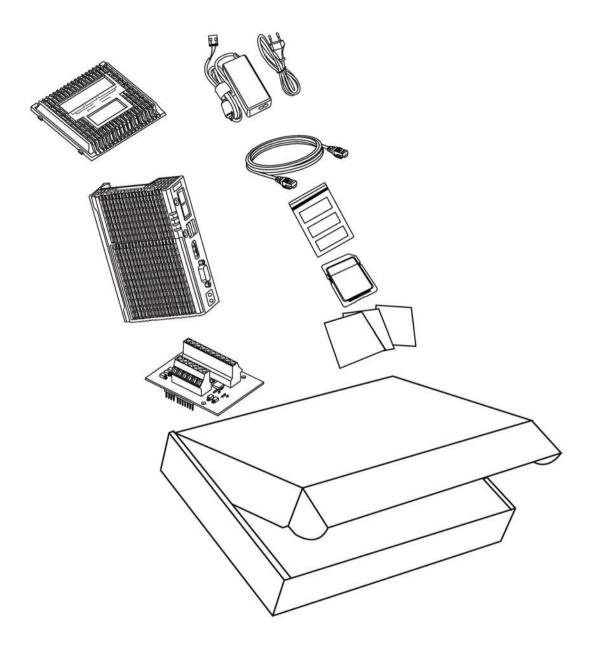
Disclaimer of Liability

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.

Table of contents

Package list

IOT2050 Starterkit contains the following components:

Quantity	Name	Specification	
1	SIMATIC IOT2050	6ES7647-0BA20-0SP2	
1	SIMATIC IOT2000 Input/Output Module	A5E39310827 5 x DI, 2 x AI, 2 x DO	
1	Cover for Input/Output Module and three plastic mounting clamps	A5E50613788	
1	SD card (Inserted in IOT2050)	8 GB	
1	Power adapter	AC-DC Power supply, 12 V	
1	Network cable	RJ45 cable, 1.5 m	
1	Accessory Kit	Mounting bracket, mounting clamps and screws	
1	Quick Install Guide	Printed paper	
1	OSS Readme	Printed paper	
1	Important notes on your device	Printed paper	

Note: Additional information on the software topics, commissioning and Micro SD image is available in the SIMATIC IOT2000 Forum (http://www.siemens.com/automation/forum).

Preparing for installation

2

2.1   Checking the delivery

Procedure

1. When accepting a delivery, please check the packaging for visible transport damage.

   If any transport damage is present at the time of delivery, lodge a complaint at the shipping company in charge. Have the shipper confirm the transport damage immediately.

2. Unpack the device at its installation location.

3. Keep the original packaging in case you have to transport the unit again.

   Note

   Damage to the device during transport and storage

   If a device is transported or stored without packaging, shocks, vibrations, pressure and moisture may impact the unprotected unit. A damaged packaging indicates that ambient conditions have already had a massive impact on the device.

   The device might be damaged.

   Do not dispose of the original packaging. Pack the device during transportation and storage.

4. Check the contents of the packaging and any accessories you may have ordered for completeness and damage.

   – Device

   – DC connecting terminal, already plugged into the device.

   – One mounting accessory kit including: 1 x Rail clamp, 2 x mounting brackets and screws.

5. If the contents of the packaging are incomplete, damaged or do not match your order, inform the responsible delivery service immediately.

⚠️ **WARNING**

Electric shock and fire hazard due to damaged device

A damaged device can be under hazardous voltage and trigger a fire in the machine or plant. A damaged device has unpredictable properties and states.

Death or serious injury could occur.

Make sure that the damaged device is not inadvertently installed and put into operation. Label the damaged device and keep it locked away. Send off the device for immediate repair.

NOTICE

Damage from condensation

If the device is subjected to low temperatures or extreme fluctuations in temperature during transportation, for example in cold weather, moisture could build up on or inside the device (condensation).

Moisture causes a short circuit in electrical circuits and damages the device.

In order to prevent damage to the device, proceed as follows:
- Store the device in a dry place.
- Bring the device to room temperature before starting it up.
- Do not expose the device to direct heat radiation from a heating device.
- If condensation develops, wait approximately 12 hours or until the device is completely dry before switching it on.

---

6. Keep the enclosed documentation in a safe place. You need the documentation when you commission the device for the first time.

7. Write down the identification data of the device.

2.2 Identification data of the device

The device can be clearly identified with the help of this identification data in case of repairs or theft.

You can find this information on the rating plate. The following illustration shows an example.

Example rating plate:	Enter the identification data in the table below:	
	Order number	6ES ...
	Serial number	S V
	Production version	FS
	All existing Ethernet addresses (MAC)	

2.3 Permitted mounting positions and mounting types

The device can be mounted horizontally or vertically on a DIN rail or to a wall.

Vertical mounting position, preferred   **Horizontal mounting position**

Consider the permitted temperature range for operation that depends on the mounting position.
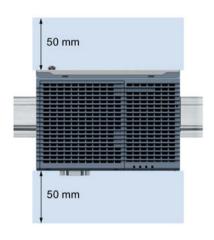
Mounting type	Ambient temperature for operation
Rail mounting	• Vertical: 0 to 50 °C • Horizontal: 0 to 40 °C
Wall mounting	• Vertical: 0 to 45 °C • Horizontal: 0 to 40 °C

Clearances

Ensure that the following clearances measurements to another component or to a wall of a housing are complied with:

• Below the device: ≥ 50 mm

• Above the device: ≥ 50 mm

Mounting the device

<div align="right">

3

</div>

3.1 Mounting instructions

Note the following:

- The device is approved for indoor operation only.

- For installation in a cabinet, observe the SIMATIC setup guidelines
  (http://support.automation.siemens.com/WW/view/de/1064706) as well as the relevant
  DIN/VDE requirements or the applicable country-specific regulations.

- When the device is used in the area of Industrial Control Equipment in accordance with
  UL61010-2-201, note that the device is classified as "Open equipment".

- Siemens recommends you use 0.6 Nm tightening torque to install the mounting clamps
  and brackets.

Fasten securely

NOTICE
Insufficient load carrying capacity
If the mounting surface for wall mounting does not have an enough load-bearing capacity, the device may fall and be damaged.
Ensure that the mounting surface on the wall can bear four times the total weight of the device, including fixing elements.

NOTICE
Incorrect fixing elements
If you use anchors and screws other than those specified below for wall mounting, safe mounting is not guaranteed. The device can fall and may be damaged.
Only use the anchors and screws specified in the following table.

Material	Bore diameter	Fixing element
Concrete	Select according to the specification of the mounting elements used	• Anchor, ∅ 6 mm, 40 mm long • Screw, ∅ 4 mm, 40 mm long
Plasterboard, (at least 13 mm thick)		Toggle plug, ∅ 12 mm, 50 mm long
Metal, (at least 2 mm thick)		• Screw M4 × 15 • M4 nut

3.2 Mounting on DIN rails

3.2.1 Secure the mounting clips

Requirement

- The DIN rail is installed at the installation site (35 mm standard profile).
- Mounting bracket and mounting clamps
- Two screws
- T8 screwdriver
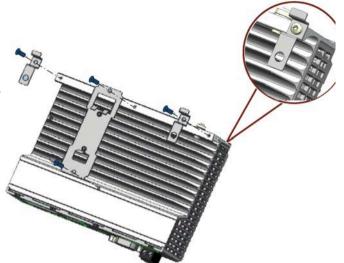
Secure the mounting clips for vertical mounting

1. Lay the rail clamp on the rear of the device.
2. Fasten the rail clamp with the supplied screws.
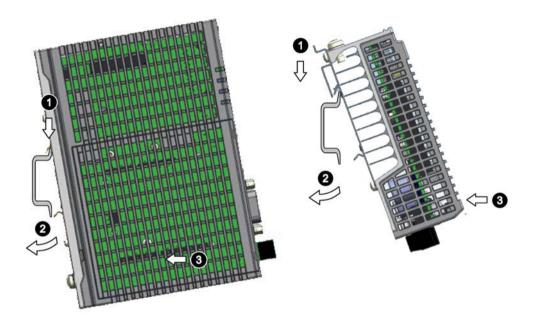
Secure the mounting clips for horizontal mounting

1. Lay the rail clamp on the rear of the device.
2. Fasten the rail clamp with the two supplied screws.
3. Lay the brackets on the rear of the device. Align the bracket edge with the device edge.
4. Fasten the brackets with the supplied screws.

3.2.2 Mounting on DIN rails

Mounting

1. Place the device and rail clamp on the upper edge of the standard profile rail at the position shown and push the device down.
2. Swing the rail clamp of the device from below through the standard profile rail.
3. Push the device in the direction of the standard profile rail. You will hear the device click into place.

Vertical	Horizontal

Removing

1. Push down the device until it is released by the rail clamp.
2. Swing the device out of the standard profile rail.
3. Lift the device up and off.

3.3 Wall mounting

3.3.1 Vertical wall mounting

The device is suitable for horizontal or vertical wall mounting.

Note

The device must be installed on the plate of an enclosure.

Requirement

- Two mounting brackets
- Two screws
- T8 screwdriver

Procedure for mounting

1. Lay the mounting brackets on the rear of the device.
2. Fasten the brackets with supplied screws.
3. Mark the bore holes, drill the required holes in the wall and fasten the device to the wall using two screws.

3.3.2   Horizontal wall mounting

The device is suitable for horizontal or vertical wall mounting.

Requirement

- Two mounting brackets
- Two screws
- T8 screwdriver

Procedure for mounting

1. Lay the mounting brackets on the rear of the device.

2. Fasten the brackets with supplied screws.

3. Mark the bore holes, drill the required holes in the wall and fasten the device to the wall using two screws.

Connecting the device

4

4.1 Notes on connecting

⚠ WARNING
Risk of lightning strikes
A lightning flash may enter the mains cables and data transmission cables and jump to a person.
Death, serious injury and burns can be caused by lightning.
Take the following precautions:
• Disconnect the device from the power supply in good time when a thunderstorm is approaching. • Do not touch mains cables and data transmission cables during a thunderstorm. • Keep an enough distance from electric cables, distributors, systems, etc.

⚠ CAUTION
Use copper cables at connectors with terminal connections
Use copper (Cu) cables for all supply lines that are connected to the device with terminals, e.g. 24 VDC power supply cables to the 24 VDC power supply connectors.
Utiliser des câbles en cuivre sur les connexions à bornes
Utilisez des câbles en cuivre (Cu) pour tous les câbles d'alimentation qui sont raccordés à l'appareil par des bornes, par exemple les câbles d'alimentation 24 V CC sur le connecteur d'alimentation 24 V CC.

NOTICE
Fault caused by I/O devices
The connection of I/O devices can cause faults in the device.
The result might be personal injury and damage to the machine or plant.
Note the following when connecting I/O devices:
• Read the documentation of the I/O devices. Follow all instructions in the documentation. • Only connect I/O devices which are approved for industrial applications in accordance with EN 61000-6-2 and IEC 61000-6-2. • I/O devices that are not hotplug-capable may only be connected after the device has been disconnected from the power supply.

NOTICE
Damage through regenerative feedback
Regenerative feedback of voltage to ground by a connected or installed component can damage the device.
Connected or built-in I/Os, for example, a USB drive, are not permitted to supply any voltage to the device. Regenerative feedback is generally not permitted.

NOTICE
Ferrite required at USB cables
The interference immunity of the device according to the data in the technical specifications is only guaranteed when the cables at USB and micro USB ports are equipped with a ferrite magnet. Use only USB cables equipped with a ferrite magnet.

4.2 Connecting the function earth

A connected function earth discharges electrical charges from the metal enclosure.

The function earth also improves the discharge of interference generated by external power cables, signal cables or cables for I/O modules to ground.

The connection for the function earth is labeled with the following symbol:

⚠ WARNING
Electric shock and risk of fire
High voltage may be present in a defective device, which can cause fire or an electric shock if touched. This can result in death and serious injury.
• Connect the device to the function earth before you put it into operation.
• The function earth terminal on the device must be connected to the function earth of the control cabinet or system in which the device is installed.
• Never operate the device without function earth.
• If a device is defective, remove it from operation without delay and label it accordingly.

Requirement

- T20 screwdriver
- Cable lug for M4
- Function earth with minimum cross-section of 2.5 mm^2 copper cable

Procedure

1. Clamp the cable lug on the function earth.

2. Firmly attach the cable lug to the function earth connection on the device using the M4 thread with the torque of 1 Nm (see part labeled).

3. Connect the function earth to the protective conductor connection of the cabinet or the plant in which the device is installed.

4.3   Connecting the power supply

Note

The device should only be connected to a 12 to 24 V DC power supply which meets the requirements of safe extra low voltage (SELV) according to IEC/EN/DIN EN/UL 61010-1.

Note

The power supply must be adapted to the input data of the device.

If there are voltage peaks on power supply lines, use a protective device in the form of a varistor (MOV) UMOV = U-rated x 1.2 (BLITZDUCTOR BVT AVD 24 (918 422) or compatible).
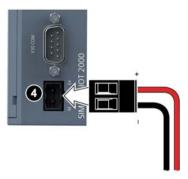

Requirement

- You are using the supplied terminal.
- A slotted screwdriver with a 3 mm blade.

Procedure

1. Switch off the power supply.
2. Connect the power cable and the adapter.

3. Connect the connecting terminal to the connection for the power supply.

Installing the IOT2000 Input/Output Module

5

Note

If the equipment is used in manner not specified by the manufacture, the protection provided by the equipment may be impaired.

Requirements

- IOT2050 is disconnected from the power supply.

> ⚠️ **WARNING**
>
> **Risk of fire and electric shock**
>
> The on/off switch does not isolate the device from the power supply. Risk of electric shock if the device is opened incorrectly or defective. There is also a risk of fire if the device or connecting lines are damaged. Death or serious bodily injury can result.
>
> You should therefore protect the device as follows:
> - Always pull out the power plug when you are not using the device or if the device is defective. The power plug must be freely accessible.
> - Use a central power isolating switch for cabinet installation.

Procedure
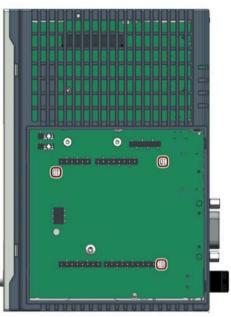
NOTICE
Install Input/Output Module
Do not under any circumstances insert the module incorrectly. Ensure that the contact pins of the module connect correctly with the terminal strips of the motherboard.

1. Loosen the shield cover. Carefully press with the blade of a flat-blade screwdriver in the marked recesses and carefully pull on the appropriate place on the shield cover.

2. Remove the shield cover.

3. Insert the mounting clamp into the marked boreholes on the motherboard shown below.

   Note: Insert the marked side of the mounting clamp into the motherboard.

4. Install the Input/Output module on the motherboard.

5. Install the Input/Output module cover to the IOT2050.

Insert Micro SD card

<div align="right">

6

</div>

Requirement

- The device is disconnected from the power supply.

Installation

NOTICE
Inserting the Micro SD card
If you are using the Micro SD card in a device installed in a system, you must observe the safety regulations for work on electrical systems.
Carefully insert the Micro SD card into the card holder without applying excess force.

1. Open the card cover on the bottom.
2. Push the Micro SD card correctly into the supporting frame. The contacts of the Micro SD card must point in the direction of the motherboard.
3. Push the card cover back.

Index