

CoreStation

INSTALLATION GUIDE

Version 1.04
English

EN 101.00.CS40 V1.04A

Document No.	Revision	Title / Description
EN 101.00.CS40	V1.04A	CoreStation Installation Guide
EN 102.00.CS40	V1.00A	CoreStation Setup Manager User Guide
201.00.CS40	V1.00A	CoreStation Intelligent Biometric Controller: Quick Guide
EN 102.00.BS2	V1.8.5A	BioStar 2.8.5 Administrator Guide
EN 101.00.BS2	V1.8.5A	BioStar 2.8.5 Installation Guide
EN 201.00.BS2	V1.01A	BioStar 2 Quick Guide
Warranty_SP_001	V12	Suprema Warranty Policy

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Safety Instructions

Observe the following instructions to use the product safely and prevent any risk of injury or property damage.

Warning

Noncompliance with instructions can lead to serious injury or death.

Installation

Do not install the product in a location with direct sunlight, moisture, dust, or soot.

- Fire or electric shock may occur.

Do not install the product in a location with heat from an electric heater.

- Fire or electric shock may occur due to overheating.

Install the product in a dry location.

- Otherwise, product damage or electric shock may occur due to moisture.

Install the product in a location with no electromagnetic interference.

- Otherwise, product damage or electric shock may occur.

The user should not install or repair the product independently.

- Fire, electric shock, or personal injury may occur.
- If the product has been damaged due to independent installation or repair of the product by the user, free A/S services will not be provided.

Caution

Noncompliance of instructions could lead to minor injury or product damage.

Installation

Do not install the power supply cable in a location where people pass by.

- Product damage or physical injury may occur.

Do not install the product near a highly magnetic object such as a magnet, TV, monitor (especially CRT), or speaker.

- Product failure may occur.

Operation

Do not drop the product or apply an impact to the product.

- Product failure may occur.

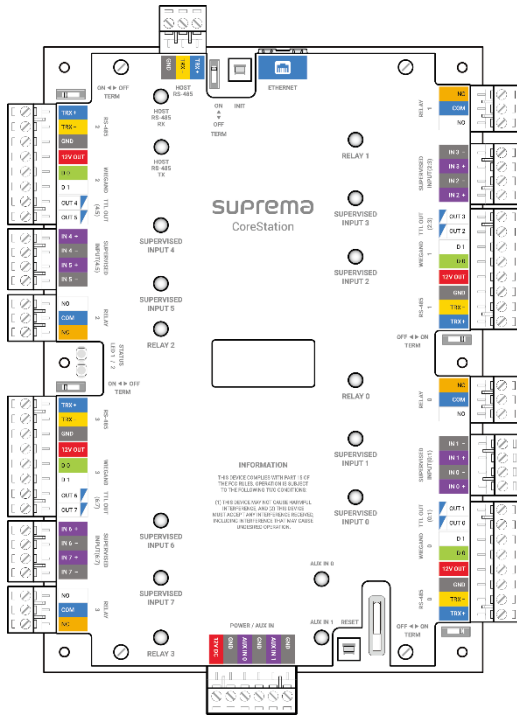
Do not press the buttons on the product forcibly or using a sharp tool.

- Product failure may occur.

When cleaning the product, wipe the product with a soft and dry cloth. Do not apply water, benzene, or alcohol.

- These may cause product failure.

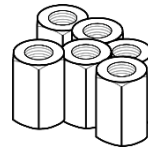
Product components



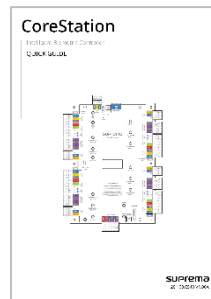
CS-40



Fixing screw
(12 EA)



Spacer
(6 EA)



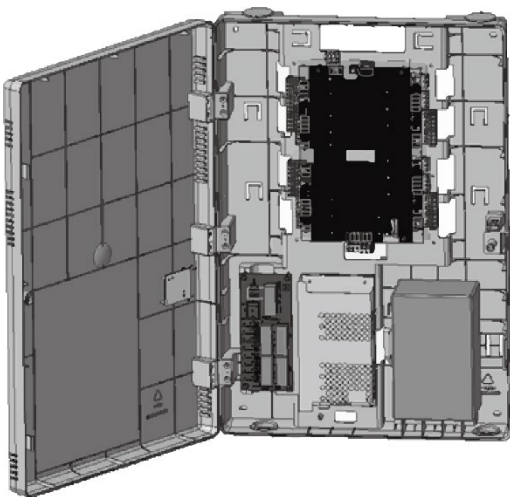
Quick Guide



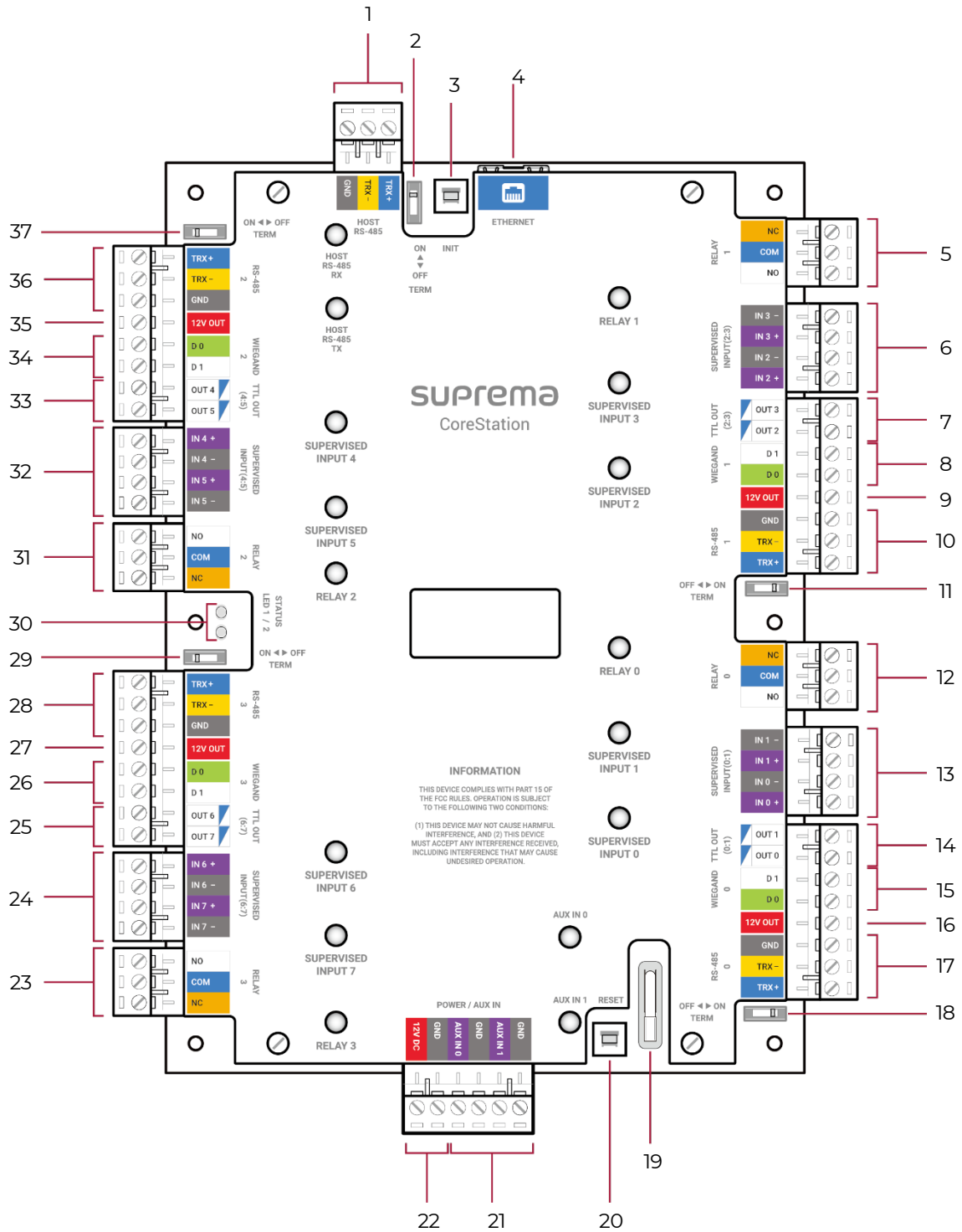
Open Source
Software Guide

Accessory

You can purchase an enclosure with CS-40 as an accessory. The enclosure contains an LED control board, power distribution board, power supply, battery, and tamper.



Name and function of each part



No.	Name	No.	Name
1	HOST RS-485 connection	20	RESET button
2	HOST RS-485 terminating resistance switch	21	AUX IN (0, 1) connection
3	INIT button	22	CS-40 power connection (DC 12V IN)
4	Ethernet connection	23	Relay 3 connection
5	Relay 1 connection	24	TTL input (6, 7) or supervised input (6, 7) connection
6	TTL input (2, 3) or supervised input (2, 3) connection	25	TTL output (6, 7) connection
7	TTL output (2, 3) connection	26	Wiegand 3 connection
8	Wiegand 1 connection	27	12V output
9	12V output	28	RS-485 3 connection
10	RS-485 1 connection	29	RS-485 3 terminating resistance switch
11	RS-485 1 terminating resistance switch	30	CS-40 status LED
12	Relay 0 connection	31	Relay 2 connection
13	TTL input (0, 1) or supervised input (0, 1) connection	32	TTL input (4, 5) or supervised input (4, 5) connection
14	TTL output (0, 1) connection	33	TTL output (4, 5) connection
15	Wiegand 0 connection	34	Wiegand 2 connection
16	12V output	35	12V output
17	RS-485 0 connection	36	RS-485 2 connection
18	RS-485 0 terminating resistance switch	37	RS-485 2 terminating resistance switch
19	RTC battery		

NOTE

- Press and hold the **INIT** button for 2 seconds or longer to initialize the CS-40 currently linked with a device and connect it to a different device.
- The power output (12V, up to 1.5A) of CS-40 can be used as the power for a Wiegand device when CS-40 and the Wiegand device are connected. In other words, when 3 Wiegand devices that consume 200mA are connected, a device that consumes up to 900mA can be connected to the remaining power output terminal.
- RTC battery capacity is 226mah. Life expectancy of RTC battery may differ depending on the installation environment and how it is performed. When replacing RTC battery, please use to be compliant with CR2032

Communication status LED

LED	Status
HOST RS-485 TX	Orange flashing: Transmitting RS-485 data
HOST RS-485 RX	Green flashing: Receiving RS-485 data
RELAY (0 ~ 3)	Red lighting: Relay operation
SUPERVISED INPUT (0 ~ 7)	TTL input <ul style="list-style-type: none"> • Green lighting: Normal Close • Off: Normal Open Supervised Input <ul style="list-style-type: none"> • Green lighting: Normal Close (short circuit), Normal Open, Switch On • Off: Switch Off
AUX IN (0, 1)	Orange lighting: Receiving AUX signal

The Levels of Access Control

Feature	Level
Destructive Attack	I
Line Security	I
Endurance	IV
Standby Power	I
Single Point Locking Device with Key Locks	I

CS-40 status LED

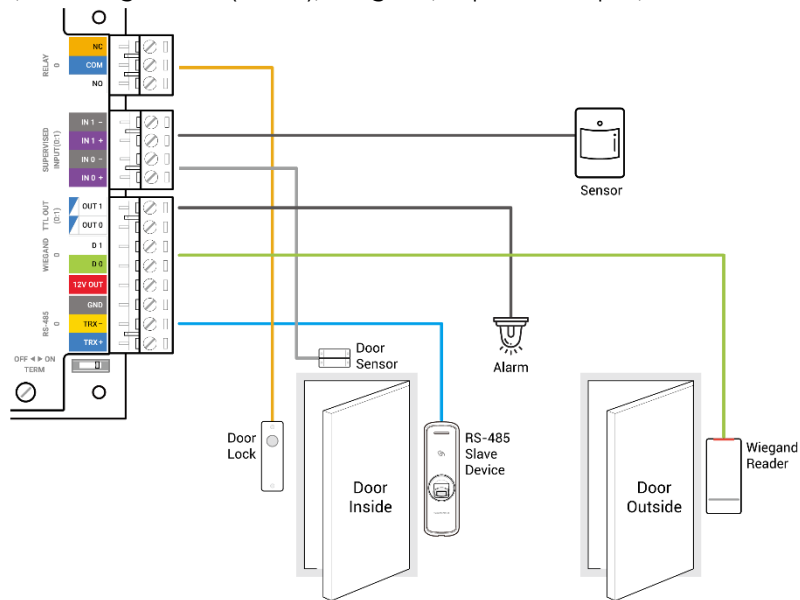
The status of CS-40 can be confirmed through **STATUS LED 1/2** located on the left side from the front unit of the product. These status LEDs show the status of Ethernet, RS-485 0, RS-485 1, RS-485 2, RS-485 3, RS-485 HOST, and system in order for 1 second each.

Feature	LED 1	LED 2	Status
Ethernet	Red	Red	Connection to a dynamic IP failed.
	Red	Yellow	Connection to a dynamic IP is on standby.
	Red	Sky blue	Connection to a static IP succeeded.
	Red	Blue	Connection to a dynamic IP succeeded
	Red	Magenta	Connection to a static IP failed.
	Red	Off	HW error
RS-485 0	Yellow	Red	No slave device
	Yellow	Yellow	The slave device is disconnected.
	Yellow	Blue	The slave device is normal.
	Yellow	Off	HW error
RS-485 1	Green	Red	No slave device
	Green	Yellow	The slave device is disconnected.
	Green	Blue	The slave device is normal.
	Green	Off	HW error
RS-485 2	Sky blue	Red	No slave device
	Sky blue	Yellow	The slave device is disconnected.
	Sky blue	Blue	The slave device is normal.
	Sky blue	Off	HW error
RS-485 3	Blue	Red	No slave device
	Blue	Yellow	The slave device is disconnected.
	Blue	Blue	The slave device is normal.
	Blue	Off	HW error
RS-485 HOST	Magenta	Red	No slave device
	Magenta	Yellow	The slave device is disconnected.
	Magenta	Blue	The slave device is normal.
	Magenta	Off	HW error
System	White	Red	System locked (by trigger & action of device)
	White	Yellow	System locked (by trigger & action of BioStar 2)
	White	Green	Connection to BioStar 2 succeeded
	White	Sky blue	Connection to BioStar 2 succeeded + Tamper ON
	White	Blue	Tamper ON
	White	Magenta	System locked (by trigger & action of device) + Tamper ON
	White	White	System locked (by trigger & action of BioStar 2) + Tamper ON
	Magenta	Magenta	Migrating the database

Installation example

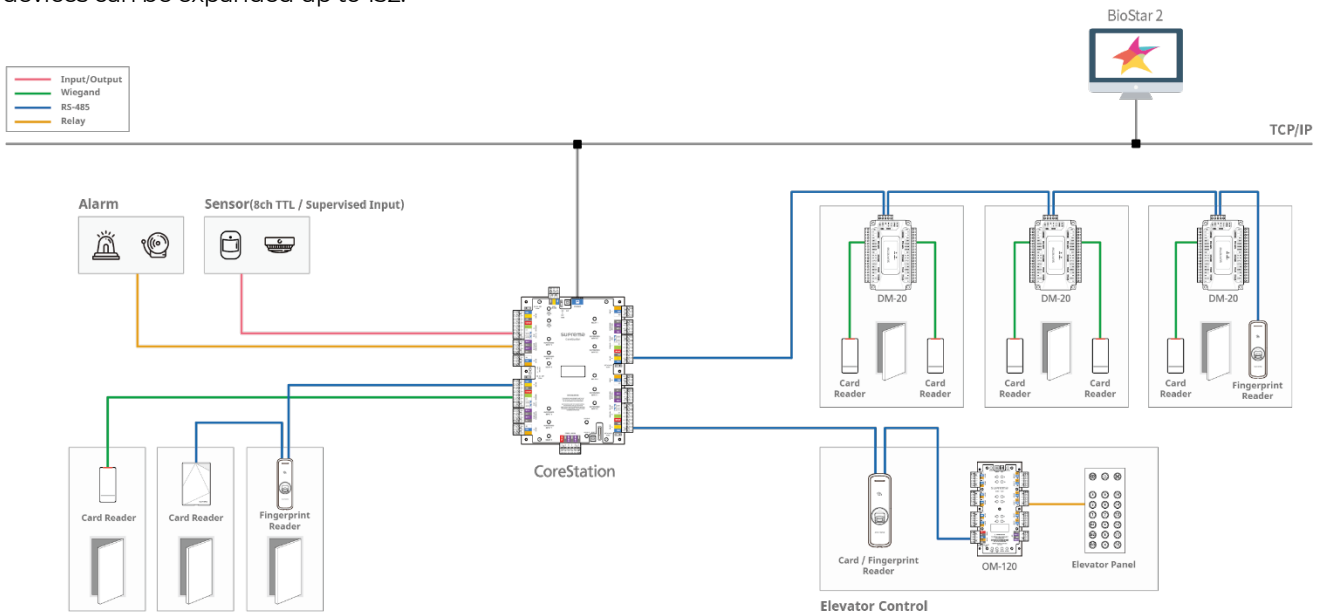
CS-40 is a centralized access control system that can perform biometric authentication. CS-40, designed as an enterprise system, can save the information of up to 500,000 users and execute matching of 400,000 fingerprints per second.

Both access control and attendance management can be used through the linkage with BioStar 2, and various interfaces are provided, including RS-485 (OSDP), Wiegand, Supervised input, and AUX.



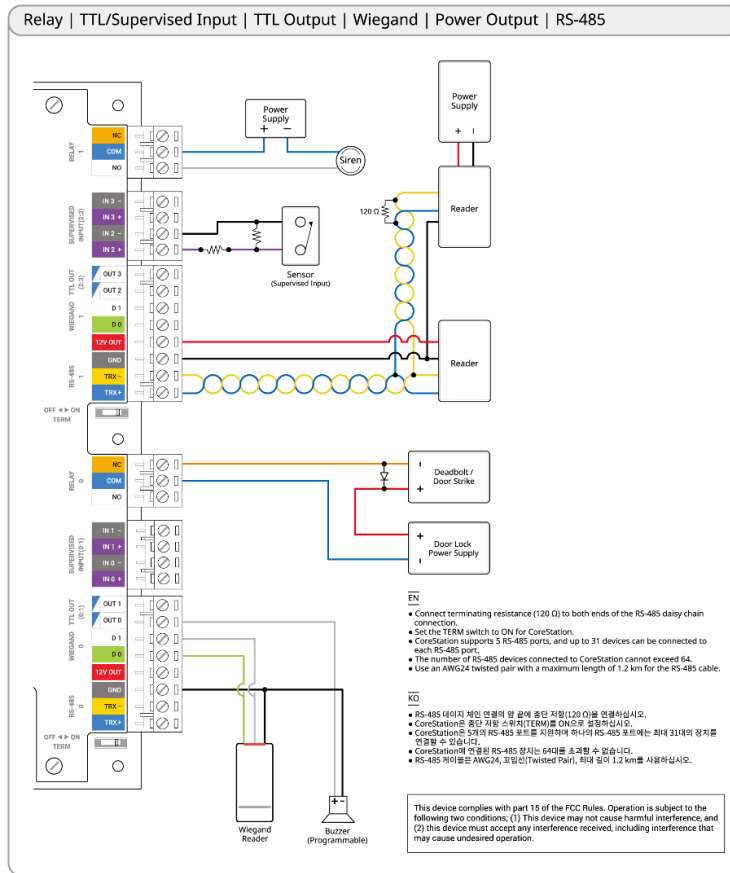
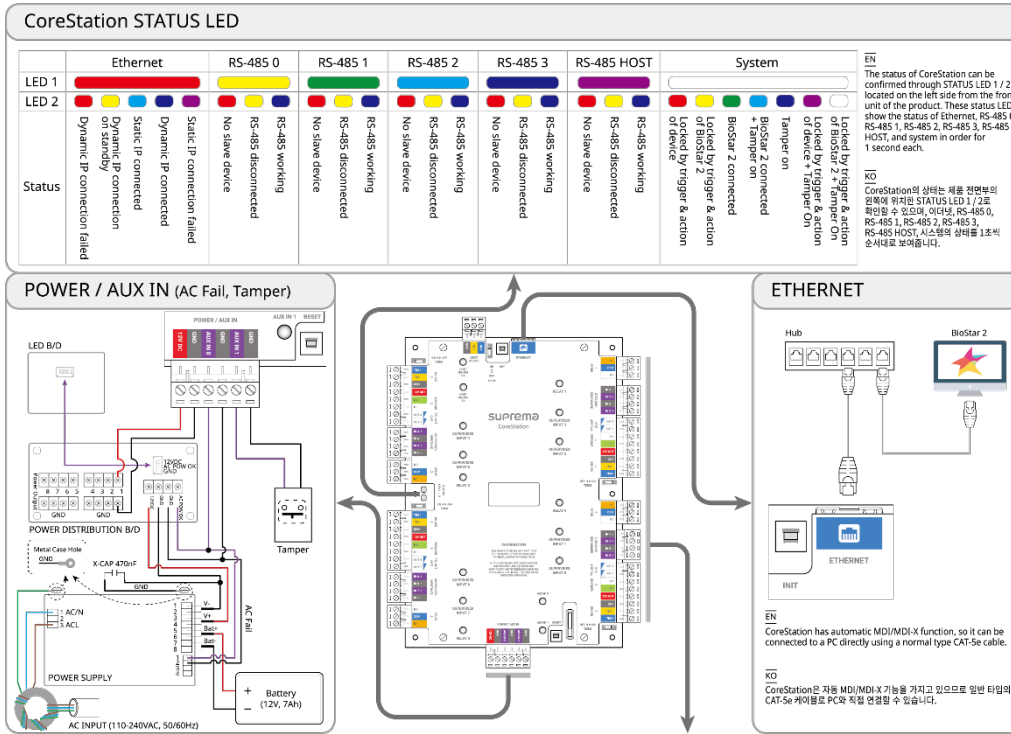
System diagram

Up to 64 RS-485 devices can be connected to CS-40, and when DM-20 is connected using a daisy chain, Wiegand devices can be expanded up to 132.



Overall Connection Diagram

The enclosure contains an LED control board, power distribution board, power supply, battery, and tamper.



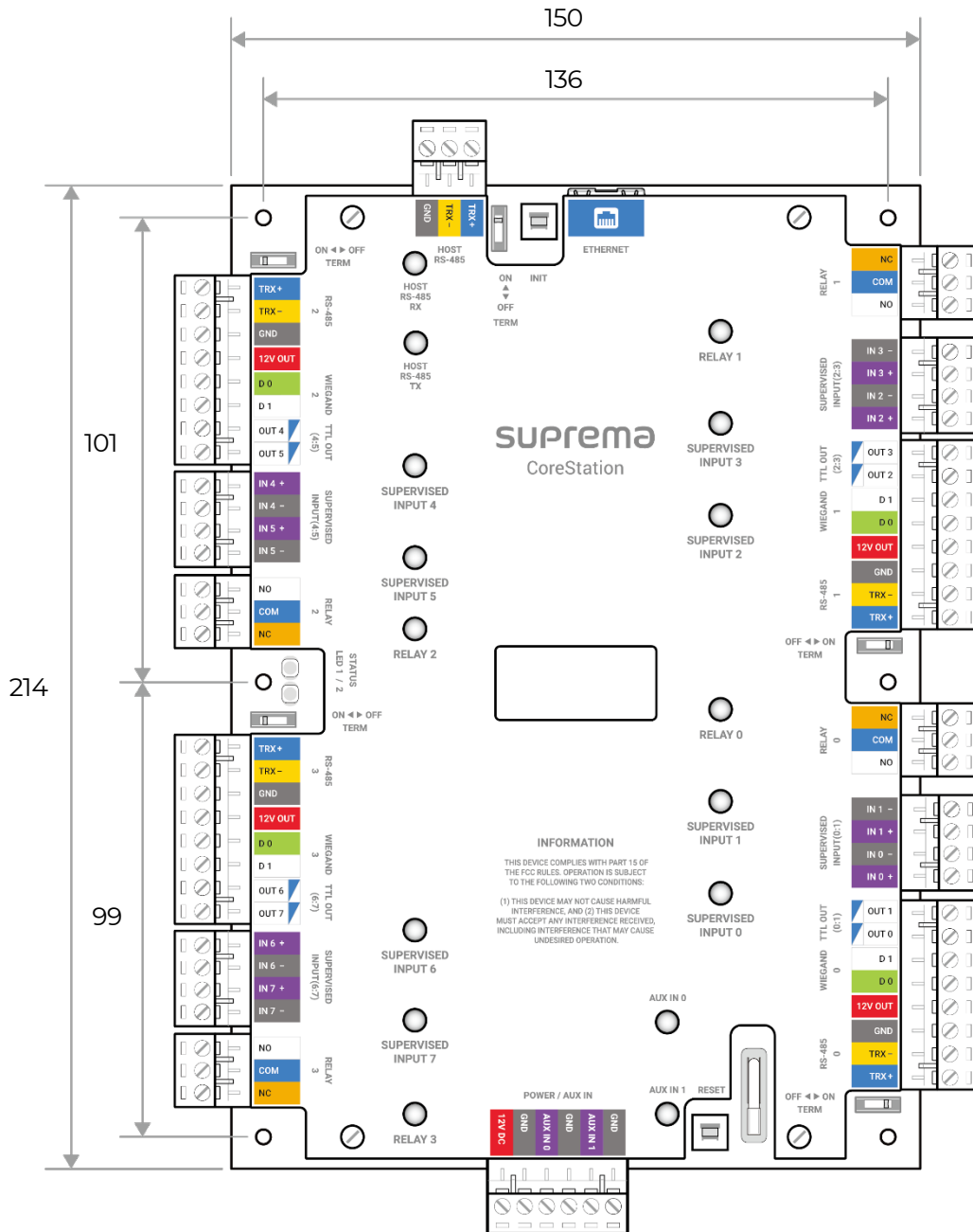
NOTE

- Do not connect to A receptacle controlled by A switch

Dimensions

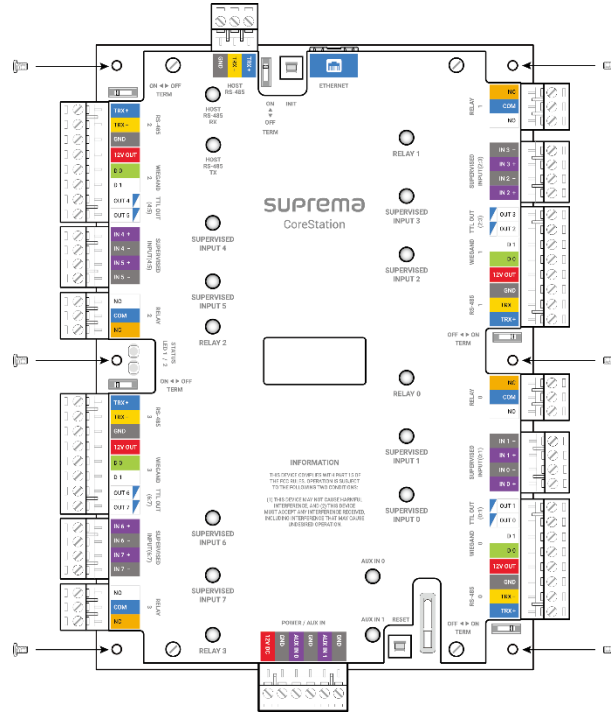
(Unit: mm)

* The tolerance is $\pm 0.3\text{mm}$.



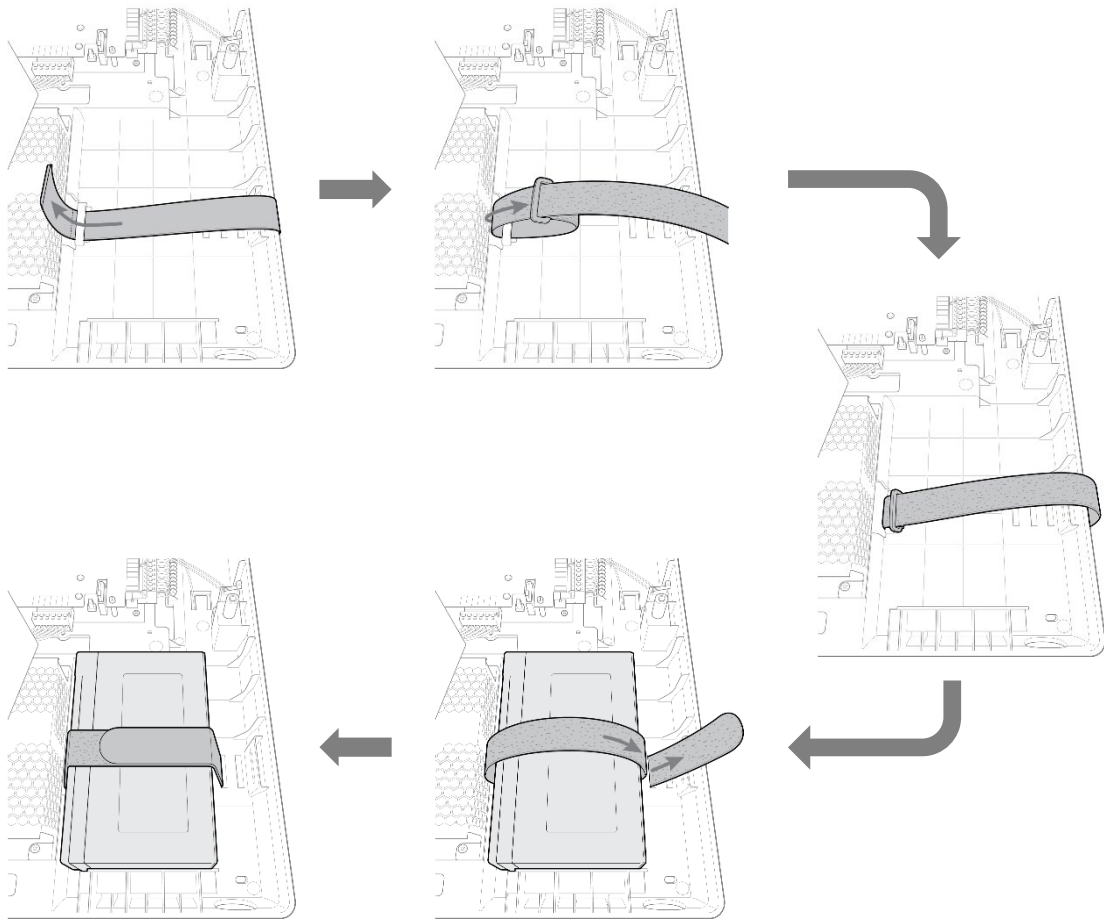
Installation

- 1 Fix a spacer on the position to mount CS-40 using a fixing screw.
- 2 Fix the product on top of the fixed spacer firmly using a fixing screw.



Battery

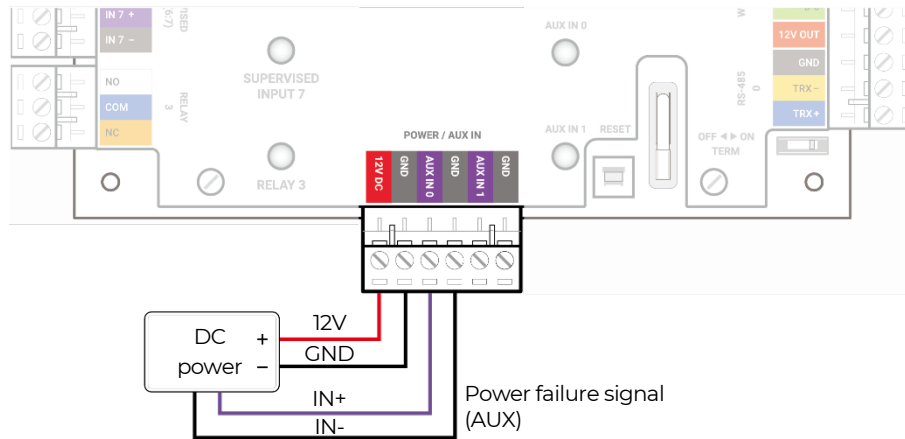
Insert the battery velcro strap into the enclosure and secure the battery.



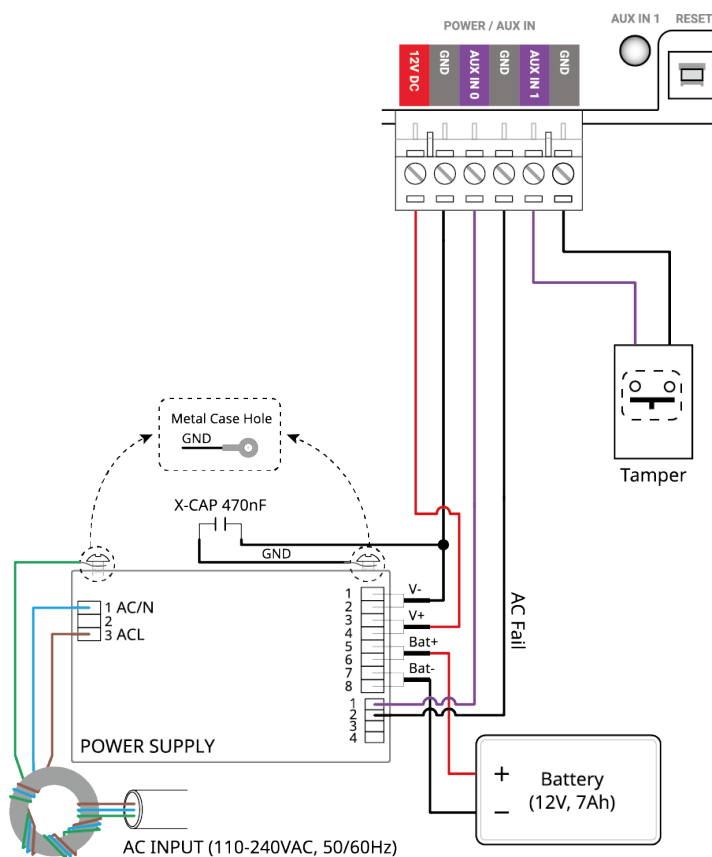
Connection

Power

- Make sure to use separate power for the access control device and CS-40.
- Use the correct power specifications (12V, 3A).
- It is recommended to connect and use an Uninterruptible Power Supply (UPS) to prevent power failure.



Power (Enclosure)



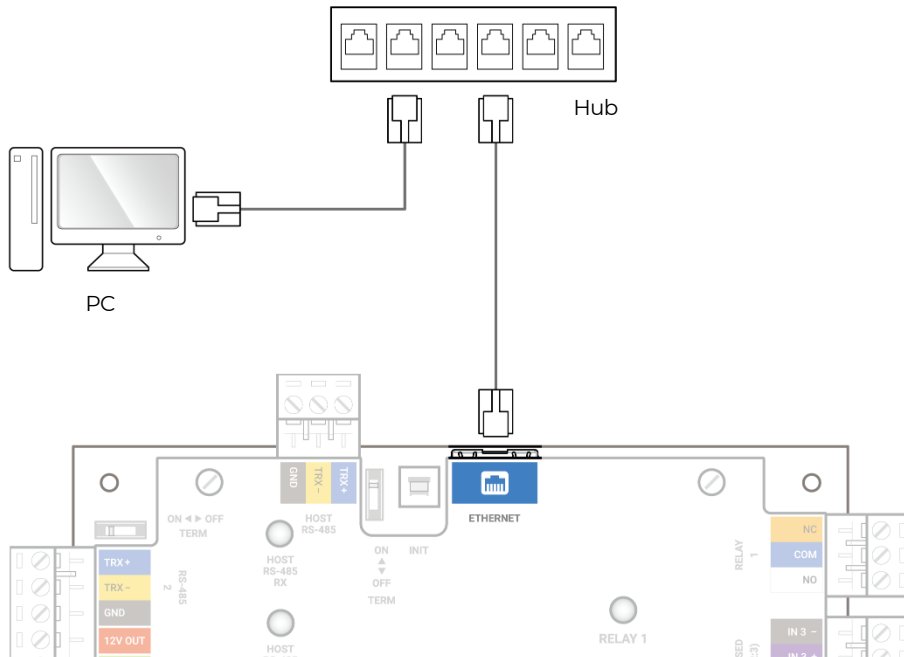
NOTE

- For UL 294 installation, the power source must be compliant to one of the following standards: UL294, UL630, UL864 or UL1481

Network connection

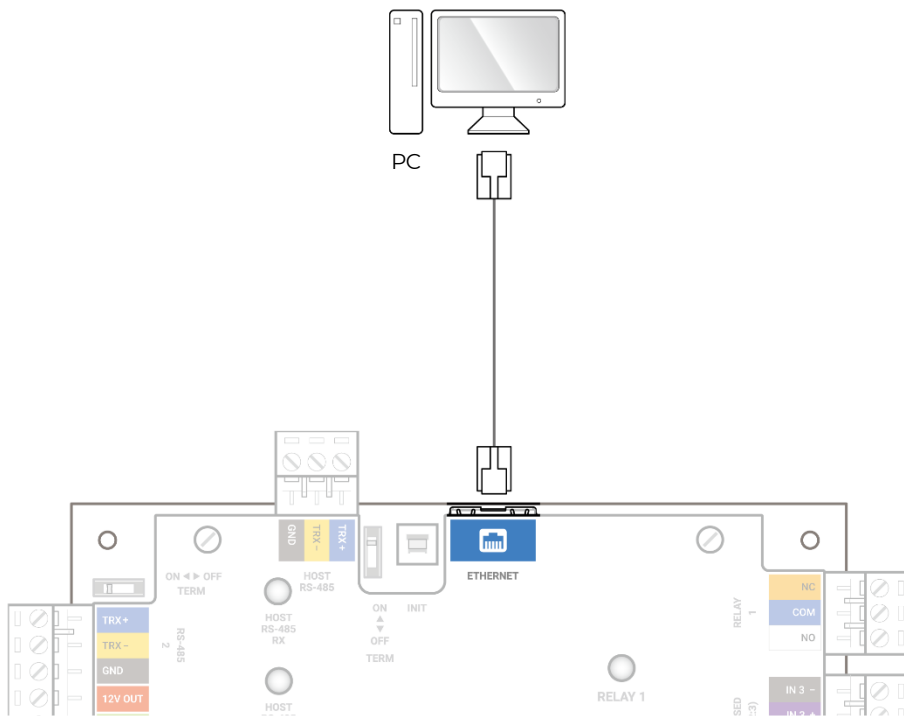
LAN connection (connecting to a hub)

You can connect the product to a hub using a general type CAT-5e cable.



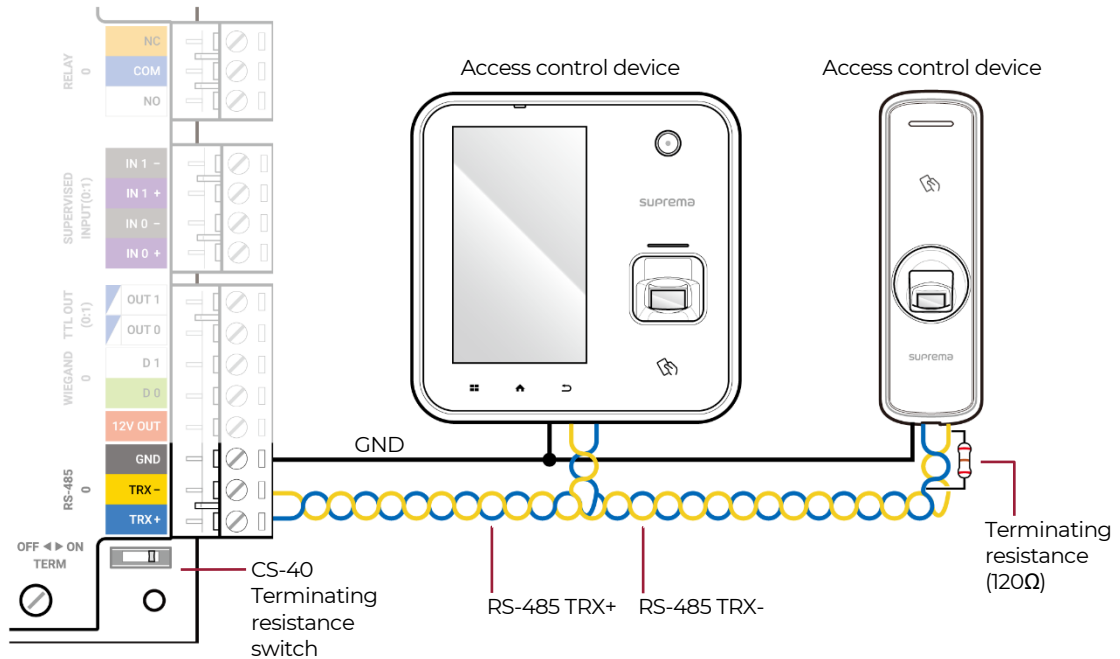
LAN connection (connecting to a PC directly)

CS-40 has automatic MDI/MDI-X function, so it can be connected to a PC directly using a normal type CAT-5e cable.



RS-485

- CS-40 supports 5 RS-485 ports, and up to 31 devices can be connected to each RS-485 port.
- The number of RS-485 devices connected to CS-40 cannot exceed 64.
- Use an AWG24 twisted pair with a maximum length of 1.2 km for the RS-485 cable.
- Connect terminating resistance (120 Ω) to both ends of the RS-485 daisy chain connection. If connected to the middle line, the signal level will weaken and the communication performance will deteriorate. Make sure to connect it to both ends of the daisy chain connection. Set the termination switch(TERM) to ON for CS-40.



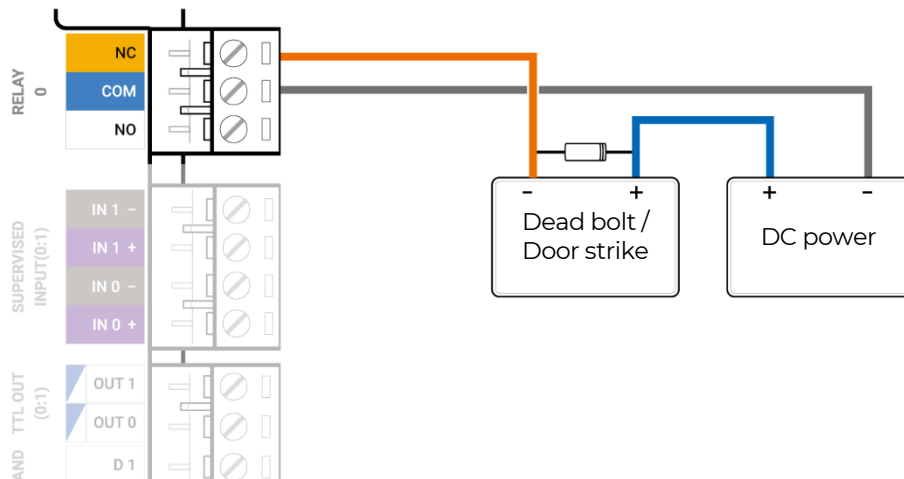
NOTE

- RS485 wire size shall be over 26 AWG and all wiring must comply with National Electrical Code, ANSI/NFPA 70.

Relay

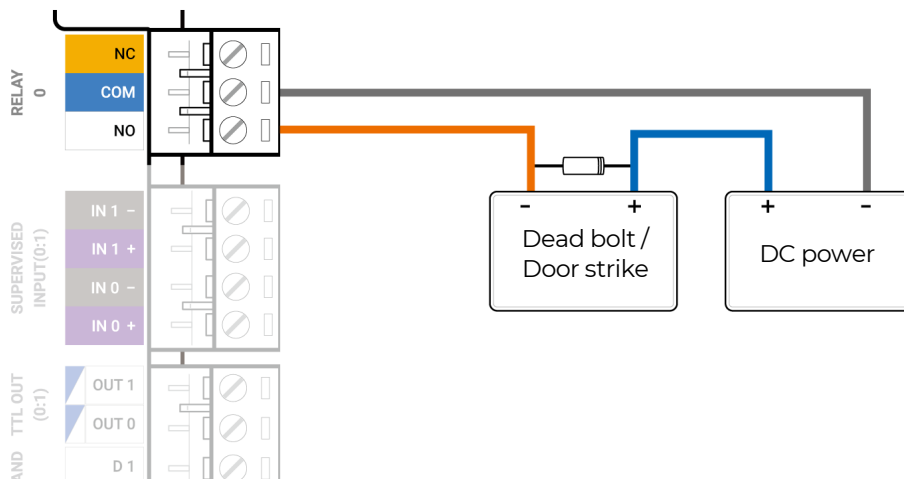
Fail Safe Lock

- In order to use the Fail Safe Lock, connect the NC relay as shown in the figure below. There is normally a current flowing through the relay for the Fail Safe Lock. When the relay is activated, blocking the current flow, the door will open. If the power supply to the product is cut off due to a power failure or an external factor, the door will open.
- Connect a diode to both ends of the power input as shown in the figure below when installing a deadbolt or a door strike. Make sure to connect the Cathode (direction to the stripe) to the + part of the power while paying attention to the direction of the diode.

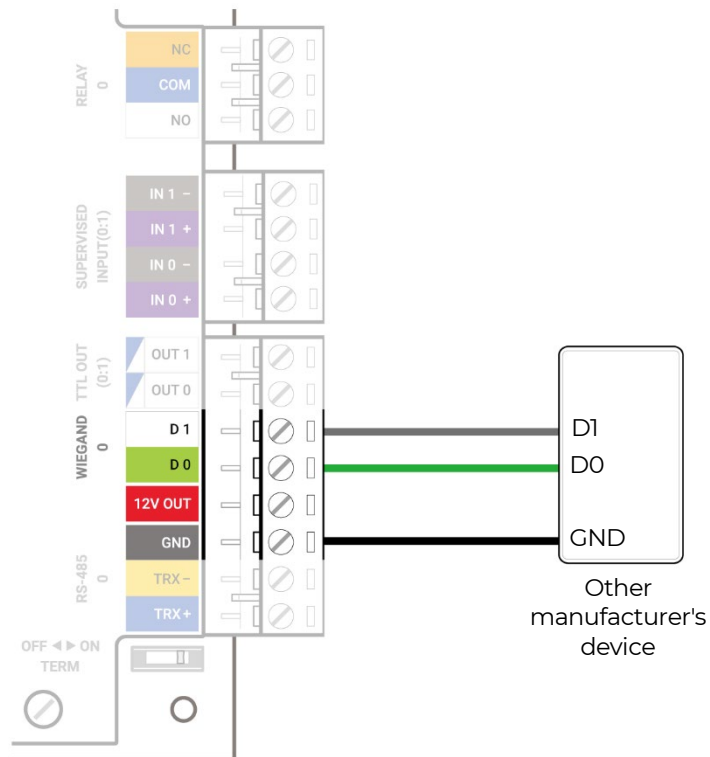


Fail Secure Lock

- In order to use the Fail Secure Lock, connect NO relay as shown in the figure below. There is normally no current flowing through the relay for the Fail Secure Lock. When the current flow is activated by the relay, the door will open. If the power supply to the product is cut off due to a power failure or an external factor, the door will lock.
- Connect a diode to both ends of the power input as shown in the figure below when installing a deadbolt or a door strike. Make sure to connect the Cathode (direction to the stripe) to the + part of the power while paying attention to the direction of diode.

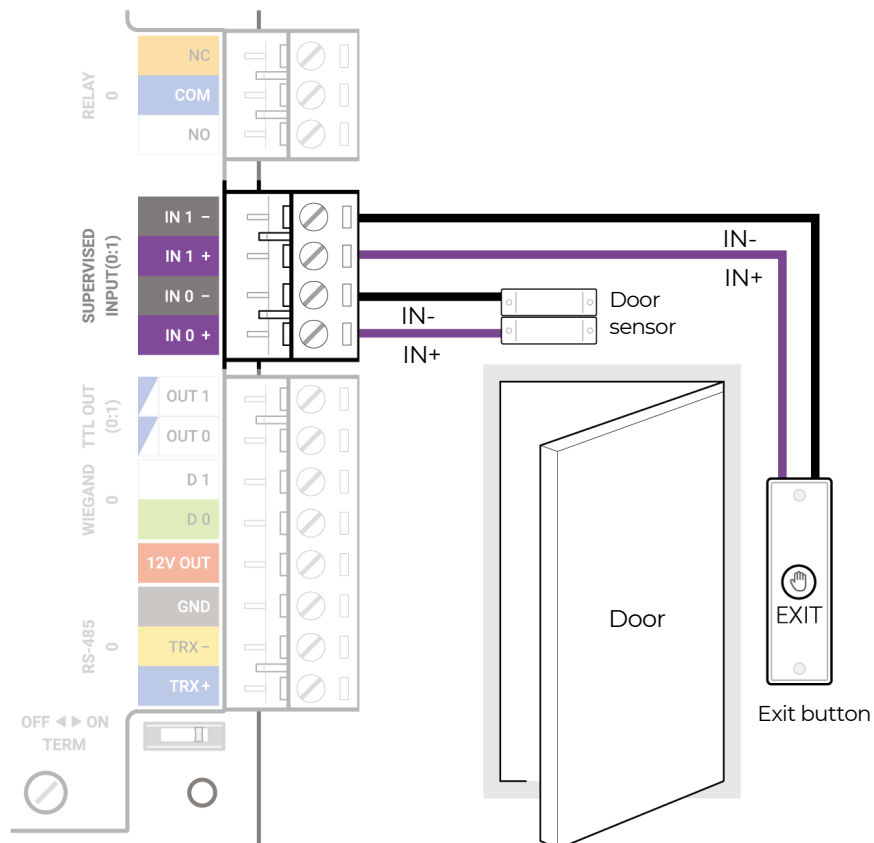


Wiegand IN



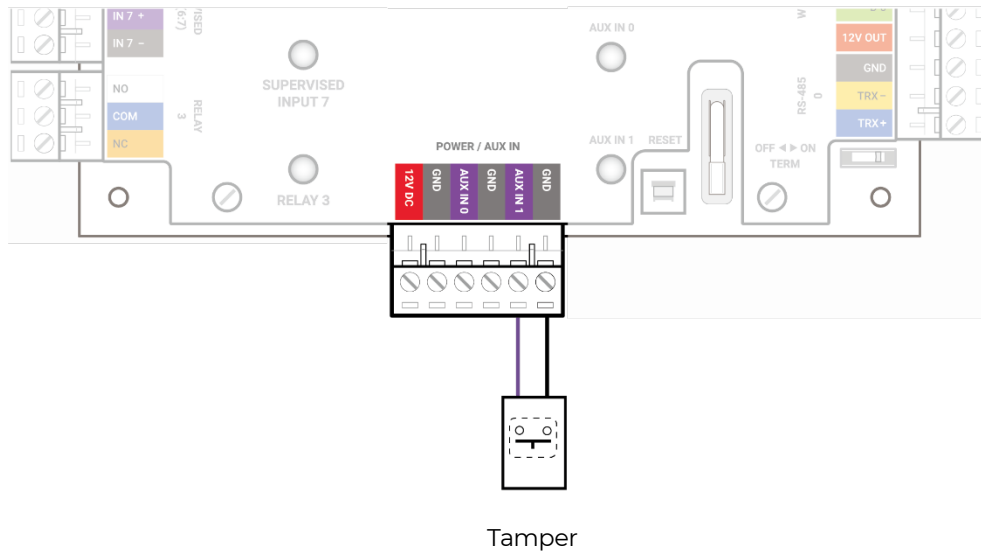
Door sensor and Exit button

SUPERVISED INPUT terminals No. 0 ~ No. 7 can be set to be used for normal TTL input or supervised input.



AUX IN

- A power failure detector or a tamper can be connected to the AUX IN terminal.



Tamper

NOTE

- You can view or manage the network settings of CS-40 and monitor the status of slave devices, input and output ports, and Wiegand ports by accessing the CS-40 Setup Manager.
- CS-40 Setup Manager is supported with CS-40 firmware version 1.3.1 or later. If you are using a firmware version lower than 1.3.1, upgrade the CS-40 firmware on the BioStar 2.
- For more information on CS-40 Setup Manager, refer to the user guide. To download the user guide, visit the Suprema website (<https://www.supremainc.com>).
- You can verify the current version of BioStar2 software When CS-40 is reprogrammable when connected to a network.

Product Specifications

Category	Feature	Specification
Model	-	CS-40
General	CPU	1.4GHz Octa-core
	Memory	8GB Flash + 1GB RAM
	LED	Multi-color <ul style="list-style-type: none"> • STATUS - 2ea • HOST RS-485 TX - 1ea • HOST RS-485 RX - 1ea • SUPERVISED INPUT - 8ea • RELAY - 2ea • AUX IN - 2ea
	Operating temperature	0°C ~ 50°C
	Storage temperature	-40°C ~ 70°C
	Operating humidity	0% ~ 80%, non-condensing
	Storage humidity	0% ~ 95%, non-condensing
	Operational ambient conditions	0°C ~ 49°C
	Dimension (W x H x D)	150 mm x 214 mm x 21 mm
	Weight	415 g
	Certificates	CE, FCC, KC, RoHS, REACH, WEEE
Capacity	Max. User (1:1)	500,000
	Max. User (1:N)	100,000
	Max. Template (1:1)	1,000,000 (Two templates per finger)
	Max. Template (1:N)	200,000 (Two templates per finger)
	Max. RF Card	500,000
	Max. PIN	500,000
	Max. Text Log	5,000,000
Interface	Ethernet	10/100 Mbps, Auto MDI/MDI-X
	RS-485	5ch
	Wiegand	4ch
	Supervised Input	8ch (TTL input selectable)
	TTL Output	8ch
	AUX Input	2ch (AC POWER FAIL, Tamper)
Electrical	Power	<ul style="list-style-type: none"> • CS-40 <ul style="list-style-type: none"> - Voltage: 12VDC, Current: Max. 3A • Power Supply (SMPS) AC INPUT <ul style="list-style-type: none"> - 110-240VAC, 50/60Hz
	Power Output	Voltage: 12VDC Current: Max. 1.5A
	Switch input V _{IH}	Max.: 5V Min.: 4V
	Switch input V _{IL}	Max. 1V
	Relay	Voltage: Max. 30VDC Current: Max. 5A

NOTE

- All the supplementary equipment (card readers, keypads and fingerprint readers) should be UL294 compliant to have a UL294 compliant complete access control system.
- To have more information about CS-40 and troubleshooting section etc., please refer to the following links.

<https://support.supremainc.com/en/support/home>

<http://kb.supremainc.com/knowledge/doku.php?id=en:start>

FCC compliance information

THIS DEVICE COMPLIES WITH PART 15 OF THE FCC RULES.

Operation is subject to the following two conditions:

- (1) This device may not cause harmful interference, and
- (2) This device must accept any interference received, including interference that may cause undesired operation.

Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a commercial installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions manual, it may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his own expense.

Modifications: Any modifications made to this device that are not approved by Suprema Inc. may void the authority granted to the user by the FCC to operate this equipment.

Appendices

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- To request the modified source code based on Linux Kernel 3.x and the source code of glibc and QT libraries, which are included in this product, please contact us at support.supremainc.com.

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Version 3, 29 June 2007

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