Parts

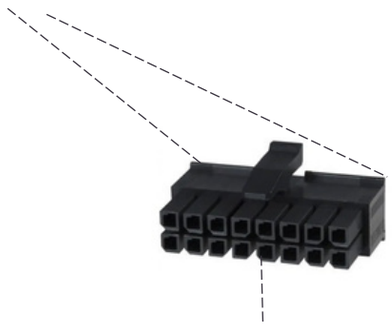
AX5 Controller

Controller

The AX5 controller integrates third-party electric locks with Teleporte, the keyless access control platform from Sera4. The controller supports electric locks that require 12VDC @ < 3A. Please contact support@sera4.com for further information about compatibility with a specific electric lock.

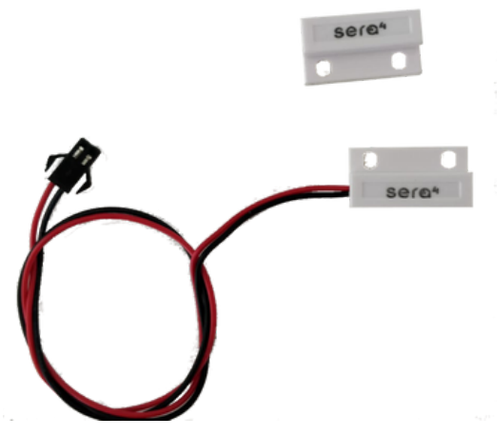
Cable Harness

The cable hardness that is included with the AX5 controller attaches to the 16-pin female connector to extend all inputs and outputs through 24AWG cables.



Sensors (Optional)

Magnetic reed contact sensors are also available as an option to detect and monitor the open and close status of doors and locks. These sensors are not needed if the electric lock already has integrated lock and door sensors.



Wiring and Electrical Specifications

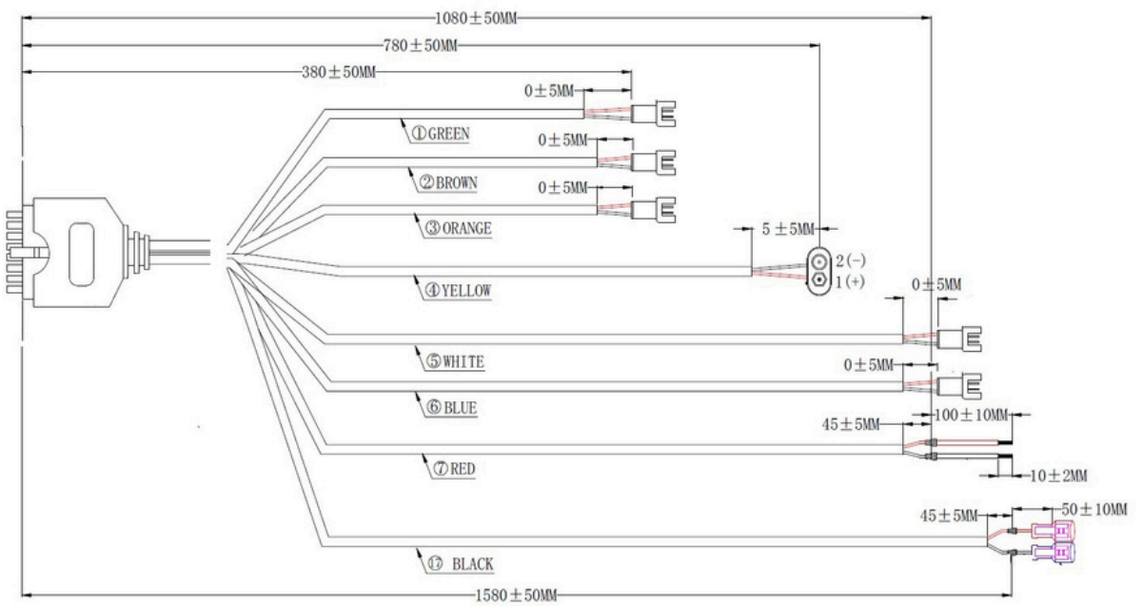
AX5 Controller

Input and Output Wiring

The cable harness connects to the 16-pin female connector of the controller. This harness contains eight cable jackets, with two inner wires each. The table below presents the color coding and specifications of each cable and wire.

Pin	I/O	Cable Color	Wire Color	Function	Specifications	Connector
1	Input	White	Black	Door Sensor Door	Normally open	SMR-02V-B
2	Input		White	Sensor Relay or		
3	Output	Orange	Black	Power Relay or Power	Up to 250VAC or 125VDC @ max 3A	SMR-02V-B
4	Output		White	Lock Signal (GND)		
5	Output	Green	Black	Lock Signal (12VDC)	12 VDC @ 3A max	SMR-02V-B
6	Output		White	Main Power (-) Main		
7	Input	Red	Black	Power (+) Lock	18 to 60 VDC @ 3A max	12 AWG
8	Input		White	Sensor Lock Sensor		
9	Input	Blue	Black	Emergency Power (-)	Normally Open	SMR-02V-B
10	Input		White	Emergency Power (+)		
11	Input	Yellow	Black	Button or Access Pad	9 to 12 VDC @ 3A max	9V PP3
12	Input		White	Button or Access Pad		
13	I/O	Brown	Black	Backup Power (-)	3.3V max @ 1A	SMR-02V-B
14	I/O		White	Backup Power (+)		
15	Input	Black	Black		9 to 12 VDC @ 3A max	SLA Spade
16	Input		White			

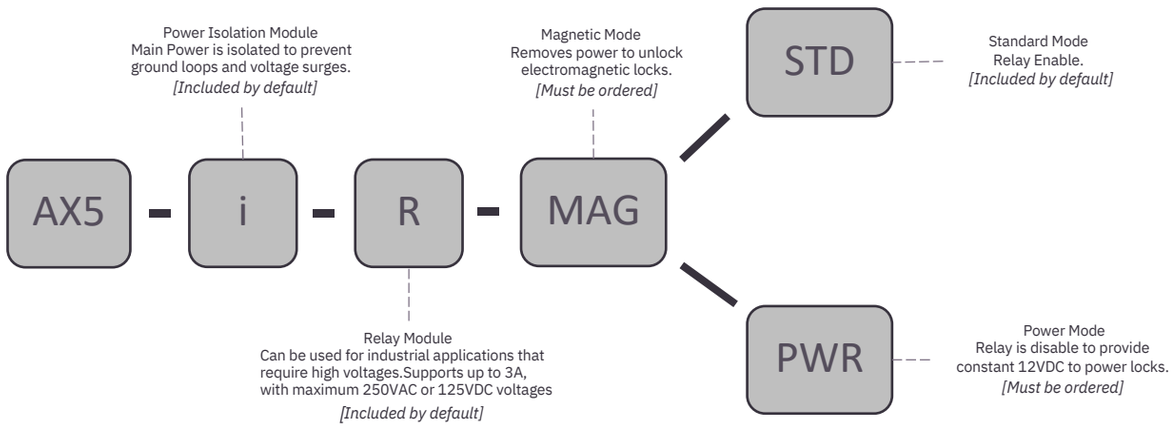
Harness Dimensions



Controller Configurations

AX5 Controller

Ordering Information

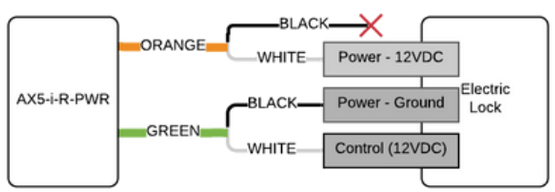


Hardware Configuration Modes

Name	Part #	Green Cable				Orange Cable			
		Idle		Unlock		Idle		Unlock	
		White Wire	Black Wire	White Wire	Black Wire	White Wire	Black Wire	White wire	Black Wire
Standard	AX5-i-R-STD	Floating	GND	+12V	GND	Relay OFF		Relay ON (Continuity)	
Magnetic Standard	AX5-i-R-MAG-STD	+12V	GND	Floating	GND	Relay ON (Continuity)		Relay OFF	
Power	AX5-i-PWR	Floating	GND	+12V	GND	+12V	Floating	+12V	+12V
Magnetic Power	AX5-i-MAG-PWR	Floating	GND	+12V	GND	+12V	+12V	+12V	Floating

Power Mode Wiring

This setup is offered for electric locks that require to be powered with a constant 12VDC signal.



Relay Wiring

The controller must have the Standard (STD) configuration in order to access the relay capabilities. The relay input and output shown in the diagram below can be exchanged without affecting functionality as the relay behaves like a dry contact switch.

Recommended Installation Components

AX5 Controller

1. Options to secure controller

Screws: 2
Recommended size: 3/16” x 1/2”
Recommended Types:

- Pan-Head Phillips machine screw
- Hex-Head Self-tapping screw

2. Connectors to Electric locks and sensors

Electromechanical locks and sensors can be connected to the AX5 controller using a 2-pin JST connector (SMP-02V-BC).

3. Wiring Length Recommendation

Keep the wire lengths during installation to a minimum. As a rule of thumb, try to keep AWG22 wires 4m or less. Higher gauge wires can run longer.

5. Powering the AX5 controller

There are three options to power the controller from an external DC source (See page 2). All the three power inputs can be connected simultaneously, with priority to the primary, then the backup and finally the emergency input. This means that the backup source is only used when the primary input is not available, and the emergency source is only used when neither the primary nor the backup is available.

Priority	Name	Cable Color	Requirements
1 2 3	Primary	Red	18 to 60 VDC @ 3A max
	Backup	Black	9 to 12 VDC @ 3A max
	Emergency	Yellow	

4. Enclosure Recommendations

Mon-metallic enclosures permit longer wireless (RF) range and better smartphone connectivity. ABS recommended. Metallic boxes require an aperture for RF connectivity. Check signal if using a metal enclosure.

5.1. Backup SLA battery

A 12VDC backup battery can be connected to the backup power input of the AX5 controller, which is used if the primary power source fails. 12VDC (7Ah+) Sealed Lead Acid (SLA) rechargeable batteries are recommended.

5.2. Power Supplies

An AC to DC converter might be required if there is only AC power available near the door. The converter must provide either 12VDC to connect to the secondary input, or anywhere between 18VDC and 60VDC to connect to the primary input. The power supply also needs to provide at least 1A of current. Below are some examples of the type of power supplies that can be used to power the controller.

Enclosure Power Supply

- Input: 115VAC
- Output: 12VDC or 24VDC selectable
- May include backup SLA battery
- Controller must be mounted externally

Din-Rail Power Supply

- Input: 100-240VAC
- Output: 12VDC or 24VDC / 1A –3A
- Din-rail mounted

Wall-Mounted Power Supply

- Input: 110VAC
- Output: 12VDC / 1A –3A
- Female barrel connector

Installation Notes

AX5 Controller

1. Prepare

- Validate compatibility of electric lock with AX5 controller, please contact support@sera4.com if you have questions.
- Understand how to open locks with the Teleporte mobile application, contact support@sera4.com for more information.
- Prepare DC power supplies, refer to Wiring and Electrical Specifications document in page 2 for voltage and current limitations.
- Understand the parts of the AX5 controller described in page 1 and select installation components from page 3

2. Validate

Before and after installation, test that the lock and controller are working as expected, this includes:

2.a Connect electric lock to AX5 controller as per instructions in section 4 below
2.b Power AX5 controller as per instructions in section 5 below
2.c Ensure the controller status LED is on and lit constantly in either red, green, or blue
2.d Use the Teleporte mobile application to confirm the following:

- The controller is detected by the Teleporte application
- The Teleporte application can connect to the controller to display the option to UNLOCK
- The lock unlocks properly when selecting UNLOCK from the Teleporte application
- The lock relocks automatically after 2-7 seconds

Warning:If any of the above fails, follow the Troubleshooting Guide document in page 6 to resolve the issue before continuing.

3. Consider

- The AX5 controller is neither dust nor waterproof, so it must be Installed in a dry, air-conditioned location.
- The AX5 controller cannot be exposed to direct heat or vibration
- The cables are NOT exposed to sharp (metal) edges of cabinet or equipment
- The unused cables are coiled and secured close to the controller
- The cables are NOT pulled tight by the normal opening and closing of the door
- The AX5 controller is mounted according to recommendations in section 6 below.

4. Connect Electric Lock

4a. Install the electrical lock as per its manufacturer's instructions.

4b. Connect the controller lock signal wires to the lock's control input.

4c. Connect the controller lock sensor wires to the lock's lock sensor output.
Warning: If the lock does not have a lock sensor, connect (short) the pins on the lock sensor wires together to get a consistent "locked" status.
4d. Connect the controller door sensor wires to the lock's door sensor output or external magnetic reed sensors.
Warning: If the lock does not have a door sensor and if you are not using magnetic reed sensors, connect (short) the pins on the controller door sensor wires together to get a consistent "locked" status.

5. Power the AX5 Controller

The AX5 controller can be powered from any of the three power inputs as shown in pages 2 and 3. At least one power input MUST be connected to the controller.

5a. If applicable, connect the main power wire to the DC power supply.

5b. If applicable, connect the backup power wire to the DC backup power supply, which is usually a 12VDC Sealed Lead Acid (SLA) backup battery. 5c. The emergency power connector wire can be run to the
outside of the enclosure to allow a 9V PP3 battery to be attached in the situation where the primary and the backup power sources are unavailable.

5d. Complete the validation steps described in section 2

6. Controller Orientation

The controller must be mounted vertically, where the cable harness exit to the right; or horizontally, where the cable harness exit downwards.
Warning:there is a water exit hole on the bottom side of the controller. Ensure the controller is mounted level so that water would naturally exit from the hole. The Parts Document shows the location of the drainage hole. When mounted horizontally, the cable connector can allow water to drain.

Vertical

Horizontal

Troubleshooting

AX5 Controller

The status LED does not turn ON when powering the controller	• Check the connections to power the controller • Connect a new 9V battery to test the emergency power option • Check if the lock appears in the Teleporte app. If it does, there may be an LED hardware problem.
The controller is not visible in the Teleporte mobile application	• Verify there is at least one power source is connected to the controller • Check that your power sources are working by measuring them with a voltmeter. • You can use a voltmeter to test for a voltage on the door sensor wire. After disconnecting the sensor, if the controller is powered, you will measure ~3V DC between the sensor wire pins. • Reboot your smartphone as it may be having Bluetooth problems. • Contact support@sera4.com if you have verified that the controller is powered properly, and the problem persists after resetting your smartphone device.
The controller is visible in the Teleporte mobile application, but it is showing a *gear* icon on the lock that does not let me select it. 	• The Teleporte app needs to contact the Teleporte Cloud to retrieve data required for communicating with the lock. • Verify that your phone has a valid data connection by using another mobile application that also needs a data connection (i.e.use a web browser to view a news website). • If your phone has a valid data connection restart your phone, and if you are still seeing the icon contact support@sera4.com.
The controller is visible in the Teleporte mobile application, but it is showing a "broken key" icon. 	• The icon indicates that the Teleporte application does not have a valid key for the controller. Check that you have logged in to an account and the account has a key for this lock. • If you do not have an account (email and password) or a key, contact your site Administrator to provide you an account and key for the lock. • If you have an account and a valid key for this controller, and the problem persists contact support@sera4.com
The lock appears as unlocked in the Teleporte app when it should show as locked based on the state of the lock.	• Disconnect sensors and short the pins of both door and lock sensor wires to determine the controller is working as expected
After connecting to the lock and selecting the "Unlock" button, the lock does not unlock.	• Use a voltmeter to measure the voltage between the pins on the lock control wire when selecting option to UNLOCK in the Teleporte application. • Contact support@sera4.com if you cannot measure ~12VDC for 3+ seconds
The lock does not show as unlocked when it is unlocked. The lock does not show as unlocked when the door is open. After unlocking the lock, opening the door, and then closing the door, the lock does not re-lock itself.	• Use a voltmeter to measure the voltage between the pins of the lock sensor wires. Contact support@sera4.com if you measure 0V • Use a voltmeter to measure the voltage between the pins of the door sensor wires. Contact support@sera4.comif you measure 0V. Contact support@sera4.com