Synergis™
Cloud Link

Synergis™ Cloud Link Hardware Installation Guide

Genetec™

Legal notices

Document information

About this guide

This guide explains how to install and connect a Synergis Cloud Link appliance.

For more information on the available Synergis™ Cloud Link hardware versions, see Differences between Synergis Cloud Link appliances on page 5.

This guide supplements the *Synergis™ Softwire Integration Guide*, the *Synergis™ Cloud Link Administrator Guide*, and third-party documentation provided by the manufacturer of your access control hardware.

For more information, visit the TechDoc Hub.

Notes and notices

The following notes and notices might appear in this guide:

- **Tip:** Suggests how to apply the information in a topic or step.
- **Note:** Explains a special case or expands on an important point.
- **Important:** Points out critical information concerning a topic or step.
- **Caution:** Indicates that an action or step can cause loss of data, security problems, or performance issues.
- **Warning:** Indicates that an action or step can result in physical harm, or cause damage to hardware.

IMPORTANT: Content in this guide that references information found on third-party websites was accurate at the time of publication, however, this information is subject to change without prior notice from Genetec Inc.

Contents

Introduction to Synergis Cloud Link

This section includes the following topics:

What is Synergis Cloud Link?

Synergis™ Cloud Link is an intelligent PoE-enabled IoT gateway designed to address the demand for a non-proprietary access control solution.

Synergis Cloud Link provides native support for popular non-proprietary security modules, from intelligent controllers such as Mercury Security, HID Global, and Axis communications, to electronic locks from ASSA ABLOY, Allegion, and SimonVoss, which requires Mercury controllers.
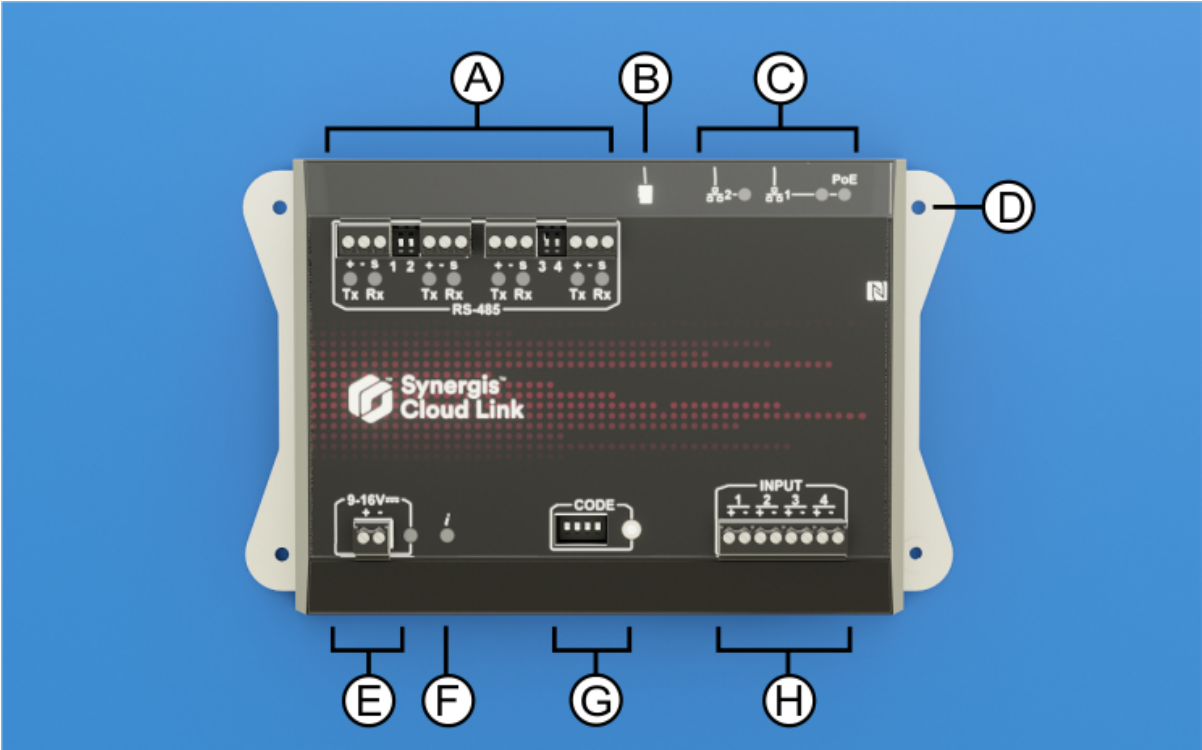
	Hardware feature	What you should know
A	RS-485 ports	Synergis Cloud Link includes four RS-485 communication channels. The number of modules you can connect to each RS-485 port depends on the type of interface modules you are installing. For more information, see RS-485 communication channels on page 16.
B	Micro SD card	Future use
C	Ethernet ports	Two Ethernet ports are provided for connection to the IP network. **NOTE:** Ethernet port 1 can be used to power the appliance using Power over Ethernet (PoE). For more information, see Powering the appliance on page 12.
D	Mounting holes	You can either mount the appliance to a suitable surface using the mounting holes or to a DIN rail using the optional DIN rail mounting bracket. For more information, see Mounting the appliance on page 9.
E	Power	Connect the appliance to a 12 V dc (nominal) power supply. For more information, see Power supply requirements on page 15.

	Hardware feature	What you should know
F	Information (*i*) LED	The LED provides feedback on system status. For more information, see LED feedback on page 6.
G	Command code DIP switches	The four CODE DIP switches allow you to run commands which can, for example, reset certain appliance configurations. For more information, see DIP switch command codes on page 41.
H	Monitoring inputs	The appliance includes four inputs that you can use to monitor external events in the access control system. For more information, see Monitoring inputs on page 17.

Related Topics

Differences between Synergis Cloud Link appliances on page 5

Specifications

Refer to the technical specifications when planning your Synergis™ Cloud Link appliance installation.

Hardware specifications

Specification	Details
Processor	Quad-core, 64-bit CPU
System memory	4GB of LPDDR4 DRAM
	16GB on-board eMMC Flash for OS, firmware, and database
Communication ports	Two 10/100/1000 Mbps Gigabit Ethernet ports
	Four RS-485 ports
I/Os	4 Inputs; supervised or digital
	Micro SD card
Power	PoE Input (LAN1): IEEE 802.3af or 802.3at Type 1 (Class 2 6.49W)
	DC power input: 12 V dc nominal, 9 - 16 V dc range, average 300 mA, max. 600 mA[a]
Mechanical	Appliance dimensions: (L x W x H): 18.4 cm (7.24 in) x 11.4 cm (4.48 in) x 3.5 cm (1.39 in)
	Appliance weight: 475 g (1 lb 1 oz)
Environment	Operating temperature: 0°C (32°F) to 50°C (122°F)
	Storage temperature: -40°C (-40°F) to 80°C (176°F)
	Relative humidity non-condensing: 5% to 95%
	For indoor use only
Electromagnetic compatibility (EMC)	CE compliant
	FCC/IC Class A

[a] The 9 - 16 V dc range was not evaluated by UL.

Differences between Synergis Cloud Link appliances

There are two generations of Synergis™ Cloud Link hardware that include different features and run different firmware.

Legacy Synergis™ Cloud Link   **Synergis™ Cloud Link**

Feature	Legacy Synergis Cloud Link	Synergis Cloud Link
Firmware	Synergis™ Softwire	Synergis Cloud Link firmware
DIN rail bracket	Not available	Optional
Feedback buzzer	Not available	Included
Micro SD card	Not available	1 (future use)
USB ports	2	Not available
Inputs	• 1 supervised/digital • 2 digital only	• 4 supervised/digital
Service ports	1	Not available
DEP.IND. ports	4	Not available
Power consumption	Average 500 mA, max. 875 mA	Average 300 mA, max. 600 mA
Documentation	• Synergis Cloud Link Appliance Hardware Installation Guide 3.0 • Synergis Softwire documentation	• Synergis Cloud Link documentation • Synergis Softwire Integration Guide **NOTE:** For information on which version of Synergis Softwire applies to your Synergis Cloud Link firmware, see Product compatibility for access control (Synergis).

LED feedback

The LEDs on the Synergis™ Cloud Link appliance provide visual feedback on system status and operation.

Group	LED name	LED color	Description
General	Information (𝒊)	Orange: solid	Synergis Cloud Link software not started
		Green: solid	Synergis Cloud Link software started
		Green: 2 blinks per second	Connecting to Access Manager
		Green: 5 blinks per second	Firmware upgrade in progress **IMPORTANT**: Do not power cycle or power down the Synergis Cloud Link appliance while the Information (𝒊) LED is flashing green. Doing so might result in serious damage to the unit.
		Orange: solid 3 seconds	DIP switch code recognized
		Red: 3 slow blinks	DIP switch code not recognized
		Red: blinking	Partial factory reset in progress
		Red: solid	Full factory reset in progress
		Green: blinking 1 second	Enable/disable *IO Diagnostics* page
	Power	Blue: solid	ON when 12 V dc or PoE power is applied
RS-485	RX	Red: blinking	Receiving data
	TX	Green: blinking	Transmitting data
Ethernet ports	1, 2	Green	1000BASE-T link is established. Flashes when there is activity.
		Yellow	10BASE-T or 100BASE-TX link is established. Flashes when there is activity.
	PoE	Yellow: solid	ON if Synergis Cloud Link is being powered from a Power over Ethernet (PoE) source connected to Ethernet port 1.

Related Topics

Buzzer feedback

A buzzer inside the Synergis™ Cloud Link appliance provides audible feedback to communicate system status.

Buzzer tone	Description
Low-middle-high tone sequence	Synergis Cloud Link firmware is starting up.
High-low tone sequence	The appliance is in a warning state. Restart the appliance. If the problem persists, contact Genetec™ Technical Support.

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Mounting and connecting the Synergis Cloud Link

This section includes the following topics:

Mounting the appliance

You can use the mounting holes on the Synergis™ Cloud Link to mount the appliance to a suitable flat surface. Alternatively, you can mount the appliance to a DIN rail using the optional DIN rail mounting bracket.

Procedure

To install the appliance on a flat surface:

1 Install the appliance using the provided self-drilling screws (#6 x 3/8") or machine screws (#6-32 x 3/8").

   NOTE: If your installation requires any other type or length of fasteners, use #6 (M3.5) screws.
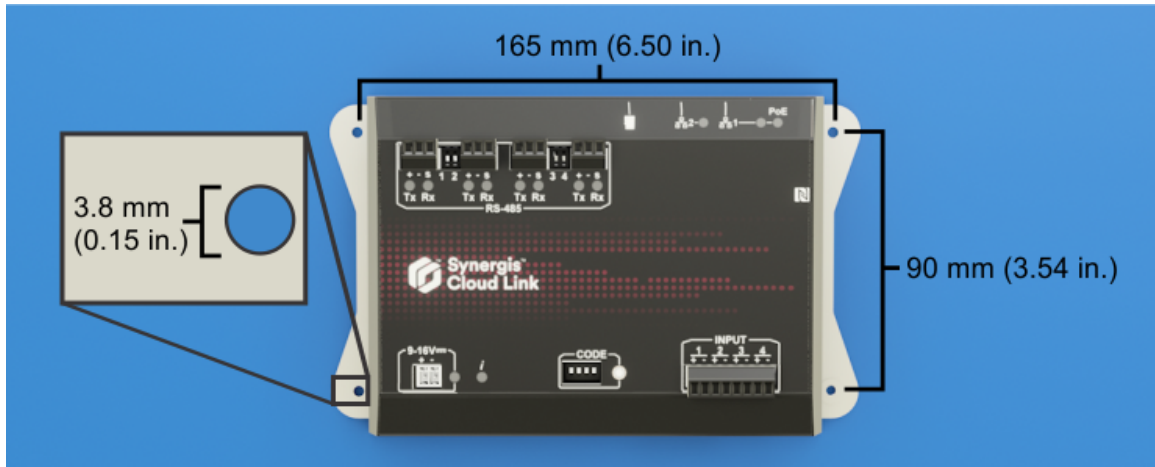
In this example, the provided self-drilling screws are installed using a 6 mm (0.25 in) socket.
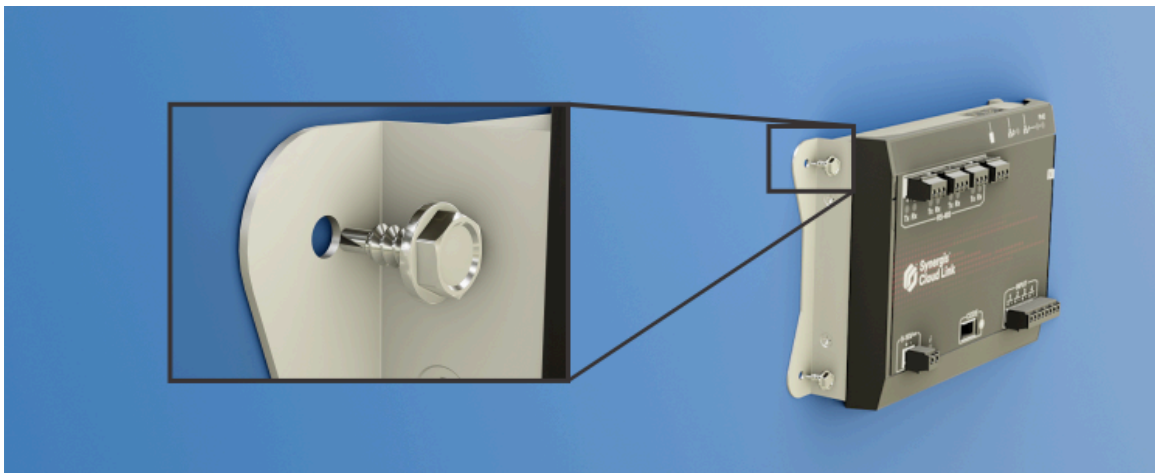
IMPORTANT: If you're mounting the appliance to a surface that isn't grounded, you must connect a ground wire to one of the mounting screws. For more information, see Synergis Cloud Link connections on page 11.

To install the Synergis Cloud Link on a DIN rail:

1 Attach the optional DIN rail bracket to the Synergis Cloud Link using the screws and lock washers included with the kit.
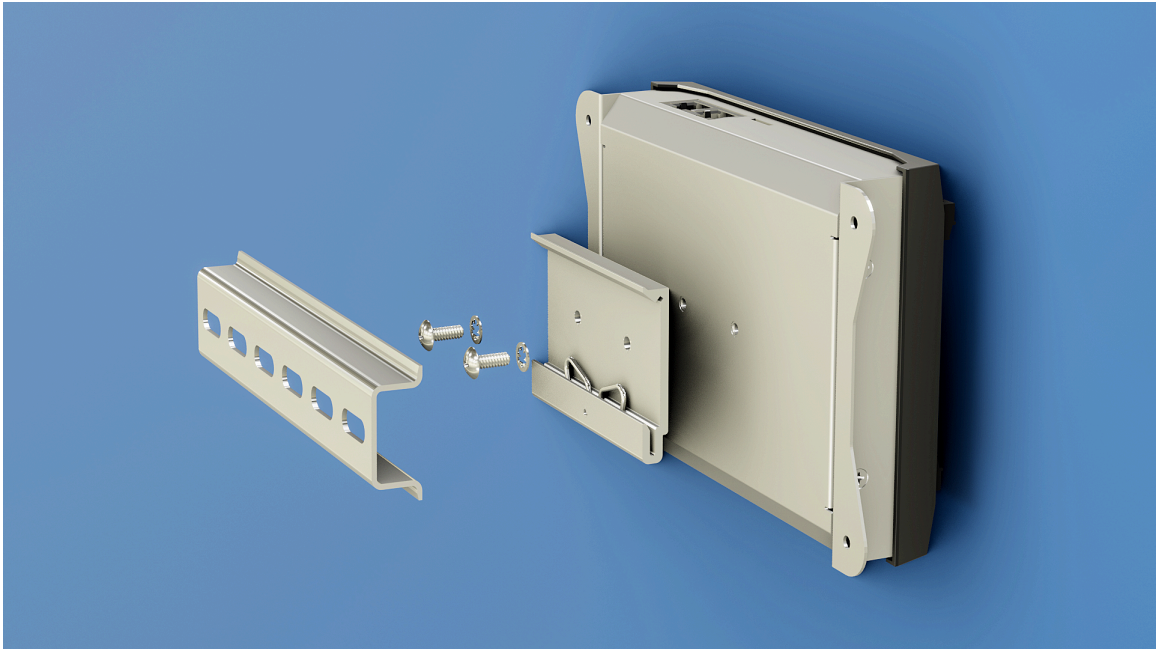
CAUTION: Using screws other than the ones provided with the kit might damage the appliance if they are longer.

2 Hook the bottom of the bracket to the DIN rail and rotate to engage the clip.

TIP: Hook the spring behind the DIN rail.
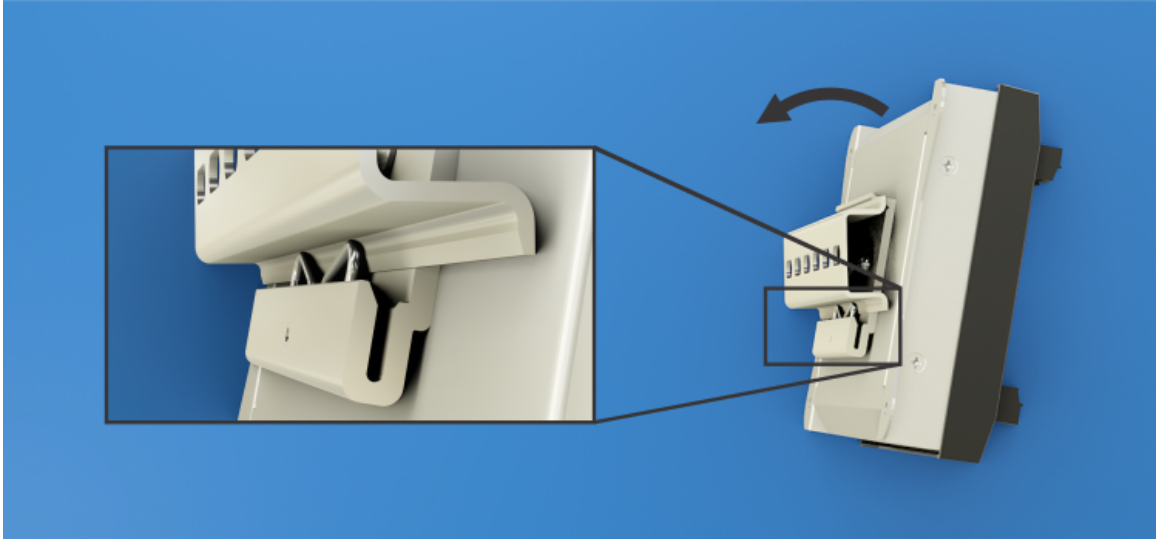
Synergis Cloud Link connections

The Synergis™ Cloud Link appliance includes connectors and ports for power (12 V dc and PoE), Ethernet, monitoring inputs, and for modules that require RS-485 communication.
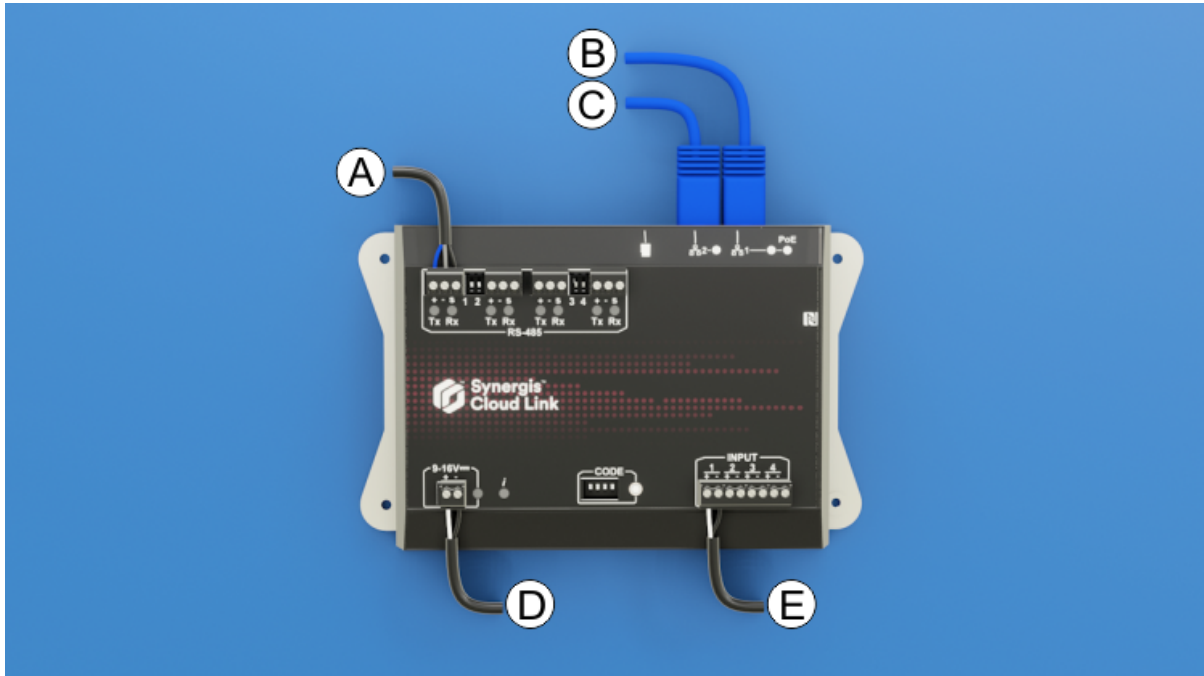
	Hardware connection	What you should know
A	RS-485 cable	Connect readers or modules that require RS-485 communication. For more information, see RS-485 communication channels on page 16.
B	Ethernet cable	Use Ethernet port 1 to connect to IP interfaces or to provide power to the Synergis Cloud Link using Power over Ethernet (PoE). For more information, see Powering the appliance on page 12.
C	Ethernet cable	Use Ethernet port 2 to connect to the building's LAN or other IP interfaces.
D	DC power cable	Connect the Synergis Cloud Link to a 12 V dc (nominal) power supply. For more information, see Powering the appliance on page 12.
E	Monitoring inputs	You can use the inputs to monitor external events in the access control system. For more information, see Monitoring inputs on page 17.

NOTE: The appliance is shipped with the required screw terminal connectors.

Related Topics

Specifications on page 4
LED feedback on page 6

Powering the appliance

The Synergis™ Cloud Link appliance can be powered using 12 V dc, Power over Ethernet (PoE), or using dual power sources.

Supplying PoE power

You can supply power to the appliance using an Ethernet cable that provides PoE power from a PoE router or injector.

NOTE: The Synergis Cloud Link PoE capability was evaluated by UL for compatibility with Altronix NetWay1 PoE midspan.

IMPORTANT:

• The Power Sourcing Equipment (PSE) must be compliant with IEEE 802.3af or 802.3at type 1, with at least 6.49 W of available power (Class 2).
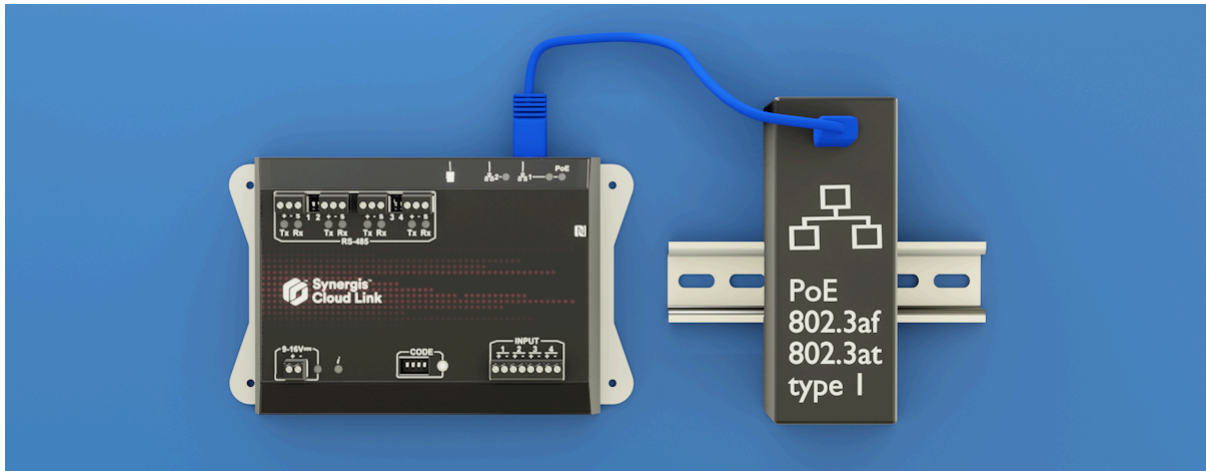
Supplying 12 V dc power

You can power the appliance using 9-16 V dc from an external power source.

NOTE: The 9-16 V dc range wasn't evaluated by UL.

Voltage information:

• Nominal input voltage: 12 V dc
• Minimum input voltage for guaranteed power-up: 10 V
• Minimum input voltage before guaranteed automatic shut-off: 9 V
• Maximum input voltage to guarantee no automatic shut-off: 16 V

9-16 V dc connector pinout

NOTE: The 9-16 V dc range wasn't evaluated by UL.

Pin	Description
+	Input power (+12 V dc)
-	Input power ground (GND)
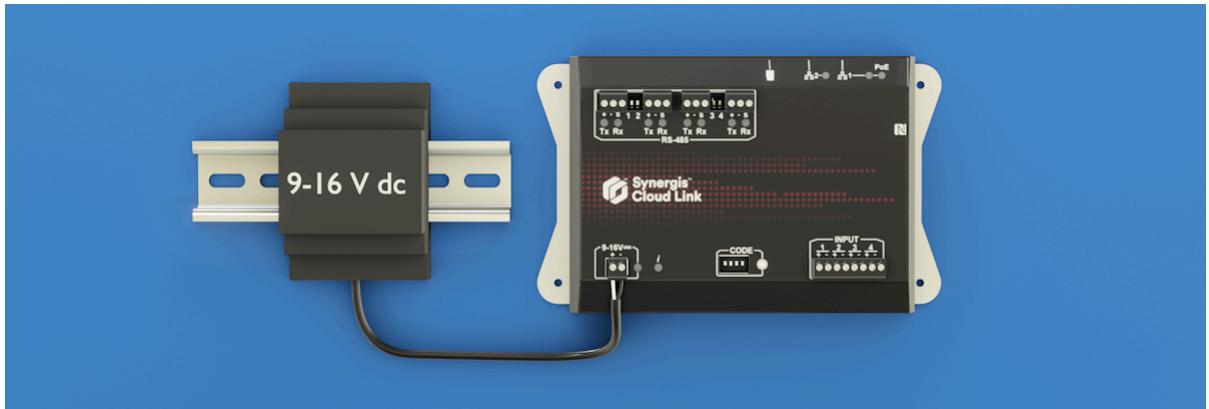
Supplying dual power

If the appliance is provided with both PoE and 12 V dc power, PoE has priority over the 12 V dc input. In this case, the appliance draws all of its current from PoE. If you disconnect the Ethernet 1 cable, or if the PoE source (injector or Ethernet switch) has a failure or a power outage, the appliance falls back automatically and transparently to the 12 V dc input. If PoE is restored, the appliance switches automatically and transparently back to PoE power.

Grounding the appliance

Mount the appliance on a grounded metal surface. Alternatively, you can connect a ground wire to one of the mounting screws.
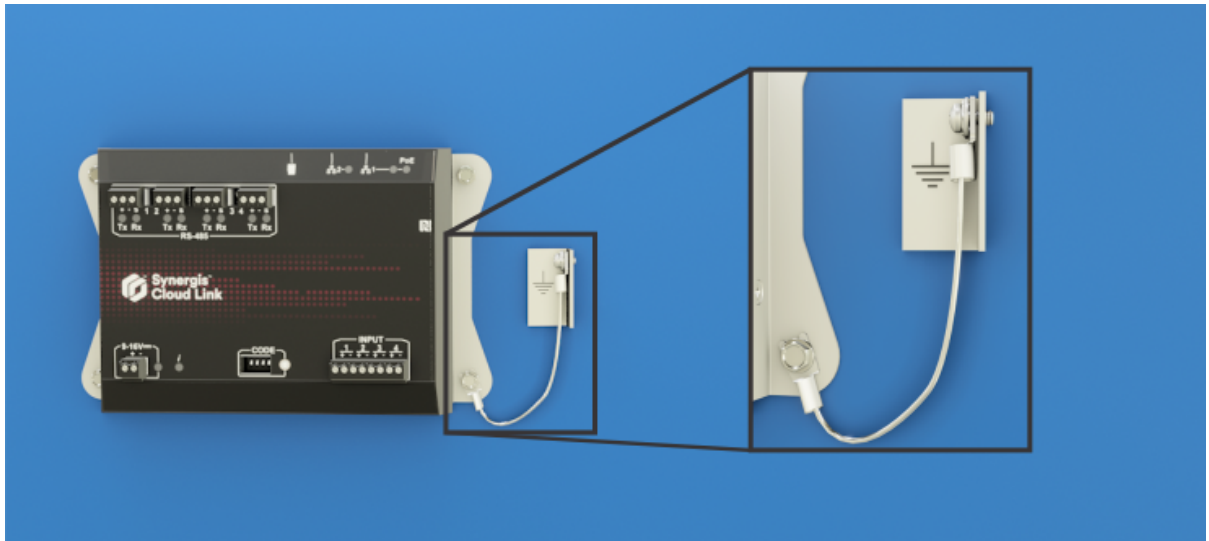
Related Topics

Specifications on page 4
LED feedback on page 6
Wiring guidelines on page 19
Recommended wire gauges on page 19

Power supply requirements

When calculating the power usage of your access control system, you must account for the power requirements of the Synergis™ Cloud Link appliance and other hardware connected to the same power supply.

Synergis Cloud Link power consumption

Synergis Cloud Link	Voltage	Average operating current	Peak operating current
During normal operation and bootup	12 V dc	300 mA	600 mA

Card reader power consumption

The following power consumption information on the card reader can help you to plan the power requirements for your access control system.

HID card reader	Standby average current [a]	Reading average current [b]	Peak current [c]
20	60 mA	70 mA	250 mA
20K	65 mA	75 mA	250 mA
40	65 mA	75 mA	250 mA
40K	70 mA	80 mA	250 mA

[a] Standby average current: RMS current draw without a card in the RF field.

[b] Read average current: RMS current draw during continuous card reads.

[c] Peak current: highest instantaneous current draw during RF communication.

RS-485 communication channels

The Synergis™ Cloud Link appliance has four on-board RS-485 communication channels for connecting I/O interface modules or card readers.

Consider the following when designing your system:

- The number of modules you can connect to each RS-485 channel depends on the type of interface modules you're installing.
- You can continue the RS-485 data daisy chain to interface modules outside the enclosure.
- Synergis Cloud Link doesn't supply power to RS-485 readers. Readers must be powered directly from a separate power source.

RS-485 connector pinout

Pin	Description
+	RS-485 D+ (A)
-	RS-485 D- (B)
S	Cable shield (GND)

RS-485 termination DIP switches

When you start an RS-485 bus from the Synergis Cloud Link appliance for module or OSDP reader communication, you must set the associated termination DIP switch on the appliance to ON.

NOTE: Set the termination jumper or add a 120-Ohm resistor on the last connected module or OSDP reader on the RS-485 bus.

In the following example, card readers are connected to two RS-485 communication channels. The corresponding termination DIP switches are set to ON.
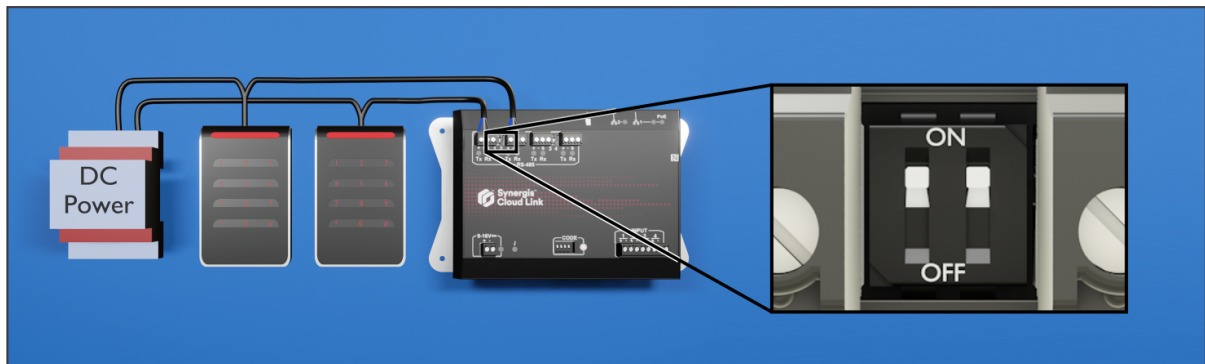
Related Topics

Monitoring inputs

You can use the four inputs on the Synergis™ Cloud Link appliance to monitor external events in the access control system.

The monitoring inputs can be configured by software as supervised or unsupervised, each requiring a specific resistor configuration.

NOTE: Synergis Cloud Link inputs must not be used as REX (Request To Exit) in UL294-compliant installations.

Monitoring input connector pinout

Pin	Description
+	Input signal
-	Input return signal

Resistor configuration

The supervision of Synergis Cloud Link monitoring inputs must be configured in Config Tool. For information, see Configuring the monitoring inputs on the Synergis Cloud Link appliance on the TechDoc Hub.

Refer to the following electrical diagram for information on how to configure the resistors.

3-state supervision wiring
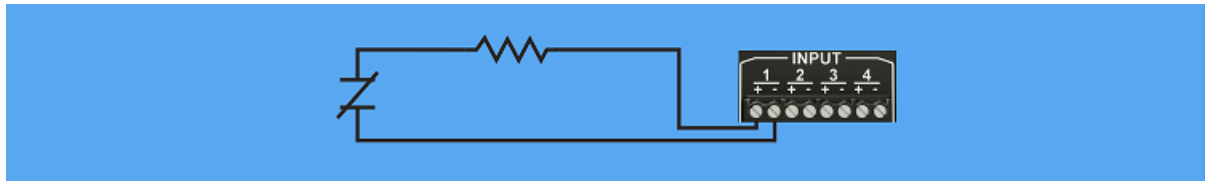
Normally closed:
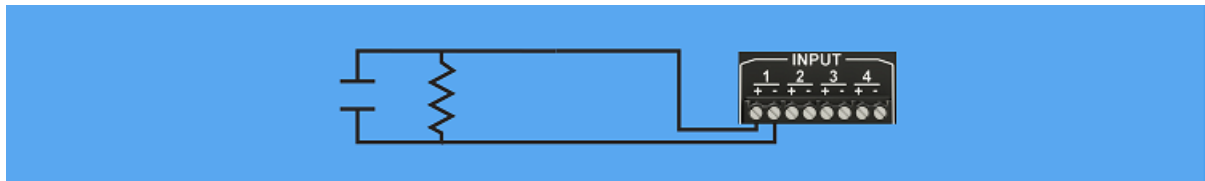
Normally open:

4-state supervision wiring
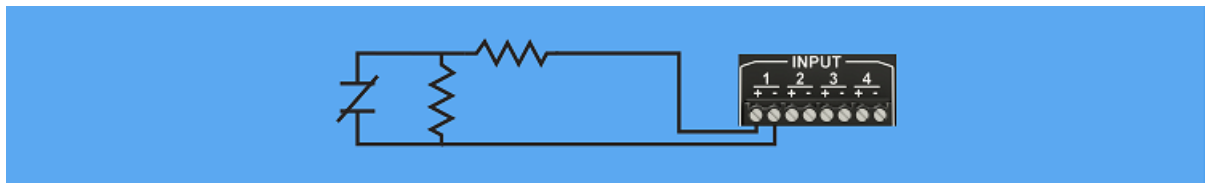
Normally closed:
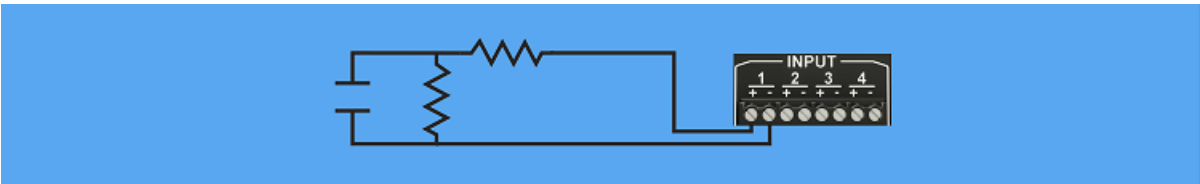
Normally open:

Unsupervised input wiring

Normally closed:
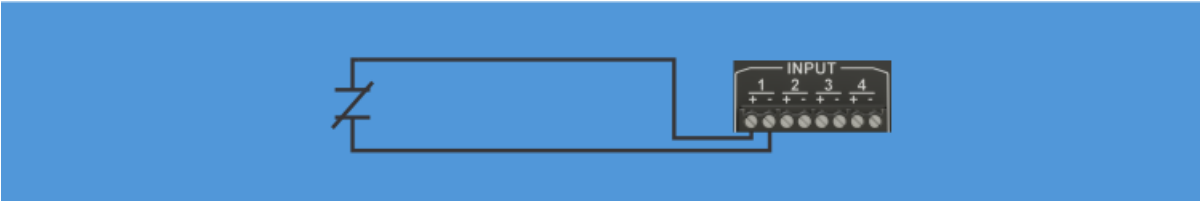
Normally open:
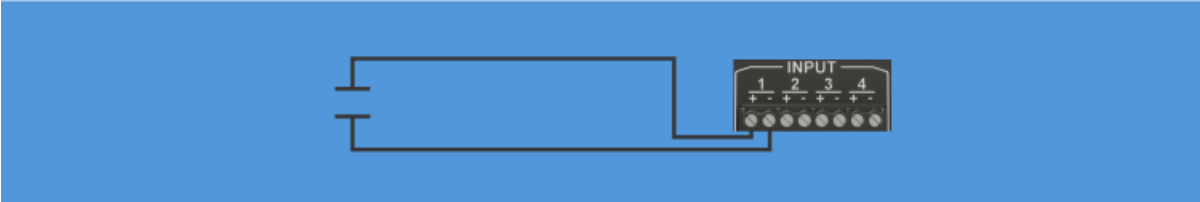
Wiring guidelines

To avoid injury, you should follow specific guidelines when you wire a Synergis™ Cloud Link appliance.

- Wiring must be installed by someone who has been trained to wire the system.
- To avoid electrostatic discharge (ESD) damage when installing third-party hardware, follow the manufacturer's requirements for the use of anti-static devices such as ESD wrist straps.
- Grounding and cabling must comply with your Local Electrical Code or National Electrical Code.
- For RS-485 shielding, have ONE device providing ground (connect the shield to a single location, preferably to the primary device). This provides a return path for common mode noise, and avoids DC ground loop current flow.
- When running the RS-485 bus between enclosures, only ground one end of the cable. When running the RS-485 bus within the enclosure, you can ground one end, or both ends of the cable.

Recommended wire gauges

When connecting hardware the Synergis™ Cloud Link appliance, use the recommended wire gauges.

Function	Specification
RS-485	Belden 3105A or 9841 shielded cable or equivalent 22 AWG (maximum length of 4000 ft (1219 m) or 24 AWG (maximum length of 2500 ft (762 m)) shielded communications cable with a characteristic impedance of 120 ohm.
12 Volt (Synergis Cloud Link dc + input)	20 AWG (minimum)
Ground (Synergis Cloud Link dc - input)	20 AWG (minimum)

3

Synergis Cloud Link 312

This section includes the following topics:

About Synergis Cloud Link 312

Compared to the standard Synergis™ Cloud Link, the 312 model of the appliance includes eight additional RS-485 ports and three SAM card slots.
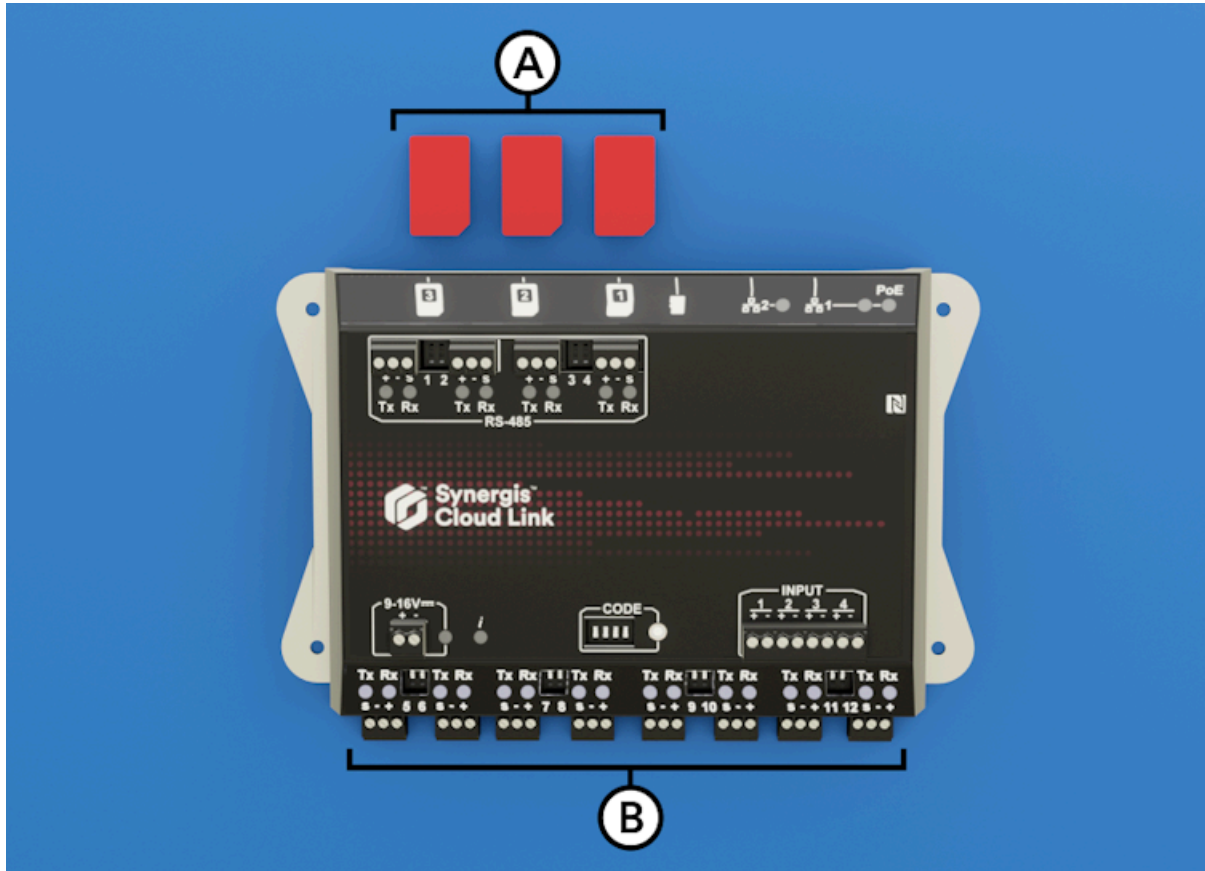
Letter	Hardware feature	What you should know
A	SAM card slots	You can use Secure Access Module (SAM) cards for encryption key storage.
B	RS-485	The Synergis Cloud Link 312 provides 8 additional RS-485 ports to the system for a total of 12.

NOTE: The Synergis Cloud Link 312 has not been evaluated for UL/ULC compliance and must not be used in installations where UL/ULC compliance is required.

For more information on Synergis Cloud Link 312 appliance, see Synergis Cloud Link 312 specifications.

Related Topics

About the Synergis Cloud Link 312 RS-485 ports

The Synergis™ Cloud Link 312 includes 12 on-board RS-485 ports for connecting I/O interface modules or card readers.

- The number of modules you can connect to each RS-485 port depends on the type of hardware you have.
- RS-485 readers must be powered directly from another power source.
- The Synergis Cloud Link 312, ports are numbered 1 - 12 as indicated on the hardware.
  NOTE: Previous Synergis Cloud Link models used alphanumeric port designations.

For more information, see Configuring the connected interface modules.

Typical RS-485 installation

The following diagram shows a typical Synergis Cloud Link 312 installation using 12 RS-485 ports.
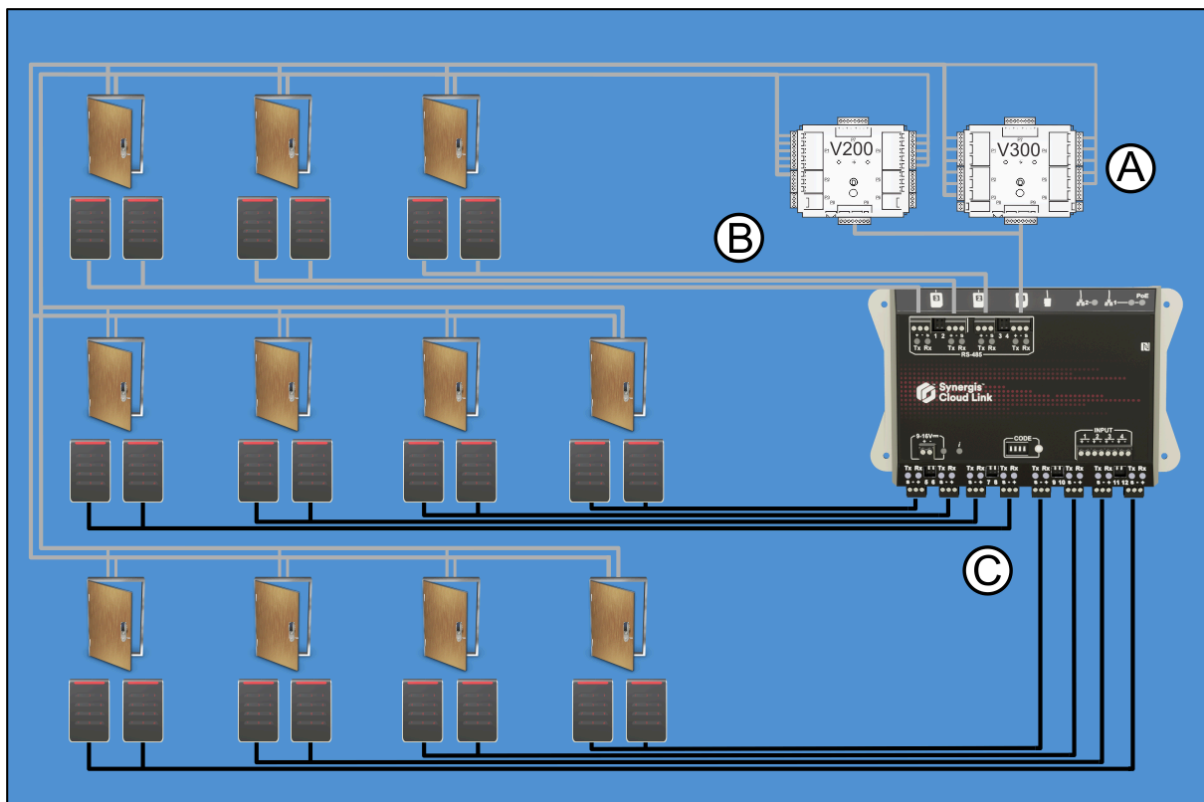
Letter	Description
A	Input monitor interface and output control interface
B	Four RS-485 ports
C	Eight additional RS-485 ports available with Synergis Cloud Link 312

Related Topics

RS-485 communication channels on page 16

Installing SAM cards on a Synergis Cloud Link 312

The Synergis™ Cloud Link 312 includes three Secure Access Module (SAM) card slots for encryption key storage.

What you should know

Using SAM cards to manage encryption keys means that end-to-end encryption is handled by the SAM card and the user badge. Removing the card reader from the encryption process is important because card readers are often not installed in secure locations.
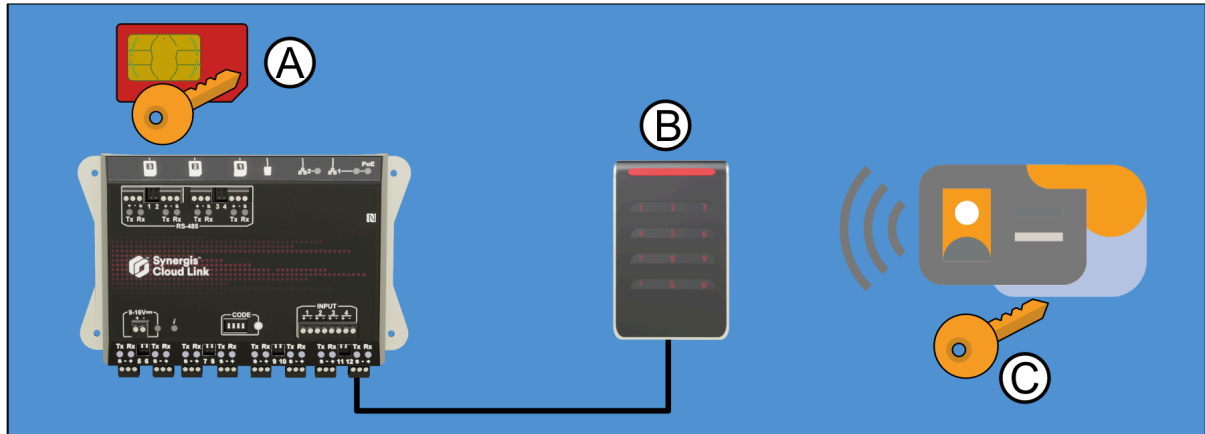
Letter	Description
A	SAM card with encryption keys
B	Card reader
C	Access card with encryption key

Procedure

1 Encode the SAM cards for use with the Synergis™ system.
   For instructions, see Configuring MIFARE SAM AV2 cards.
   NOTE: To optimize performance, install three SAM cards.

2   Invert the SAM cards so that the metal contacts are on the bottom and insert the cards as shown. The card slots are spring-loaded and click when the cards are properly inserted.
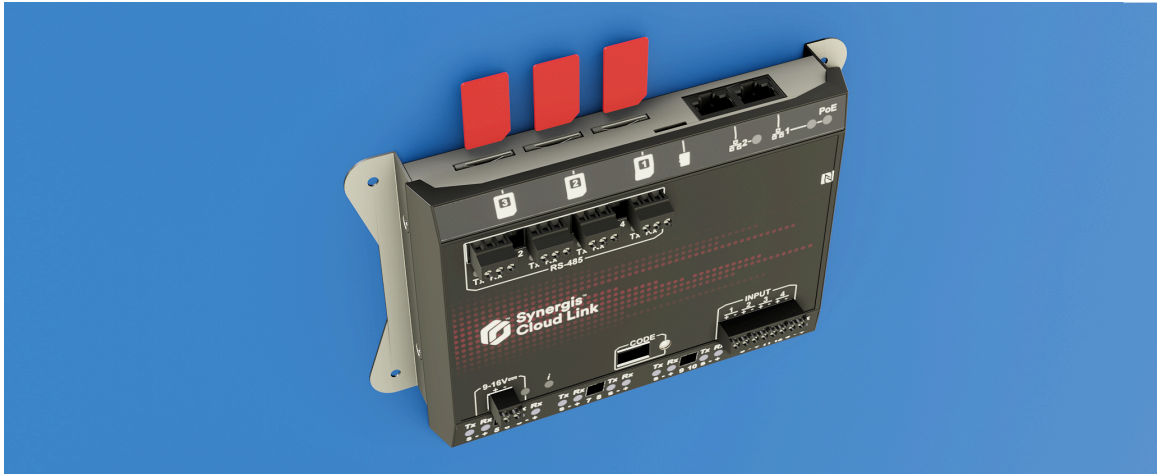
After you finish

- The SAM cards must be unlocked to interact with Synergis™ Softwire for cryptographic operations. For more information, see Unlocking SAM cards.
- If you are installing OSDP readers, you must enable MIFARE DESFire. For more information, see Enabling MIFARE DESFire for transparent OSDP readers.
- If you are installing STid readers, you must enable transparent mode. For more information, see Enabling transparent mode on STid readers that use the SSCP protocol.

Synergis Cloud Link 312 specifications

Refer to the technical specifications when planning your Synergis™ Cloud Link appliance installation.

NOTE: The Synergis Cloud Link 312 has not been evaluated for UL/ULC compliance and must not be used in installations where UL/ULC compliance is required.

Hardware specifications

Specification	Details
Processor	Quad-core, 64-bit CPU
System memory	4GB of LPDDR4 DRAM
	16GB on-board eMMC Flash for OS, firmware, and database
Communication ports	Two 10/100/1000 Mbps Gigabit Ethernet ports
	12 RS-485 ports
SAM cards	3 Secure Access Module (SAM) cards for encryption key storage
I/Os	4 Inputs; supervised or digital
	Micro SD card
Power	PoE Input (LAN1): IEEE 802.3af or 802.3at Type 1 (Class 2 6.49W)
	DC power input: 12 V dc nominal, 9 V dc to 16 V dc range, average 450 mA, max. 900 mA
Mechanical	Appliance dimensions: (L x W x H): 18.4 cm (7.24 in) x 11.4 cm (4.48 in) x 3.5 cm (1.39 in)
	Appliance weight: 540 g (1 lb 3 oz)
Environment	Operating temperature: 0°C (32°F) to 50°C (122°F)
	Storage temperature: -40°C (-40°F) to 80°C (176°F)
	Relative humidity non-condensing: 5% to 95%
	For indoor use only
Electromagnetic compatibility (EMC)	CE compliant
	FCC/IC Class A

Connecting Mercury interface modules in Synergis Cloud Link

This section contains information about connecting readers to Mercury interface modules. Note that readers can be from a number of manufacturers, but for the purposes of this documentation, connections for HID readers are shown.

This section includes the following topics:

-

Connections for Mercury interface modules

You can connect peripheral devices such as readers, the IP network, and AC power source to your Mercury interface modules.

- Synergis™ systems support EP Series and LP Series Mercury controllers.
- Synergis systems support Series 2 and Series 3 Mercury interface modules.

For information on how to connect Mercury interface modules, refer to the diagram about your particular interface module.

NOTE: The following information describes Mercury LP and Series 3 hardware only. For additional information, refer to the manufacturer's documentation.

Mercury MR16in connections

As part of your Synergis™ Cloud Link installation, you might need to include a Mercury MR16in interface module.

The following diagram demonstrates how to connect the module.
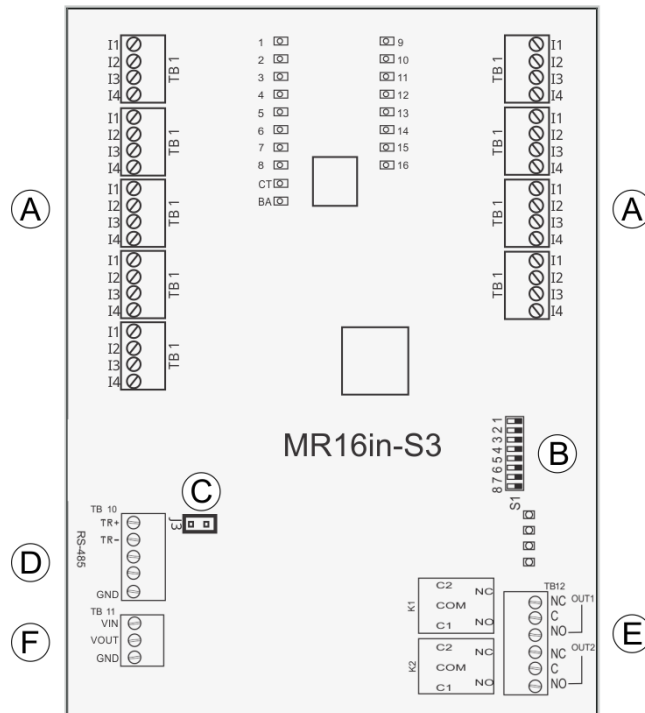
A	Inputs	16 general-purpose, programmable-circuit type.
B	Address switches	Used to set the device address. For more information on address settings on the Mercury module, refer to the manufacturer's instructions.
C	Line termination	For modules at end of line, install jumper for 120 ohm line termination (J2 is not used).
D	RS-485	RS-485 bus connection to other Mercury modules.

E		
	Relay outputs	MR16in: 5A inductive, 0.6 PF
		MR16in-S3: NO: 5A, NC: 3A, inductive, 0.6 PF
F	Power In	Connect + to VIN (observe polarity). Connect - to GND. Use 20 AWG wires minimum.

Mercury MR16out connections

As part of your Synergis™ Cloud Link installation, you might need to include a Mercury MR16out interface module.

The following diagram demonstrates how to connect the module.
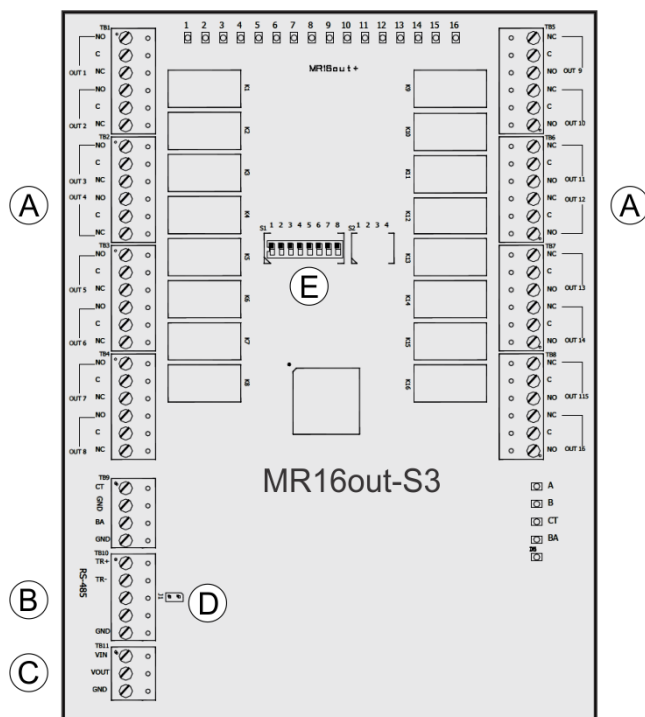
A	Outputs	MR16out: 5A inductive, 0.6 PF
		MR16out-S3: NO: 5A, NC: 3A, inductive, 0.6 PF
B	RS-485	RS-485 bus connection to other Mercury modules.
C	Power in	Connect + to VIN (observe polarity). Connect - to GND. Use 20 AWG wires minimum.
E	Line termination	For interface modules at end of line, install Jumper J1 for 120 ohm line termination.
F	Address switches	Used to set the device address. For more information on address settings on the Mercury module, refer to the manufacturer's instructions.

Mercury MR52 connections

As part of your Synergis™ Cloud Link installation, you might need to include a Mercury MR52 interface module.

The following diagram demonstrates how to connect the module.

| A	Reader connections	The wire colors in the illustration refer to "pigtail" HID readers; the information in parentheses refers to "terminal block" HID readers.
		Connect the drain wire of the shielded cable to the GND contact of the interface module's reader port. For OSDP daisy-chained readers, do not connect the drain wire to the last reader.
B	Inputs	Inputs 1 - 8 can be configured to use End-Of-Line (EOL) resistors, and for normally open or normally closed contacts.
C	Address switches	Used to set the device address. For more information on address settings on the Mercury module, refer to the manufacturer's instructions.
D	Reader power	12V = 12 V dc at readers, PT = voltage "passed through" to readers. **IMPORTANT:** For UL294 compliant Synergis™ installations, always install the jumper in the *PT* position.
E	2W/4W Select	Install the jumper in 2W position (4W is not supported).
F	Line termination	For end-of-line interface modules, install jumper J5 (MR52) or J4 (MR52-S3) for 120-ohm line termination (J6 is not used).
G	RS-485	RS-485 bus connection to other Mercury modules.
H	Relay outputs	6 x Form-C
		MR52: 5A inductive @28 V dc, 0.6 PF
		MR52-S3: NO: 5A, NC: 3A, inductive @28 V dc, 0.6 PF

I	Power In	Connect + to VIN (observe polarity). Connect - to GND. Use 20 AWG wires minimum.
J	Resistors	For OSDP integrations, prevent readers from misinterpreting noise as data on a non-driven RS-485 line by installing a 1k ohm pull-down resistor from D0 to GND on both Reader 1 and Reader 2.
		For wiring distances over 10 meters, install a 120 ohm termination resistor between D0 and D1, as well as between A (-) and B (+) on the RS-485 bus of the last connected reader.
		To find out whether you need to add a 1K ohm pull-down resistor between D0 and GND, see KBA-78953.

Mercury MR50 connections

As part of your Synergis™ Cloud Link installation, you might need to include a Mercury MR50 interface module.

NOTE: For UL certified installations, the output from the MR50's K2 relay must not leave the room of installation and must be shorter than 30.5 m (100 ft.).

The following diagram demonstrates how to connect the module.

A	Reader connections	Connect one reader.
		NOTE: The wire colors in the illustration refer to "pigtail" HID readers; the information in parentheses refers to "terminal block" HID readers. Connect the drain wire of the shielded cable to the GND contact of the interface module's reader port. For OSDP daisy-chained readers, do not connect the drain wire to the last reader.
B	RS-485	RS-485 bus connection to other Mercury modules.
C	Line termination	For modules at end of line, install jumper J4 (MR50) or J1 (MR50-S3) for 120 ohm line termination.
D	Address jumpers/ DIP switches	Used to set the device address. For more information on address settings on the Mercury module, refer to the manufacturer's instructions.

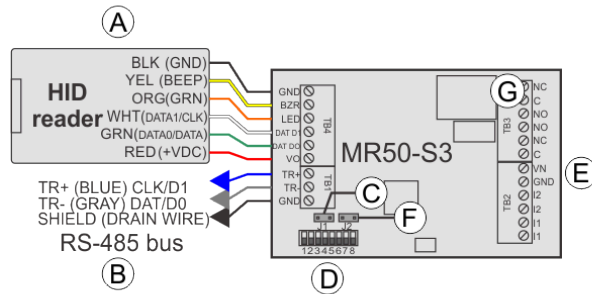| E	Power In	Connect + to VIN (observe polarity). Connect - to GND. Use 20 AWG wires minimum.
F	Tamper input	MR50: Normally closed switch (J3)
		MR50-S3: Normally open switch (J2)
G	Relay outputs	MR50:
		• Relay 1: 5A inductive, 0.6 PF
		• Relay 2: 1A inductive, 0.6 PF
		MR50-S3:
		• Relay 1: NO: 5A, NC: 3A inductive, 0.6 PF
		• Relay 2: 1A inductive, 0.6 PF
H	Resistors	For OSDP integrations, prevent readers from misinterpreting noise as data on a non-driven RS-485 line by installing a 1k ohm pull-down resistor from D0 to GND on TB4.
		For wiring distances over 10 meters, install a 120 ohm termination resistor between D0 and D1, as well as between A (-) and B (+) on the RS-485 bus of the last connected reader.
		To find out whether you need to add a 1K ohm pull-down resistor between D0 and GND, see KBA-78953.

Mercury LP1501 connections

As part of your Synergis™ Cloud Link installation, you might need to include a Mercury LP1501 intelligent controller.

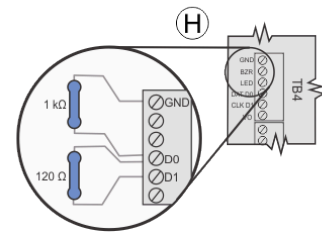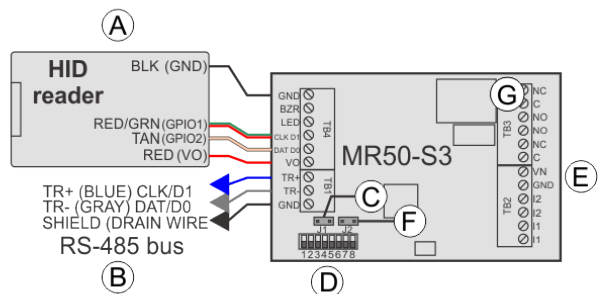**IMPORTANT:** LP controllers include a Micro USB port. This connection is not to be used if UL/ULC listed access control system compliance is required and is to be maintained.

The following diagram demonstrates how to connect the controller.
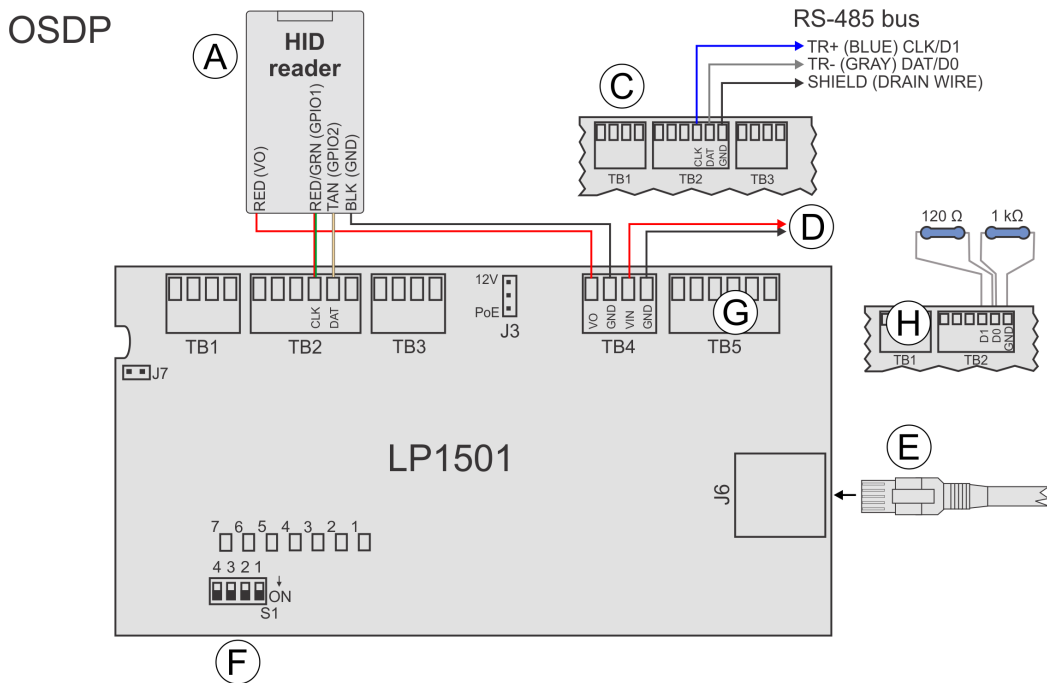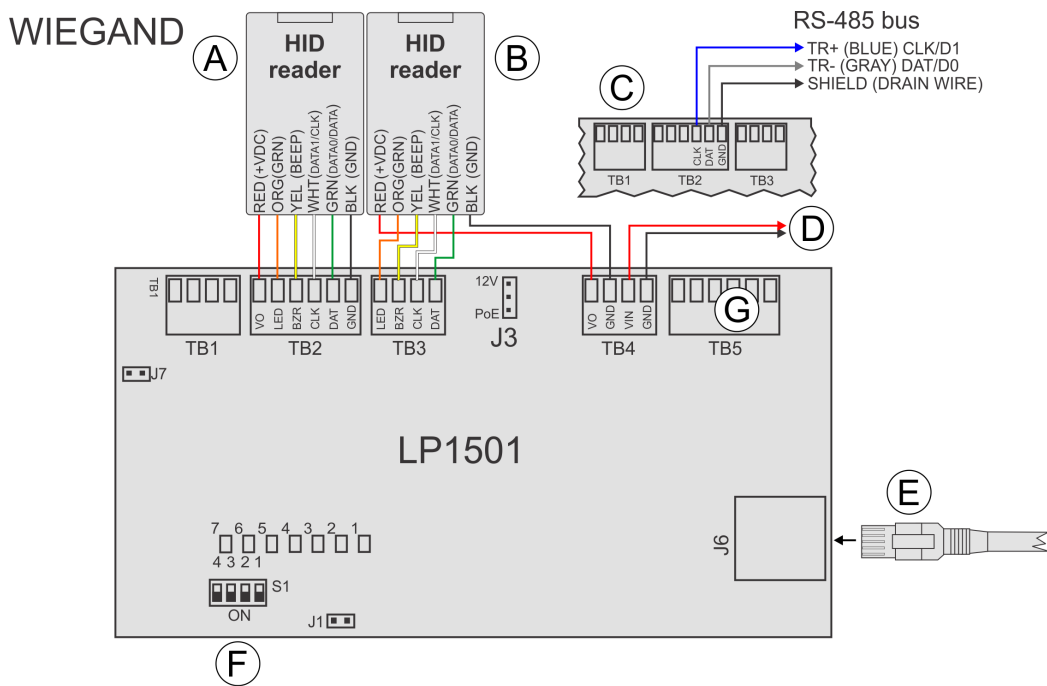
A	Reader connections	TB2: Reader 1
		NOTE: The wire colors in the illustration refer to "pigtail" HID readers; the information in parentheses refers to "terminal block" HID readers. Connect the drain wire of the shielded cable to the GND contact of the interface module's reader port. For OSDP daisy-chained readers, do not connect the drain wire to the last reader.
B	Reader connections (Wiegand only)[a]	TB3: Reader 2
		NOTE: The wire colors in the illustration refer to "pigtail" HID readers; the information in parentheses refers to "terminal block" HID readers. Connect the drain wire of the shielded cable to the GND contact of the interface module's reader port.

| C	RS-485 bus	RS-485 bus connection to other Mercury modules. **NOTE:** When using the TB2 port for RS-485, the controller can only support one reader (TB3) in Wiegand mode.
D	Power In	Connect + to VIN (observe polarity). Connect - to GND. Use 20 AWG wires minimum. **NOTE:** Set jumper J3 to 12V.
E	Ethernet cable	Connect to the Synergis Cloud Link directly or through the network infrastructure.
F	Address switches	Used to set the device address. For more information on address settings on the Mercury controller, refer to the manufacturer's instructions.
G	Relay outputs	2A inductive @30 V dc, 0.6 PF
H	Resistors	For OSDP integrations, prevent readers from misinterpreting noise as data on a non-driven RS-485 line by installing a 1k ohm pull-down resistor from D0 to GND on TB2. For wiring distances over 10 meters, install a 120 ohm termination resistor between D0 and D1, as well as between A (-) and B (+) on the RS-485 bus of the last connected reader. To find out whether you need to add a 1K ohm pull-down resistor between D0 and GND, see KBA-78953.

[a]Mercury LP1501 controllers are only capable of driving an OSDP reader from TB2.

Mercury LP1502 connections

As part of your Synergis™ Cloud Link installation, you might need to include a Mercury LP1502 intelligent controller.

IMPORTANT: LP controllers include a Micro USB port. This connection is not to be used if UL/ULC listed access control system compliance is required and is to be maintained.

The following diagram demonstrates how to connect the controller.

A	Reader connections	TB8: Door 1 Reader
		NOTE: The wire colors in the illustration refer to "pigtail" HID readers; the information in parentheses refers to "terminal block" HID readers. Connect the drain wire of the shielded cable to the GND contact of the interface module's reader port. For OSDP daisy-chained readers, do not connect the drain wire to the last reader.
B	Reader connections	TB9: Door 2 Reader
		NOTE: The wire colors in the illustration refer to "pigtail" HID readers; the information in parentheses refers to "terminal block" HID readers. Connect the drain wire of the shielded cable to the GND contact of the interface module's reader port. For OSDP daisy-chained readers, do not connect the drain wire to the last reader.
C	Power In	Connect + to VIN (observe polarity). Connect - to GND. Use 20 AWG wires minimum.

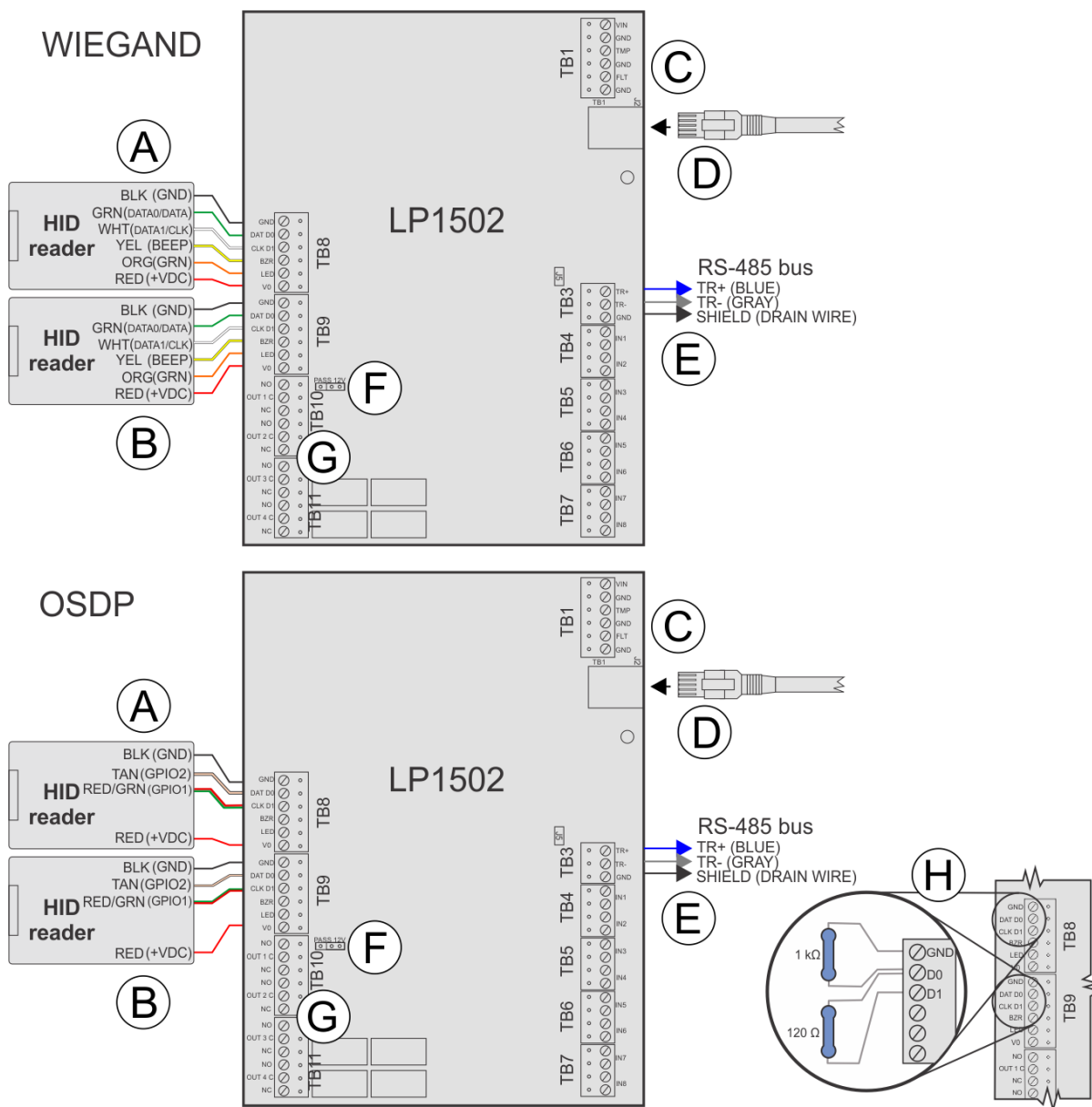| D	Ethernet cable	Connect to the Synergis Cloud Link directly or through the network infrastructure.
E	RS-485 bus	RS-485 bus connection to other Mercury modules.
F	Reader power	12V = 12 V dc at readers, PASS = voltage "passed through" to readers. **IMPORTANT**: For UL294 compliant Synergis™ installations, always install the jumper in the *PT* position.
G		4 x Form-C LP1502: NO: 5A, NC: 3A, inductive @30 V dc, 0.6 PF
H	Resistors	For OSDP integrations, prevent readers from misinterpreting noise as data on a non-driven RS-485 line by installing a 1k ohm pull-down resistor from D0 to GND on both TB8 and TB9. For wiring distances over 10 meters, install a 120 ohm termination resistor between D0 and D1, as well as between A (-) and B (+) on the RS-485 bus of the last connected reader. To find out whether you need to add a 1K ohm pull-down resistor between D0 and GND, see KBA-78953.

Mercury LP2500 connections

As part of your Synergis™ Cloud Link installation, you might need to include a Mercury LP2500 intelligent controller.

IMPORTANT: LP controllers include a Micro USB port. This connection is not to be used if UL/ULC listed access control system compliance is required and is to be maintained.

The following diagram demonstrates how to connect the controller.

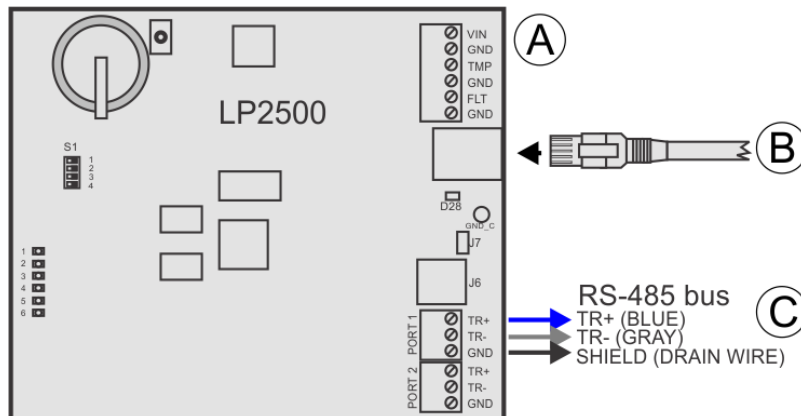| A	Power In	Connect + to *VIN* (observe polarity). Connect - to *GND*. Use 20 AWG wires minimum.
B	Ethernet cable	Connect to the Synergis Cloud Link directly or through the network infrastructure.
C	RS-485 bus	RS-485 bus connection to other Mercury modules.

Mercury LP4502 connections

As part of your Synergis™ Cloud Link installation, you might need to include a Mercury LP4502 intelligent controller.

IMPORTANT: LP controllers include a Micro USB port. This connection is not to be used if UL/ULC listed access control system compliance is required and is to be maintained.

The following diagram demonstrates how to connect the controller.

A	Reader connections	TB8: Door 1 Reader
		NOTE: The wire colors in the illustration refer to "pigtail" HID readers; the information in parentheses refers to "terminal block" HID readers. Connect the drain wire of the shielded cable to the GND contact of the interface module's reader port. For OSDP daisy-chained readers, do not connect the drain wire to the last reader.

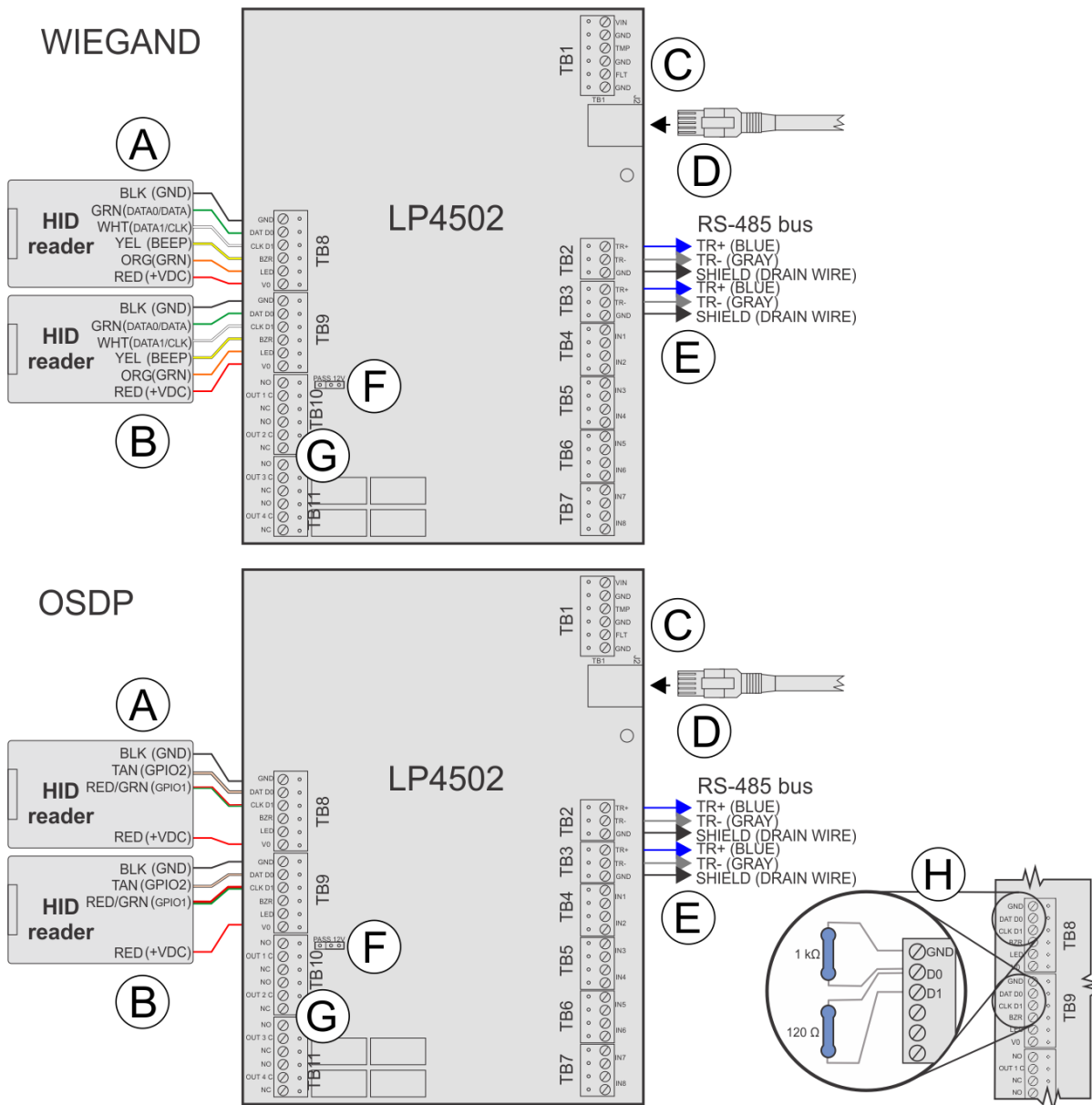| B	Reader connections	TB9: Door 2 Reader
		NOTE: The wire colors in the illustration refer to "pigtail" HID readers; the information in parentheses refers to "terminal block" HID readers. Connect the drain wire of the shielded cable to the GND contact of the interface module's reader port. For OSDP daisy-chained readers, do not connect the drain wire to the last reader.
C	Power In	Connect + to VIN (observe polarity). Connect - to GND. Use 20 AWG wires minimum.
D	Ethernet cable	Connect to the Synergis Cloud Link directly or through the network infrastructure.
E	RS-485 bus	RS-485 bus connection to other Mercury modules.
F	Reader power	12V = 12 V dc at readers, PASS = voltage "passed through" to readers. **IMPORTANT:** For UL294 compliant Synergis™ installations, always install the jumper in the *PT* position.
G		4 x Form-C LP4502: NO: 5A, NC: 3A, inductive @30 V dc, 0.6 PF
H	Resistors	For OSDP integrations, prevent readers from misinterpreting noise as data on a non-driven RS-485 line by installing a 1k ohm pull-down resistor from D0 to GND on both TB8 and TB9. For wiring distances over 10 meters, install a 120 ohm termination resistor between D0 and D1, as well as between A (-) and B (+) on the RS-485 bus of the last connected reader. To find out whether you need to add a 1K ohm pull-down resistor between D0 and GND, see KBA-78953.

5

Additional resources for Synergis Cloud Link

This section includes the following topics:

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Verifying the installation

After completing a Synergis™ Cloud Link installation, there are several steps you must perform to verify that the system is functioning correctly.

Procedure

1   Apply power and wait for the Synergis Cloud Link information (*i*) LED to be solid green indicating that Synergis Cloud Link software is running. For more information, see LED feedback on page 6.

2   In the Synergis™ Appliance Portal, perform the following steps. For more information about the Synergis™ Appliance Portal, refer to the *Synergis™ Cloud Link Administrator Guide*.

   a) Verify that appliance has the latest firmware version.

   b) Verify that the default password has been changed.

   c) Verify that all connected interface modules are online.

   d) Present a card to the readers and verify the state change in the Synergis Appliance Portal.

Running DIP switch command codes

Synergis™ Cloud Link includes four code DIP switches on the front of the appliance. They allow you to run command codes, which can apply certain configurations and reset settings.

Procedure

1 Select a command code to run. For more information, see DIP switch command codes on page 41.

2 Enter the code with the DIP switches on the appliance.

3 Press and hold the command code button for 1 second.
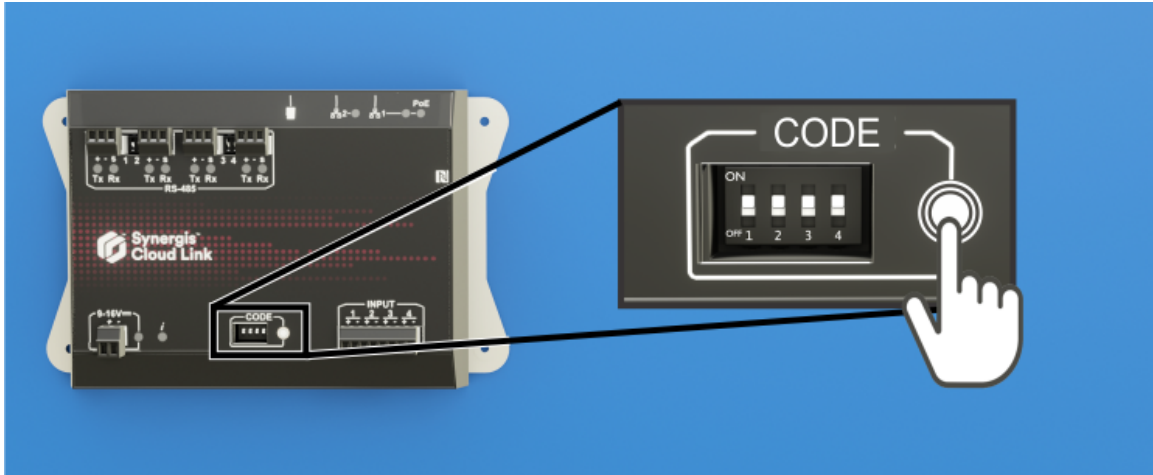
The Information LED (*i*) confirms that the code was recognized.

LED name	LED color	Description
Information (*i*)	Orange: solid 3 seconds	DIP switch code recognized
	Red: 3 blinks	DIP switch code not recognized

4 To avoid an accidental configuration change, set the DIP switches to ON ON ON ON.
NOTE: There is no action associated with this code, making it a safe state when configuration is complete.

Related Topics

LED feedback on page 6

DIP switch command codes

By turning the four CODE DIP switches ON or OFF, you can apply a configuration to the Synergis™ Cloud Link appliance.

DIP switch commands

S1	S2	S3	S4	Command description
ON	ON	ON	ON	No code: After running a command code, to avoid an accidental configuration change, set the DIP switches to ON ON ON ON.
ON	OFF	OFF	OFF	Partial factory reset. This command has the following effects: • Resets the Synergis™ Appliance Portal logon password to factory default (Synergis Cloud Link software) • Removes the Synergis Cloud Link from the hosted SaaS Access Manager • Resets the network addressing mode to DHCP • Resets the discovery port to 2000 • Deletes all hardware (connected interface modules) configurations • Deletes all cardholder (credentials and access rules) configurations • Resets all unit-wide settings • Clears all logging options **NOTE:** The unit firmware is not affected by this command.
ON	OFF	OFF	ON	Resets all settings to factory defaults and removes SSL certificates.
OFF	OFF	ON	OFF	Re-enables the ability to change output states from the *I/O diagnostics* page of the Synergis™ Appliance Portal.

UL/ULC listing

Synergis™ Cloud Link is a UL294-listed subassembly under file BP20761. This certification has been made with the Synergis Cloud Link as part of Lifesafety Power's FPO series access control enclosures.

The Synergis Cloud Link is ULC 60839-11-1 certified and EN 60839-11-1 compliant as a Grade 4 system. This certification has been made using Genetec Security Center software and with the Synergis Cloud Link as part of Lifesafety Power's FPO enclosures.

For Genetec UL/ULC certification and EN compliance to be applicable, the Synergis Cloud Link must be installed in an access control enclosure of the following nomenclature:

SY-FPOxxx/yyy/zzz/H-qaaaaqaaaaeeee/V/WnC

Consult the FlexPower System documents on Genetec TechDoc Hub for enclosure installation:

- FlexPower Power System Quick Start Guide
- FlexPower Power System Installation Manual
- FlexPower Power System Panel Mounting Guide

The Synergis Cloud Link appliance is UL-certified as a stand-alone system. Installation of the Synergis Cloud Link appliance other than as a stand-alone system has not been evaluated by UL.

UL performance levels

- UL 294, Destructive Attack Level I
- UL 294, Line Security Level I
- UL 294, Endurance Level IV
- UL 294, Standby Power Level I

NOTE: Standby power up to level IV can be provided by the backup batteries installed in the LifeSafety Power enclosure.

EN 60839-11-1 environmental class: I. All products, except for card readers, are intended to be installed indoors.

For ULC/EN 60839-11-1 Grade 4 compliance, FPO150/250 enclosures must use an SLA 40Ah backup battery and the PSU max output must be 9A @ 12VDC. For the FPO75, an SLA 20Ah backup battery must be used and the PSU max output must be 4.5A @ 12VDC.

The electronic access control system shall not prohibit the free exit granted by other emergency systems. For example, fire and environmental systems.

Wiring requirements

Wiring methods shall be in accordance with the National Electrical Code (ANSI/NFPA70), Canadian Electrical Code (CSA C22.1), local codes, and the authorities having jurisdiction.

Power supply requirements

You can supply power to the Synergis Cloud Link appliance using a third-party power supply that is installed in a separate enclosure. To comply with the UL certification provided by Genetec Inc., the power supply assembly, enclosure, and cabling must be ULC-60839-11-1 or UL294 certified with Class 2 power-limited output.

Hardware compliance information

Synergis™ Cloud Link hardware products are certified based on the power supplies provided or recommended by Genetec Inc. If you use a different power supply, you do so at your own risk, and you're responsible for the EMC compliance of the new system formed by the Synergis Cloud Link hardware and the new power supply.

Synergis Cloud Link hardware

This device complies with Part 15 of the FCC rules.

Operation is subject to the following two conditions:

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

This Class A digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la classe A est conforme à la norme NMB-003 du Canada.

This equipment has been tested and found to comply with the limits of a Class A digital device, pursuant to Part 15 of the FCC rules and CISPR32 / EN55032. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy, and if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. Operation of this equipment in a residential area might cause harmful interference in which case the user will be required to correct the interference at his own expense. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to correct the interference by one of the following measures:

- Reorient or relocate the receiving antenna.
- Increase separation between the equipment and receiver.
- Connect the equipment into an output on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

To maintain electromagnetic compliance in an end-user installation, follow these conditions:

- Ensure that the enclosure is properly grounded to the building earth/ground system.
- All reader and RS-485 cables extending outside the enclosure must be shielded and must have their drain wire grounded using the appropriate terminal for this usage.
- Any changes or modifications to the product or installation practice not expressly approved by Genetec, may result in interference to radio or television reception, and could void the user's right to operate the equipment.
- Ensure that you use only the recommended cable types as described in the Genetec documentation, especially for the RS-485 cables and reader cables, which are both shielded cables.

Safety:

- Replace the internal time/date battery with Panasonic, Part No. BR1225 only. Use of another battery may present a risk of fire or explosion.

Where to find product information

You can find our product documentation in the following locations:

- **Genetec™ TechDoc Hub:** The latest documentation is available on the TechDoc Hub.

  Can't find what you are looking for? Contact documentation@genetec.com.

- **Installation package:** The Installation Guide and Release Notes are available in the Documentation folder of the installation package. These documents also have a direct download link to the latest version of the document.

- **Help:** Security Center client and web-based applications include help, which explains how the product works and provide instructions on how to use the product features. To access the help, click **Help**, press F1, or tap the **?** (question mark) in the different client applications.

Technical support

Genetec™ Technical Assistance Center (GTAC) is committed to providing its worldwide clientele with the best technical support services available. As a customer of Genetec Inc., you have access to TechDoc Hub, where you can find information and search for answers to your product questions.

- **Genetec TechDoc Hub:** Find articles, manuals, and videos that answer your questions or help you solve technical issues.

  Before contacting GTAC or opening a support case, it is recommended to search TechDoc Hub for potential fixes, workarounds, or known issues.

  To access the TechDoc Hub, log on to Genetec Portal and click TechDoc Hub. Can't find what you're looking for? Contact documentation@genetec.com.

- **Genetec Technical Assistance Center (GTAC):** Contacting GTAC is described in the Genetec Advantage Description.

Technical training

In a professional classroom environment or from the convenience of your own office, our qualified trainers can guide you through system design, installation, operation, and troubleshooting. Technical training services are offered for all products and for customers with a varied level of technical experience, and can be customized to meet your specific needs and objectives. For more information, go to http://www.genetec.com/support/training/training-calendar.

Licensing

- For license activations or resets, contact GTAC at https://portal.genetec.com/support.
- For issues with license content or part numbers, or concerns about an order, contact Genetec Customer Service at customerservice@genetec.com, or call 1-866-684-8006 (option #3).
- If you require a demo license or have questions regarding pricing, contact Genetec Sales at sales@genetec.com, or call 1-866-684-8006 (option #2).

Hardware product issues and defects

Contact GTAC at https://portal.genetec.com/support to address any issue regarding Genetec appliances or any hardware purchased through Genetec Inc.