

# KT-1 One-Door Controller Installation Guide





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**Table 1: United States and Canada telephone numbers**

Area	Call type	Opening times: 08:00 to 20:00 (EST)
United States and Canada	Toll free	+1 888 222 1560
United States and Canada	Toll free	+1 800 507 6268 option 4

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**Table 2: Latin America and Caribbean telephone numbers**

Area	Call type	Opening times: 08:00 to 20:00 (EST)
Latin America and Caribbean	Toll free	+1 800 507 6268
Latin America and Caribbean	Toll free	+1 800 392 2873
Argentina, Buenos Aires	Direct	+54 11 5199 3104
Brazil, Sao Paulo	Direct	+55 11 3181 7377
Chile, Santiago	Direct	+56 2 3210 9662
Colombia, Cali	Direct	+57 2 891 2476
Colombia, Medellin	Direct	+57 4 204 0519
Costa Rica, National VOIP	Direct	+506 4 000 1655
Dominican Republic, Santo Domingo	Direct	+1 829 235 3047
El Salvador, San Salvador	Direct	+503 2 136 8703
Guatemala, Guatemala City	Direct	+502 2 268 1206
Mexico, Mexico City	Direct	+52 55 8526 1801
Panama, Panama City	Direct	+507 836 6265
Peru, Lima	Direct	+51 1 642 9707
Venezuela, Caracas	Direct	+58 212 720 2340

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- For technical training inquiries, email [emea.training@tycoint.com](mailto:emea.training@tycoint.com).
- For all licensing inquiries, email [sp-licensing-support@jci.com](mailto:sp-licensing-support@jci.com).

**Table 3: Europe, Middle East, and Africa telephone numbers**

Area	Call type	Opening times: 08:00 to 18:00 (CET)
Europe, Middle East, and Africa	Toll free	+800 2255 8926
Europe, Middle East, and Africa	Direct	+31 475 352 722
Bahrain	Direct	(0)800 04127
Belgium	Direct	+0800 76 452
Denmark	Direct	+45 4494 9001
France	Direct	+0800 90 79 72
Germany	Direct	+0800 1806 757
Greece	Direct	00800 312 294 53
Ireland	Direct	+1800 94 3570
Israel	Direct	+972 772 201 350

**Table 3: Europe, Middle East, and Africa telephone numbers**

Area	Call type	Opening times: 08:00 to 18:00 (CET)
Italy	Direct	+39 0230 510 112
KSA	Direct	+96 6800 8500 509
Kuwait	Direct	(0)22062915
Lebanon	Direct	01 426 801, new dial tone and then dial 8552 3436 77
Nordic Countries	Direct	04494 9001
Oman	Direct	(00) 8007 4364
Qatar	Direct	(00) 800100841
Russia	Direct	81 0800 2052 1031
South Africa	Direct	+27 (0) 10 100 3292
Spain	Direct	+900 99 31 61
Turkey	Direct	+00800 3192 3007
United Arab Emirates	Direct	(0)800 0310 7123
United Kingdom	Direct	+44 330 777 1300

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**Table 4: Asia Pacific telephone numbers**

Area	Call type	Opening times: 09:00 to 18:00 (CST China Standard Time) and 09:00 to 19:00 (India Time)
Asia Pacific	Toll free	+ 800 2255 8926
Australia	Direct	+1 800 580 946
China	Direct	+86 21 6163 8644
India	Direct	+91 80 4199 0994
Oceania and New Zealand	Direct	+64 9942 4004

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## Safety information

**⚠ WARNING: Risk of Electric Shock.** Never install the equipment during an electrical storm. Failure to follow this precaution can result in personal injury or death.

**⚠ WARNING: Risk of Personal Injury.** Do not look directly at LED with unshielded eyes, or damage to retina may occur.

The KT-1 One-Door Controller shall be installed and used within an environment that provides the pollution degree max 2, and over voltages category II NON HAZARDOUS LOCATIONS, INDOOR only. The equipment is FIXED and PERMANENTLY CONNECTED. The KT-1 is designed to be installed by Service Persons only (service person is defined as a person having the appropriate technical training and experience necessary to be aware of hazards to which that person may be exposed in performing a task and of measures to minimize the risks to that person or other persons). The

equipment is installed in a metallic cabinet that meets the applicable requirements for a FIRE ENCLOSURE.

**i Note:** When installed on the North American Market, powered via the UL, cUL Listed 40VA Transformer, the KT-1 shall be connected to the mains by a LICENSED ELECTRICIAN in accordance with the applicable rules of the National Electrical Code or Canadian Electrical Code regarding this type of connection.

1. The connection to the mains supply must be made as per the local authorities rules and regulations. An appropriate disconnect device must be provided as part of the building installation. Where it is not possible to rely on the identification of the NEUTRAL in the AC MAINS SUPPLY, the disconnecting device must disconnect both poles simultaneously (LINE and NEUTRAL).
2. AVOID setting up the equipment near heaters, air conditioners, ventilators, and/or refrigerators; DO NOT select a place that exposes your controller to direct sunlight, excessive heat, moisture, vapors, chemicals or dust.
3. If during the installation a knockout on the cabinet is removed, it is the installer's responsibility to ensure that the same degree of protection for the cabinet is provided by the use of bushings, fittings, adequate sealant, etc.
4. If a metallic cabinet is used, the cabinet must be secured to the building structure before operation. Use four (4) stainless steel tapping screws #8, 32 mm (1.25 in.) to mount the cabinet.
5. The ground connection must be as shown within the included diagram, or equivalent.
6. Internal wiring must be routed in a manner that prevents:
  - Excessive strain on wire and on terminal connections;
  - Loosening of terminal; connections;
  - Damage of conductor insulation;
  - Reducing the clearance between SELV (Safety Extra Low Voltage) circuits and NON-POWER Limited Circuits (Battery wires);
  - Route the battery wires away from the rest of the SELV circuits.
7. It is the end-user and/or installer's responsibility to ensure that the disposal of the used batteries is made according to the waste recovery and recycling regulations applicable to the intended market.
8. There are no serviceable parts within the equipment; For any issues regarding the equipment please contact your installer.
9. Before leaving the premises, the Ethernet communication lines must first be connected to an approved (acceptable to local authorities) type Network Interface Device (NID), (UL installations, UL 60950 listed NID, or UL 62368-1, for ULC installations CAN/CSA C22.2, No. 60950-1 or No. 62368-1 Certified NID). All wiring shall be performed according to the local electrical codes.
10. DISCONNECT POWER BEFORE SERVICING.
11. DO NOT OPEN the enclosure! Hazardous voltages may become accessible!

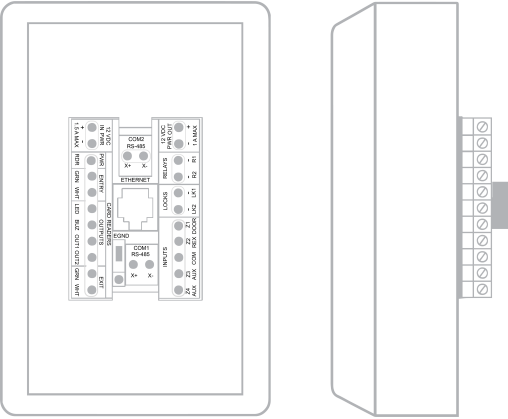
# Introduction

The KT-1 One-Door Controller offers a simple access control solution. It is available in two configurations:

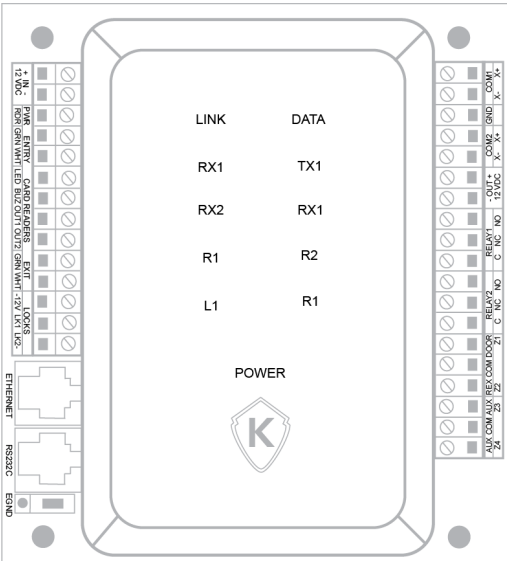
- KT-1: one-door controller, single gang mount.
- KT-1-PCB: one-door controller, cabinet mount.

For information about expansion kits and related components, see [KT-1 models, expansion kits, and components](#).

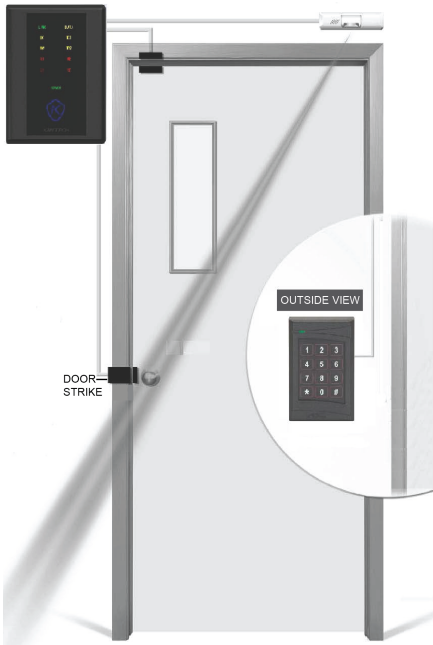
**Figure 1: KT-1 controller**



**Figure 2: KT-1-PCB controller**



**Figure 3: Example of a KT-1 setup with a T.REX**



## Features

The KT-1 controller includes the following features.

### Operating modes

Use the controller in one of the following three modes:

- Stand-alone mode: use as a stand-alone access controller with an Ethernet connection for direct configuration.
- Cloud mode: connect to the cloud service using an Ethernet connection.
- EntraPass mode: connect to EntraPass access control management software to add additional doors and controllers using an Ethernet or RS-485 connection.

For information about how to configure each mode, see [Configuration](#).

### Compatibility with EntraPass

See the following EntraPass compatibility depending on which operating system your controller uses.

### Compatibility using Windows CE

The controller is compatible with the following EntraPass editions 6.02 and later:

- EntraPass Special Edition
- EntraPass Corporate Edition
- EntraPass Global Edition with a Multi-site Gateway, a Global Gateway, or a KT-NCC Network Communications Controller

# Compatibility using Linux

The controller is compatible with the following EntraPass editions 8.20 and later:

- EntraPass Special Edition
- EntraPass Corporate Edition
- EntraPass Global Edition with a Multi-site Gateway, a Global Gateway, or a KT-NCC Network Communications Controller

**Note:** To upgrade the KT-1 controller to Linux firmware, you must have EntraPass 8.30 or later.

For information about setting up the controller with EntraPass, see [System setup with EntraPass](#).

## Configuring IP communication

To configure the controller's IP settings, use one of the following options:

- KT Registration web page
- KT-Finder stand-alone application

For more information, see [Configuration](#).

## Communication ports

The following table lists the controller's communication ports.

**Table 5: KT-1 communication ports**

Controller	Quantity	Port	Use
KT-1 and KT-1-PCB	1	10/100Base-T (ETH1) PoE+	To get a network connection with the EntraPass Gateway.
KT-1 and KT-1-PCB	1	RS-485 (COM1)	To communicate with EntraPass or a loop of controllers.
KT-1 and KT-1-PCB	1	RS-485 (COM2)	To communicate with ioSmart card readers.
KT-1-PCB	1	RS-232	To communicate and integrate with third party systems. <b>Note:</b> In UL listed installations, this is only for supplementary use.

## IP connectivity with or without PoE/PoE+

When you use the KT-1 controller with EntraPass Special Edition, Global Edition, or Corporate Edition, it can gather its configuration through an IP connection over a local area network (LAN) or over a wide area network (WAN).

**Note:** Do not use a WAN configuration with EntraPass Global Edition.

When you use the KT-1 controller with any EntraPass edition, the first controller becomes a master controller and can poll up to 31 controllers. The KT-1 controller is compatible with all of the controllers. The controller asynchronously polls the KT-100, KT-300, or KT-400 controllers and communicates with the EntraPass gateway only when it is necessary. This reduces the amount of bandwidth that you require to operate the security system on the network.

**Note:** The KT-100 is not a UL listed model; do not use it in UL listed applications.

PoE provides up to 13 W power to the unit. PoE+ provides up to 25.5 W power to the unit. To power the controller, use only a PoE, PoE+ or an external power supply source. For more information, see [Power supply](#).

## AES encryption 128-bit

When you use the controller over the internet on a WAN or a LAN, the controller uses AES 128-bit encryption to communicate with the gateway.



# Inputs

You can use the four onboard inputs for different functions depending on the mode of your controller.

## Stand-alone, EntraPass, or cloud mode

If your controller is in stand-alone, EntraPass, or cloud mode, you can use the inputs for the following functions:

- Door contact
- Request to Exit Detector (T.REX)
- Trigger relay on events

## EntraPass mode

If your controller is in EntraPass mode, you can also use the inputs for the following functions:

- Interlock
- External alarm system status: armed or disarmed
- External alarm system alarm: alarm or secure
- External alarm system zones
- Zone shunt: shunt a single zone or a group of zones, permanently or temporarily, to a secure state on the same controller. See the following list of shunt methods:
  - Zone shunt by another zone: when a zone in alarm is programmed to shunt another zone or group of zones.
  - Zone shunt on unlock: when a zone is temporarily frozen to its actual state, alarm or secured, after an access is granted.
  - Manual shunt: an operator can manually shunt a zone to a secure state.
  - Disarmed door shunt: when the alarm system is disarmed, some zones may be shunted to a secure state.
  - Entry/exit delay shunt: when a user disarms or arms the alarm system and an entry or exit delay prevails, some zones may be shunted to a secure state.
- Arming/disarming request
- Postpone arming request

## Tamper switch

Use the screw at the bottom of the case, which locks the cover, to identify tampering of the KT-1 cabinet.

## Lock outputs

The controller has two supervised onboard lock outputs. You can configure any onboard relay to perform a locking function. For more information, see [Connecting door locking devices](#).

**i Note:** Supervision is provided to detect only short-circuit faults; it does not detect open-circuit faults.

## Relay outputs

The KT-1 has two open collector onboard switch to ground relay outputs. The KT-1-PCB has two Form C relays. For more information, see [Connecting relay controlled outputs](#).

## ioSmart card readers

The controller is compatible with ioSmart card readers, which provide security by using end-to-end encryption between the ID badge credentials and the EntraPass software.

## Reader outputs

The controller has four open-collector, switch-to-ground outputs. Use the reader outputs to give the user visual or audible feedback about ongoing access events. The outputs include three LEDs (LED, OUT1, and OUT2) and a buzzer (BUZ).

## Reader interfaces

The controller has two onboard 12 VDC reader interfaces. You can program them for Wiegand or ABA clock and data readers.

**Note:** For UL listed installations, use only Wiegand, Kantech XSF, MIFARE PLUS EV1, and ISO/IEC 14443A and 14443B readers and cards.

## Integration interface

The KT-1 supports alarm panel interfacing when you make the appropriate connections between zone inputs, relay outputs, and the alarm system panel.

The KT-1-PCB supports integration interfacing using RS-232 for fire alarm panel and intrusion integrations.

**Note:** RS-232 interface communication with a fire alarm panel has not been evaluated by UL.

## Detecting ports automatically

The controller automatically detects the site communication speed set by EntraPass and the communication port, IP (ETHERNET), or RS-485 (COM1).

## Downloadable firmware

The steps to download firmware depend on the mode of your controller. See the following options.

### Downloading firmware in EntraPass mode

- Download firmware from any EntraPass workstation to the controller. The system stores the firmware in the controller's flash memory, and it upgrades without having to change any parts.

### Downloading firmware in stand-alone mode

- Log on to [www.kantech.com](http://www.kantech.com).
- Go to **Support > Software Downloads > Door Controllers and Readers > KT-1**.
- Select the appropriate firmware version.

## Trouble and reporting

The controller monitors its power continuously and reports low and critical power issues. The controller monitors the power outputs and electronically protects them against short-circuits and surges. The controller monitors locking devices for short circuit faults.

## Technical specifications

The following table lists the technical specifications of the KT-1 controller.

**Table 6: Technical specifications**

Item	Description
DC power input	11.3 VDC-14 VDC, 1.5 A <b>Note:</b> This is compatible with the KT-PS4085 power supply module. Use the PTC1640UG plug-in adapter model. Standby power: 12 V/7 Ah battery provides 4h of battery backup.
PoE	13 W, 1 A. See Note 1.
PoE+	25.5 W, 1.9 A. See Note 1.

**Table 6: Technical specifications**

Item	Description
Operating temperatures	For UL listed installations: 0°C to 49°C (32°F to 120°F) indoor use only. For European compliant installations: -10°C to 55°C (14°F to 131°F) Environmental Class II.
Humidity level	93% maximum (relative humidity non-condensing)
KT-1 cabinet dimensions (H x W x D)	From wall surface: 5.1 in. x 3.4 in. x 1.8 in. (2.4 in. overall depth) (12.9 cm x 8.6 cm x 4.6 cm)
KT-1-PCB cabinet dimensions (H x W x D)	5.4 in. x 4.8 in. x 1.9 in. (13.8 cm x 12.1 cm x 4.8 cm)
KT-1 weight	10.75 oz (305 g)
KT-1-PCB weight	13.93 oz (395 g)
Reader types	Wiegand, proximity, ABA Clock and Data, bar code, magnetic, integrated keypad, smartcard and others
Reader power output	12 VDC 500 mA maximum; protected and supervised only for Wiegand and Kantech XSF types. <b>i</b> <b>Note:</b> 12 VDC outputs have an output voltage rating of 10.6 to 13.5 VDC.
Monitored points (zone inputs)	Four monitored points (Z1 to Z4), NO/NC without EOL (DRY), single EOL, double EOL and one fixed-function tamper input.
Points maximum wiring	AWG #22 - 600 m (2,000 ft) For maximum wiring specifications for readers, refer to the card reader Installation Guide.
Door strike power supervised	750 mA for one output or 1.0 A total (in PoE 13W, 375 mA each or 750 mA total). Lock outputs can detect only short-circuit faults, not open-circuit faults.
Auxiliary reader outputs	LEDs (LED, OUT1, and OUT2) and buzzer (BUZ), 25 mA max each, open collector outputs.
Relay controlled outputs: KT-1	Two open collector outputs, 100 mA each
Relay controlled outputs: KT-1-PCB	Two onboard Form C relays, 30 VDC/VAC, 3 Amps each, 0.6 power factor.
KT-1 communication ports	Two RS-485 One Ethernet 10/100 Base-T with RJ-45
KT-1-PCB communication ports	One RS-232 with RJ-12 Two RS-485 One Ethernet 10/100 Base-T with RJ-45. <b>i</b> <b>Note:</b> RS-232 is for supplementary use.
Auxiliary power	1.0 A maximum (shared with door strike power).
Communication speed	- 1200 to 115200 Bauds (automatic detection) over RS-485 - 10/100 Mb/s BaseT over Ethernet
Flash memory	256 MB NAND flash for application, storage, and stand-alone event buffer holding 20,000 events.
RAM memory	128 MB DDR2 for application loading and running.

**Table 6: Technical specifications**

Item	Description
Network autonomy	Distributed data and processing.
Certifications/listing	USA: UL 294, UL 1076, FCC Part 15 Class B Canada: ICES-003 (B)/NMB-003 (B) Europe: EN 60950-1, EN 62368-1, EN 50130-4, EN 61000-6-3. CE Compliance in accordance with applicable LVD and EMC Directives. Australia/New Zealand: RCM Compliance.
AES encryption	NIST CAVP validation number AES 3092, key length 128.

- ❶ **Note: 1.** The KT-1 has been tested by UL with the PoE/PoE+ models Phihong POE36U-1AT-R and/or the POE125U-4-HP-R. These devices shall be used in conjunction with UL listed transient protectors. Other compatible PoE/PoE+ configurations may be possible.
- ❷ **Note: 2.** The KT-1 can restart automatically after total power loss, and keeps its programming for an unlimited time of power interruption. The design uses flash memory to save access rules.
- ❸ **Note: 3.** For KT-1 and Class B installations powered with a PoE device, use a ferrite on the Ethernet cable (P/N 10000089).

## Front cover LEDs

The front cover of the KT-1 has several LEDs. The following table describes the status that each LED indicates when it turns on.




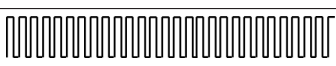
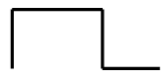
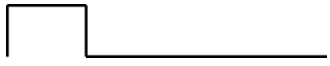




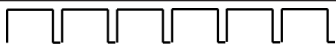




**Table 7: LED status indicators**

Name	LED color	Status
LINK (Ethernet)	Green	There is an Ethernet cable and a network connection. The LED is off when there is no Ethernet network or the cable is disconnected.
DATA (Ethernet)	Yellow	There is network activity.
RX1	Yellow	The RS-485 serial port is receiving activity from the gateway.
TX1	Yellow	The RS-485 serial port is transmitting activity to the gateway.
RX2	Yellow	The LED is reserved for future use.
TX2	Yellow	The LED is reserved for future use.
R1 (Relay 1)	Red	Relay 1 is activated.
R2 (Relay 2)	Red	Relay 2 is activated.
L1 (Lock 1)	Red	Lock output 1 is activated.
L2 (Lock 2)	Red	Lock output 2 is activated.
POWER	Green or yellow	The primary power supply is present. The type of power source determines which color LED illuminates. The LED is green when the DC level is sufficient for all DC terminals, such as the 12 V AUX.
Kantech shield (One Button)	Blue	The controller is communicating with EntraPass or the controller's IP mode is activated. For more information about this LED, see <a href="#">Kantech shield LED</a> .

## Kantech shield LED

The LED on the Kantech shield shows the controller's communication status and other conditions. Use this information when you connect the controller to the EntraPass system. The following table lists all possible conditions.

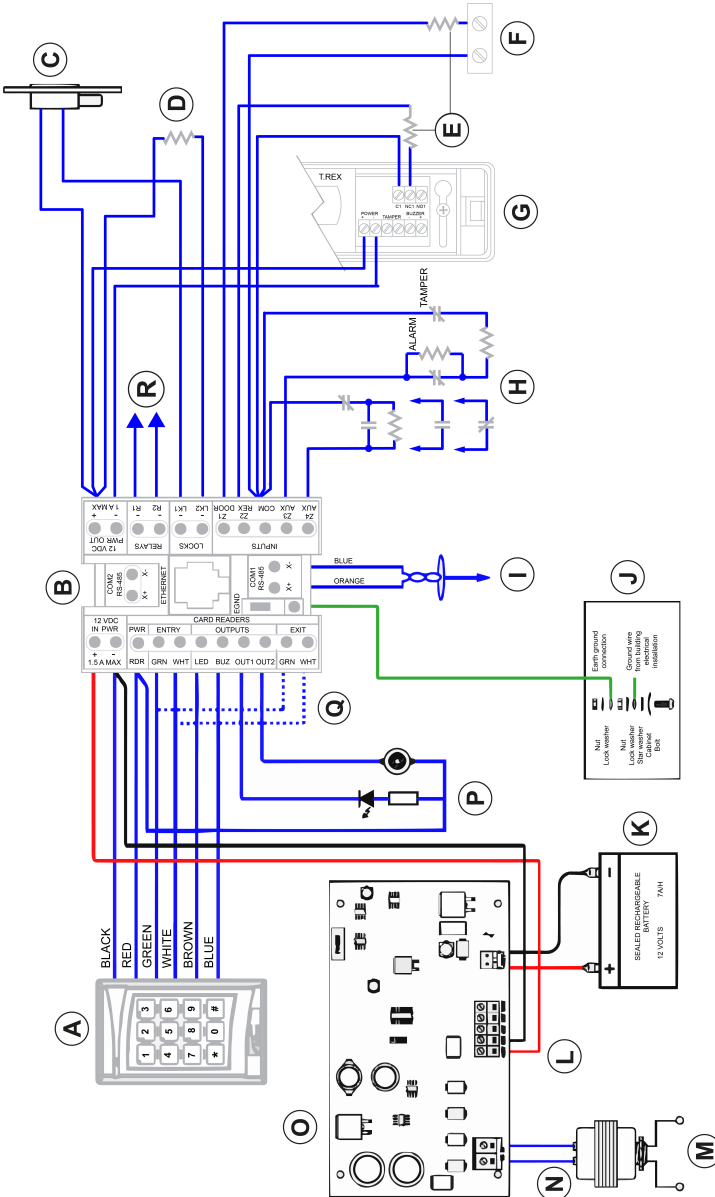
**Table 8: Kantech shield LED patterns**

Condition	LED color	Flashing pattern	
Starting up	Blue	Steady	
Corporate/ Multi-site Gateway	Blue	Three short flashes	
Global Gateway	Blue	One short flash	
Restarting	Blue	Ten flashes every second at 50% duty cycle	
Card read or swipe	Blue	One 0.5 sec flash, then it resumes the previous flash.	
Enrolling	White	One long flash every 2 seconds	
Acknowledging enrollment	Pink	One 2.5 second flash	
Updating firmware	Green	Five flashes every second at 50% duty cycle	
Receiving broadcast	Green	One 2.5 second flash	
Fail soft	Yellow	Continuous short flashes	
Factory default DHCP	Yellow	Continuous long flashes	
Forced default STATIC	Yellow	Three long flashes	
Hard reset	Red	Four short flashes	
Unable to resolve DNS	Red	Two long flashes	
DHCP server failed	Red	Four long flashes	

**i** **Note:** To reset or change the KT-1 controller's communication mode, see [Resetting the controller](#).

# Wiring diagrams

See the following wiring diagrams for each controller model.  
**Figure 4: KT-1 inputs and outputs**




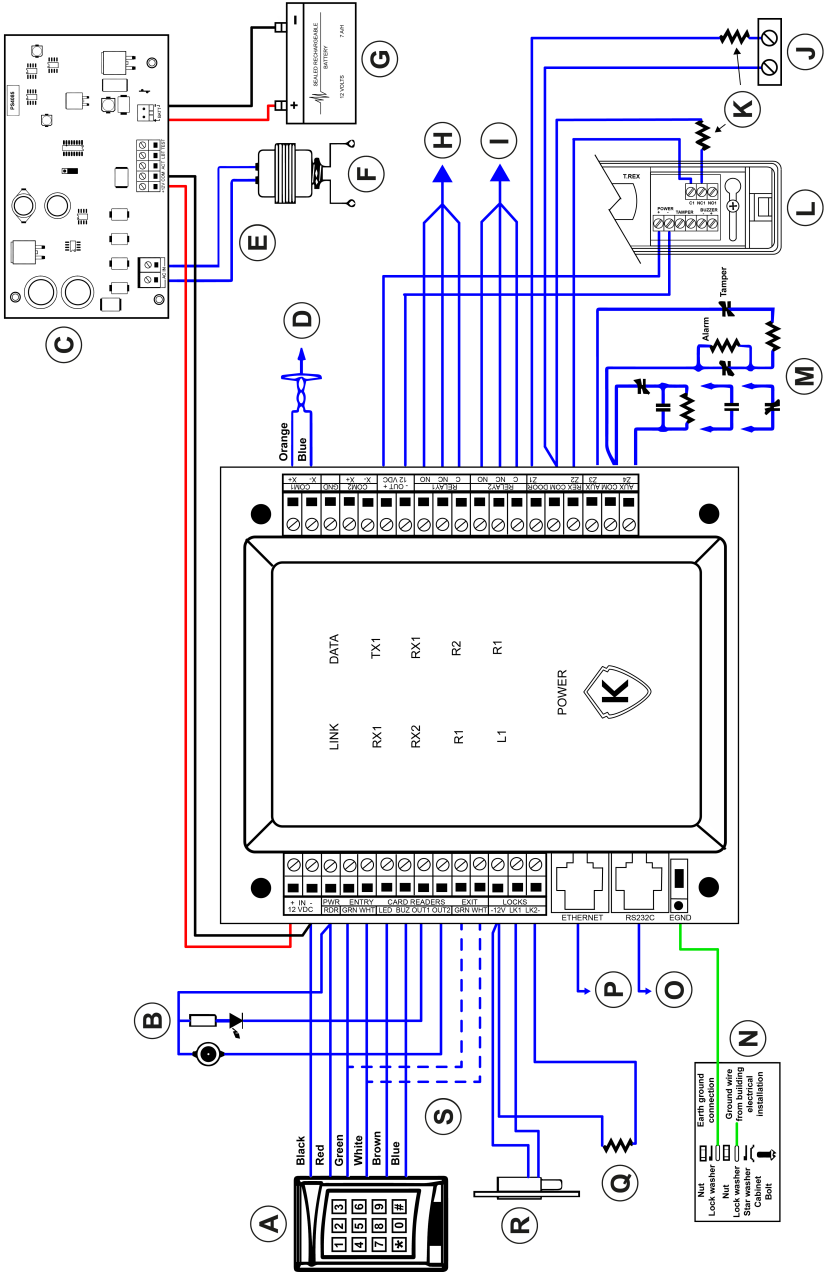
Callout	Description
A	Entry card reader
B	RJ45 Ethernet network. Optional PoE or PoE+ powered.
C	Door locking device: 12 VDC, 750 mA maximum.
D	Connect a 1000 Ohm resistor between LK- and +12 V if you are not using a locking device.
E	Optional end of line resistor.
F	Door contact
G	Request to exit device
H	Individually programmable zone termination: NC, NO, NEOL, single or double EOL termination.
I	Connect the RS-485 main network to other KT-1 controllers or to the gateway using a USB-485 interface.
J	Tighten the nut to break the paint and ensure that there is a secure connection to the cabinet.
K	Battery: 12 V, 7 A/H
L	Connect the ACT (AC trouble) output from the KT-PS4085 to one input on the KT-2 to transmit AC loss events to the monitoring console.
M	Class 2 power limited adaptor model PTC1640UG. Input ratings: 120 VAC / 60 Hz / 40 VA.  <b>Note:</b> Do not connect to a receptacle that is controlled by a switch.
N	Transformer 16 VAC / 40 VA
O	Optional power supply: KT-PS4085 12 VDC/1.5 A (North American model) To power the KT-1, use a PoE or PoE+ power source connected to a RJ45 socket, or a UL listed external supply connected to a terminal block +/- rated 12 VDC / 1.5 A.
P	Extra outputs used as a general annunciator
Q	Optional exit reader
R	Relay outputs: open collector, switch to ground, 12 VDC, 100 mA maximum.

Figure 5: KT-1 PCB inputs and outputs






Callout	Description
A	Entry reader
B	Extra outputs used as a general annunciator.
C	KT-PS4085 power supply (optional North American model). 12 VDC, 1.5 A.
D	RS485 main network to other KT-1 controllers or the Gateway using a USB-485 interface.
E	Transformer: 16 VAC, 40 VA.
F	120 Volts, 80 Hertz. Class 2 power limited adapter model PTC1640UG. Input ratings: 12 VAC/620 Hz/40 VA.  <b>Note:</b> Do not connect to a receptacle controlled by a switch.
G	Battery: 12 V/7 A/H
H	Relay 1: 30 VDC/VAC, 3 Amps Form C
I	Relay 2: 30 VDC/VAC, 3 Amps Form C
J	Door contact
K	Optional end of line resistors
L	Request to exit device
M	Individually programmable zone termination: NC, NO, NEOL, single or double EOL termination.
N	Tighten the nut to break the paint and ensure there is a secure connection to the cabinet.
O	RJ12 RS232C port integration
P	RJ45 Ethernet network optional PoE or PoE+ powered.
Q	Connect a 1000 Ohm resistor between the LK- and +12 V if you are not using a locking device.
R	Door locking device: 12 VDC, 750 mA maximum.
S	Optional exit reader

Figure 6: KT-1 controller with KT-PS4085 power supply

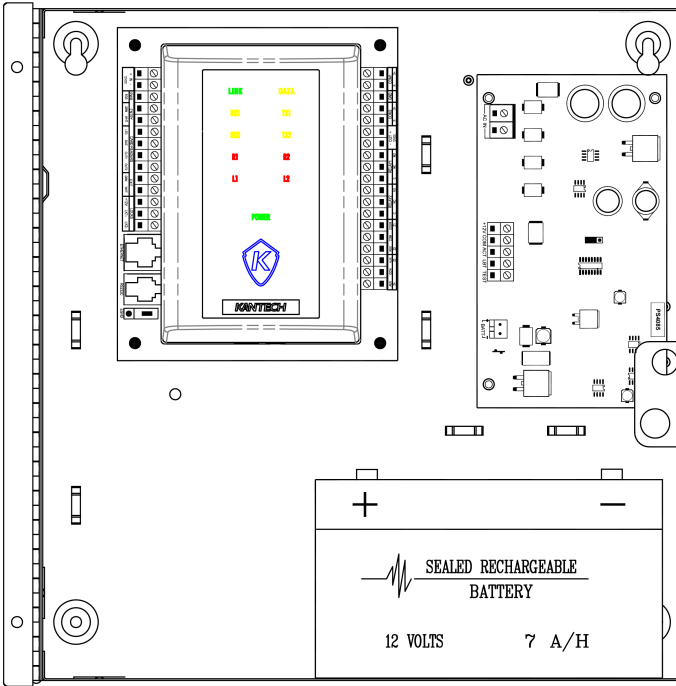
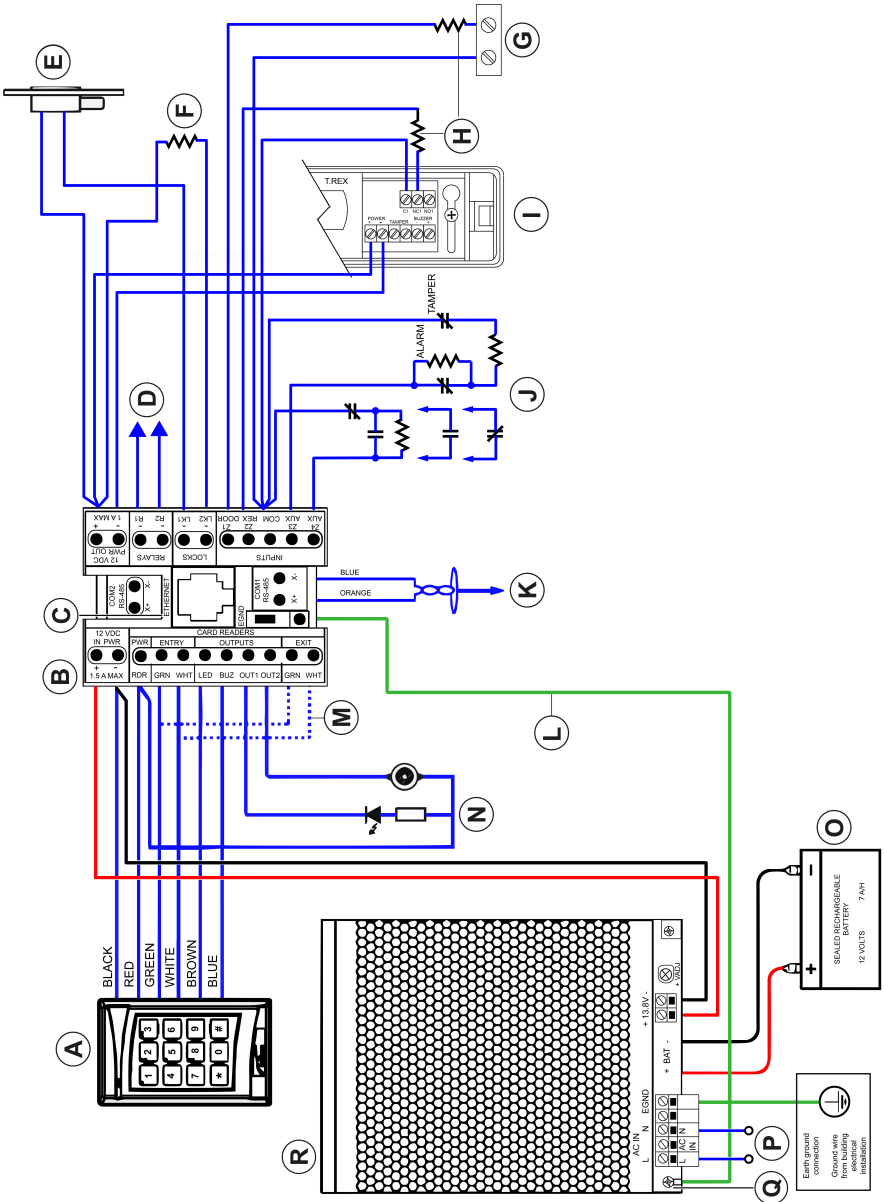


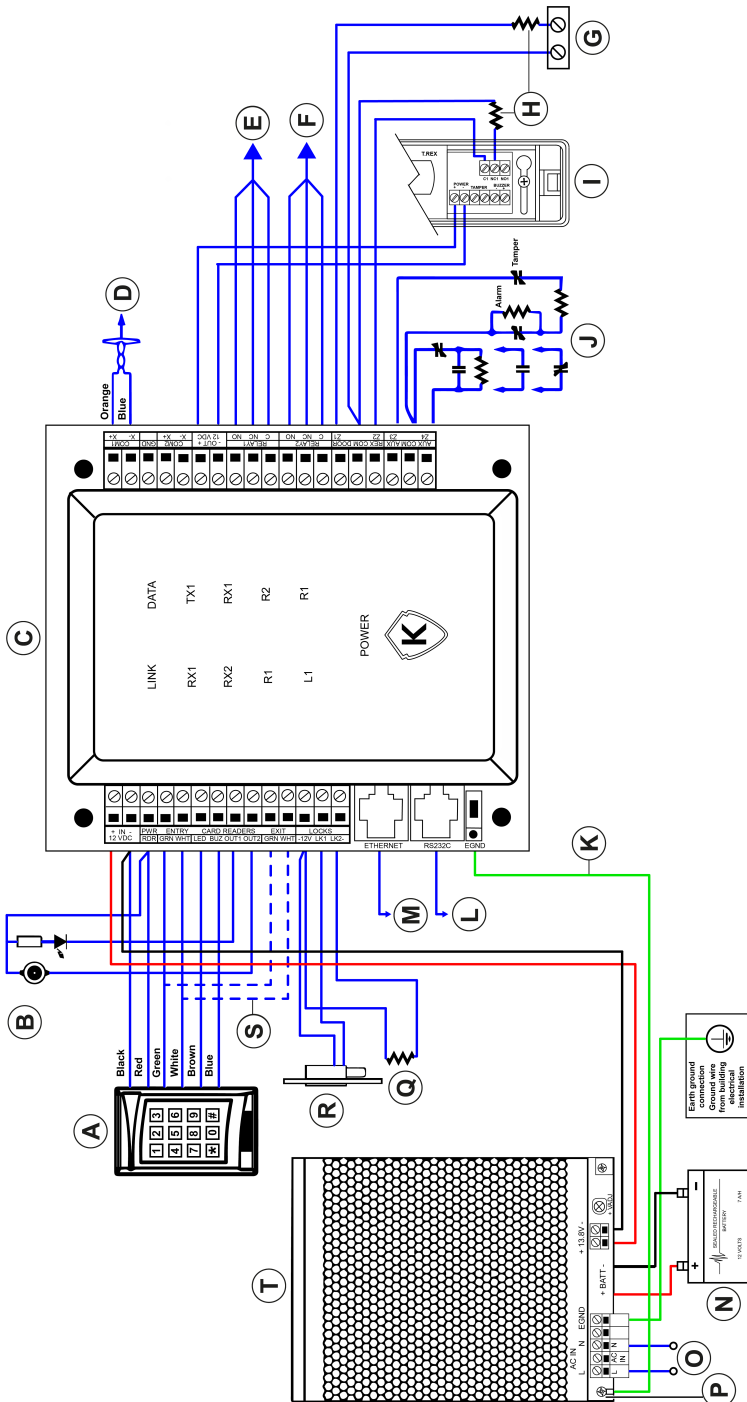
Figure 7: KT-1 EU inputs and outputs



Callout	Description
A	Entry reader
B	KT-1 controller
C	RJ45 Ethernet network. Optional PoE or PoE+ powered
D	Relay outputs: open collector, switch to ground, 12 VDC 100 mA maximum

<b>Callout</b>	<b>Description</b>
E	Door locking device: 12 VDC 750 mA maximum
F	Connect a 1000 Ohm resistor between LK- and +12V if you are not using a locking device.
G	Door contact
H	Optional end of line resistor
I	Request to exit device
J	Individually programmable zone termination: NC, NO, NEOL, single or double EOL termination.
K	Connect the RS-485 main network to other KT-1 controllers or to the gateway using a USB-485 interface.
L	Earth ground connection
M	Optional exit reader
N	Extra outputs used as a general annunciator
O	Battery: 12 V 7A/H
P	AC power: 230 VAC 50 Hz
Q	Power supply case screw
R	Power supply (approved type): In: 230 VAC 50 Hz Out: 13.8 VDC 1.5A

Figure 8: KT-1-PCB EU inputs and outputs



Callout	Description
A	Entry reader
B	Extra outputs used as a general annunciator
C	KT-1-PCB controller
D	RS485 main network to other KT-1 controllers or the Gateway using a USB-485 interface.
E	Relay 1: 30 VDC/VAC, 3 Amps, Form C
F	Relay 2: 30 VDC/VAC, 3 Amps, Form C
G	Door contact
H	Optional end of line resistor
I	Request to exit device
J	Individually programmable zone termination: NC, NO, NEOL, single or double EOL termination.
K	Earth ground connection
L	RJ12 RS232C port integration
M	RJ45 ethernet network: Optional PoE or PoE+ powered.
N	Battery: 12 V 7A/H
O	AC power: 230 VAC 50 Hz
P	Power supply case screw
Q	Connect a 1000 Ohm resistor between LK- and +12V if you are not using a locking device.
R	Door locking device: 12 VDC 750 mA maximum
S	Optional exit reader
T	Power supply (approved type): In: 230 VAC 50 Hz Out: 13.8 VDC 1.5A

## System setup with EntraPass

You can set up the KT-1 controller with EntraPass Special Edition, Corporate Edition Multi-Site Gateway, or Global Edition Gateway in the following ways:

- Over the internet
- Over RS-485 with a USB-485 or a VC-485

You can set up the KT-1 controller with EntraPass Global Edition and a KT-NCC in the following ways:

- Over the internet on the premises
- Over RS-485 with a USB-485 or a VC-485

Figure 9, Figure 10, and Figure 11 show examples of system setups.

Figure 9: Over the internet with EntraPass Special or Corporate Edition with a Multi-Site Gateway

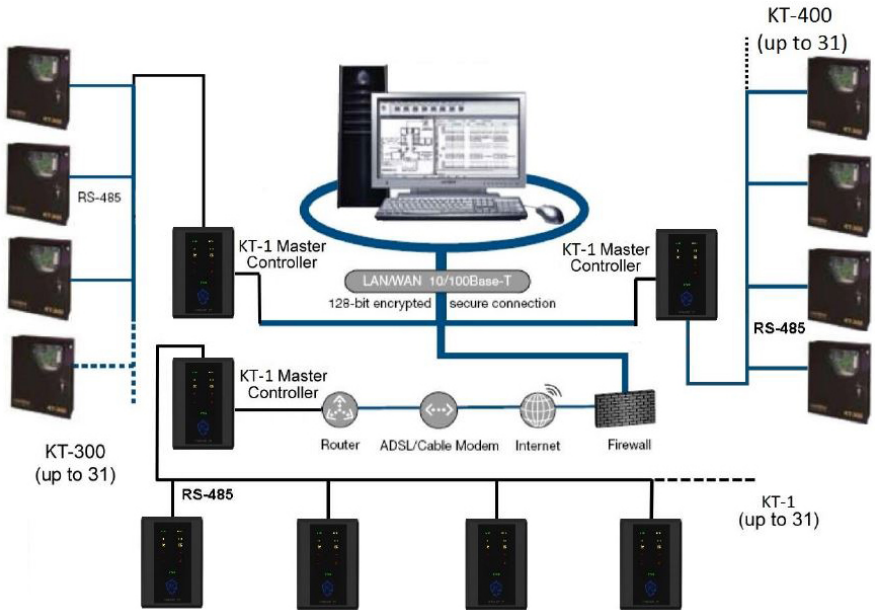


Figure 10: USB-485 with EntraPass Special, Corporate, and Global Editions

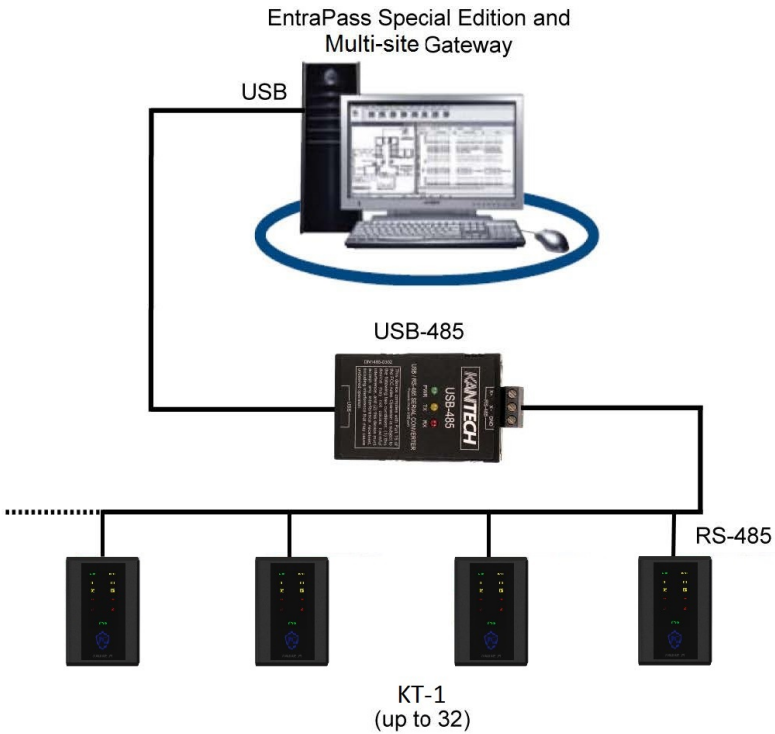
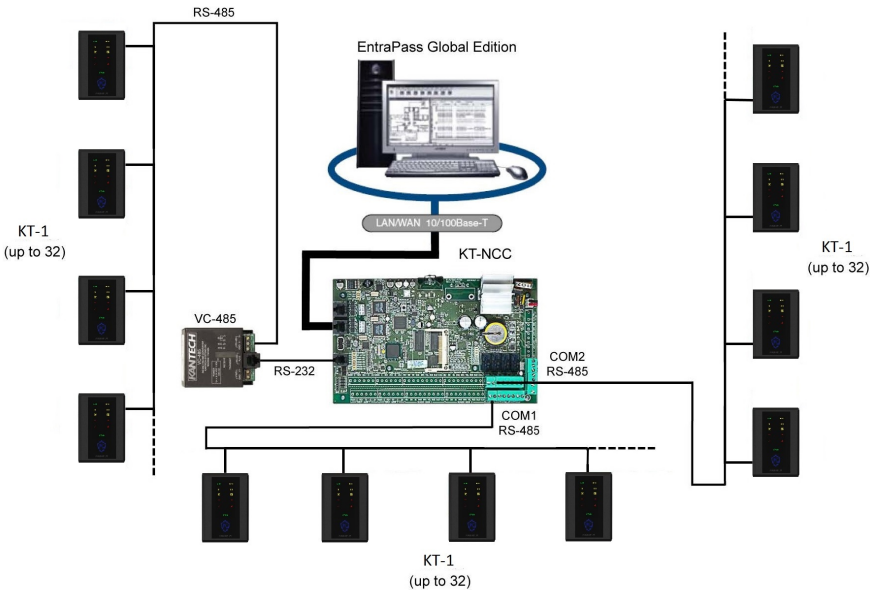


Figure 11: Over the internet with EntraPass Global Edition and a KT-NCC





# Security hardening guide

The security hardening guide provides information about the following areas:

- Assuring compliance with the cybersecurity criteria that govern the target environment
- Designing safe and secure deployment architecture
- Providing a reference for settings that you configure during deployment

To ensure the safe and secure deployment of the KT-1 controller, complete the following steps:

1. Ensure that you understand and plan your controller architecture. For more information, see [Architecture](#).
2. After you complete your architectural plan, install the controller and make application-specific configuration changes. For more information, see [Deployment](#).

## Architecture

The KT-1 architecture includes the following components:

- The KT-1 controller that you can configure in one of three modes:
  - Stand-alone mode: use as a stand-alone access device with an Ethernet connection for direct configuration.
  - EntraPass mode: connect to a base server with the Entrapass application through an Ethernet or RS-485 connection.
  - Cloud mode: connect to the cloud service using an Ethernet connection.
- The controller commonly has at least one reader connected to it. You can connect multiple readers and input/output modules to the controller.

See the following guidelines that relate to your chosen controller architecture.

## Connecting to EntraPass using RS-485

If you connect the controller to EntraPass using an RS-485 bus, the connection is not encrypted or authenticated.

- Ensure that you isolate and secure the connection wires inside the walls of the installation in a safe area.
- Ensure that you cannot access wires from an exterior wall.

## Connecting to EntraPass using Ethernet

- To connect the controller to EntraPass in TCP mode, even if the link is encrypted and secure, use a LAN or VLAN.

**i** **Note:** The controller does not support the direct use of a VPN. Connect a VPN through a router.

## Connecting to the cloud using the internet

If you connect the controller to the cloud service using the internet, the cloud connection is protected by certificate-based authentication.

- If possible, when you connect the controller to the internet, use a firewall.

## Connecting a stand-alone controller using Ethernet

- To connect a stand-alone controller, configure your username and password. Use these details to access the secure Kantech registration web pages to configure the controller.

**i** **Note:** Complete this process during the initial setup.

## Connecting readers and modules using Wiegand and an SPI

The Wiegand connections and SPI connection are not encrypted or authenticated. If you connect readers and modules, complete the following steps:

- Ensure that you isolate and secure the connection wires inside the walls of the installation in a safe area.
- Ensure that you cannot access wires from an exterior wall.
- Use a tamper contact to signal an alarm if someone tries to breach security.

## Connecting readers and modules using an RS-485 bus (with encrypted protocol)

- Connect readers and modules, such as the ioSmart card reader, that interconnect with an encrypted and secure 485 link. These devices include a mechanical or optical contact alarm that does not require additional wires.

## Updating to the latest firmware

The latest security features are included in firmware 3.xx and higher. To ensure your controller has up-to-date security features, use the latest available firmware version.

- To update from version 2.xx to 3.xx, see [Downloadable firmware](#).

## Security configuration

You can view, monitor, and access the controller in one of three modes: stand-alone, with EntraPass, or with the cloud service.

If it is required, as you complete the installation wizard, you are prompted to reconfigure your user account, activate additional password security measures, or disable the access point mode.

## Connecting to the internet

Depending on your configuration and deployment architecture, you may require internet access. To access cloud services, you require an internet connection. For a convenient stand-alone deployment, you can configure the KT-1 over the internet.

- When you connect to the internet, use a private LAN.

## Managing users

Follow best practice guidelines for managing user accounts, credentials, and permissions. Best practice guidelines include the following:

- Do not share accounts.
- Change passwords every 90 days.
- Create strong passwords. Passwords must contain at least eight characters, and include one lowercase, one uppercase, one number, and one special character.
- Give users access only to what they need.
- Set temporary accounts to expire after a set amount of time.

## Protecting the network

- When the trust deviation is beyond the risk tolerance, control the flow of data between trusted and untrusted networks by using a switch or a router with data flow control capabilities, such as a firewall.
- Isolate the KT-1 system from networks of lower trust.

## Deployment

To ensure the safe and secure deployment of the KT-1, see the following guidelines:

- [Restricting physical access to the controller](#)

- [Logging on during the initial startup](#)
- [Resetting to factory default](#)
- [Knowledge level](#)

## Restricting physical access to the controller

If you install the controller in an area that is easily accessible, this enables actions that cannot be authenticated or logged electronically, and therefore, impact the controller's cybersecurity capabilities.

To restrict unauthorized access to the controller, complete the following steps:

- Install the controller in a room, cabinet, or enclosure that you can restrict access to, for example, by using a mechanical lock or other physical access control.
- Configure the controller's mechanical tamper switch to send and log alerts if the device is tampered with.
- Use protective electric wire conduits when communication wires pass through areas of lower trust.

For more information about installing the KT-1, see [Installation](#).

## Logging on during the initial startup

To facilitate common commissioning tasks when you first start up the controller, the following functions are enabled: KT Registration web page and controller discovery. There is no default user account to access these functions.

- To log on to the controller during the initial startup, use the secure account activation process.

## Resetting to factory default

- If the controller was used previously as part of another installation or test environment, reset it to factory default before you use it in the current installation. To reset the controller, see [Resetting the controller](#).

## Knowledge level

- To execute the proper hardening steps, you must have experience with KT-1 administration and networking technologies. To gain the required competencies, complete the basic and advanced Kantech installation courses. For more information, refer to <http://www.kantech.com>.

# Installation

Use this section to prepare for the installation, to install the controller, and to connect all of the components.

## Preparing to install the controller

Before you install the controller, follow these guidelines:

- Install the controller indoors in a secure location with regular temperature and humidity levels.
- Install the controller away from electrical and communication devices.
- Mount the KT-1 on a wall. Mount the KT-1-PCB in a cabinet.
- When you mount the controller, ensure that there is 9 in. (23 cm) of clear space around all sides of the unit and a minimum of 13 in. (33 cm) of clear space in front of the unit.
- Do not locate the controller within 6.5 ft (2 m) of any high voltage equipment or wiring and of any electrical equipment susceptible to generating electrical interference, within 3 ft (1 m) of any telephone equipment or lines, and within 26 ft (8 m) of any third party transmitting equipment.
- Locate the controller so that it is easily accessible to service the equipment. Provide physical access by using keys on controlled doors.

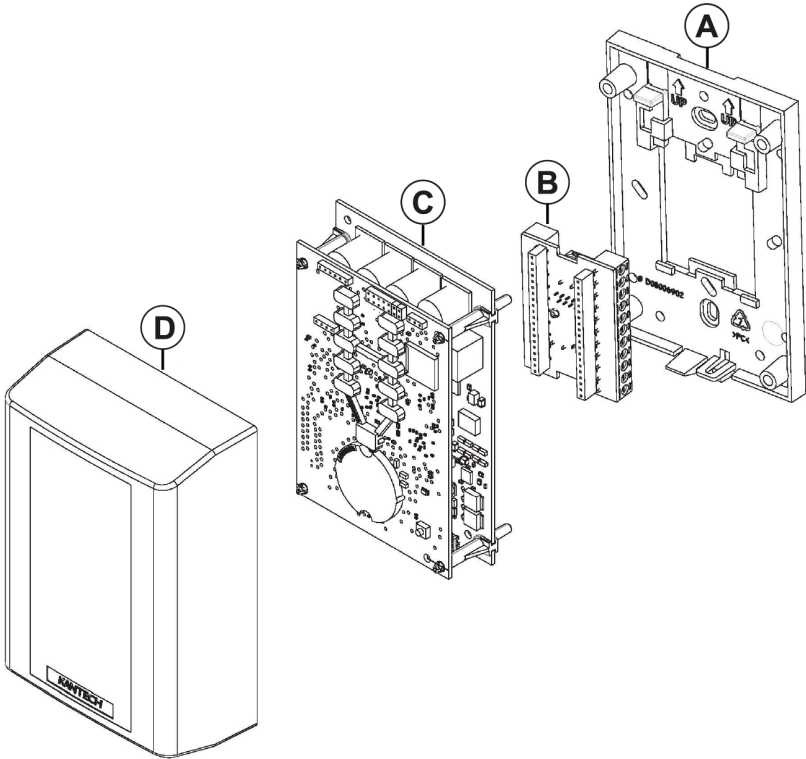
For more information about preparing the installation, see [Restricting physical access to the controller](#).

# Installing the KT-1

**⚠ WARNING:** Route and secure all internal wiring using tie wraps or equivalent means to ensure that the cables do not come into contact with the front cover of the metal enclosure. Failure to do so may result in risk of physical injury to persons, or damage to or destruction of property.

1. Complete each of the required connections on the small board.
2. Mount the wall plate onto a single gang electrical box using two of the Phillips head screws that are provided.
3. Clip the small board onto the wall plate.
4. Mount the main boards in front of the small board.
5. Mount the cover and secure it with one of the Phillips head screws that are provided.

Figure 12: Installing the KT-1



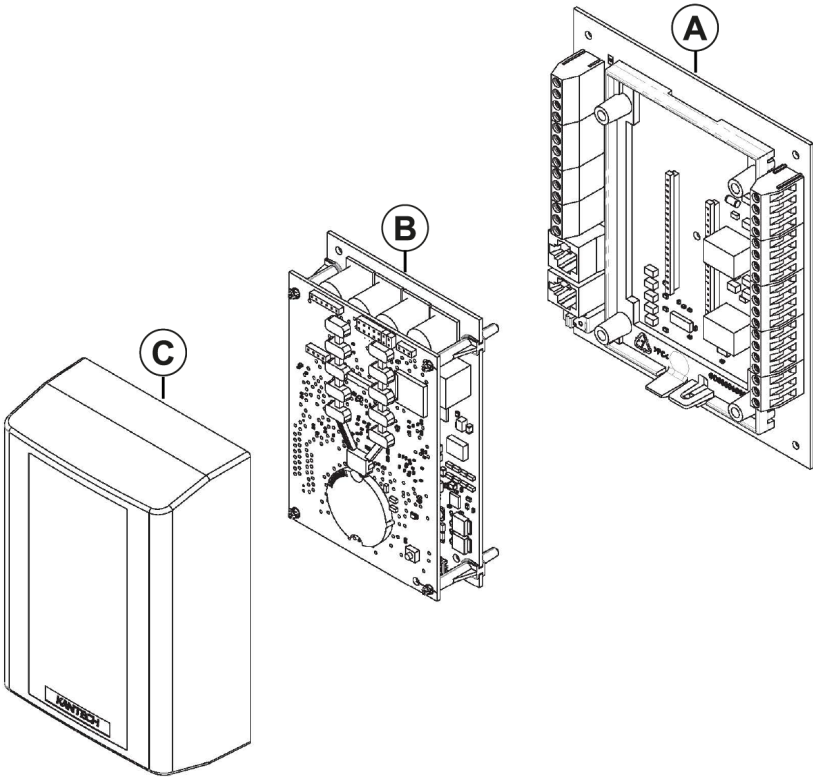
Callout	Description
A	Wall plate
B	Small board
C	Main boards
D	Front cover

# Installing the KT-1-PCB

**⚠ WARNING:** Route and secure all internal wiring using tie wraps or equivalent means to ensure that the cables do not come into contact with the front cover of the metal enclosure. Failure to do so may result in risk of physical injury to persons, or damage to or destruction of property.

1. Remove the main boards from the cabinet. If you leave the boards in place, disconnect the power before you continue.
2. Complete each of the required connections.
3. Connect the 12 VDC power supply or, if you are using Ethernet, connect the PoE or PoE+ to the RJ-45 connection.
4. If you removed the boards at the beginning of the installation, replace them in the cabinet.

**Figure 13: Installing the KT-1-PCB**



Callout	Description
A	Backplate
B	Main boards
C	Front cover

## Earth grounding

To ensure proper operation of the controller, ground the controller securely.

1. Connect the ground wire to the green quick-connect terminal.

2. Make an earth ground connection to the cabinet of the controller.  
 ⓘ **Note:** Follow the requirements of your local electrical code.
3. Wire the E-GND terminal on the controller printed circuit board directly to the earth ground connection point.

## Connecting door locking devices

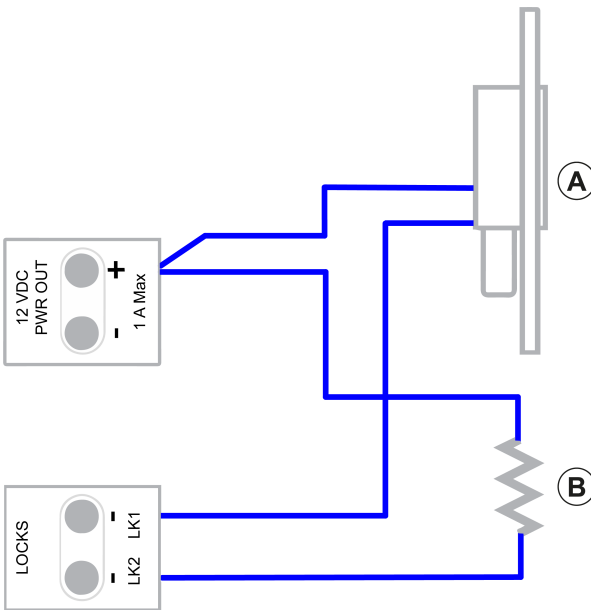
⚠ **WARNING:** Controlled door locks may be governed by regulatory bodies and must always be installed according to local regulations. In most instances, there are strict limitations to installing fail-secure devices and fail-safe locking devices such as magnetic locks or other similar locking devices on doors used as emergency exits.

ⓘ **Note:** The door locking device outputs can operate DC-powered locking devices such as electromechanical strikes and can be configured to operate in fail-safe or fail-secure mode (normal or reverse action).

ⓘ **Note:** If required, you can program any of the controller relays to provide galvanically-isolated outputs.

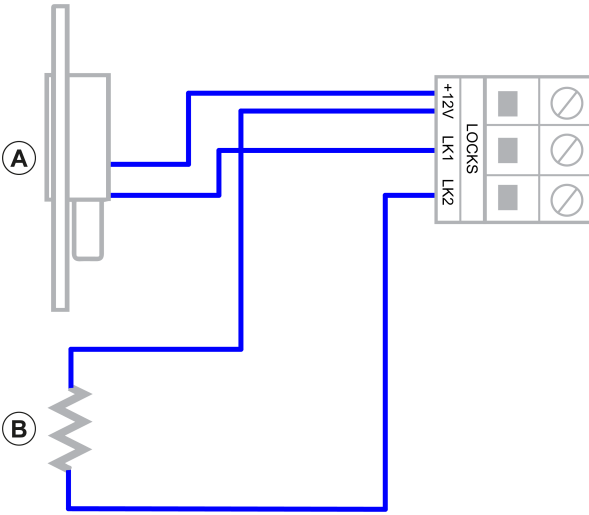
1. Connect the negative wire from the door strike to the LK1- output.
2. **Optional:** Connect the door magnetic lock to the LK2- output.
3. Connect the positive wire to the +12 VDC output.
4. Program the schedules and access levels for door locking devices.

**Figure 14: KT-1 lock setup**



Callout	Description
A	Door locking device: 12 VDC, 750 mA maximum.
B	Connect a 1000 ohm resistor between LK- and +12 V if you do not use a locking device.

Figure 15: KT-1-PCB lock setup



Callout	Description
A	Door locking device: 12 VDC, 750 mA maximum.
B	Connect a 1000 ohm resistor between LK- and +12 V if you do not use a locking device.

## Connecting inputs

The controller can monitor four input points. Each onboard input is supervised with or without end-of-line (EOL) resistors. The resistors for all inputs are 5.6K ohm, if selected. The maximum distance of one line is 2,000 ft (600 m) with AWG #22 in a single or double EOL configuration.

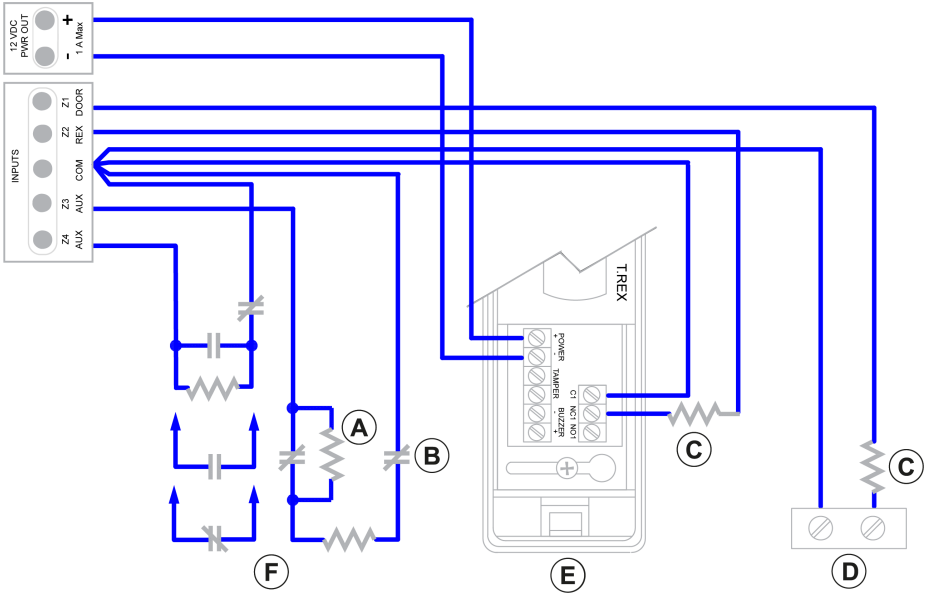
1. Connect devices to inputs 1 to 4.
2. Define onboard inputs with none, single, or double EOL resistors.

**Note:** For UL listed installations, you must use supervised EOL resistors.

**Note:** Inputs 1 and 2 are automatically reserved for the controlled door. The door contact is assigned to input 1 and the associated request-to-exit detector is assigned to input 2. You do not have to follow this convention but it facilitates servicing.

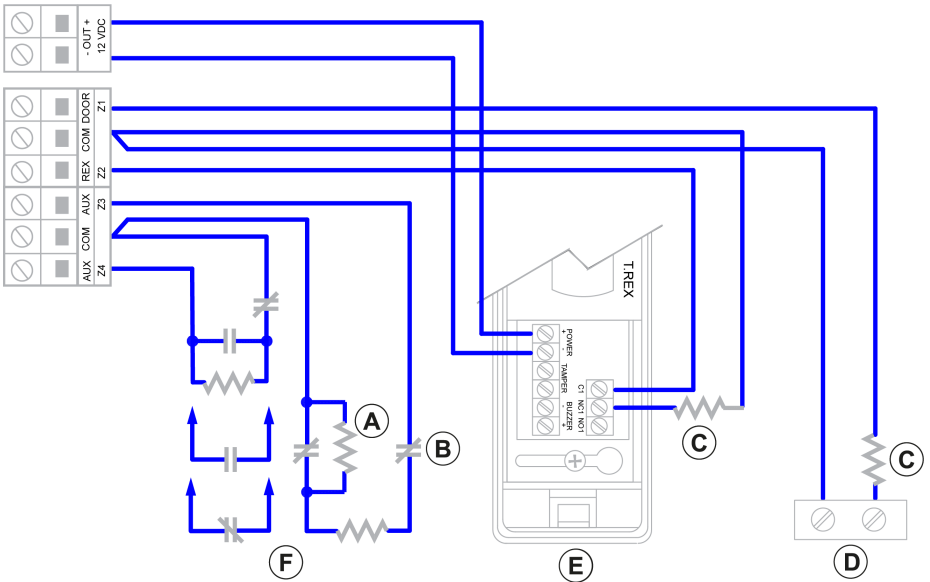


Figure 16: KT-1 inputs



Callout	Description
A	Alarm
B	Tamper
C	End of line resistor
D	Door contact
E	Request to exit device
F	Individually programmable zone termination: NC, NO, NEOL, single or double EOL termination.

Figure 17: KT-1-PCB inputs



Callout	Description
A	Alarm
B	Tamper
C	End of line resistor
D	Door contact
E	Request to exit device
F	Individually programmable zone termination: NC, NO, NEOL, single or double EOL termination.

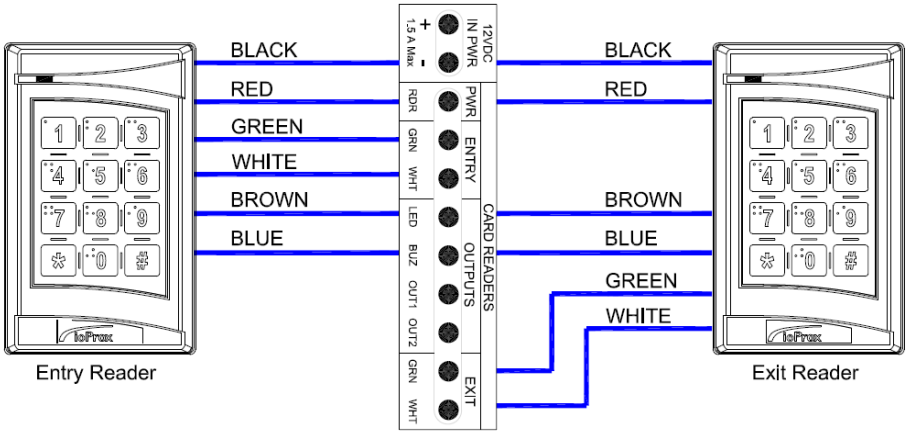
## Connecting card readers

The controller provides 12 VDC power for card readers. You can connect two card readers to a KT-1 controller. The distance between the readers and the controller varies by reader type. For more information, refer to the card reader Installation Guide.

- Install one reader to control the entry of a single door.
- Install two readers to control the entry and the exit of a single door.

**Note:** Outputs OUT1 and OUT2 are extra multipurpose outputs.

Figure 18: Connecting card readers



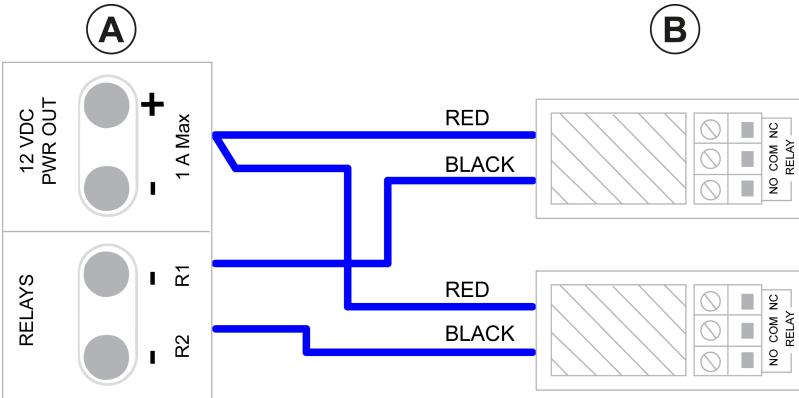
## Connecting relay controlled outputs

The following table lists the KT-1 controller's relay controlled output ratings.

Table 9: Relay controlled outputs

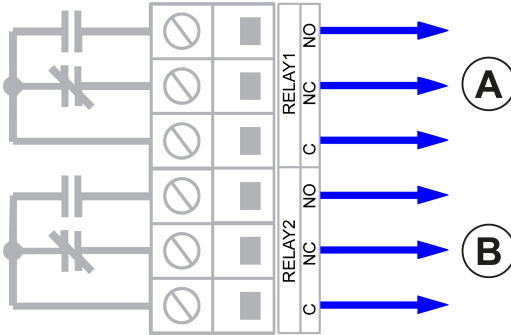
Controller	Outputs	Rating
KT-1	RELAY1 and RELAY2	Open-collector, up to 100 mA each
KT-1-PCB	Form C RELAY1 and RELAY2	3 Amps, 30 VAC/VDC, 0.6 power factor

Figure 19: KT-1 relay controlled outputs



Callout	Description
A	Relay outputs: Open collector, switch to ground, 12 VDC 100 mA maximum.
B	12 VDC relays

Figure 20: KT-1-PCB relay controlled outputs



Callout	Description
A	Relay 1: 30 VDC/VAC, 3 Amps, Form C, 0.6 power factor.
B	Relay 2: 30 VDC/VAC, 3 Amps, Form C, 0.6 power factor.

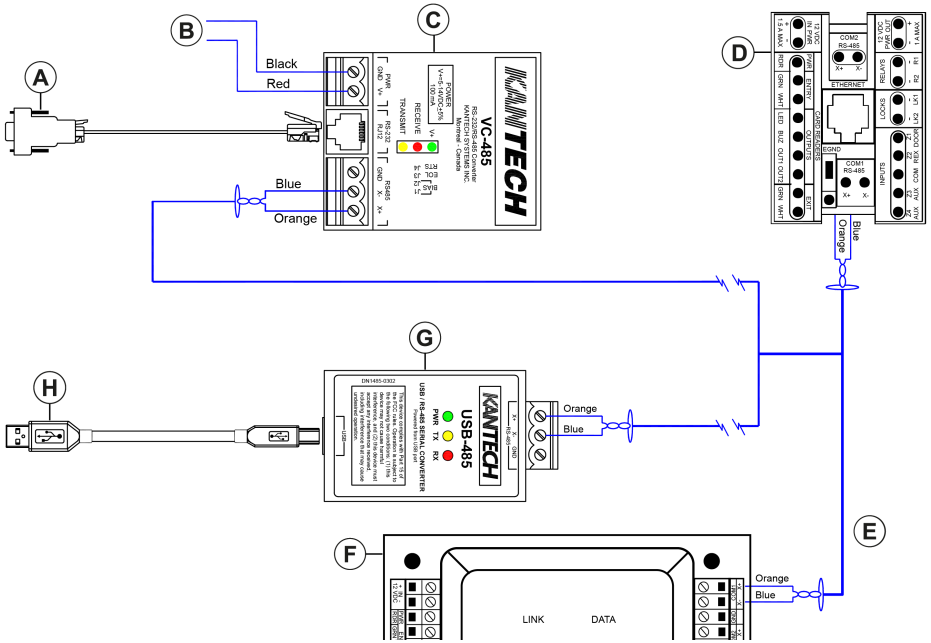
## Connecting auxiliary outputs

- To provide visual and audio signals of access operations, connect auxiliary outputs to card readers and to local warning devices.
  - Note:** Auxiliary outputs activate according to input conditions, events, and local alarms. LEDs provide visual feedback for access operations. Audible warning devices, such as the T-REX or reader buzzer, signal door alarms.

## Connecting the controller

- CAUTION:** Do not connect several KT-1 controllers at a single point. Do not use splitters or spider web (star) networks.
- Note:** On the last controller of a loop, there is no end-of-line resistor to install on the RS-485 COM1 terminals.
  - Connect the VC-485 or the USB-485 to the RS-485 Bus.
    - Note:** The use of a VC-485 was not evaluated by UL.
  - Connect the RS-485 cable to (COM1) X+, X-.
    - Note:** The controllers are linked together through their RS-485 terminals. The maximum communication loop length is 4,000 ft (1.2 km) using the appropriate cabling. See Figure 21.
  - Wire the RS-485 communication loop with an Ethernet Category 3 double twisted pair (unshielded) network cable or better.
    - Note:** The RS-485 loop can operate from 1200 to 115200 Bauds under normal conditions.
  - Optional:** If you experience intermittent communication problems or erratic operation, drop your network speed to a Baud rate of 9600 or 19200. If you vary the network speed, the operating speed of the system does not change noticeably.

Figure 21: Connecting the controller

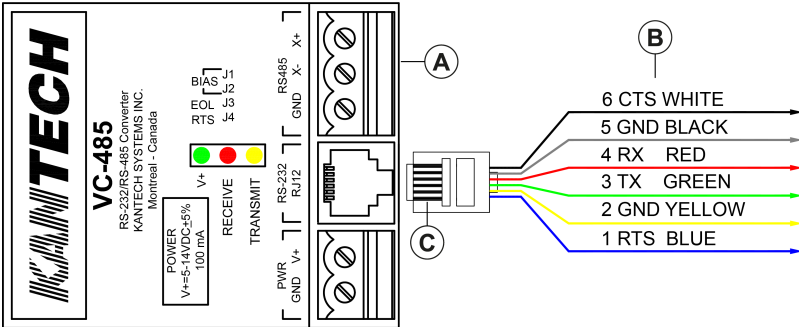


Callout	Description
A	DB9F: Gateway to serial port. The maximum length is 100 ft (33 m).
B	External power supply: 5 to 14 VDC, 100 mA
C	VC-845: RS232 to RS485 serial communication interface
D	KT-1 controller
E	Connect the RS-485 main network to other KT-1 controllers or to the gateway using a USB-485 interface.
F	KT-1-PCB controller
G	USB-485: USB to RS485 serial communication interface
H	Gateway USB port. The maximum length is 3.3 ft (1 m).

# Making an RS-232 cable with an RJ-12 connector

To make your own RS-232 cable with a RJ-12 connector, the following figure shows an example of the configuration.

**Figure 22: RJ-12 pin-out**



Callout	Description
A	VC-485
B	RJ-12 male connector (clip down)
C	PIN 1

## Power supply

- ⚠ CAUTION:** Do not apply power to the controller until after you complete and test all connections, and after you fix the unit to the wall.
- ⚠ CAUTION:** Do not connect the controller to the PoE or PoE+ injector and to an external 12 VDC power supply at the same time.

To power the controller, complete one of the following procedures:

- [Powering the KT-1](#)
- [Powering the KT-1 or KT-1-PCB using PoE or PoE+](#)
- [Powering the KT-1-PCB in a KT-1-CAB](#)
- [Powering the KT-1-PCB using an external power supply](#)

## Powering the KT-1

1. Connect an external power supply to the 12 VDC input terminals that are located on the small board.
2. Install the small board to the wall plate.
3. Install the main boards to the small board.

## Powering the KT-1 or KT-1-PCB using PoE or PoE+

1. During the installation, connect the Ethernet wire to the RJ-45 connector.
  - i Note:** Use PoE or PoE+ Phihong models POE125U-4-HP-R or POE36U-1AT-R.
2. Put the main board back into place.

## Powering the KT-1-PCB in a KT-1-CAB

1. Connect a KT-PS4085 power supply, a PTC 1640UG plug-in adapter, and a battery rated 12V/7Ah.
2. Connect the AC trouble output from the KT-PS4085 to one of the available inputs on the KT-1 to transmit AC loss events to the monitoring console.

# Powering the KT-1-PCB using an external power supply

- Connect the external power supply to the 12 VDC input terminals.

## Reset options

The controller has four reset options:

- [Soft reset](#)
- [Hard reset](#)
- [Forced default static](#)
- [Factory default DHCP](#)

To reset the controller, see [Resetting the controller](#).

## Soft reset

If you perform a soft reset on a KT-1, the following occurs:

- If all of the controller's memory definitions and parameters are valid, they are verified and kept intact. If they are not valid, the controller goes into a hard reset.
- If it is valid, the internal event buffer is maintained.
- If it is defined, the previous IP address is kept.
- You see one of the following messages: **Power ON Soft Reset, Manual Pushbutton Soft Reset, or Operator Soft Reset.**
- The LED pattern does not change during the reset.

**Table 10: Soft reset LED pattern**

EntraPass edition	Communication status	LED pattern
All editions	Offline	Fast flashes
Global	Online	1 flash every second
Corporate	Online	3 flashes every second

## Hard reset

If you perform a hard reset on a KT-1, the following occurs:

- All of the controller's memory definitions reset to their default values.
- The internal event buffer clears.
- If it is valid, the IP address is kept.
- The LED pattern is in a hard reset state: 4 flashes every second, if it is not in a factory default or forced default static state.
- You see the following message: **Controller Hard Reset.**
- The internal real time clock (RTC) and clock reset to the default time and date values of January 1 2014, 00:00:00, Wednesday.

## Forced default static

If you perform a forced default on a KT-1, the following occurs:

- If all of the controller's memory definitions and parameters are valid, they are verified and kept intact. If they are not valid, the controller goes into a hard reset.
- If it is valid, the internal event buffer is maintained.
- The IP address resets to the default static IP: 192.168.1.2 Subnet mask: 255.255.255.0.
- The LED pattern remains in forced default static mode: a flashing beat of 3 reversed flashes, until the controller resets to another mode.

# Factory default DHCP

The KT-1 default DHCP is completed by Kantech. Reset the controller to factory default DHCP only for the following reasons:

- To configure the KT-1 with the KT-Finder. For more information, see [Configuring the controller using the KT-Finder](#).
- The KT-1 is communicating using a VC-485 or a USB-485 and you want it to communicate using the Ethernet port.
- You are using a KT-1 from another site and there is no communication.

If you perform a factory default on a KT-1, the following occurs:

- All of the controller's memory definitions reset to their default values.
- The internal event buffer clears.
- The LED pattern is a reversed flash continuous beat.
- You see the following message: **Controller Factory Default Reset**.
- The internal RTC and clock reset to the default time and date values of January 1 2014, 00:00:00, Wednesday.
- The KT-1 waits for valid communication from EntraPass through any effective Ethernet or RS-485 communication port to configure the controller master mode.

## Resetting the controller

1. Remove the front cover of the controller by unlocking the clip at the bottom.
2. Locate the **Reset** button in the lower right of the main board. See Figure 23.
3. Complete one of the following options:

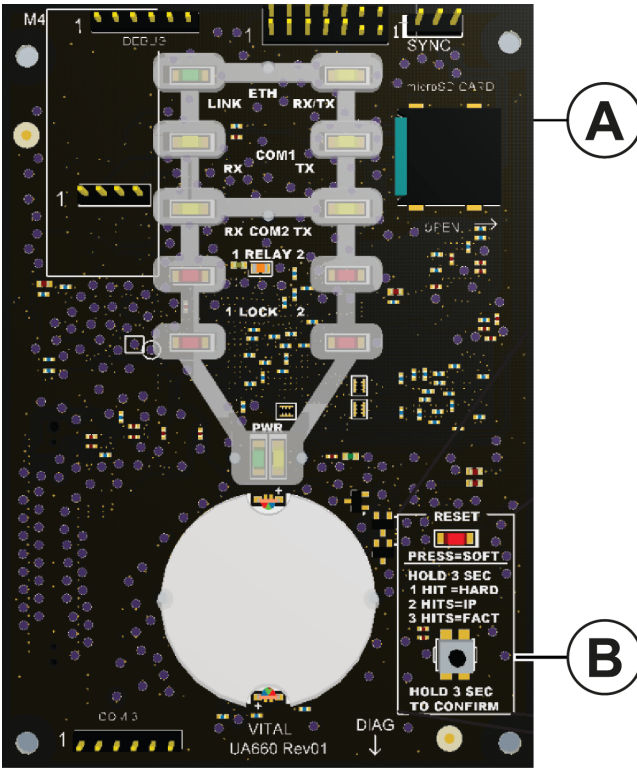
**Table 11: Reset options**

Step	Soft reset	Hard reset	Forced default static	Factory default DHCP
A	Press <b>Reset</b> for less than 2 seconds.	Press <b>Reset</b> for 3 seconds until you hear 5 beeps.		
B	-	Press <b>Reset</b> once.	Press <b>Reset</b> twice.	Press <b>Reset</b> three times.
C	-	Press <b>Reset</b> for 3 seconds until you hear 5 beeps.		

- ⓘ **Note:** For a description of the Kantech shield LED during each reset option, see Table 8.
- ⓘ **Note:** For descriptions of each reset option, see [Reset options](#).



Figure 23: KT-1 main board



Callout	Description
A	KT-1 controller main board
B	Reset button

## Using the One Button on the Kantech shield

The One Button is located on the Kantech shield on the lower part of the controller's front cover. Press the One Button to configure some of the controller's functions.

**Note:** After you replace the controller's front cover, there is a 20-second delay before the One Button responds.

## Turning on the Kantech shield LED

- Press the One Button for three seconds. To turn off the Kantech shield LED, press the One Button for three seconds again.

## Enrolling to EntraPass

- Press the One Button for six seconds to trigger enrollment to EntraPass for 10 minutes and to activate the Kantech shield LED. To turn off the enrollment and the Kantech shield LED, press the One Button for six seconds again.

## Using the One Button as a fifth input

- You can use the One Button as a fifth input, for example for a request to exit detector. For more information, see [Connecting inputs](#).

# Configuration

Use one of the following options to configure the controller:

- [Configuring the controller using a browser](#)
- [Configuring the controller using the KT-Finder](#)

## Configuring the controller using a browser

**Before you begin:** To configure cloud mode, factory default the controller.

1. Determine your connection to the controller and choose the appropriate network cable.
2. On your computer or mobile device, open a web browser.
3. In the address bar, type **KT** and the last six digits of the controller's MAC address in the following format: **KT-XX-YY-ZZ/**.
4. On the **KT-1 REGISTRATION** page, in the upper right of the window, select your preferred language. English is selected by default.
5. To configure the correct mode, complete the steps in one of the following procedures:
  - To configure the controller in stand-alone mode, complete one of the following options:
    - [Configuring stand-alone mode using the activate now option](#)
    - [Configuring stand-alone mode using the other ways to activate option](#)
  - To configure the controller with EntraPass, complete [Configuring EntraPass mode](#).
  - To configure the controller with Cloudvue, complete [Configuring cloud mode](#).

## Configuring stand-alone mode using the activate now option

1. On the **KT-1 REGISTRATION** page, click **Standalone**.
2. On the **Activate now** tab, in the **Customer information** and **Installer information** fields, enter the relevant information.
3. Click **Activate now**.

## Configuring stand-alone mode using the other ways to activate option

1. Log on to <http://www.kantech.com>.
2. Click **Support** and click **Kantech Registration**.
3. In the **KT Standalone Registration** area, click **Click here**.
4. On the **KTWeb - Registration** page, enter the relevant information and click **Register**. You receive an activation code by email. Alternatively, contact Kantech technical support in your region to get an activation code.
5. Return to the **KT-1 REGISTRATION** page and click **Other ways to activate**.
6. In the **Activation code** field, enter the activation code and click **Activate now**.

## Configuring EntraPass mode

1. On the **KT-1 REGISTRATION** page, click **EntraPass**.
2. In the **EntraPass gateway** pane, in the **IP address** field, enter the IP address, or in the **Domain name** field, enter the domain name.
3. From the **Protocol** list, select **TCP** or **UDP**.
4. **Optional:** If you selected **UDP**, in the **Port** field, enter a port number.
5. Click **Save**.

## Configuring cloud mode

1. On the **KT-1 REGISTRATION** page, click **Cloudvue**.

2. In the **Cloudvue Registration** pane, in the **Cloudvue Partner** and **Cloudvue Account Name** fields, enter the partner and account name, and from the **Cloudvue Data Center** list, select the data center.

**i** **Note:** To find out this information, contact your Cloudvue administrator.

3. Click **Save**.

## Result

- If the Cloudvue partner is invalid, a red banner displays the message **Invalid Partner Code** and the controller cannot restart.
- If the Cloudvue account name is invalid, a red banner displays the message **Invalid Account Name** and the controller cannot restart.
- If the information is valid, the controller's Kantech shield LED makes three short blue flashes and the controller restarts in cloud mode.

**What to do next:** After you configure the controller in cloud mode, you can add it to the Cloudvue system. To add the controller in Cloudvue, see [Adding the controller to the cloud](#).

## Configuring the controller using the KT-Finder

Download the KT-Finder for free from <http://www.kantech.com>. Use the KT-Finder application to configure the controller over the LAN or the WAN.

1. Exit all EntraPass applications.
2. Make sure the controller is in factory default DHCP mode. To reset the controller, see [Resetting the controller](#).
3. To open the KT-Finder, go to **Start > All Programs > EntraPass Edition > Server > KT-Finder**.  
**i** **Note:** If you try to open the KT-Finder when EntraPass is open, an error message appears.
4. In the **KT-Finder Wizard** window, from the **Device** list, select **KT-1**.
5. In the **MAC address** field, type the MAC address of the KT-1, and click **Connect**. When the KT-Finder finds the controller, the following message appears: **Configuring the KT-1 with the KT-Finder**.
6. In the **EntraPass Gateway** pane, in the **EntraPass IP Address** field, type the IP address. For more information, refer to the *EntraPass Administration Guide*.
7. In the **Ethernet configuration** pane, from the **Protocol** list, select **UDP** or **TCP**.
8. **Optional:** If you selected **UDP**, in the **Port** field, enter a port number.  
**i** **Note:** Change the port number only when you have more than one controller at the same remote site.
9. Click **OK**.
10. Repeat the steps for each controller at this site.

## Adding the controller to the cloud

**Before you begin:** Before you add a controller to Cloudvue, you must initialize it so that the controller receives its default configuration from the cloud. If the controller is initialized, the L2 (Lock 2) LED turns on. If the controller is not initialized, you cannot save your configuration in Cloudvue.

1. Log on to Cloudvue at <https://cloudvue.com/login>.
2. In the right pane, click **Account**.
3. Click the **Devices** tab.
4. Click **ADD NEW DEVICE**, and from the list, select **Add Access Control Device**.
5. Enter the following information about the controller:
  - **Controller Name:** Enter a name to identify the controller easily.
  - **MAC Address:** Enter only the numbers. Do not enter dashes or colons.
  - **Serial Number:** Enter the controller's serial number.
6. From the **Location** list, select an existing location, or to add a new location, select **ADD A NEW LOCATION** and enter the location details.

**Note:** The location defines the controller's time zone. If you enter an incorrect location, it affects all controllers associated with it.

- Click **Save**.
- Click the **Devices** tab. If the controller saves successfully, it appears in the list of devices.

## Replacing or discarding components

**Important:** Only qualified service technicians should perform maintenance recommendations.

The KT-1 includes a lithium CR2032 primary battery. To avoid risk of explosion, the battery must be replaced only by a qualified service technician. Do not crush, puncture, open, disassemble or otherwise mechanically interfere with the battery. Do not try to recharge the battery. If you need to dispose of the PCB and/or the lithium battery, wrap the KT-1 in non-conductive tape. Check with your local authorities for battery disposal regulations.

**WARNING:** Do not store the batteries in such a way that they come into contact with each other or with any piece of metal. Explosion or fire may occur. Should fire occur, use only dry chemical fire extinguishers. Do not use water to put out the fire. Do not heat the batteries. Do not dispose of the batteries or PCB in a fire. Do not disassemble the batteries. Do not apply pressure to deform the batteries. Ensure that the above precautions are strictly observed by related departments, including, but not limited to, production, sales and outside contractors.

**WARNING:** There is a risk of fire, explosion, and burns. Do not recharge, disassemble, heat above 100°C, or incinerate.

## KT-1 models, expansion kits, and components

The following table lists of the different KT-1 models, expansion kits, and other related components.

**Table 12: KT-1 models, expansion kits, and related items**

Product	Description
KT-1	One-door IP controller, single gang mount.
KT-1-M	One-door IP controller PCB with metal cabinet (No P/S, No BAT).
KT-1-PCB	One-door IP Controller PCB including connector board (Compatible with KT-1-CAB-M or P).
KT-1-CVR	Black replacement cover for KT-1 including the back box.
KT-1-CAB-M	Metal enclosure only for KT-1-PCB.
KT-MOD-IO16	RS-485 Input/Output Module compatible with the KT-1.
KT-1-PCB-BP	Backplate only for KT-1-PCB. KT-1 not included.
USB-485	USB-485 interface, USB cable 3 ft (0.9 m) and USB drivers on CD-ROM.
VC-485	VC-485 interface, RS-232 cable 10 ft (3 m) with RJ-12 connectors, 740-1012 (DB25F to RJ-12) adaptor, 740-1022 (DB9F to RJ-12) adaptor and 740-1033 (DB25M to RJ-12) adaptor.

## Compliance specifications

### UL

When a KT-1 is enclosed in the metal cabinet model KT-1-CAB and powered by the power supply model KTPS4085 in conjunction with the external adapter PTC1640UG the following performance levels are defined for the access control unit as per UL 294:

Destructive attack: Level I (no attack test)

Line Security: Level II (Standard line security, RS-485 or Ethernet) and Level III (encrypted line security 128 bit, Ethernet only)

**Note:** Line Security Level III requires that you create a trigger and alarm sound in Entrapass. To create a trigger and alarm sound, complete the steps in the following task:

## Creating a trigger and alarm sound in EntraPass

1. On the EntraPass main menu, click the **Devices** tab and click **Controller**.
2. From the **Controller** list, select the controller.
3. Click the **Trigger and Alarm** tab.
4. Right-click and select **New trigger**.
5. In the **Trigger and Alarm** window, in the **English** field, enter a name for the trigger.
6. On the **General** tab, from the **Component Type** list, select **Controller**.
7. From the **Controller** list, select the controller.
8. From the **Trigger schedule** list, select **Always valid**.
9. On the **Events** tab, click **Controller communication failed**.
10. On the **Alarm notification** tab, from the **Alarm schedule** list, select **Always valid**.
11. From the **Desktop alarm** list, select **Always valid**, and click the **Save** icon.
12. On the EntraPass main menu, click the **Options** tab and click **Multimedia Device**.
13. On the **Sound** tab, from the **Priority** list, select the priority level associated with the event **Controller communication failed**. The default is priority level 3.
14. Click **Assign alarm sound** and select an alarm sound from the list.
15. Click **OK**.
16. On the EntraPass main menu, click the **Desktops** tab, right-click one of the eight desktop views and select **Properties**.
17. In the **Desktop properties** window, in the **Alarms Desktop** pane, select **Messages screen** and click **OK**.

When a controller's communication fails, a message displays in the desktop view and an alarm sounds.

Endurance: level IV (100,000 cycles)

Standby power: Level 1 (when no standby power is provided) and level IV (4 hours, when using KT-PS485)

**i** **Note:** If KT-1 is used in a single gang configuration, powered by an external, separately listed power supply or PoE/PoE+ switch the performance levels remain the same with the exception of the standby time that will be rated Level I (no secondary power source).

To comply with UL listings, the following requirements must be met:

- Installation locations and wiring methods shall be in accordance with the National Electrical Code, ANSI/NFPA 70.
- Do not connect to a receptacle controlled by a switch.
- Use of a UL listed computer.
- Use of UL listed readers (Wiegand 26 and 34 bits, stripe 26 and 34 bits, XSF 39 bits have been tested and found to comply).
- Kantech XSF 39 bits have been tested and found to comply.
- Use of a UL recognized tamper switch on every housing cabinet for the KT-1 One-Door Controller.
- Do not use the SmartLink option.
- Do not use a 230 VAC transformer (not UL listed).
- Use only UL listed cables.
- Use only UL listed adaptors.
- Use only a UL listed power supply such as Kantech part number KT-PS4085 (available through Kantech distributors or dealers, please refer to the Technical Support contact information at the beginning of this guide to obtain the specific transformer).
- The KT-1-EU has not been validated as a UL Listed system.
- The PTC1640UG and 12V/7Ah battery are used for 4 hours of standby power.
- Security hardening guide has not been evaluated by UL.
- KT-MOD-IO16 has not been evaluated by UL.

**i** **Note:** All circuits are power limited with the exception of battery connection. Separation of 3/4 in. shall be maintained between power limited and non-power limited wiring.

**i** **Note:** Replace battery with Changzhou Jintan Chaochuang Battery Co Ltd., Panasonic or Energizer Part No. CR2032 Only. Use of another battery may present a risk of fire or explosion.

## UL 294 Compliance Notice

- Use only UL 294 or UL 1076 listed power supply.
- Connect Kantech part number KT-ACPW-LED status indicator to the AC terminals of the KT-PS4085.
- Use Kantech part number KT-BATT-12 battery.

**i Note:** Using a 12V/7Ah battery, backup battery provides a minimum of 4 hours standby time.

- For UL listed installations, use only in conjunction with compatible PoE/PoE+ devices that are UL 294 listed. These devices shall be used in conjunction with UL listed transient protectors.
- The following Kantech readers have been validated by UL for the UL 294 Standard: P225W26, P225KPW26, P225XSF, P225KPXSF, P325W26, P325KPW26, P325XSF, P325KPXSF, P600, KT-MUL-SC, KT-MUL-SC-KP, KT-SG-SC, KT-SG-SC-KP, KT-MUL-MT, KT-MULMT-KP, KT-SG-MT, and KT-SG-MT-KP.
- Communication between EntraPass and the KT-1 shall use a secure network to guard against such threats as: Denial of Service (DoS), spoofing, sniffing, hijacking, Trojans, viruses/worms, and malware.

## UL 1076 Compliance Notice

- The KT-1 is UL 1076 Listed as a Commercial Proprietary Control Unit Accessory and Proprietary Burglar Alarm Unit (Section 83.2), with EntraPass and Redundant Server, alarm system features, KT-300, KT-400 Controllers, Kantech ioProx Proximity readers, and TRex request to exit devices – other sensor devices (temperature, water level, etc.) may be used as long as they are also UL 1076 Listed.
- The EntraPass and Redundant Server shall be running at all time, and manned 24 hours a day, 365 days a year – The EntraPass and Redundant Server will each have their own operator workstation.
- Data processing equipment and office appliance and business equipment used as central supervisory equipment station shall be listed to Information Technology Equipment - Safety-Part 1: General Requirements - UL 60950-1 or UL 62368-1.
- Should the EntraPass and/or Redundant Server be replaced, a UL 60950-1 or UL 62368-1 listed computer must be used.
- The following recommended system requirements apply to the EntraPass Server, Redundant Server, Video Vault, Card Gateway, SmartLink, and Workstation:

- Operating Systems: Windows® 2008/Windows 2012/Windows 7 Standard/Enterprise Server Editions/Windows 8/Windows 10
- Processor: Dual Core
- 4 GB RAM
- Minimum free hard disk space: 20 GB
- Color depth: 24-bit (16 million colors), required for Video Integration only
- Screen resolution: 1024 x 768
- AGP or PCI Express 8X graphics card with 64 MB memory and DirectX 9.0 support
- Network Interface card: 10/100 Base-T network adaptor

**i Note:** Actual requirements may vary based on your operating system and configuration.

- The Central Supervisory Equipment shall employ supply line transient protection complying with the Standard for Transient Voltage Surge Suppressors, UL 1449, with a maximum marked rating of 330 V.
- The Central Supervisory Equipment shall employ signal line Transient protection complying with the Standard for Protectors for Data Communications and Fire Alarm Circuits, UL 497B, with a maximum marked rating of 50 V.
- The Central Supervisory Equipment shall employ that communication circuits and network components connected to the telecommunications network shall be protected by secondary protectors for communication circuits. These protectors shall comply with the Standard for Secondary Protectors for Communications Circuits, UL 497A. These protectors shall be used only in the protected site of the telecommunications network.

- The Central Supervisory Equipment shall be installed in a temperature controlled environment. A temperature controlled environment is defined as one that can be maintained between 14° - 10°C (55° - 95°F) by HVAC system. Twenty-four hours on standby power shall be provided for the HVAC system. The standby power system for the HVAC system may be supplied by an engine driven generator alone. A standby battery is not required to be used.
- A marking to identify the application and signaling function of the product is located on the inside of the unit (inner door sticker).
- For certified commercial proprietary control unit accessory applications, the requirements of UL 1076, Commercial Proprietary Control Unit Accessory also apply.
- The reader(s), that is(are) designated to arm or disarm the alarm system, must be within the secured side of the customer premises.
- The following Kantech readers have been validated by UL for the UL 1076 Standard: P225W26, P225KPW26, P225XSF, P225KPXSf, P325W26, P325KPW26, P325XSF, P325KPXSf and P600.
- All alarms shall be reported and acknowledged in the following priority:

**(i) Note:** To set these priorities, please adjust the Event Parameters, found in EntraPass System.

- Fire alarm and industrial supervision where a risk of injury to persons, or damage or destruction of property may be involved.
  - Hold-up or panic alarm.
  - Burglar alarm.
  - Watchman tour (Guard tour).
  - Fire-alarm supervision.
  - Burglar-alarm supervision.
  - Industrial supervision where a risk of injury to persons, or damage or destruction of property will not be involved.
- If multiplex system signals are transmitted directly from the protected systems to the central supervising station and the loss of the channel prevents the receipt of signals from protective circuits beyond the fault, the number of separate signals on a single channel shall be limited to 1000.
  - Minimum 4 hours of stand-by power provided by a standby rechargeable battery, rated 12V, 7Ah. Loss of AC signal is transmitted immediately to the central station. Required use of Reader's LED (flashing) as acknowledgement signal indicator.
  - Use EntraPass and under Definition/Alarm System/Door enable the option "Supervised door when armed" when using the Reader's flashing LED to indicate the acknowledgment signal. POE/POE+ feature is not permitted for UL 1076.
  - The supervision of the IP network connection between a KT-1 and EntraPass is controlled by the network pulse time. You can program the network pulse time in EntraPass from 15 seconds up to 10 minutes. The default times are 1 minute for EntraPass Corporate Edition and 15 seconds for EntraPass Global Edition. For UL listed installations, the allowed range for the network pulse time is from 15 seconds up to 140 seconds. The loss of communication notification will occur when the network pulse time has elapsed twice plus 15 seconds.

## FCC & IC

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.

- This class B digital apparatus meets all requirements of the Canadian Interference Causing Equipment Regulations CAN ICES-3 (B) / NMB-3 (B).

## CE & RCM

- EN 60950-1, EN 62368-1, EN 50130-4:2011, EN 61000-6-3. CE Compliance in accordance with applicable LVD and EMC Directives.
- Australia/New Zealand: RCM Compliance.

