

KT-300

Door Controller



Installation Manual



DN1315-0707

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Pre-Installation Information

To the Installer: If you are familiar with the installation, you can use the checklist with the ☒ symbol.

Copyright Info

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Safety Instructions

ONLY SERVICE PERSONEL WILL INSTALL AND MAINTAIN THE KT-NCC. Service personnel must have appropriate technical training and experience necessary to be aware of the hazards to which they are exposed and of measures to minimize the danger to themselves or other persons.

The connection to the mains supply must be made as per local authorities rules and regulations: in the UK as per BS6701.

Provide an appropriate disconnect device, 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).

If a knockout is removed during installation, it is the installer's responsibility to ensure that the same degree of protection is provided for the cabinet by the use of bushings, fittings, etc.

Secure the metal cabinet to the building structure before operation.

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.

The power supply must:

- **Be permanently connected, fail safe, with double or reinforced insulation between primary and secondary circuits.**
- In EU countries it must meet the applicable requirements of the *Low Voltage Directive* and protected as per EN60950 requirements.
- In other countries, it must be of approved type acceptable to local authorities.

The ground connection must be provided via the TERMINAL BLOCK at the PE (IEC 60417-5019 symbol) marked connection.

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.

It is the installer's responsibility to provide protection against a short circuit on the input (bridge rectifier, C2, etc.).

Components Required to Install KT-300 ☒

- KT-300 Controller with accessory kit
- AC transformer 120/220 VAC/16 VAC, 40 VA, class 2*
- One 12 volt battery 7 A/h*
- Ground clamp*

A visual inspection should be made when unpacking the KT-300. Any missing item/part or damaged component should be reported immediately.

*Not included

Technical Support

For technical assistance with the KT-NCC and other Turnstiles products, contact technical support,

- **Phone:** (303) 670-1099
- **Fax:** (303)679-8949
- **Internet:** www.TURNSTILES.us
- **E-mail:** Patrick.McAllister@Turnstiles.us



KT-300 Compliance Specifications

FCC & IC Compliance

This device complies with Part 15 of the FCC rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received including interference that may cause undesired operation. This class B digital apparatus meets all requirements of the Canadian Interference Causing Equipment Regulations. The KT-300 is also compliant with EN55022:1994, amendment 1:1995, Class B.

CE Compliance Notice

This equipment has been tested and found to comply with the limits of EN 50130-4: 1995.

This equipment is designed to be used in an environment that meets a maximum pollution degree of 2 and over voltages category II - NON HAZARDOUS LOCATIONS, indoor only. The equipment is FIXED and PERMANENTLY CONNECTED. It must be installed in a metal cabinet by service personnel only. Service personnel is defined as: Persons having the appropriate technical training and experience necessary to be aware of hazards to which they are exposed in performing a task.

UL Compliance Notice

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

- Use of a UL listed computer
- Use of UL listed readers (Wiegand 26 and 34 bits, mag stripe 26 and 34 bits, have been tested and found to comply)
- Use of a UL recognized tamper switch on every housing cabinet for the KT-300
- Do not use the SmartLink option
- Use the Turnstiles IP Link Enhanced Ethernet Device
- Use the KT3-LCD module on each KT-300 controller (should be installed near the controller)
- Do not use a 220 V transformer (not UL listed)
- Use only UL listed cables
- Use only UL listed adaptors
- Use only a UL listed transformer such as Turnstiles TR1640/UL or DSC PRD1640
- Use Turnstiles BD7-12 battery

NOTE: Backup battery provides operation of up to 12 hours but has been tested only 4 hours per Section 33 of UL294, fifth edition.

NOTE: All circuits are power limited.

Overview

Innovative and Powerful

The Turnstiles KT-300 Door Controller is designed to meet the highest standards of access control and point monitoring applications.

Downloadable Firmware

The firmware program, stored in the controller's flash memory, is updated without changing the memory chips. The firmware program can be uploaded from any EntraPass workstation.

Speed selection - Fast! Up to 115,200 Bauds

The KT-300 automatically detects the site communication speed set by EntraPass.

Trouble and Reporting

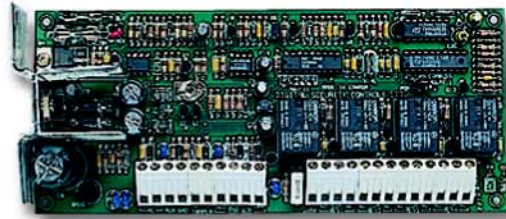
The KT-300 constantly supervises battery condition and reports "Low battery" or "No battery" status to the EntraPass system. Power outputs are supervised and individually protected against short-circuits and surges by self-resetting PTC. Locking devices are also supervised for short and open circuits.

Built-in Combus Expansion

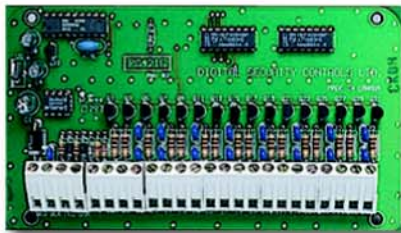
The KT-300 supports expansion modules to add inputs, outputs and an LCD time and date display for Time & Attendance purposes.



**KT-PC4108 - 8-Zone Input
Expansion Module**



**KT-PC4204 - 4-Relay and Combus
Additional Power Supply Module**



**KT-PC4216 - 16-Output
Expansion Module**



**KT-3LCD-LCD Time and Date Display
for Time & Attendance Functions**



Technical Specifications

Specification	Description
AC power	16VAC, 40VA, class 2 transformer
Battery back-up	1battery 12VDC, 7Ah, supervised, provides up to 12 hours of operation, Kantech BD7-12 battery tested for 4 hours standby for UL294
Operating temperatures	From 2°C to 40°C (35°F to 110°F)
Cabinet Dimensions (H-W-D)	29.9 cm (11-3/4") x 28.8 cm (11-3/8") x 7.7 cm (3") EMT 1.9 cm (3/4")
Cabinet Weight	2.4 kg (5.4 lbs)
PCB dimension	18.3 cm (7-1/4") X 12.18 cm (4-3/4") X 5.20 cm (2-1/16")
Reader types	Wiegand, proximity, bar code, magnetic, integrated keypad and others
Reader power output	12 VDC and 5VDC @ 175mA max, protected and supervised
Monitored points	8 monitored points, NO/NC, w/without EOL's (expandable to 16), use UL recognized tamper switch on cabinet housing to conform with UL 294
Points maximum wiring	AWG #22 - 600 meters (2,000 feet)
Door strike power	12 V DC, 250mA max each, supervised
Auxiliary outputs	4 outputs, 25mA max each, open collector
Relay controlled output	2-relay controlled outputs, 25mA max each. Open collector to ground (use form "C" relays Kantech #KT-RM1 if needed)
Auxiliary power output	11.5 to 13.85 VDC @ 175mA max, protected and supervised
Communication ports	RS-232, RS-485 and Combus
Communication speed	Up to 115.200 baud (automatic detection)
Firmware Flash memory	128 K
RAM memory	128 K (512 K unit available) Protected by a lithium battery
Network autonomy	Distributed data and processing
Certifications / Listing	CE, FCC, UL294 listed

Electrical Specifications

VOLTAGE OUTPUTS	MAXIMUM CURRENT	ABSOLUTE COMBINED MAXIMUM
Lock Outputs (12 VDC)	500 mA (250 mA each)	1.5 A
Auxiliary Power (11.5 to 13.85 VDC)	175 mA	
Reader 5 VDC and 12 VDC	175 mA	
Combus	500 mA	
Battery Charging (12 VDC)	250 mA	
OPEN COLLECTOR OUTPUTS	MAXIMUM CURRENT	
LED (door 1 & 2)	25 mA (each)	
Buzzer (Buz, door 1 & 2)	25 mA (each)	
Controlled Relay 1 & 2 (RL1 & RL2)	25 mA (each)	

KT-300 Controller and Accessories

Kantech Model	Description
KT-300/128K	Door controller with 128K memory including KT-300CAB, KT-300ACC and KT-LOCK
KT-300/512K	Door controller with 512K memory including KT-300CAB, KT-300ACC and KT-LOCK
KT-300PCB/128K	KT-300/128K PCB only and KT-300 ACC
KT-300PCB/512K	KT-300/512K PCB only and KT-300 ACC (not UL listed)
KT-300ACC	Accessory kit including: 2 X 1.0k ohm, 10 x 5.6k ohm, 2 x 120 ohm, PCB standoffs, lock hole cover, ground wire and screwdriver
KT-PC4108	8-zone input expansion module for KT-300
KT-PC4204	4-Relay and Combus additional power supply module for KT-300
KT-PC4216	16-Output expansion module for KT-300
KT-RM1	External isolation relay SPDT for KT-300 output (RL1/RL2) (not UL listed)
KT3-LCD	Time & date LCD display unit for KT-300
KT-300CAB	KT-300 black metal cabinet including KT- LOCK
KT-4051CAB	Standard black metal cabinet for KT-PCxxx modules (order keylock separately)
KT-LOCK	Keylock for KT-300CAB/KT-4051CAB metal cabinet (2keys/same as KT-200)
KT-TAMP	Tamper switch for KT-300CAB/KT-4051CAB metal cabinet
TR1637W/CSA	Transformer, Wire-in, 110V/16V (37VA) CSA (not UL listed)
TR1640P/CSA	Transformer, Plug-in, 110V/16V (40VA) CSA (not UL listed)
TR1640P/UL	Transformer, Plug-in, 110/16V (40VA) UL or DSC PTD1640 www.dsc.com
TR1640W-220	Transformer, Wire-in, 220V/16V (40VA) CE (not UL listed)
VC-485 or USB-485	Multi-function communication interface



Installing the KT-300

Physical Installation

- Check for ideal indoor location.
- Stay away from electrical or communication devices.

The KT-300 Controller cabinet has been designed to be mounted on a wall without any additional enclosures. The cabinet is large enough to accommodate the battery backup supply and the necessary wiring connections for most applications. EMT (Electrical Metallic Tubing) conduit knockouts are provided in 2.2 cm (7/8") on all sides of the cabinet.

The cabinet should be mounted indoors, in a secure location providing normal temperature and humidity, leaving 23 cm (8") clear space around all sides and a minimum of 33 cm (13") clear space in front of the cabinet. The location should be easily accessible for servicing the equipment and it is recommended that controllers be located close to the controlled doors.

Controllers must be located at a minimum distance of 2 meters (6 feet) from any high voltage equipment or wiring and from electrical equipment susceptible of generating electrical interference, at a minimum distance of 1 meter (3 feet) from telephone equipment or lines, and at a minimum of 8 meters (25 feet) from any transmitting equipment.

Physical access, using keys, on controlled doors must be provided so that the KT-300 can easily be accessed for servicing in case of malfunction.

Earth Grounding

- AWG#18 grounding wire to EGND.

Since the KT-300 uses high performance communication, proper grounding must be provided to ensure proper operation.

An AWG#18 single conductor copper wire must be used to ground each controller to good earth ground as per the local electrical code (be careful of ground loops). The ground clamp should be located below any other ground.

It is also recommended that you install an AWG#18 single conductor copper wire between each controller.

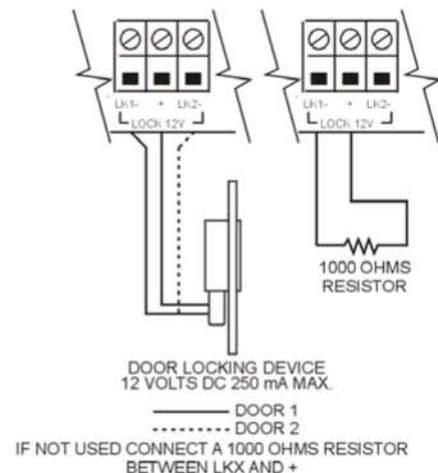
Door Locking Devices

- Connect door locks to + and LK1- (+ and:L2-)
- Maximum 250mA @ 12 VDC per output
- Check for local "magnetic lock" regulations

LK1-, LK2- and + terminals are located on the bottom left to the KT-300 terminal strip. The locking device outputs are controlled according to the end-user programmed parameters for allowing access to or unlocking doors according to schedules and access levels. These doors locking device outputs can operate DC powered locking devices such as electromechanical strikes and can be configured to operate fail-safe or fail-secure (normal or reverse action). Maximum DC current for each lock output is 250 mA.

NOTE: Use 1K ohm EOL (End-Of-Line resistor) between + and LK- if not used. This resistor is already included within the controller packaged box (KT-300ACC).

WARNING: *Controlled door locks may be governed by regulatory bodies and should 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.*



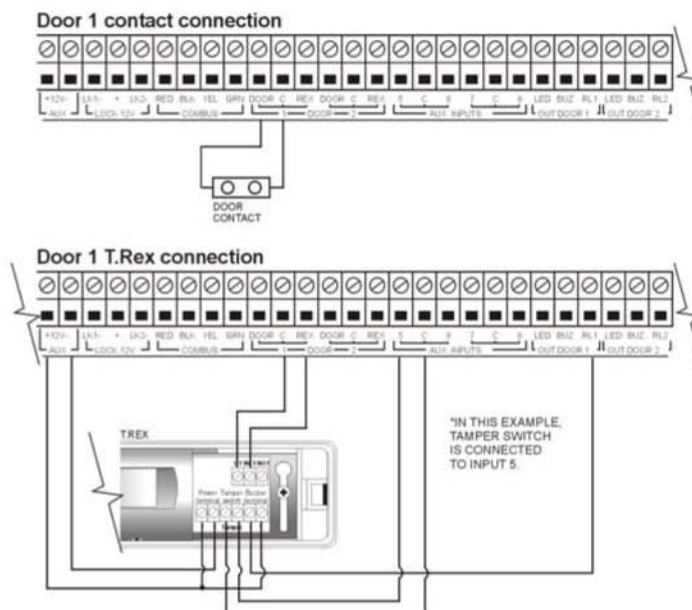
Hooking Up Inputs

- ☒ Connect devices to inputs 1 to 8.
- ☒ Resistors (included with KT-300) for all inputs 5.6K ohm (if selected).

The KT-300 has an on-board capability of monitoring 8 input points (expandable to 16 if KT-PC4108 module is used). Each input is supervised with or without end-of-line resistors (5.6K ohm). The maximum distance of one line is 600m (2,000 feet) with AWG#22.

NOTE: Inputs can be defined with: none or one EOL (End-Of-Line) resistor according to your EntraPass software settings.

Inputs 1-2 are automatically reserved for the first controlled door. The contact is assigned input 1 and the associated request-to-exit detector as input 2. Inputs 3 and 4 are automatically reserved for the second controlled door. The contact is assigned input 3 and the associated request-to-exit detector as input 4. There is no obligation to follow these rules but this standard convention facilitates servicing.



Readers and Keypads

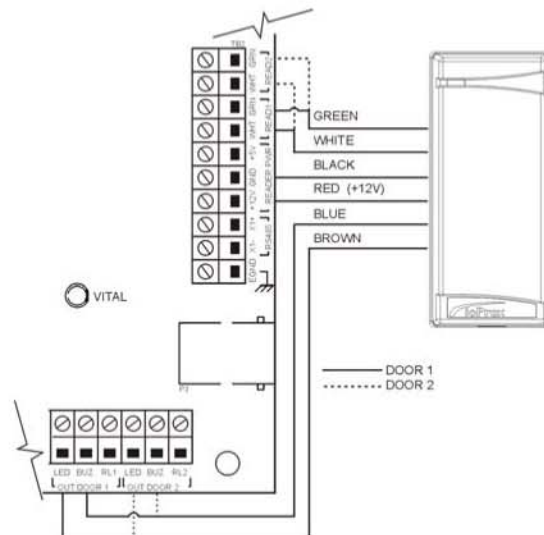
READER CONNECTION TERMINAL WARNING

Connection the red wire lead (or power lead) of a 5 VDC reader to the 12 VDC terminal may damage the reader. See your reader installation procedure for proper power connection.

Up to 2 readers can be connected to a KT-300. They can be installed on one door to control both entry and exit or on two separate doors operating independently to control one-way access.

The distance between the readers and the KT-300 controller varies by reader type (please consult the installation manual for details). Auxiliary outputs provide visual and/or audible access operation feedback at the controlled door. Outputs "OUT DOOR 1 LED & BUZ" are used for the first door and "OUT DOOR 2 LED & BUZ" are used for the second door.

The 12 VDC auxiliary power can also be used to power low current audible devices usually located at the controlled door.



Relay Controlled Outputs

- ☒ Connect controlled outputs to low voltage devices (25 mA max).
- ☒ Add external relays for high voltage devices (optional - Turnstiles # KT-RM1).

The KT-300 provides two controlled outputs -RL1 & RL2 (open collector to ground-current limited to 25 mA). Use a KT-RM1 (optional) to switch larger currents or voltages or to supply a dry contact.

Can be expanded up to 16 controlled outputs when using a KT-PC4216 module. This module allows a maximum of 16 outputs and a maximum of up to 50 mA per output. Since the KT-300 only supports 500 mA, a power supply module can be used to provide an additional 1 A to the Combus.

NOTE: If you are using a KT-PC4204 in "repower" mode and other KT-PC4216 modules that are assigned as relays 1-16 are also connected to the same loop, do not use relay 1 of those modules or relay 1 of the KT-300 Door Controller (see the *Combus Repower* section for more information).



Auxiliary Outputs

Connect auxiliary outputs to readers and local warning devices.

Auxiliary outputs are used for visual and audible signal. They can be activated according to schedules, input conditions or events and local alarms. Auxiliary outputs "OUT DOOR 1 & 2 LED" provide visual feedback of access operation, and auxiliary outputs "OUT DOOR 1 & 2 BUZ" can activate audible warning devices, such as T-REX, to signal door alarms.

Tamper Protection

Install tamper switch on cabinet (Turnstiles #KT-TAMP).

A tamper switch must be installed on the unit to detect unauthorized cabinet opening.

The normally closed tamper switch is connected to an input (choose an unused input (5 to 8) as tamper input or any other unused inputs on the KT-PC4108 module (if used)).

NOTE: The tamper switch is required for a UL listed installation.

Connecting the KT-300

Connecting to the RS-485 Bus

Connect RS-485 cable to X1+, X1- and GND.

If not using VC-485 or USB-485: connect a 120 ohm end-of-line resistor on the first/last KT-300 (X- & X+).

If using VC-485 or USB-485: connect a 120 ohm end-of-line resistor on the last KT-300 only (X- & X+).

Controllers are linked together through their RS-485 connectors. The maximum communication loop length is 1.2 kilometers (4,000 feet) using appropriate cabling. Connecting several KT-300 controllers at a single point is not acceptable nor are splitters or "spider web networks."

The RS-485 communication loop should be wired with Ethernet Category 3 double twisted pair network cable (see cable specifications Belden 1227A, or equivalent). The RS-485 loop can operate from 1,200 to 115,200 Bauds under normal conditions.

Intermittent communication problems or erratic operation may require network speed drops to 9,600 or 19,200 Bauds. Varying the network speed does not perceptibly change the operation speed of the system. Usually most installations should be set to 19,200 Bauds.

Important:

- **Without a VC-485 or USB-485:** Connect a 120 ohm end-of-line resistor between terminals X1- and X1+ of the **first** and **last** KT-300.
- **With a VC-485 or USB-485:** connect a 120 ohm end-of-line resistor between terminals X1- and X1+ of the **last** KT-300. No need to connect on the first KT-300 since the VC-485 contains an end-of-line resistor.

NOTE: To learn more about USB-485 wiring, refer to the *USB-485 Installation Sheet*, DN1482.

Connecting the Master Controller to the Host PC

Connect flat cable from KT-300 to the PC.

From 0 to 30m (0 to 100 feet):

If the local master controller is located less than 30m (100 feet) from the host computer, use the on-board RS-232 RJ12 jack and the supplied flat cable.

From 30m to 60m (100 to 200 feet)

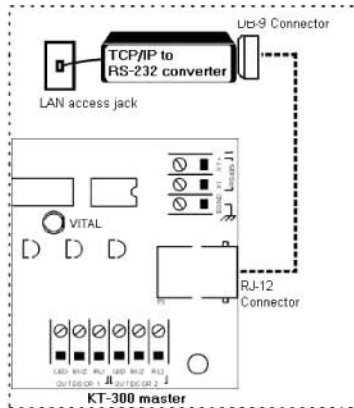
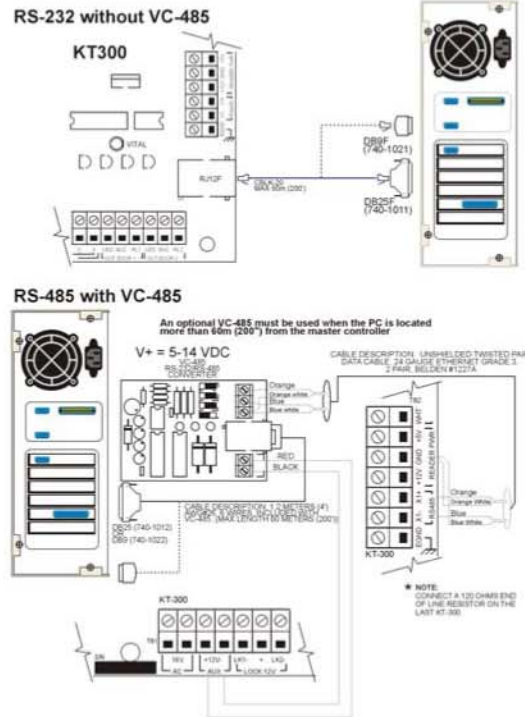
Since the master controller can be located up to 60m (200 feet) from the host computer, an extra 100 feet cable can be added to the existing cable.

NOTE: If you plan to locate the host PC more than 30 m. (100 feet) away from the controller, be sure to use a VC-485 interface. Otherwise, reduce the communication speed to a minimum to avoid data loss.

From 60m to 1.2 km (200 to 4,000 feet)

If the master controller is located more than 60m (200 feet), an optional VC-485 multi-function communication interface must be used. It can also be used when running a communication cable in areas unusually high in electrical noise.

NOTE: The host computer is used to program the KT-300 Controllers.

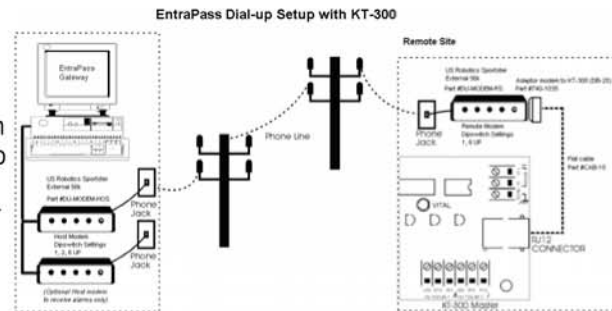


Over Corporate Network (LAN)

If the master controller is used in a LAN-enabled corporate setting, use TCP/IP-to-RS-232 converter (such as the Turnstiles IP Link or the Lantronix UDS-1100 communication interface) to connect the controller to the corporate network. This method uses existing wiring for data exchange between EntraPass and the controllers. The next diagram shows how to connect a DB-9 to RJ-12 flat cable between the master controller and the converter. Consult *Application Note DN1506* to learn how to set up the communication interface.

For remote sites

If the master controller is used in remote areas, modems must be used to send and receive access control data over telephone lines. For this application Turnstiles supports US Robotics 56K external Sportster modems at both ends of the communication line. As shown next, a modem connects to the master controller only using a DB25 to RJ-12 flat cable. For dial-up communication settings via software, refer to Chapter 4 of your communication settings via software, refer to Chapter 4 or your EntraPass Reference Manual.





Powering the KT-300

- ☒ Install 120 / 220VAC / 16VAC, 40 VA, class 2 transformer.
- ☒ Place battery in cabinet.
- ☒ Power the KT-300 controller.

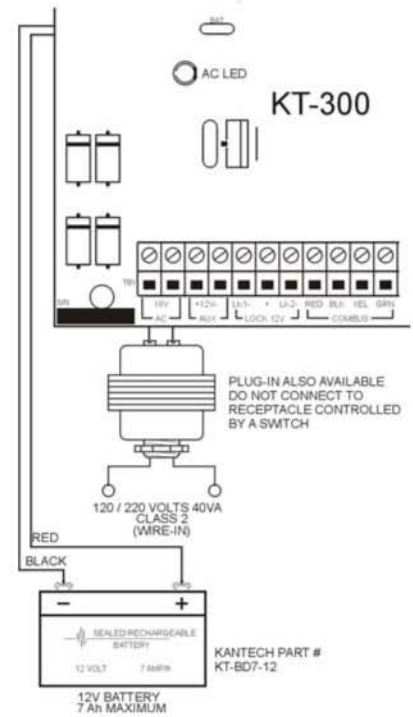
The KT-300 Controller must be powered by a 16VAC/40VA class 2 wire-in or plug-in transformer.

After you have completed all the necessary steps, you may power the KT-300 Controller. Connect AC power and connect the battery. Once powered, check the VITAL LED status indicator to determine the status of communication and other vital parameters. Consult the troubleshooting section for Vital LED behavior identifications.

If the AC supply is removed, the 12 Volt 7 A/h led-type backup battery will support normal operation for up to 12 hours if fully charged. Internal battery verification will cutoff battery power if the battery voltage level falls below 9.5 Volts.

NOTE: The KT-300 Controller will not start on battery alone.

NOTE: Power should only be applied to the unit when all connections are completed and tested.



Installing Combos Modules

Introduction to Combos Modules

The Combos terminals on the KT-300 Controller are used to connect expansion modules to add more inputs, outputs, relays and LCD time and date display. The four Combos terminals of the main panel must be connected to the four Combos terminals or wires of all modules.

Four expansion modules can be connected to KT-300's Combos (more specifications on each of these modules can be found further down in this document.):

- KT-PC4108 - 8-Zone input expansion module
- KT-PC4204 - 4-Relay/Power supply expansion module
- KT-PC4216 - 16-Zone output expansion module
- KT3-LCD - Turnstiles LCD keypad module

Combos Specifications

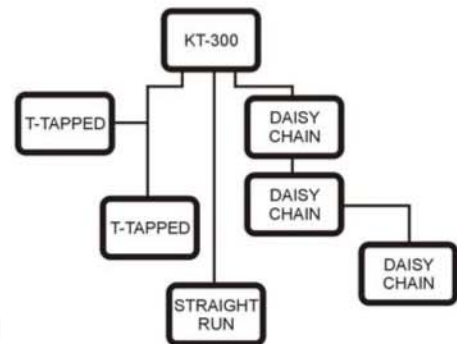
The Combos provides 500 mA at 12 Volts (13.85 VDC). The recommended cable is #22 AWG. Each loop (module to KT-300) cannot exceed 300 m (1,000 feet) and the total maximum cable length of all connected loops cannot exceed 1,200 m (4,000 feet).

For example:

- Only four wireruns at 1,000 feet from the KT-300.
- Only eight wireruns at 500 feet from the KT-300.
- Only ten wireruns at 400 feet from the KT-300

Shielded wire should only be used in areas with excessive RF noise or electromagnetic interference. Modules can be straight run, connected in a daisy chain or T-tapped anywhere on the Combos.

Keep in mind that the new modules must be defined in the EntraPass system when they are added to the Combos. Refer to the *Controller Definition* section in the *EntraPass Reference Manual* to learn how to assign modules to your system.



Combus Repower (If Required)

Depending on how many modules are connected to the Combus and how far they are from the KT-300 controller, you may need to “repower” the controller’s Combus.

The Combus needs to be “repowered” if the voltage drops below 12.5 Volts between black and red wires of the last module of each loop (the modules will still operate but there will be no communication between the modules and the controller and a “Combus module defect” event will be generated from the controller). This voltage drops if modules are drawing too much current (500mA maximum for the Combus of each KT-300).

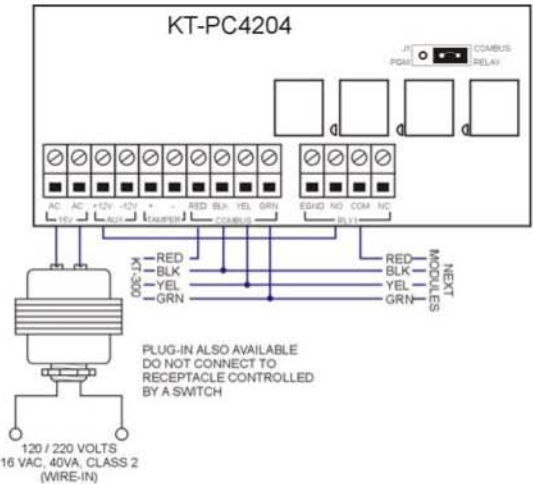
Verify this voltage with a multi meter, and determine if you need to install a KT-PC4204 in “repower” mode. Using this configuration, you will be provided with an additional 1 amp of current on the controller’s Combus. The KT-PC4204 is generally installed at the beginning of the loop.

When using the KT-PC4204 in “repower” mode, the first relay of the module will be reserved for the “repower function”. You will have to assign an “all valid” schedule to the first relay so it is “always activated” (refer to the Controller definition section of your *EntraPass User Reference Manual* for the exact procedure.)

If you are using a KT-PC4204 in “repower” mode and other KT-PC4204 modules that are assigned as relays 1-4 or KT-PC4216 modules that are assigned as relays 1-16 that are also connected to the same loop, do not use relay 1 of those modules or relay 1 of the KT-300 door controller. Please also note that all KT-PC4204 modules that are used for Combus repower should be assigned as relays 1-4.

NOTE: Jumper 1 “J1” on the KT-PC4204 must be moved to the Combus relay position.

NOTE: Do not use any power supply other than the KT-PC4204 to repower the Combus. In the event of a power surge or transient, a module may lock up and cease to communicate with the controller. If the KT-300 loses communication with the module, it will initiate a module reset and will power down the Combus for five seconds in an attempt to reset the problem module. After five seconds, the controllers will reapply power to the Combus and the problem module should begin to operate as intended.



Module Housing Cabinet

Kantech Part: KT-4051CAB

Measurement: 16.8" H x 10.4" W 4.1" D (42,5cm H x 26.4 cm W x 10.4 cm D)

Color: Black

Cabinet will hold either:

- One KT-PC4204 power supply/relay module with batteries and one KT-PC4108/KT-PC4216.
- Three KT-PC4216/KT-PC4108 modules



KT-PC4204 - 4-Relay and Additional Power Supply Module

KT-PC4204 Introduction

The KT-PC4204 module is an output module with four programmable relays. This module can be used to “repower” the Combus. The KT-PC4204 can also be used for elevator control.

NOTE: Do not use any power supply other than the KT-PC4204 module to repower the Combus. If a power supply other than the KT-PC4204 is used, the Combus repower function will not operate as intended.

KT-PC4204 Specifications

- Current draw: 30 mA (from Combus)
- 40 VA 16 VAC transformer required.
- Maximum 7 A/h battery required
- Connects to the controller via 4-wire Combus
- Four programmable relay contacts rated 2 A, 30 VDC
- AUX current: 1.0 A max.
- Tamper contact input
- Can be used to repower the Combus

Unpacking the KT-PC4204

The KT-PC4204 package should include the following parts/items:

- One KT-PC4204 circuit board
- One ground wire assembly
- Five plastic standoffs
- One 5 A replacement fuse

Mounting the KT-PC4204

The KT-PC4204 should be located inside a compatible cabinet (Turnstiles part no. KT-4051CAB), mounted in a dry, secure location. Preferably, it should be placed at a convenient distance from the connected devices. Perform the following steps to mount the unit:

1. Push the five plastic standoffs through the mounting holes on the back of the cabinet.
2. Secure the cabinet to the wall in the desired location. Use appropriate wall anchors when securing the cabinet to dry wall, plaster, concrete, brick or other surfaces.
3. Press the circuit board into the plastic standoffs to secure the module to the cabinet.

Installation and Wiring

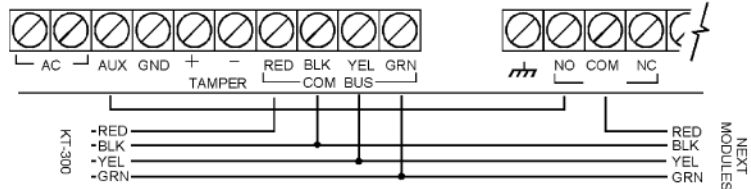
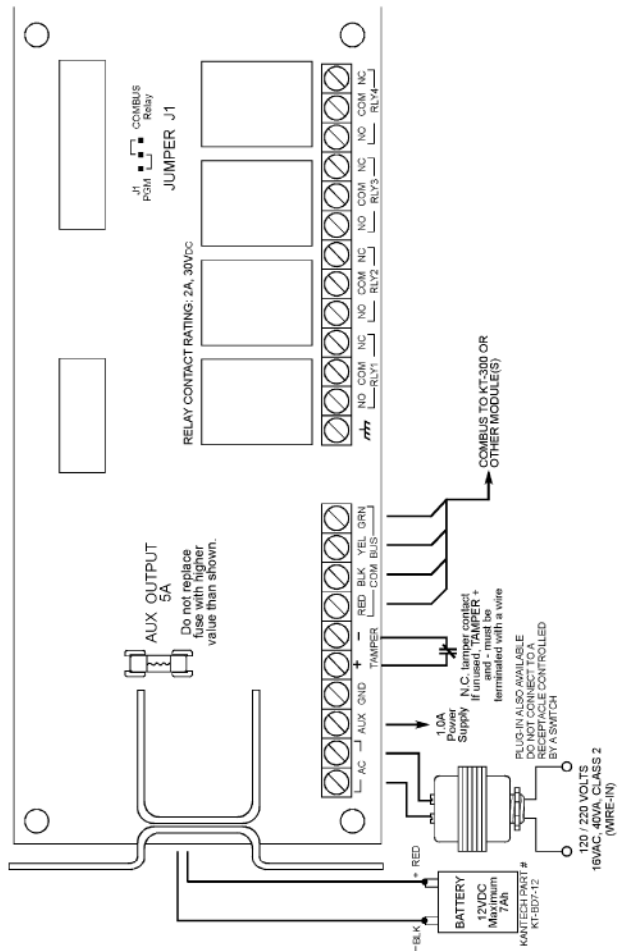
Before wiring the unit, ensure that all power (AC transformer and battery) is disconnected from the KT-300 controller. Perform the following steps to complete wiring:

1. Connect the four Combus wires to the KT-PC4204. Connect the red, black, yellow and green Combus wires to the RED, BLK, YEL and GRN terminal respectively.
2. If the module is used for Combus Repower, connect the Combus wires according to the following diagram. Note that for this option, Jumper J1 must also be set to “Combus Relay”.
3. Complete all output wiring.
4. Connect the external tamper switch, if used.

Applying Power

After wiring is completed, apply power to the KT-300. Connect the battery leads to the battery, and connect the AC battery leads followed by the AC transformer.

NOTE: Do not connect the power until all wiring is complete.





Assigning the KT-PC4204 Module

Once wiring is completed, the module must be assigned to the system. To assign the module, perform the following:

1. Establish communication between the PC and the controller.
2. Remove the tamper switch wire (or only the wire if tamper switch is not used).
3. A serial number should be displayed in the EntraPass message desktop. Look for the type of module and the controller to which it is connected.
4. From the EntraPass controller definition window, select the functionality of the module and enter the serial number in the appropriate field (refer to Chapter 4, Defining Devices or your EntraPass Reference Manual for more details).
5. If the module is used in "repower" mode, assign an "Always valid" schedule to relay 1 and assign the module's functionality to "relay 1 to 4" in the EntraPass software.

NOTE: Do not forget to reconnect the tamper switch (or the wire, if there is no tamper switch).

NOTE: Ensure that Jumper J1 is set to "Combus Relay" position if used as "repower".

KT-PC4216 - 16-Zone Output Expansion Module

KT-PC4216 Introduction

The KT-PC4216 module is an open-collector to 12 VDC 16-zone output module. Can be used for elevator access control (may require additional hardware).

KT-PC4216 Specifications

- 16-output low current module, 12 VDC, 50 mA max. each, power drawn from Combus (since Combus can handle a maximum of 500 mA, a KT-PC4204 module in "repower" mode can be used to increase the current of the Combus of 1A).
- Connects to KT-300 via 4-wire Combus
- Nominal current draw of 15 mA
- Tamper contact input
- Can be used for elevator control

Unpacking the KT-PC4216

The KT-PC4216 package should include the following parts:

- One KT-PC4216 circuit board
- 4 plastic standoffs

Mounting the KT-PC4216

The KT-PC4216 should be located inside a compatible cabinet (part no. KT-4501CAB), mounted in a dry, secure location. It should be placed at a convenient distance from the connected devices. Perform the following steps to mount the units:

1. Press the four plastic standoffs through the mounting holes at the back of the cabinet.
2. Secure the cabinet to the wall in the desired location. Use appropriate wall anchors when securing the cabinet to drywall, plaster, concrete, brick or other surfaces.
3. Press the circuit board into the plastic standoffs to secure the module to the cabinet.

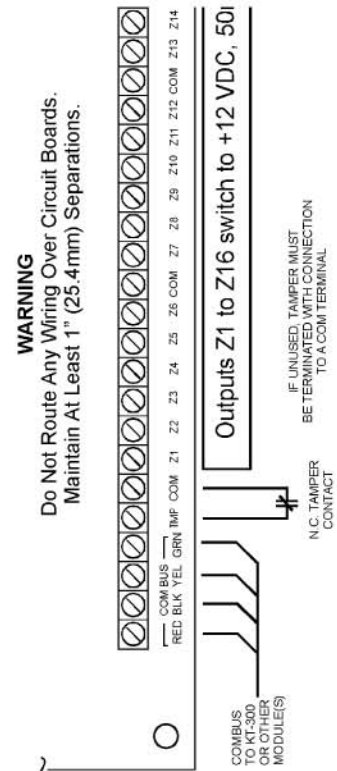
Wiring may be started once the unit is mounted.

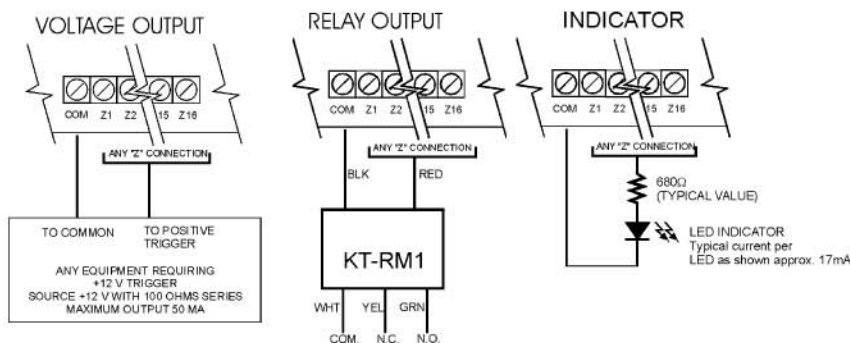
Installation and Wiring

Before beginning to wire the unit, ensure that all power (AC transformer and battery) is disconnected from the controller.

Perform the following steps to complete wiring:

1. Connect the four Combus wires to the KT-PC4216. Connect the Red, Black, Yellow and Green Combus wires to the RED, BLK, YEL and GRN terminals, respectively.
2. Complete all output wiring as illustrated below.
3. Connect the external tamper switch, if used.





NOTE: Current is drawn from the Combus. May require a KT-PC4204 power supply module if drawing too much current from the Combus.

Applying Power

1. After all wiring is completed, apply power to the KT-300.
2. Connect the battery leads to the battery.
3. Then, connect the AC transformer.

NOTE: Do not connect the power until all wiring is completed.

Assigning the KT-PC4216 Module

Follow the instructions below for assigning and programming your KT-PC4216 module.

1. Establish communication between EntraPass and the controller.
2. Remove the tamper switch wire (or only the wire if tamper switch is not used).
3. A serial number, the type of module and on which controller it is connected should be displayed on the screen.
4. From the EntraPass user interface, go to the controller definition window and select the functionality of the module and enter the serial number in the appropriate field (refer to *Chapter 4, Defining Devices* of your *EntraPass Reference Manual* for more details).

NOTE: Do not forget to reconnect the tamper switch (or the wire, if there is no tamper switch).

NOTE: If you are using a KT-PC4204 in "repower" mode on the same loop, do not use the first relay of the KT-PC4216.

KT3-LCD - Turnstiles LCD Time & Date Display Module

KT3-LCD Introduction

The KT3-LCD module is an LCD readout module with integrated keypad which provides date and time via a 32-character liquid crystal display.

KT3-LCD Specifications

- Connected to control panel via 4-wire Combus
- Current draw: 50 mA (from Combus)
- Input status (green), AC Fail (red) and Trouble (yellow) status lights

Unpacking the KT3-LCD

The KT3-LCD package includes the following parts/items:

- One KT3-LCD keypad
- Four mounting screws

Mounting the KT3-LCD

The keypad should be mounted where it is accessible to designated points to entry/exit. Once a dry and secure location is selected, perform the following steps to mount the keypad:

1. Remove the keypad back plate by loosening the screw located at the base of the unit.
2. Secure the keypad back plate to the wall in the desired location. Use the Included screws.

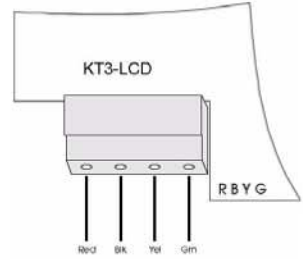




Wiring the KT3-LCD

Before beginning to wire the unit, ensure that all power (AC transformer and battery) is disconnected from the control panel.

To complete keypad wiring, connect the four Combus wires (Red, Black, Yellow and Green) to keypad terminals R,B,Y and G.



Applying Power

1. Once all wiring is completed, apply power to the controller.
2. Connect the battery leads to the battery.
3. Connect the AC transformer.

Assigning the KT3-LCD Keypad

Once all wiring is completed, the module must be assigned to the system. To assign the module, perform the following steps:

1. Establish communication between EntraPass and the controller.
2. Press the pound key (#) on each keypad.
3. A serial number should be displayed in the EntraPass message desktop. Look for the type of module and the controller to which it is connected.
4. From the EntraPass controller definition window, select the functionality of the KT3-LCD and enter the serial number in the appropriate field (refer to *Chapter 4, Defining Devices of the EntraPass Reference Manual* for more details).

Troubleshooting Communication Problems

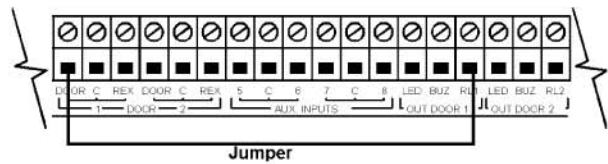
Default Initialization

The KT-300 default initialization is done at Turnstiles. The following steps should only be followed if:

- a You are using a KT-300 from another site and there is no communication;
- b The KT-300 was communicating via the RS-232 port and you installed a VC-485 to communicate via the RS-485 port;
- c You were using the KT-300 at a local site and now want to configure it for remote operation.

How to Use the Default Initialization (Hard Reset)

1. Disconnect both transformer and battery.
2. Remove all connection to DOOR1 and RL1 terminals.
3. Place a jumper between the DOOR1 and RL1 terminals.
4. Apply AC power to the transformer. The VITAL LED should flash 4 times. This means that the controller is in the initialization mode.
5. Remove jumper.
6. The VITAL LED will flash 3 beats at a time as soon as the controller communicates with the PC.
7. Reconnect the battery.



VITAL LED status indications

Communication status and other vital controller parameters can be obtained from VITAL LED pulsations. This information is particularly useful when connecting the controller to the rest of the access control system. Consult the KT-300 Controller Wiring Diagram on page see page 18 to locate the VITAL LED. The following table lists all conditions along with a brief description

VITAL LED Pulse	Status Identification
1 per second	Communication with EntraPass Global Gateway
2 per second	Communication with master controller, modem online
3 per second	Communication with EntraPass Corporate Gateway
4 per second	Hard reset to factory defaults
Continuous	Offline
0.5 second ON	Reading access card
2.5 seconds ON	Modem confirm

KT-300 Controller Maintenance Recommendations

The KT-300 circuit board includes a Lithium battery (see the KT-300 Controller Wiring Diagram on page see page 18). This battery must be replaced by a Turnstiles technician to avoid any risk of explosion. If the Lithium battery stops working, return the circuit board to Turnstiles. 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 circuit board and/or the Lithium battery, wrap the KT-300 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 circuit board in a fire. Do not disassemble the batteries. Do not apply pressure to or deform the batteries. Ensure that the above precautions are strictly observed by related departments, including, but not limited to, production, sales and outside contractors.*

Regarding the recommended battery 7 A/12 V: It is the end-user and/or installer responsibility to assure that the disposal of used batteries is made according to the waste recovery and recycling regulations applicable to the intended market. Use the recommended battery type ONLY.

It is highly recommended to test the KT-300 Controller by performing the following tests:

1) Bi-annual test for battery:

Remove AC power from the controller and connect the battery to the controller for one hour. This test will ensure that in the event of a power failure, the battery will be able to support normal operations. This test should be performed twice a year. Once the test has been performed successfully, reconnect AC power to the controller.

2) Annual test for emergency lithium battery:

Measure voltage of lithium battery when power is totally removed from the controller (AC & DC power). To ensure maximum operation and prevent loss of power, contact your distributor to return the KT-300 for maintenance if the lithium battery voltage measures below 2.5 VDC.





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