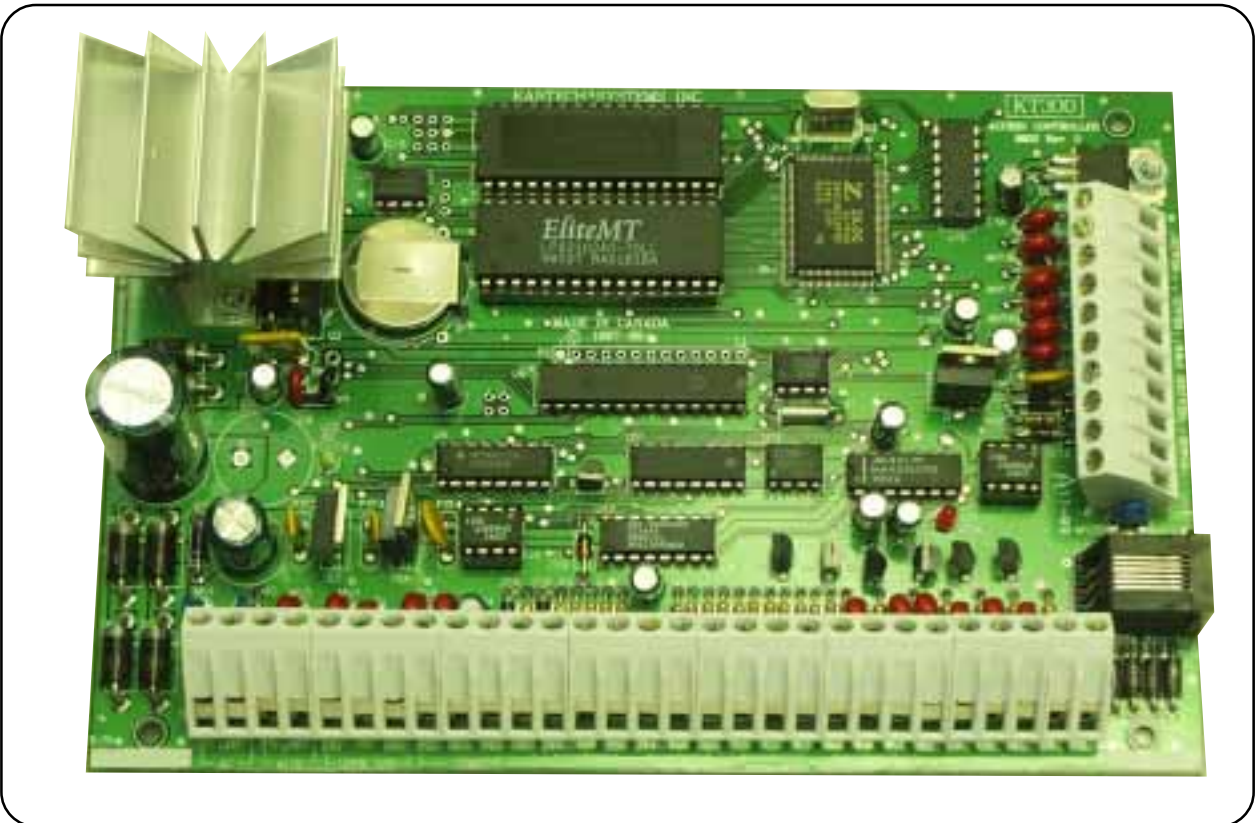




# KT-300

## DOOR CONTROLLER INSTALLATION MANUAL



Part of the DSC group, Kantech Systems Inc. embraces the group's corporate philosophy of providing competitive and innovative products. Established in 1986, Kantech Systems has been designing and manufacturing integrated access control systems for industrial, government and military applications.

The DSC Group is recognized as a leading international manufacturer of security products. As a group, we currently supply hundreds of different security products that are distributed in more than 100 countries. We strongly believe in cost effective manufacturing and product innovation. Over one hundred engineers and technologists contribute to our on going R&D efforts with one goal in mind: providing high quality, cost effective and innovative products!

DSC group manufacturing facilities are spacious, efficient and equipped with the most advanced electronic assembly equipment operating on 24 hour production schedule to meet demand, quickly and efficiently.

### **ISO-9001 Certified Quality System**

The international Organization for Standardization (ISO) is a worldwide federation of national standard bodies. ISO has developed a series of standards relating to a Quality System known as the ISO family standards. The ISO-9001 standard defines the highest level for this Quality System and is applicable to design, development, production, installation and servicing, final inspection and testing.

The system is audited twice a year and certified by outside auditors/registrars. Kantech's quality system also extends to its suppliers and customers. A supplier must be initially approved and thereafter, regularly appraised and rated. Customer feedback is documented and reviewed under formal procedures by Kantech's internal Continuing Improvement Committee composed of employees from every department.

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**Specifications may change at any time without prior notice**

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**November 1999**

## INTRODUCTION TO THE KT-300 DOOR CONTROLLER

**Notice:** The KT-300 door controller will only operate with **WinPass Version 2 or later** and **EntraPass Version 3 or later**.

### Innovative and Powerful

Kantech's new **KT-300** door controller is designed to meet the highest standards of access control and point monitoring applications. The **KT-300** controls 2 doors and is easily linked to a network controlling thousands of doors.

### Updates from system's workstation (firmware)

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

### Speed Selection - Fast ! Up to 115,200 baud

The **KT-300** automatically detects the loop communication speed as set within the system's workstations.

### Trouble Condition Reporting

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

### Built-in COMBUS Expansion

In order to provide greater flexibility to the Access Control System, the **KT-300** controller supports different expansion modules such as: relay modules, input modules, output modules and LCD time display for time & attendance functions.

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



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



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



**KT-LCD4501 - LCD time & date display  
for time and attendance functions**



## TECHNICAL SPECIFICATIONS

<b>AC power</b> .....	16VAC, 40VA, class 2 transformer
<b>Battery back-up</b> .....	1 battery 12 V, 7Ah, supervised, provides up to 12 hours of operation
<b>Cabinet measurement</b> .....	29,9cm Hx28,8cm W x 7,7cm D(11-3/4" Hx 11-3/8" W x 3" D)EMT 1,9cm(3/4")
<b>Weight (with metal cabinet)</b> .....	2,4 kg (5.4 lbs)
<b>Operating temperature</b> .....	From 2° C to 40° C (35° F to110° F)
<b>Reader types</b> .....	Wiegand, proximity, bar code, magnetic, integrated keypad and others
<b>Monitor points</b> .....	8 monitor points, NO/NC, with / without end-of-line resistors (expandable to 16)
<b>Points maximum wiring</b> .....	600 meters (2,000 feet) - (AWG #22)
<b>Door strike power</b> .....	12VDC, 250mA max/each, supervised
<b>Auxiliary outputs</b> .....	4 outputs, 25mA max/each, Open collector
<b>Controlled outputs</b> .....	2 controlled outputs, 25mA (max) each. Open collector to ground (use relay part number KT-RM1 if needed)
<b>Auxiliary power output</b> .....	12VDC @ 125mA max, protected and supervised
<b>Reader power outputs</b> .....	12VDC and 5VDC @ 125mA total, protected and supervised
<b>Communication ports</b> .....	RS232, RS485 and COMBUS
<b>Communication speeds</b> .....	Up to 115,200 bauds (automatic detection)
<b>Firmware Flash memory</b> .....	128k
<b>RAM memory</b> .....	128k (512k unit available) Protected by a lithium battery
<b>Network autonomy</b> .....	Distributed data and processing
<b>Certification / Listing</b> .....	CE, FCC / UL294 pending

## KT-300 AND ACCESSORIES

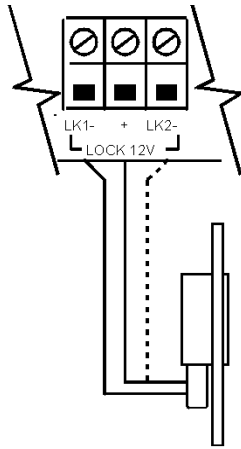
KT-300 CONTROLLER AND ACCESSORIES	
KANTECH PRODUCT NUMBER	PRODUCT DESCRIPTION
KT-300/128k	Door controller with 128kB memory including KT-300CAB, KT-300ACC and KT-300LOCK
KT-300/512k	Door controller with 512kB memory including KT-300CAB, KT-300ACC and KT-300LOCK
KT-300PCB/128k	KT-300/128kB PCB only and KT-300ACC
KT-300PCB/512k	KT-300/512kB PCB only and KT-300ACC
KT-300ACC	Accessory kit including: 2x1.0K ohms, 10x5.6K ohms, 2x120 ohms, 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)
KT-LCD4501	LCD time & date display for KT-300, used for Time and Attendance
KT-300CAB	KT-300 black metal cabinet including KT-300LOCK
KT-4051CAB	Standard black metal cabinet for KT-PCxxxx modules (order keylock sep.)
KT300LOCK	Keylock for KT-300CAB/KT-4051CAB metal cabinet (2 keys/same as KT-200)
KT-300TAMP	Tamper switch for KT-300CAB and KT-4051CAB metal cabinet
TR1637W/CSA	Transformer, Wire-In, 110V/16V (37VA) CSA
TR1640P/CSA	Transformer, Plug-In, 110V/16V (40VA) CSA
TR1640P/UL	Transformer, Plug-In, 110V/16V (40VA) UL
TR1640W-220	Transformer, Wire-In, 220V/16V (40VA) CE





## Step 5. Door locking devices

- ☒ Connect door locks to + and LK1- (+ and LK2-)
- ☒ Maximum 250mA at 12VDC per output
- ☒ Check for local "mag-lock" regulations



DOOR LOCKING DEVICE  
12 VOLTS DC 250 mA MAX.

————— DOOR 1

----- DOOR 2

IF NOT USED CONNECT A 1000 OHMS RESISTOR  
BETWEEN LKX AND +

The LK1-, LK2- and + terminals are located on the bottom left of the **KT-300** controller's 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 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 modes (normal or reverse action). The maximum DC current for each lock output is 250mA.

**NOTE:** Use 1K ohm EOL (end-of-line resistor) between + and LK- if not used. This resistor is already included within the controller's packaged box (KT300-ACC).

**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 mag-locks or other similar locking devices on doors used as emergency exits.

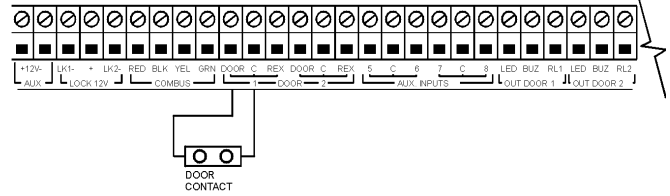
## Step 6. Hooking up Inputs

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

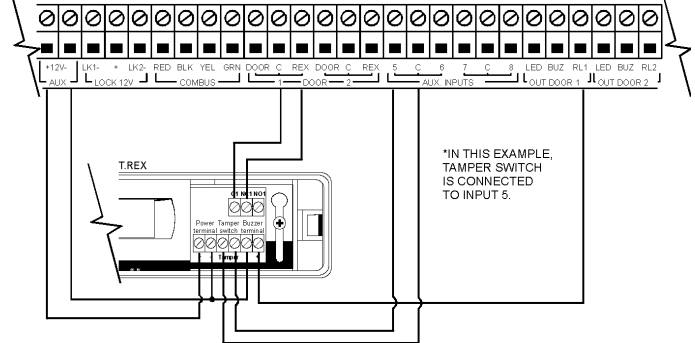
The **KT-300** has an on board capability of monitoring 8 input points (can be expanded to 16 if KT-PC4108 module is used). Each input is supervised with or without end-of-line resistors (5.6K ohms). The maximum distance of one line is 600m (2,000 feet) with AWG#22 (Kantech part #CBL-R2).

**NOTE:** Inputs can be defined with: None or One EOLs (end-of-line) resistors according to your EntraPass V3 or WinPass V2 software's settings.

### Door 1 contact connection

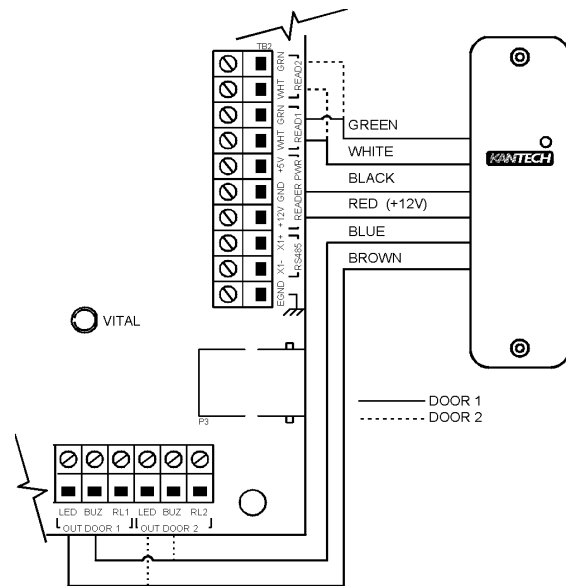


### Door 1 T.Rex connection



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 following these rules but such a standard convention makes it easier for servicing.

## Step 7. Readers and Keypads



### READER CONNECTION TERMINAL:

**WARNING:** Connecting the red wire lead (or power lead) of a 5VDC reader to the 12VDC 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 access in one direction only.

The distance between the readers and the **KT-300** controller varies by

reader type (please consult the reader manual for details). Auxiliary outputs provide access operation visual and/or audible 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.

## Step 8. Controlled outputs & Auxiliary outputs

- Connect controlled outputs to low voltage devices (25mA max)
- Add external relays for high voltage devices
- Connect auxiliary outputs to readers & local warning devices

The **KT-300** provides two controlled outputs (open collector to 12 VDC current limited to 25mA). If **KT-PC4216** module is used it allows a maximum of up to 50mA that can be connected to a relay module to switch larger currents or voltages or to supply a dry contact.

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

## Step 9. Tamper Protection

- Install optional tamper switch on cabinet

A tamper switch may be installed on the unit to detect unauthorized opening of the cabinet (Kantech part no. **KT-300TAMP**). 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).

## Step 10. Connecting the KT-300 to the RS-485 bus

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

Controllers are linked together through their RS-485 connectors. The maximum communication loop length with the appropriate cable is 1.2 kilometers (4000 feet). Connecting several **KT-300** controllers at a single point is not acceptable nor are "Y" or "spider web networks".

The RS-485 communication loop should be wired with Ethernet Category3 double twisted pair network cable (see cable specifications Belden 1227A or equivalent). The RS-485 loop can operate from 1,200 to 115,200 baud under normal conditions.

Intermittent communication problems or erratic operation may require to slow down the network speed to 9,600 or 19,200 baud.

Varying the network speed does not perceptibly change the operation speed of the system. Usually, most installations should be set at 19,200 baud.

Connect a 120 ohms end of line resistor between terminals X1- and X1+ of the first and last **KT-300**.

## Step 11. Connecting the Master Controller to the Host PC

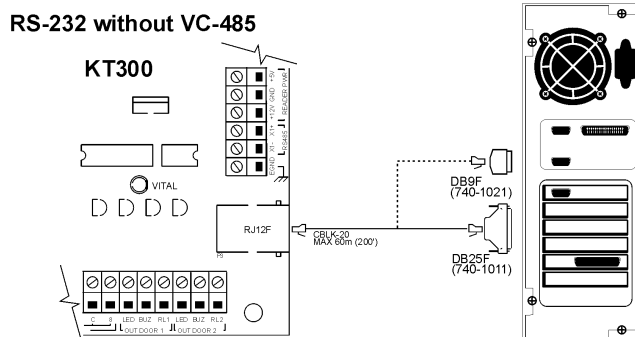
- Connect flat cable from the **KT-300** to the PC

### From 0 to 100 feet:

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

### From 100 to 200 feet:

Since the master controller can be located up to 200 feet (60m) from the host computer, an extra 100 feet cable can be added to the existing cable (Kantech part no. **CAB100ext**).



## Step 12. Powering the KT-300

**Power the KT-300 controller**

After you have completed all the necessary steps, you may now power the KT-300 controller.

**How to:**

1. Connect AC power
2. Connect the battery

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

### KT-300 FCC Compliance Notice

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial or residential environment. The **KT-300** is also compliant with EN55022: 1994, amendment 1: 1995, Class B.

### KT-300 CE Compliance Notice

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

### Electrical Specifications

VOLTAGE OUTPUTS	MAXIMUM CURRENT	ABSOLUTE COMBINED MAXIMUM
Lock Outputs (12 VDC)	500 mA (250 mA each)	<b>1.5 A</b>
Auxiliary Power (12 VDC)	125 mA	
Reader 5 VDC and 12 VDC	125 mA	
COMBUS	500 mA	
Battery Charging (12VDC)	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)	

## Troubleshooting Communication Problems

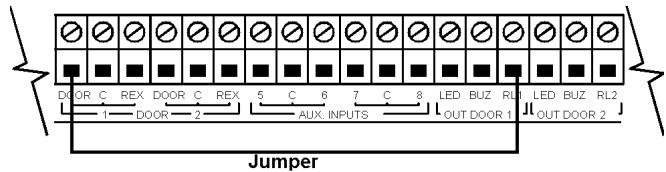
**Default Initialization:**

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

- (A) You changed the software (e.g.: you were using EntraPass, then installed WinPass) and there's no communication;
- (B) 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:**

- 1) Disconnect the transformer and the battery,
- 2) Remove all connections of 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) Disconnect the jumper,
- 6) When the controller is communicating with the PC, the VITAL led will flash 3 beats at a time,
- 7) Reconnect the Battery.







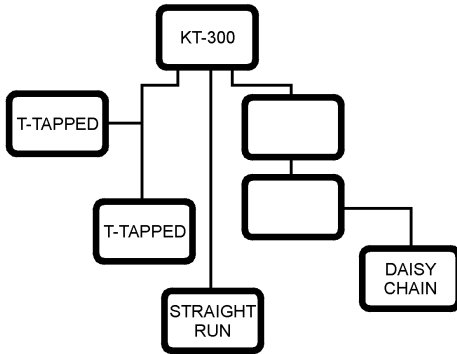
## Combus Specifications

The combus provides 500mA at 12 volts (13.85VDC). The recommended cable is 22 AWG (Kantech part number: CBL-ZN). Each loop (module to KT-300) cannot exceed 300 m (1000') and the total maximum cable length of all connected loops cannot exceed 1200 m (4000').

For example:

- Only four wireruns at 1000' from the KT-300
- Only eight wireruns at 500' from the KT-300
- Only ten (10) wireruns at 400' from the KT-300

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



## INSTALLATION

1. Remove power from the **KT-300** controller;
2. For the KT-PC4108, KT-PC4216 and KT-PC4204 modules place a jumper between tamper+ and tamper- (COM) of the module;
3. Connect the module to the combus, power the **KT-300**;
4. Run EntraPass or WinPass;
5. Remove the Tamper jumper of each module, a serial number will appear on the screen (one for each module);
6. To register the module, enter the serial number of the module in the proper field of the software.

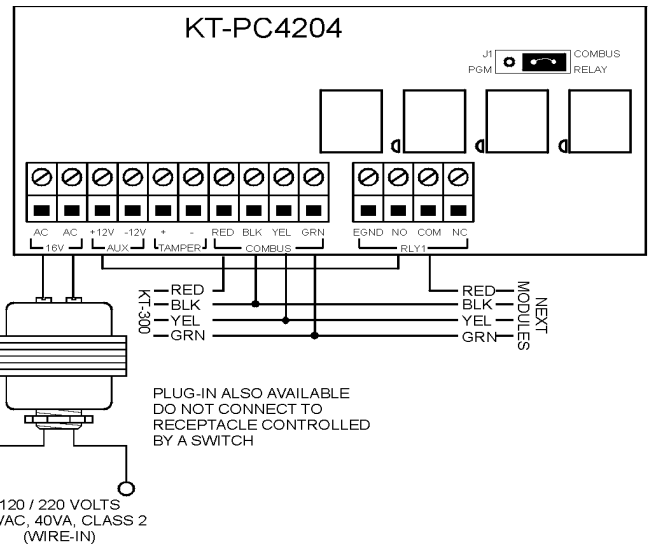
For **KT-LCD4501** keypad module, connect it to the combus, and press the “#” key on the keypad and the serial number will appear on the screen.

**NOTE:** Don't forget to put back the tamper jumper or connect a tamper switch to it.

## Combus Repower (If required)

Depending on how many modules are connected to the combus and how far they are from the **KT-300** you may need to “repower” the combus. The combus needs to be “repowered” if the voltage between the black and red wires of the last module of each loop drops under **12.5 volts**. This voltage drops if modules are taking too much current (500mA maximum for the combus).

You'll have an event “Combus module defect” and you won't be able to communicate with the expansion modules if the voltage is under 12.5 volts. With a multimeter you should verify this voltage and determine if you need to install a KT-PC4204 in repower mode. With this configuration you'll have an additional 1 amp of current on the combus. The KT-PC4204 is generally installed at the beginning of the loop.



The 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 attempt to reset the problem module. After five seconds, the controller will reapply power to the combus and the problem module should begin to operate as intended.

## Introduction to Modules

The combus terminals on the **KT-300** controller are used to connect expansion modules to add more inputs, outputs, relays and LCD keypads. The four combus terminals of the main panel must be connected to the four combus terminals or wires of all modules.

There are 4 expansion modules that can be connected to **KT-300's** combus (more specifications of each of these modules can be found at the end of this document).

- 1) **KT-PC4108 - (8 - Zone input expansion module)**
- 2) **KT-PC4204 - (4 Relay/Power Supply Expansion Module)**
- 3) **KT-PC4216 - (16 - Zone output expansion module)**
- 4) **KT-LCD4501 - (Kantech LCD digital keypad module)**

## Cabinet for Housing Modules

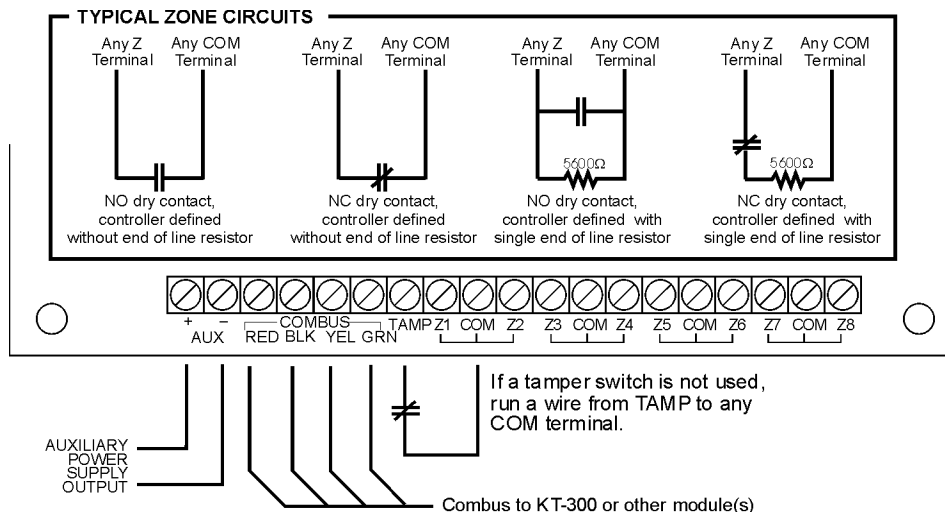
**Kantech part no.:** KT-4051CAB  
**Measurements:** 16,8" H x 10,4" W x 4,1" D  
**Color:** Black

Cabinet will hold either:

- a) One (1) KT-PC4204 power supply/relay module with batteries and one (1) KT-PC4108/KT-PC4216.
- b) Three (3) KT-PC4216/KT-PC4108 modules



## KT-PC4108 - 8 Zone Input Expansion Module



### Introduction

The **KT-PC4108** module is a zone input module that adds up to 8 fully programmable zones to the KT-300 controller.



### 1. Specifications

- Connects to the controller via 4-wire Combus
- Current Draw: 30 mA (from Combus)
- Supports single end-of-line and no end-of-line (5600 ohm resistors) zone loops.
- AUX+ output: 12VDC, 250mA max. (drawn from Combus)
- Tamper contact input

### 2. Installing the KT-PC4108 module

#### 2.1 Unpacking

The KT-PC4108 package includes the following parts:

- One KT-PC4108 circuit board
- 16 end-of-line resistors (5600 ohms)
- Four (4) plastic standoff

#### 2.2 Mounting

The KT-PC4108 module should be located inside a compatible cabinet (Kantech 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. Press the four (4) 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 drywall, plaster, concrete, brick or any other surfaces.

3. Press the circuit board into the four (4) plastic standoffs to secure the unit to the cabinet.

Once the unit is mounted, wiring may be started.

### 2.3 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-PC4108. Connect the red, black, yellow and green Combus wires to the RED, BLK, YEL and GRN terminals, respectively.
2. Complete all zone wiring to the zone input terminals (Z1-Z8). See the EntraPass or WinPass manual for details on zone wiring configurations.
3. Connect the external tamper switch, if used.

Consult the wiring diagram above for further information.

### 2.4 Applying Power

After all wiring is completed, apply power to the controller. Connect the battery leads to the battery, then connect the AC transformer.

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

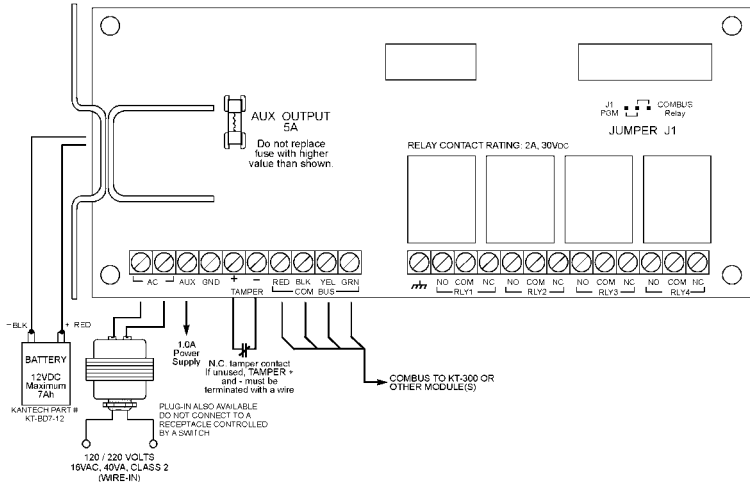
### 3. Assigning the Module

Once all wiring is complete, 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,
3. A serial number should be displayed on the screen, in the same window where the serial number is located, you should see the type of module and on which controller it is connected,
4. From the software, select the functionality of the module and enter the serial number in the appropriate field.

**NOTE:** Don't forget to reconnect the tamper switch (or the wire, if there is no tamper switch)

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



## 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** is also used for elevator control or other purposes.



**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.

## 1. Specifications

- Current Draw: 30 mA (from Combus)
- 40VA 16-18V transformer required
- Maximum 7Ah battery required
- Connects to the controller via 4-wire Combus
- Four programmable relay contacts rated 2A, 30VDC
- AUX current: 1.0A max.
- Tamper contact input
- Can be used to repower the combus
- Can be used for elevator

## 2. Installing the KT-PC4204

### 2.1 Unpacking

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

- One **KT-PC4204** circuit board
- One ground wire assembly
- Five plastic standoff's
- One 5A replacement fuse

### 2.2 Mounting

The **KT-PC4204** should be located inside a compatible cabinet (Kantech 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. Press the five plastic standoff's through the mounting holes

at 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 standoff's to secure the module to the cabinet.

Once the unit is mounted, wiring may be started.

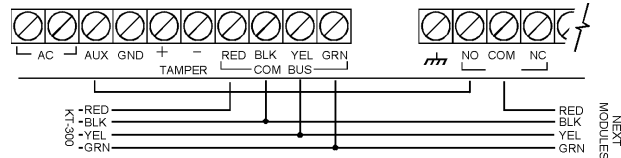
## 2.3 Installation and Wiring

Before beginning to wire 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 terminals, respectively.

If Relay 1 is being used for Combus Power, connect the Combus wires according to the following diagram. Note that for this option, Jumper J1 must also be set for "Combus Relay."



2. Complete all output wiring
3. Connect the external tamper switch, if used

Consult the above wiring diagrams for further information.

## 2.4 Applying Power

After all wiring is completed, apply power to the **KT-300**. Connect the battery leads to the battery, then connect the AC transformer. Then, connect power to the **KT-PC4204**: the battery leads followed by the AC transformer.

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

## 3. Assigning the Module

Once all wiring is done, 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 on the screen, in the same window where the serial number appears, you should see the type of module and on which controller it is connected,
4. From the software select the functionality of the module and enter the serial number in the appropriate field.

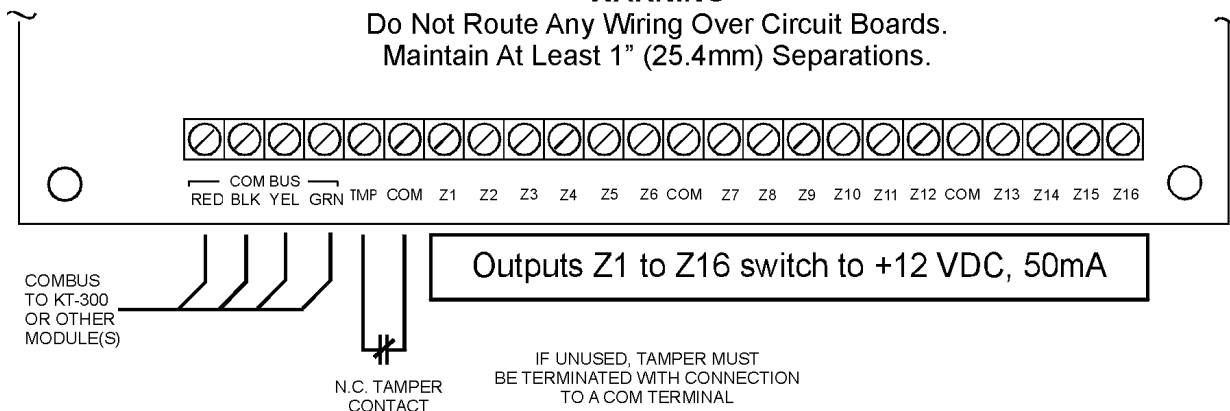
**NOTE:** Don't forget to reconnect the tamper switch (or the wire, if there is no tamper switch).

**NOTE:** Relay 1 must not be programmed if used for Combus Power. Ensure that Jumper J1 is set to "Combus Relay."

# KT-PC4216 - 16 Zone Output Expansion Module

## WARNING

Do Not Route Any Wiring Over Circuit Boards.  
Maintain At Least 1" (25.4mm) Separations.



## 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) or other purposes.



## 1. Specifications

- 16 output low current module, 12V, 50mA max. each, power drawn from Combus
- Connects to **KT-300** via 4-wire Combus
- Nominal current draw of 15mA
- Tamper contact input
- Can be used for elevator

## 2. Installing the KT-PC4216

### 2.1 Unpacking

The KT-PC4216 package should include the following parts:

- One KT-PC4216 circuit board
- 4 plastic standoffs

### 2.2 Mounting

The KT-PC4216 should be located inside a compatible cabinet (Kantech 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. Press the four plastic standoffs through the mounting holes at 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.

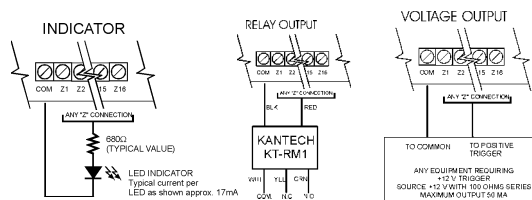
Once the unit is mounted, wiring may be started.

## 2.3 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 on this page:



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.

Consult the wiring diagrams for further information.

## 2.4 Applying Power

After all wiring is completed, apply power to the **KT-300**. Connect the battery leads to the battery, then connect the AC transformer.

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

## 3. Assigning the Module

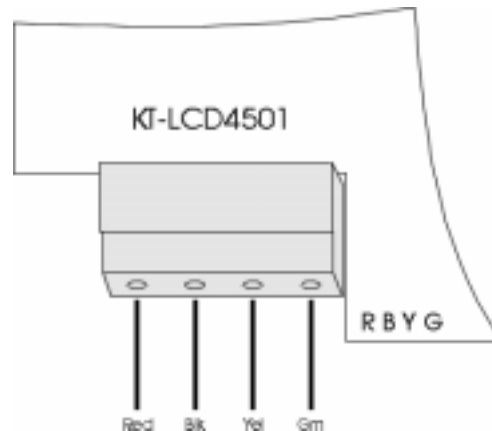
Follow the instructions below for assigning and programming your KT-PC4216 module.

Follow these steps to assign the module(s):

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 on the screen, in the same window where the serial number is located, you should see the type of module and on which controller it is connected,
4. From the software select the functionality of the module and enter the serial number in the appropriate field.

**NOTE:** Don't forget to reconnect the tamper switch (or the wire, if there is no tamper switch).

## KT-LCD4501 - Kantech LCD Time & Date Display Module



### Introduction

The **KT-LCD4501** module is an LCD with integrated keypad which presents date and time via a 32-character liquid crystal display.

### 1. Specifications

- Connects to control panel via 4-wire Combus
- Current Draw: 50mA (from Combus)
- Inputs status (green), AC fail (red) and Trouble (yellow) status lights

### 2. Installation

#### 2.1 Unpacking

The KT-LCD4501 package includes the following parts/items:

- One KT-LCD4501 keypad
- Four mounting screws

#### 2.2 Mounting

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

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

Before mounting the keypad to its backplate, complete keypad wiring.

#### 2.3 Wiring

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 the keypad terminals (R B Y G). Consult the diagram below:

### 3.4 Applying Power

Once all wiring is complete, apply power to the controller. Connect the battery leads to the battery, then connect the AC transformer.

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

### 3. Assigning the Keypad

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

1. Establish communication between the PC and the controller,
2. Press the pound key (#) on each keypad,
3. A serial number should be displayed on the screen, in the same window where the serial number is displayed, you should see the type of module and on which controller it is connected,
4. From the software, select the functionality of the KT-LCD4501 and enter the serial number in the appropriate field.