TruPortal System Controller Quick Reference (for TP-SYS-BRD, TP-SYS-2D, TP-SYS-2D-E, TP-SYS-2D2R) en-US

The TruPortal System Controller

The TruPortal System Controller provides a solution for access control. It consists of two boards; the I/O board and the system on module (SOM) board. The I/O board, the larger of the two, contains the power supply and all field wiring connections. The SOM, the smaller mounted board, contains the main CPU and memory.

The event log buffer and the real time clock are stored in battery-backed memory. Each reader port can accommodate a reader that utilizes Wiegand Data1/Data0, LED control, and buzzer control.

Twelve supervised inputs (excluding tamper and power monitor) are provided for door sense, reader tamper, or request to exit as well as four auxiliary supervised inputs.

Interfaces

The TruPortal System Controller interfaces upstream with the browser-based TruPortal User Interface. There is no dedicated host software to install on operators' workstations.

The TruPortal System Controller provides two (2) Ethernet ports.

Configuration data and event/status reports are exchanged with the user interface via the primary Ethernet ports. The secondary port is not used.

Communication via modem is not supported.

Packing List

- TruPortal System Controller PCB assembly, which consists of the I/O board and the SOM (quantity = 1)
- Two positional terminal plug-in block (quantity = 7)
- Three positional terminal plug-in block (quantity = 10)
- Four positional terminal plug-in block (quantity = 8)
- End of line resistors 1k ohm, 1% (quantity = 24)
- Push-fit terminal tab adapters (quantity = 2)
- Battery cable (quantity =1)
- Battery bracket (quantity = 1)
- Screws for battery bracket (quantity = 2)
- Strain relief for power cable (quantity = 1)
- Terminal block cover (quantity = 1)
- Lock (quantity = 1)
- Machine screws for securing the cover (quantity =6)
- Enclosure (depending on option ordered)
- Transformer (depending on option ordered)
- Credentials (depending on option ordered)
- T-100 Proximity Readers (depending on option ordered)

Model Numbers

The panels are available in the following configurations:

- TP-SYS-BRD: TruPortal System Controller. Board only. Capable of controlling two (2) doors. No enclosure or readers.
- TP-SYS-2D: TruPortal 2-Door base kit. Consists of a TruPortal System Controller, installed in UL-listed enclosure with 4 amp power supply.
- TP-SYS-2D2R: TruPortal 2-Door base kit with readers. Consists of a TruPortal System Controller, installed in UL-listed enclosure with 4 amp power supply. Includes T-100 Readers (quantity = 2) and Credentials (quantity = 5).
- TP-SYS-2D-E: TruPortal 2-Door base kit for EMEA. Consists of a TruPortal System Controller, installed in CE-compliant enclosure with 4 amp power supply.
- -E Part number suffix for panel with CE enclosure (CE 220 VAC internal transformer). Not evaluated by UL.

System Capacities

Attribute	TP-SYS
Number of persons	10,000
Number of unique credentials	10,000
Credentials per person	5
Access levels	64
Access levels per credential	8
Schedules	64
Time intervals per schedule	6
Holiday groups per schedule	8
Holiday groups	8
Holidays per holiday group	32
Holidays (total)	255
Areas	64
Reader groups	64
Operator roles	32
User-defined fields	10
Video layouts	64
Card formats	8
Number of retained events in event log	65,000
Doors/Readers	
Number of doors (base board and dual door controllers) with readers in / Number of doors with readers in and out	64 / 32
TP-ADD-2D-BRD Dual Door Control Modules (including built in)	32
Readers (total)	64
Inputs/Outputs	
Total number of system inputs (including TruPortal System Controller)	132
Total number of system outputs (including TruPortal System Controller)	66
Total number of TP-ADD-IO or TP-ADD-IO-BRD Input/Output Expansion Add-Ons	8
DVR/Cameras	
DVRs	4
Cameras per DVR	
TVR10 (EMEA & US)	4
TVR30 (US Only)	16
Cameras (maximum)	64
Ethernet ports (total/supported)	2/1
RS-485 SNAPP bus ports	4

Anti-attack Bushing Cap

An anti-attack bushing cap covers a rear tamper spring. It fits inside an O-ring bushing located in the cabinet's rear wall anti-tamper spring knockout. Leave the O-ring bushing and cap in place if the rear tamper is not used.

If the rear tamper is used:

1. Remove the cap and the O-ring with the edge of a flat screwdriver.
2. Discard the O-ring.
3. Align the cap for the tamper spring and knockout hole on the cabinet back.
4. Screw the cap into the mounting surface.
5. Place the control cabinet over it, allowing the rear tamper spring to fit inside the cap. The cap will fit into the cabinet's tamper spring knockout hole.
6. Secure the cabinet to the mounting surface.

Mounting the Module

On dry wall, use 1/8 in. (3.175 mm) hollow wall, expansion anchors. Unscrew the screws from the anchors. Mark the mounting holes. Force a starter hole in each mark with a sharp tool. Hammer the anchors into each hole. Align the box mounting holes over the anchor holes and screw in the anchors until tight.

On a concrete surface, hold the control box on the mounting surface. Mark the mounting holes. Use a hammer drill with a 3/16 in. (4.76 mm) carballoy drill bit and make 1in. (25.4 mm) deep holes in each marking. Insert a # 6-8 plastic anchor in each hole and hammer them in. Use # 8 X 1 in.(25.4 mm), Phillips, wood screws to screw into the plastic anchors and mount the box.

See Figure 1 on page 9.

Communication Wiring

The controller communicates to the user interface via Ethernet.

The downstream communication ports are 2-wire RS-485 interfaces which can be used to connect additional I/O panels. The interface allows multi-drop communication on a single bus of up to 4000 feet (1200 m). Use twisted pairs (minimum 22 AWG / 0.644 mm / 0.326 mm^2) with an overall shield for communication.

See Figure 2 on page 10.

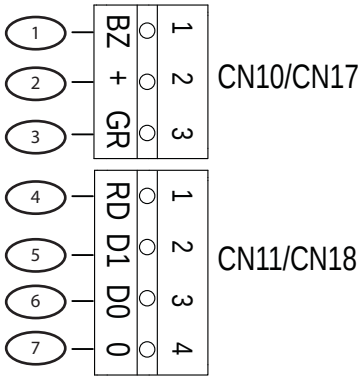
Reader Wiring

Each reader port supports Wiegand Data1/Data0. Voltage at the reader port is passed through from the input voltage of the controller and is limited to 250 mA.

The reader supply voltage is 14 VDC. Readers that require different voltage should be powered separately. These readers may be connected and

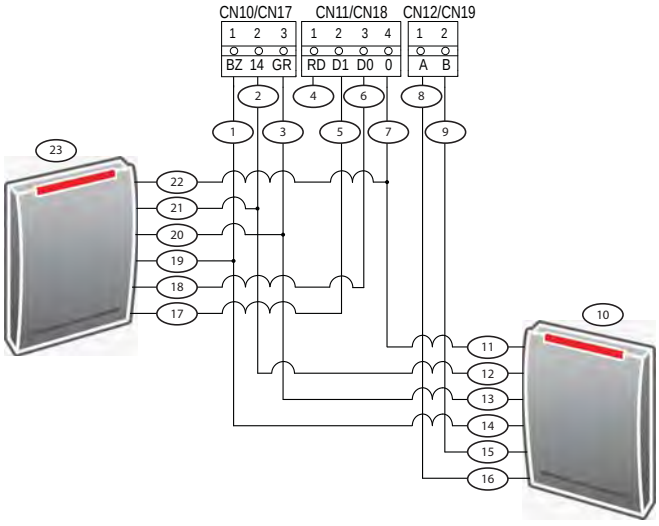
powered through the dual door interface module. Refer to the reader manufacturer specifications for cabling requirements.

Reader wiring



Callout	Description	Callout	Description
1	Buzzer	**5**	Data1
2	+14 V	**6**	Data0
3	Green LED	**7**	Ground
4	Red LED		

Wiring In and Out readers



Callout	Description	Callout	Description
1	Buzzer	**13**	LED
2	+14 V	**14**	Buzzer
3	Green LED	**15**	Data0
4	Red LED	**16**	Data1
5	D1	**17**	Data1
6	D0	**18**	Data0
7	0 V	**19**	Buzzer
8	D1	**20**	LED
9	D0	**21**	Power
10	Reader (Out)	**22**	Ground
11	Ground	**23**	Reader (In)
12	Power		

Input Circuit Wiring

Typically, these inputs are used to monitor door position, request to exit, or alarm contacts. Input circuits are supervised. The input circuit is able to report a condition of “Fault” for the status of the circuit, which appears as a “Tamper” event for supervised conditions.

A supervised input circuit requires a resistor be added to the circuit to facilitate proper reporting. The standard supervised circuit requires 1K ohm, 1% resistors and should be located as close to the sensor as possible.

Relay Circuit Wiring

All relays are dry contact.

Output	30 VDC rating
Siren relay	1 A
Strobe relay	1 A
Strike relay	5 A
Aux relay	1 A

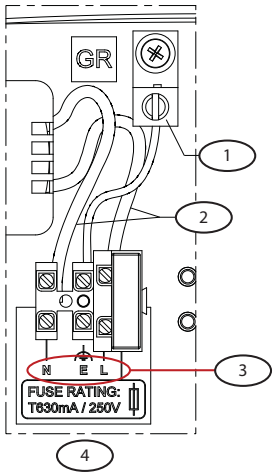
The relays for siren and door strike have a Common pole (C), a Normally Closed pole (NC), and a Normally Open pole (NO). When you are controlling the delivery of power to the door strike, the Normally Open and Common poles are used. When you are momentarily removing power to unlock the door, as with a mag lock, the Normally Closed and Common poles are used. Check with local building codes for proper egress door installation.

Power

The TruPortal System Controller requires 18 VAC or 24 VDC for input power at CN2, or 12 VDC at CN1 (24 VDC and 12 VDC input power were not evaluated by UL). When powering the board from 12 VDC, the on-board battery charger will not be used and the lead-acid backup battery

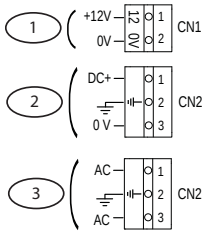
should not be connected to the TP-SYS. The power supply providing the 12 VDC must have its own backup source.

TP-SYS 110/220 VAC Power wiring diagram



Callout	Description	Callout	Description
1	Ground stud	**3**	Connections for AC wiring
2	Red transformer wires	**4**	Wiring indication

Power connectors



Callout	Description	Callout	Description
1	12 VDC input	**3**	18 VDC Input
2	24 VAC Input		

The maximum input current is 2.7 A. The gauge is dependent on the length of the wire. The TruPortal System Controller can be powered by an internal 18 VAC transformer that uses 20 AWG (0.812 mm / 0.518 mm^2) secondary wires. The earth ground connection at CN2 Pin 2 is not required if the controller board is grounded through the mounting screws.

Maximum lengths for wiring

I/O Description	Connection	Maximum length of 22 AWG wire (in feet)	Maximum line resistance (in Ohms)
13.2 V supply output	CN3-1 CN3-3 CN10-2 CN17-2 CN21-1 CN23-1 CN24-1 CN25-1 CN26-1	300	approximately 4.8
Supervised inputs	CN8-1 CN8-3 CN9-1 CN9-3 CN15-1 CN15-3 CN16-1 CN16-3 CN21-2 CN21-4 CN22-1 CN22-3	500	approximately 8
5 A @ 24 VDC relay output (assume 15% voltage drop)	CN7-1 (NO) CN7-2 (C) CN7-3 (NC) CN14-1 (NO) CN14-2 (C) CN14-3 (NC)	45	approximately 0.72
1 A @ 24 VDC relay output (assume 15% voltage drop)	CN4-1 (C) CN4-2 (NC) CN4-3 (NO) CN5-1(C) CN5-2 (NC) CN13-1 (NO) CN13-2 (C) CN20-1 (NO) CN20-2 (C)	220	approximately 3.6

Note: These specified ranges have been verified by UL. Note that if you run a longer wire, it is not verified by UL.

This equipment must be permanently connected to a mains fused spur (3 A or 5 A) using 3-core cable with each core being no less than 18 AWG (1.024 mm / 0.823 mm^2). The mains cable should be clamped securely with the cable clamps provided within the equipment/installation kit. Knockouts are provided on the top, bottom and sides of this equipment and these are intended for conduit or cable glands. As a mains switch is not provided on the equipment, a readily accessible disconnect device shall be incorporated in the building installation wiring. Where there is doubt as to the phase of this wiring, the device, when operated, will disconnect both poles simultaneously.

Mains Supply

Item	North America product	European product	Australian/ New Zealand product
Internal transformer	120 VAC +10% -15%, 60Hz	230 VAC +10% -15%, 50Hz	240 VAC ±10%, 50Hz
Input current rating (AC)	600 mA	250 mA	250 mA
Mains fuse	T630 mA 250 V, UL Listed	T400 mA 250 V	T400 mA 250 V

Warning: For continued protection against risk of fire, replace the mains fuse only with the same type and rating of fuse.

The Aux. DC supply output is a Class 2 Power Limited circuit.

Aux DC Supply

Item	Mains powered unit	+24 VDC input*	+12 VDC input*
Output voltage (DC)	14 V ±5%	14 V ±5%	12 V ±5%
Standby battery	7 Ah or 18 Ah	7 Ah or 18 Ah	—
Maximum recharge time	24 hours	24 hours	—
DC power supply rating**	2.4 A	2.4 A	1.2 A
Battery charge limit	1.2 A	1.2 A	—
Quiescent current	140 mA	140 mA	200 mA

* 24 VDC and 12 VDC input were not evaluated by UL.

** This DC Power Supply Rating is for all the current requirements, including recharging the battery.

Board protection is provided by resettable fuses which are not replaceable.

All wiring in this enclosure is required to be UL compliant. All installation wiring within this equipment cabinet should utilize plastic cable ties to bundle cables and attach to designated cabinet cable mounting locations to provide strain relief for the cable harness.

Disposal of batteries should be according to the local laws and regulations of your region. Contact your local waste management office for information on battery recycling or disposal.

If you are not able to identify the applicable rules in your area, check the instructions which will be available from the battery manufacturer.

Ground all enclosures in accordance with NFPA 70 and Canadian Electrical Code, Part I.

Power Setup

Power management parameters for the TruPortal System Controller are pre-configured as follows. These parameters can not be changed:

- Brownout mode: Alarm and report
- Brownout voltage (V): 10.00
- Battery size (Ah): 18
- Select Check for battery.
- Clear the Enable battery tests check box.
- Test time: 10 sec
- Low load test period: 3 min
- High load test period: 20 hr
- Low voltage (V): 11.70
- Warning voltage (V): 11.40
- Cutoff voltage (V): 10.20
- Very low voltage (V): 9.00
- Excess charge voltage (V): 16.00
- Cutoff time: 10 sec
- No current (mA): 17
- Excess power state discharge current (A): 1.200

Configuration

Use the TruPortal Installation Wizard to discover the controller and connected peripherals, and to change basic configuration parameters.

1. Insert the TruPortal disc in your computer's CD/DVD drive (Windows only).
2. Install Microsoft .NET 4.0 Framework.

   The TruPortal Utilities software will detect automatically if the .NET software is installed and display the word "Installed" next to the link if it is found.
3. Install Bonjour Print Services.

   The TruPortal Utilities software will detect automatically if the Bonjour software is installed and display the word "Installed" next to the link if it is found.
4. Click **Discovery and Installation Wizard**.
5. Select a **Language** and click [Next].

   The wizard will search the network for all TP controllers.
6. Select the controller to configure from the list and click [Next].
7. Type the Administrator's current Password.

   The default administrator User Name is `admin`
   The default administrator Password is `demo`
8. Choose a new password for the administrator.

   The Administrator account has access to all aspects of the TP controller configuration. Leaving default user names and passwords in place is dangerous. Anyone familiar with the product will know the defaults.
9. Type the password in the **New Password** and **Confirm Password** fields and click [Next].
10. Change the settings on the **Network Configuration** tab as directed by the site's network administrator.

11. Click [Next].

    The wizard will discover controllers and I/O expansion modules connected to the TP controller.
12. Click [Sync with PC] to set the correct time on the controller.
13. Select the appropriate **Global Input EOL Terminations** to indicate how the tamper circuits and sensors on the doors and readers are wired.
14. For each general purpose auxiliary input that is connected:
    a. Select a **Mode**.
    b. Observe the inputs to determine they are working and communicating with the controller.
15. For each general purpose auxiliary output that is connected:
    a. Click the icon next to the **State** to change state.
    b. Observe the outputs to determine they are working and being activated by the controller.
16. For each door controller, select the **Number of Doors** controlled.
17. For each door:
    a. Select the appropriate **Mode** for contact, request to exit and tamper circuits.
    b. Select commands from the **Door Control** list to test each door for proper installation and electrical wiring.
18. When you have tested all devices, click [Finish].

Jumpers

Jumper	Description
CN37	External LED indication for power (to be wired to the outside of the enclosure)
CN38	Controls SNAPP 1 termination. 120-ohm termination is added across the bus when the shunt jumper is installed on the pin header.
CN39	Controls SNAPP 2 termination. 120-ohm termination is added across the bus when the shunt jumper is installed on the pin header.
CN40	Controls SNAPP 3 termination. 120-ohm termination is added across the bus when the shunt jumper is installed on the pin header.
CN41	Controls SNAPP 4 termination. 120-ohm termination is added across the bus when the shunt jumper is installed on the pin header.
CN35	If the panel needs to be started on battery only, without ever having AC or DC power, this connector should be momentarily shorted.

Status LEDs

The following chart describes the purpose of each LED on the I/O board.

I/O board LED	Description
LEDs 1 and 2	During normal operation, the heartbeat is indicated by a one second blink rate on LED 2. During firmware upgrade: • When LED 1 and LED 2 are both ON, the board is in monitor program mode (bootloader mode). • When LED 1 is ON and LED 2 is off, programming (flash) firmware is in progress.
LED 3	Orange LED indicates communication occurring on SNAPP port 1.
LED 4	Orange LED indicates communication occurring on SNAPP port 2.
LED 5	Orange LED indicates communication occurring on SNAPP port 4.
LED 6	Orange LED indicates communication occurring on SNAPP port 3.
LED 7	Green LED indicates link and activity on primary Ethernet port (Eth0).
LED 8	Yellow LED indicates speed on primary Ethernet port (Eth0).
LED 9	Green LED indicates link and activity on secondary Ethernet port (Eth1).
LED 10	Yellow LED indicates speed on secondary Ethernet port (Eth1).
LED 11	Not applicable
LED 12	Green LED indicates the presence of power to the board at connector CN2.

LEDs 1 through 10 will be switched off when the enclosure is closed.

The following chart describes the purpose of each LED on the SOM board.

SOM board LED	Description
Power LED	Green LED indicates SOM power.
Status 1	Yellow LED, along with the green power LED, indicates initialization.
Status 2	Red LED is off. Currently not defined.

TruPortal Reader Output LEDs

The following chart describes the behavior of TruPortal reader output based on different actions of the door.

Reader Mode		LED									
		LED Mode	RLED ID	ON Color	OFF Color	ON Time	OFF Time	Repeat Count	Beep Count	RdiLine1	RdiLine2
1	Disabled	N/A									
2	Unlocked	N/A	N/A	GREEN	GREEN	30	0	0	0	N/A	N/A
3	Locked			RED	GREEN	5	0	0	0		
4	Facility			RED	RED	30	0	0	0		
5	Card Only			RED	RED	30	0	0	0		
6	Pin Only			RED	RED	30	0	0	0		
7	Card & Pin			RED	RED	30	0	0	0		
8	Card or Pin			RED	RED	30	0	0	0		

Replace Battery

The event log buffer and the real time clock are backed up by a 3 V battery. Without power being applied to the controller, the battery will retain events and transactions for up to one year.

This battery should be replaced annually to insure that proper backup functionally is maintained. Remove the insulator from the battery holder after installation. Replacement battery: Panasonic CR2354 Lithium coin cell battery.

Warning

When changing the lithium battery, replacement must be a Panasonic CR2354 only.

Caution: Battery may explode if mistreated. Do not recharge, disassemble or dispose of in fire. Follow local code for proper disposal of used lithium battery.

Specifications

The TruPortal System Controller is for use with UL Listed access control power limited power supplies. These specifications are subject to change without notice.

- Primary Power:
  - AC power: 18 VAC ± 10%
  - DC power: 24/12 VDC ± 10% (Not evaluated by UL.)
  - Maximum input power: 2.7 A
  - Total current that can be sourced from panel: 1 A.

Note: It is up to the installer to ensure that the sum of the loads on all the supply outputs from the TruPortal System Controller plus the current consumed by the controller is equal to or less than 1.2 A (see power table). The 1.2 A output current from the regulator also includes at least 200 mA to power the I/O board and the SOM. Maximum available output current is 1 A. [Example: 250 mA for (Reader power) + 400 mA for (SNAPP Ports) = 650 mA total current used.] Drawing more will cause the output voltage to drop as the system regulator starts to current limit.

  - The power applied from the mains to the transformer in the enclosure is 120 VAC for North America (230 VAC for Europe, and 240 VAC for Australia).

- Memory and Clock Backup: Panasonic 3 V CR2354 Lithium coin cell battery
- Wiring
  - Ground: 14 AWG (1.628 mm / 2.08 mm^2),, provided in the panel from the fused terminal block to the ground lug
  - Module Bus (RS-485) Cabling (device communication and power): Recommended: 22 AWG (0.644 mm / 0.326 mm^2), 4 conductors, shielded twisted pair, 120 impedance, low capacitance, 41 pF/meter or 12.5 pF/foot (such as Belden 9842).
  - Maximum Length: Up to 2000 feet (610 m) of cable on a Module bus port.

Note: For longer cable distances, or where one cable connects many expansion modules (daisy chained, star wiring configurations are not acceptable), a 120-ohm terminating resistor will need to be installed across A and B communication terminals of the last module on the bus cable.

  - Separate Power (or door strike) Wiring: Recommended:18 AWG (1.024 mm / 0.823 mm^2), stranded and insulated (2 conductors; color-coded is preferable)
  - Inputs/Sensor Cabling: 22 AWG (0.644 mm / 0.326 mm^2), 2 wires (For electrically noisy environments, use twisted pair, and/or shielded cable.)
  - Outputs/Signaling: 22 AWG (0.644 mm / 0.326 mm^2), 2 conductors

- Reader Cabling: 22 AWG (0.644 mm / 0.326 mm^2),(For Canadian UL Listed installations: 22 AWG / 0.644 mm / 0.326 mm^2), shielded. Maximum for reader data lines: 500 feet (150 m). Maximum for power wiring: 300 feet (91.44 m).

- Basic reader (no LEDs, buzzer control, or tamper): 4 conductors
- Reader with LEDs: 6 conductors
- Reader with LEDs, plus buzzer and tamper: 9 conductors

- Relays outputs:
  - Siren relay, 1 A @ 30 VDC
  - Strobe relay, 1 A @ 30 VDC
  - Strike relay, 5 A @ 30 VDC
  - Aux relay, 1 A @ 30 VDC
- Environmental:

  Temperature:

  – Operating: 32° to 120° F (0° to +49° C)

  – Storage: -40° to 185° F (-40° to 85° C)

  Humidity: 10 to 85% ± 5% RHNC

  BTU Output: 73.7 BTU/hour
- Mechanical:

  Dimensions: H 6.30 x W 9.84 x D 1.65 inches (H 160 x W 250 x D 42 mm)

  Weight of I/O board and SOM board: 1.04 lbs. (0.47 kg)

  Weight of accompanying parts:

  – Enclosure: 13.2 lbs. (6 kg)

  – Transformer: 2.2 lbs (1 kg)

  – Battery retention bracket:0.2 lb. (0.09 kg)

  – 18 Ahr battery: 12.8 lbs. (5.8 kg)
- UL294 Listed
- FCC Part 15
- CE marking
- RoHS compliant
- WEEE
- FCC part 15
- ULC Listed
- AES128 certified (Certificate #1496)

Figure 1: TruPortal System Controller enclosure

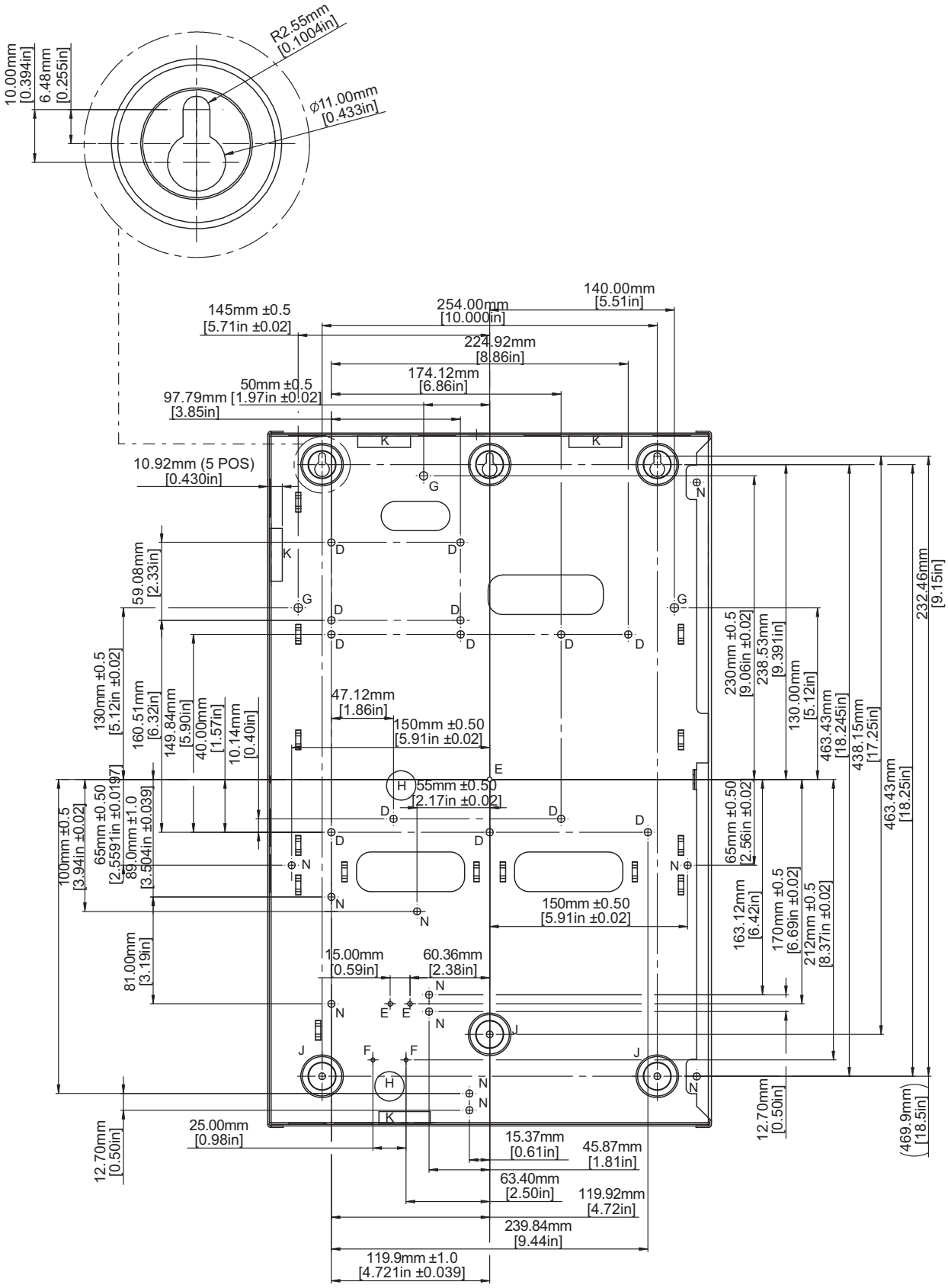
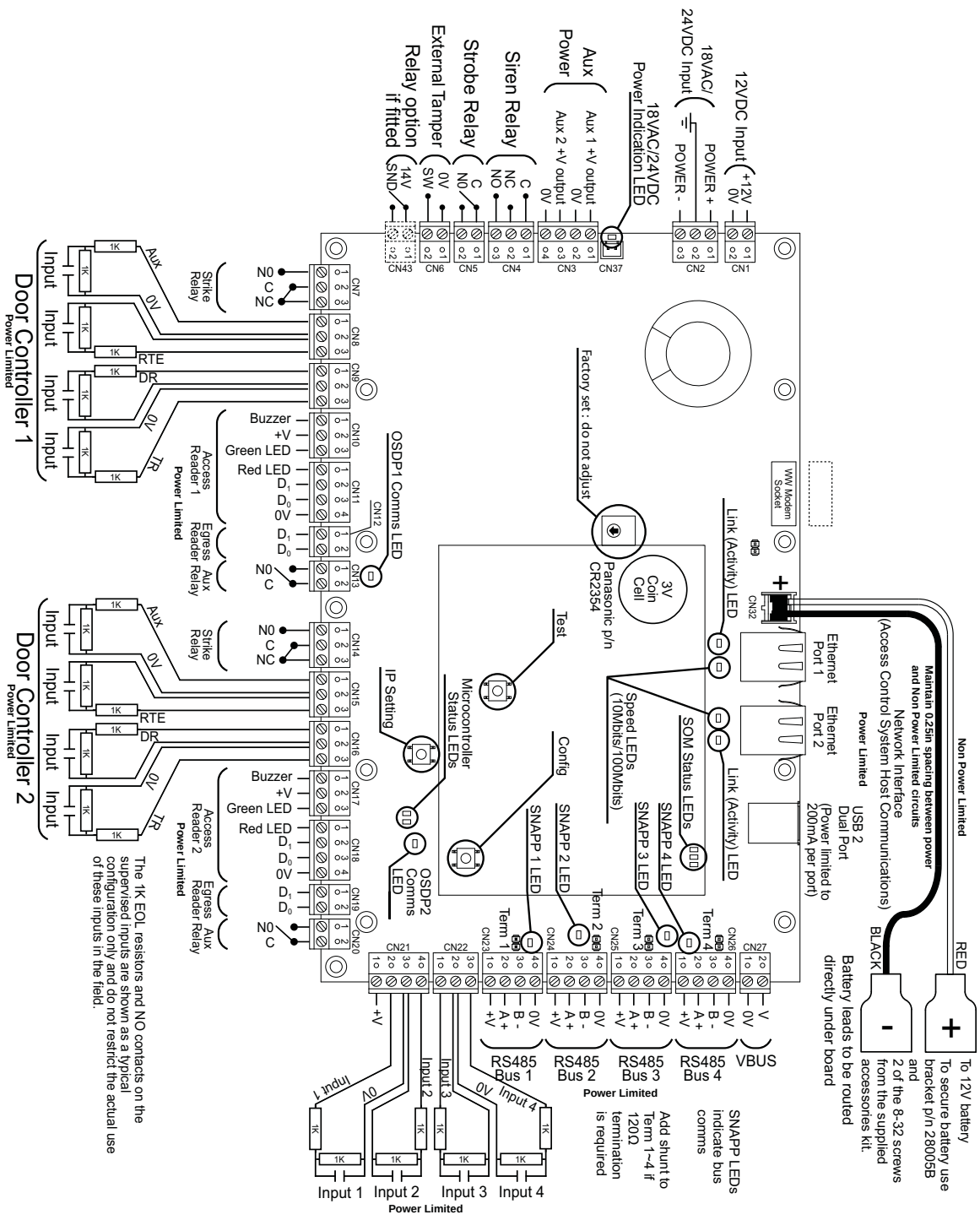


Figure 2: TruPortal controller



The 1K EOL resistors and NO contacts on the supervised inputs are shown as a typical configuration only and do not restrict the actual use of these inputs in the field.

The battery leads at CN32 must be routed away from power limited circuits. Maintain 0.25 inches (6 mm) spacing between non-power limited (that is, battery leads and AC Mains) and power limited wiring.