

PWR/RS485: Power and RS485 data communication is done with a single connector and should be the last connector to be attached as it may carry active power. We recommend that power and RS485 data communications be via a single 18 AWG, 4-conductor shielded cable. The shield drain wire can be used as the EARTH common wire. Do not connect more than two (2) RS485 cables to one PCB. All PCBs shall be connected as an inline chain beginning with the controller and ending with the last device. The last device shall have a "termination" jumper installed as shown in Figure 10. It is located next to the tail capacitor as marked. All other devices shall have this jumper omitted.

These connectors have 6 pins.

- DC + V (12-24VDC) Required.. RED
- DC – V (DC Common) Required.. BLK
- EARTH Recommended.. SHEILD
- RS485-A Required..
- RS-CMN Optional if EARTH is connected,
- RS-485-B Required

RS485 Limitations: A wired keypad can be located up to 4000 feet from the controller given proper twisted pair cable with ground wire is used.

To properly terminate cables into connectors the following instructions apply.

1. Strip back the outer insulation and shield foil from both of the 18 AWG, 4-conductor, shielded cables (coming from the controller or previous AI device in line and going out to the next AI device in line), being careful not to cut the bare shield wire. Strip ¼ inch of insulation off the end of each of the individual colored conductor wires.
2. Remove the terminal blocks from the keypad circuit board by sliding them up and off. The terminal blocks may be somewhat difficult to remove as a tight electrical connection is necessary. If they are tight, rock them slightly back and forth while lifting away from the board.
3. Insert wires into the desired connector. Where 2 wires are tied together ensure that both wires are seated all the way inside the slot. Use a flathead precision screwdriver to tighten down the terminal screw.
4. Verify that the terminal slot has tightened down on the copper wire and not on the rubber insulation. There should be no copper wire showing outside of the terminal slot. Gently tug the wires to verify that they are tightly held inside the terminal slot. Repeat this process with each of the remaining wire connections as shown in Figure 10.

Wireless Communications (Optional): **Wireless Communications (Optional):** The Keypad can also function without the RS485 wiring. In this case the XBEE or XBEE Pro 900 MHZ wireless module and an RPSMA antenna must be installed on the system Gateway and on the Keypad to operate wirelessly. If the keypad or relay unit is within wireless range of the Gateway the keypad will work in same fashion as with RS485 connections. The range depends on the wireless module used, the antenna used, the RF background level of the area (rural or urban) and the number of obstructions between devices. The XBEE basic module range is up to 300ft unobstructed line of sight rural area. Typical obstructed range of XBEE in urban areas is 100 ft. The XBEE Pro module range is up to 1 mile w/unobstructed rural line of sight. 500ft obstructed line of sight in urban areas is common for XBEE Pro. XBEE Pro transmitter modules are recommended. This equipment option has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules.

This option has not been evaluated nor certified as part of UL294 level 2 nor CSA C22.2 No.205

Relay Outputs: Each relay has a Normally Closed (NC), a Common and a Normally Open (NO) connection. Depending on the need, wire to the common and either the NC or NO. On board LED's are provided to show if the relay is activated. Typical gate operators require a normally open contact. Some electric door strikes require a normally closed contact. If door strikes are used it is recommended that they be DC (typically 12V) so that a shunting diode must then be installed across the solenoid to prevent ground spikes from disrupting the keypad communication.

RELAY CONTACT RATINGS:

Item	Rating
Contact Type	Single Ag-Alloy (Cd Free)
Rated Load	5A (NO) / 3A (NC) @ 30VDC
Max Switching Voltage	30VDC
Max Switching Current	5A (NO) / 3A (NC)

Inputs: Each Input has a Ground Connection (G) and a Sense Connection (1) . The sense connections are marked 1-4 and will source a small voltage at high impedance. Wire any dry contact across a sense pin and a G pin. Closing the contact will energize the input. On board LED's are provided to show if the input is activated.

Speaker and Call Button: These cables are factory installed but are shown in the figure above for reference.

Intercom: The PCB provides a simple way to attach the intercom cable to the speaker and the call button. Typically 2 wires are only present although a 3rd can be present. With two wires the interface supports both Alphone LEF and NEM systems. The 3rd wire (green), if present, is to be wired to the E connection along with the black wire.

Earth Ground: The earth ground wire should be. To connect the ground wire, run an insulated copper wire (preferably color green) from a grounded water pipe or from a copper rod in the ground to the keypad and connect it to the green earth ground wire using a wire nut. The enclosures earth wire is connected to the stud in the floor of the enclosure using a screw with a star washer. This installation must meet applicable code as the type of wire, depth of burial, and size of the rod may vary by municipality. **Note:** Uninsulated wires (Typically used for earth ground) cannot be located inside the unit's case. Make connections for an uninsulated ground wire outside the enclosure.

Pinhole camera Option. Video signal cable is part of the accessory device and not discussed herein. The keypad does have accessory power (12V as well as 5V) that can power a pinhole camera. This will give the best possible picture from the keypad camera. Pinhole camera power is supplied by the keypad circuit board. Depending on which camera is used a custom mounting bracket may be required.