Alliance 4-Door/Elevator Controller DGP

Installation Manual

interlogix

A UTC Fire & Security Company

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Intended use Use this product only for the purpose it was designed for; refer to the data sheet and user documentation. For the latest product information, contact your local supplier or visit us online at `www.utcfireandsecurity.com`

FCC compliance This device complies with Part 15 of the FCC Rules. Operation is subject to the following conditions:

1. This device may not cause harmful interference.
2. This device must accept any interference received, including interference that may cause undesired operation.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Note: In order to maintain compliance with FCC Class B rules, shielded cable must be used (Belden 8723 or equivalent). AL-1256 must use a Shaffner filter FN2060-1-06 with recommended transformer for FCC Part 15 compliance.

Contents

Preface

This is the *Alliance 4-Door/Elevator Controller DGP Installation Manual* for door controller models AL-1255 and AL-1256 and elevator controller model AL-1265. This document includes an overview of the product and detailed instructions explaining:

- how to install; and
- how to wire the units.

There is also information describing how to contact technical support if you have questions or concerns.

To use this document effectively, you should have the following minimum qualifications:

- a basic knowledge of Alliance systems; and
- a basic knowledge of electrical wiring and low-voltage electrical connections.

Read these instructions and all ancillary documentation entirely ~~before~~ installing or operating this product. The most current versions of this and related documentation may be found on our website. Refer to *Online publication library* on page 22 for instructions on accessing our online publication library.

Note: A qualified service person, complying with all applicable codes, should perform all required hardware installation.

Conventions used in this document

The following conventions are used in this document:

Bold	Menu items and buttons.
Italic	Emphasis of an instruction or point; special terms.
	File names, path names, windows, panes, tabs, fields, variables, and other GUI elements.
	Titles of books and various documents.
Blue italic	(Electronic version.) Hyperlinks to cross-references, related topics, and URL addresses.
`Monospace`	Text that displays on the computer screen.
	Programming or coding sequences.

Safety terms and symbols

These terms may appear in this manual:

CAUTION: *Cautions* identify conditions or practices that may result in damage to the equipment or other property.

WARNING: *Warnings* identify conditions or practices that could result in equipment damage or serious personal injury.

Product overview

The Alliance 4-door and 4-elevator controller DGP devices extend the system's access control functions. The devices allow up to four readers per door/elevator and add intelligence to the doors/elevators while increasing the total number of doors in the system.

AL-1255. 4-door controller DGP, 1 A maximum current output.

AL-1256. 4-door controller DGP, 3 A maximum current output.

AL-1265. 4-elevator controller DGP, 3 A maximum current output.

Memory expansion options

Table 1 shows the memory expansion modules you can use for your application.

Table 1. Memory expansion options

Category	Without memory expansion	Memory expansion module		
		AL-1830 IM	AL-1831 4M	AL-1832 8M
Users	50	11, 466	17, 873	65, 535
Door groups	10	128	128	128
Floor groups	10	64	64	64
History				
Alarm system events	100	1, 000	1, 000	1, 000
Access control events	100	1, 000	1, 000	1, 000

Product contents

The DGP ships with the following:

- controller DGP board
- two-position and three-position terminal blocks that can be combined to provide a variety of terminal block configurations;
- clip-in and screw-in male/female standoffs;
- battery wires;
- 4.7k resistors

Inspect the package and contents for visible damage. If any components are damaged or missing, do not use the unit; contact the supplier immediately. If you need to return the unit, you must ship it in the original box.

References and related documentation

- *Alliance System Programming Manual*
- *Alliance 4-Door/Elevator Controller DGP Programming Manual*

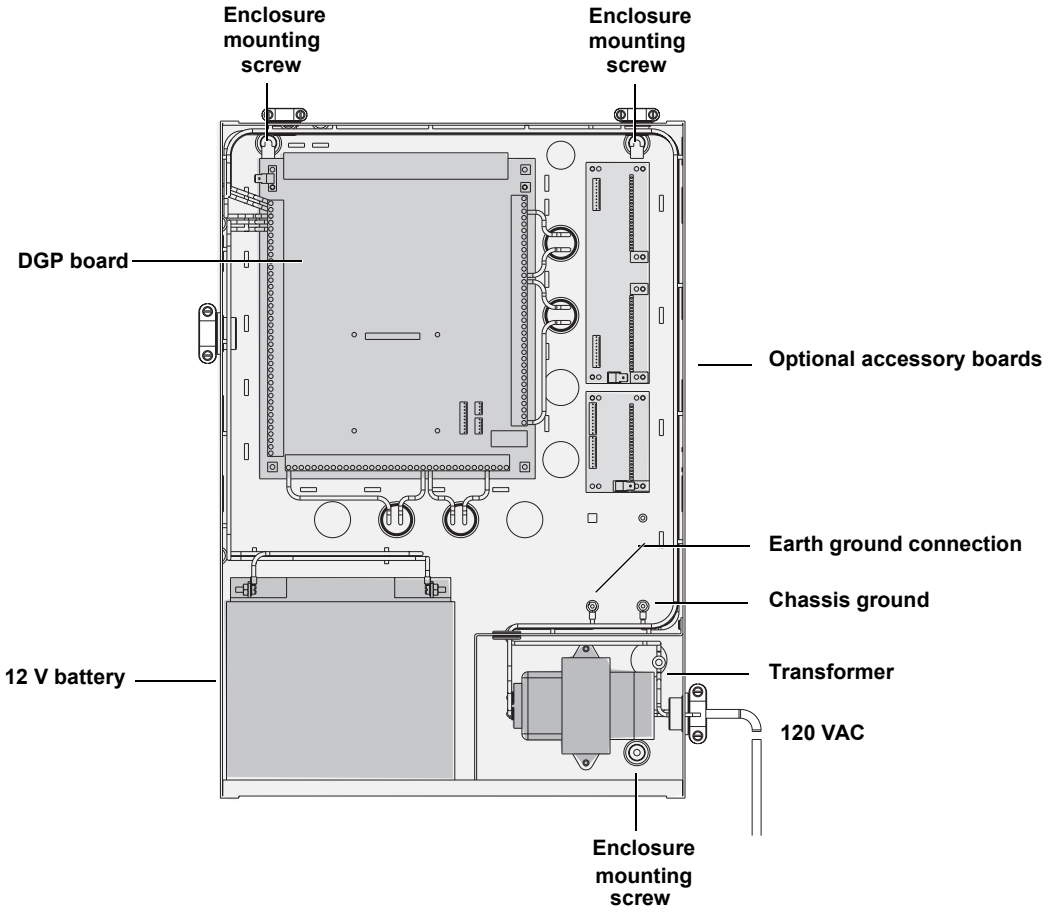
Installation

To install the DGP, do the following:

1. Mount the enclosure. A suitable location includes easy access for wiring, good lighting, suitable access to power and earth ground, and ample space to work. The mounting surface should be flat and dry. We do not recommend mounting metal enclosures directly onto concrete walls. Check with local authorities to verify local codes regarding metal enclosure mounting.

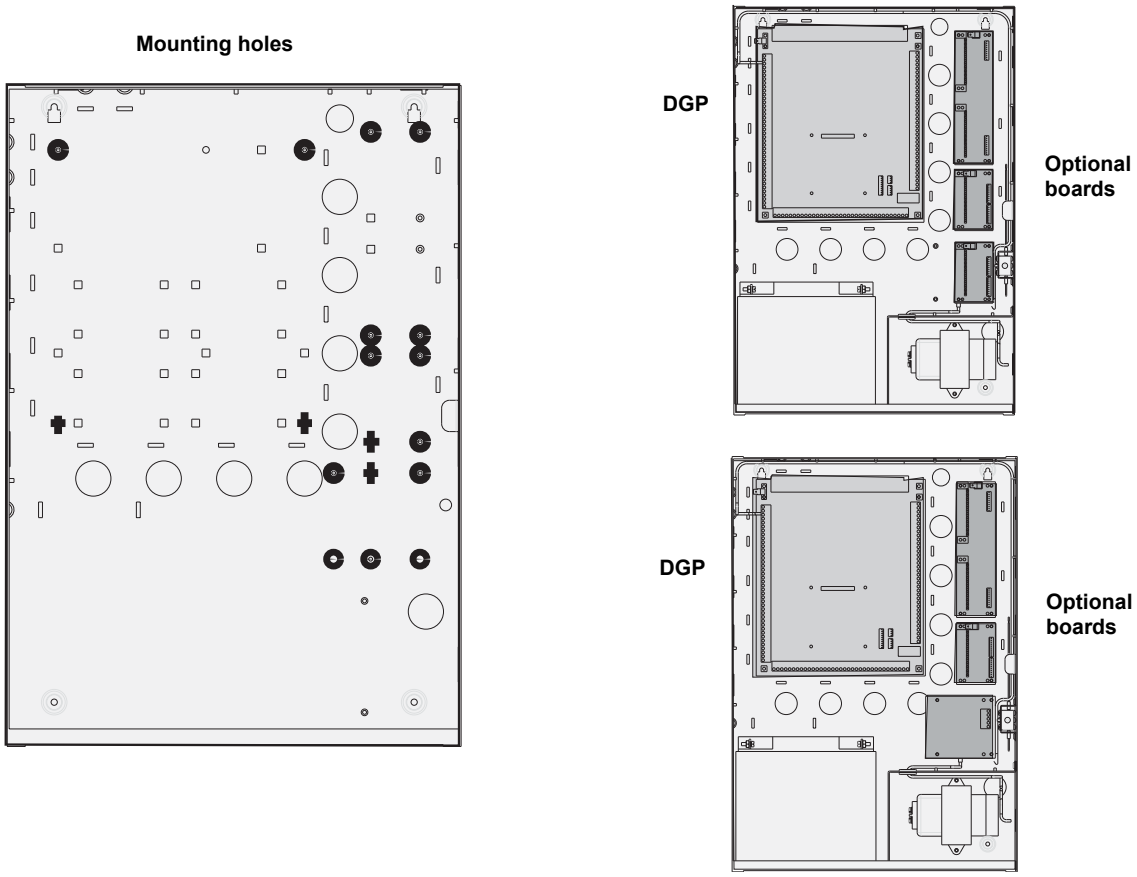
   All Alliance system enclosures contain four mounting holes located in the corners of the enclosure. Use appropriate mounting hardware to mount the enclosure to the mounting surface and the batteries to the enclosure as shown in *Figure 1*.

Figure 1. Enclosure



2. Install the standoffs. Before you install the DGP board, configure the appropriate standoffs. Use male/female standoffs where threaded holes are aligned with the mounting holes on the board and use clip-in standoffs where square holes are aligned with the mounting holes (*Figure 2*)

Figure 2. Standoff layouts



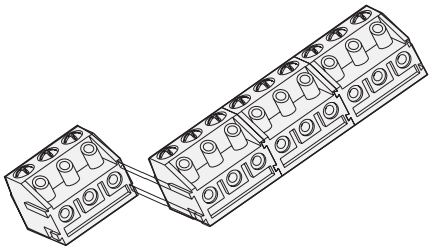
3. Install the transformer. Use two 6/32 x 1/4 in. screws to mount the transformer in the enclosure. Install the rubber grommet into the transformer shield and mount it to the enclosure using four 6/32 x 1/4 in. screws provided with the transformer (*Figure 1* on page 2).
    - AL-1255 (24 VAC, AL-1690 Transformer Kit).
    - AL-1256/AL-1265 (18 VAC, AL-1672 Transformer Kit).

    Note: For AL-1256, FCC requires the use of a Shaffner filter, model FN2060-1-06 with the recommended transformer, AL-1672.

4. It is important that you provide the proper grounding to the enclosure. Use two male/female standoffs to secure both the earth ground and enclosure ground wires (*Figure 1* on page 2). When securing the ground wires, use the internal tooth star washers provided with the enclosure between the standoff and the wire connector. All connections should be tight and make a good electrical connection.
5. Install the tamper switch. Assemble the tamper switch (use the instructions provided with the tamper switch). Use the three 6/32 x 1/4 in. screws provided to mount the tamper switch.

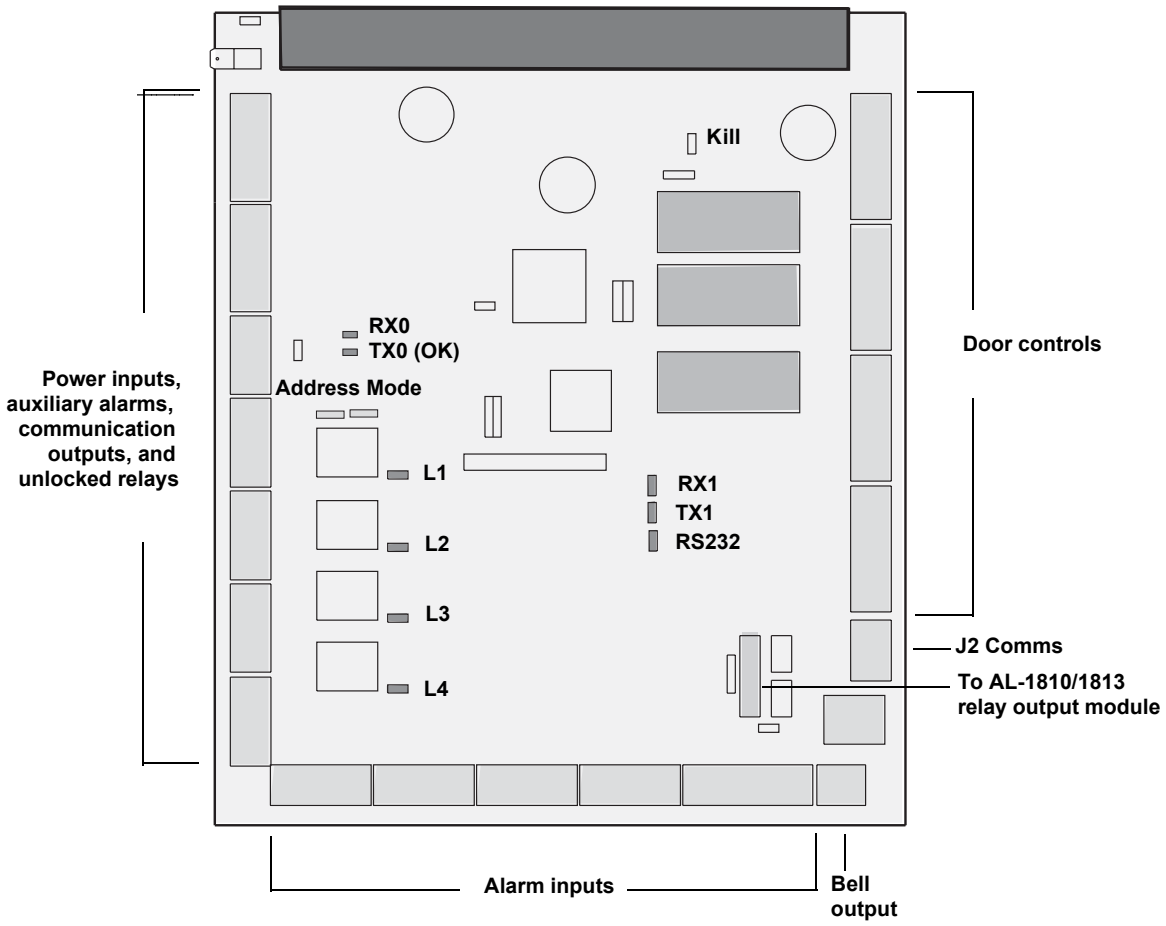
6. Slide the DGP board's terminal blocks together as shown in *Figure 3* and mount them to the board.

Figure 3. Terminal block assembly



7. Use four 6/32 x 1/4 in. screws with internal star washers to mount the board (*Figure 4*) in the enclosure (*Figure 2* on page 3). To ensure proper grounding, tighten screws securely.

Figure 4. Controller board



LEDs

Figure 4 on page 4 shows the following LEDs located on the DGP board:

RX0. Flashing LED indicates polling data is being received from the control panel on the system bus.

TX0 (OK). Flashing LED indicates the DGP is replying to polling from the control panel on the system bus.

TX1. Flashing LED indicates the DGP is polling remote units (readers, interfaces) on the DGP local bus. The TX1 LED should always be active.

RX1. Flashing LED indicates remote units are replying to the polling from the DGP on the local bus.

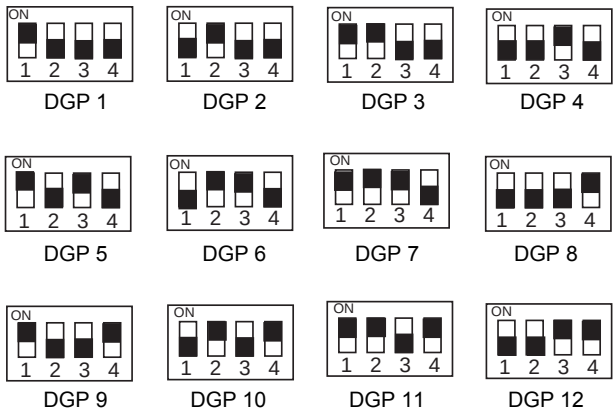
RS232. Not currently used.

L1 to L4. Indicates *unlock relay* is active.

DIP switches

There are address and mode DIP switches on the DGP board (*Figure 4* on page 4). The mode DIP switches are currently not used. The address DIP switches (1 to 4) are used to identify this DGP to the control panel (assign the DGP address). A 4-door/elevator controller DGP can only be addressed as DGP 1 to 12 (*Figure 5*).

Figure 5. DGP address DIP switch settings



Wiring

The DGP must be wired to both the system bus and the DGP local bus.

Note: FCC requires that shield cables must be used (Belsen 8723 or equivalent).

System bus connections

Keep all panel wiring well away from other wiring. Avoid parallel wire runs with other wires. Where parallel wire are unavoidable, keep wires a minimum of 2 in. (5 cm) apart or in EMT. We recommend that you wire Alliance system components that use direct wire transformers into a dedicated circuit breaker and you plug those that use plug-in transformers into an unswitched outlet.

WARNING: Each control panel or device mounted in a metal enclosure, must have its enclosure connected to earth ground. Correct earth ground procedure must be followed.

To correctly earth ground your application, follow these procedures:

One enclosure with several devices. All devices designed for the system have chassis ground connections via metal studs to the metal enclosure. Take care that these metal studs make good connections to the enclosure (beware of paint). The earth connection of every piece of equipment in the system can be used for connecting the shielding of shielded cables. If a device, such as a keypad, is placed in a plastic enclosure, the earth lug of the device does not have to be connected.

Panels in a single building. If several enclosures or devices are connected to earth ground in one building, the safety earth ground of this building has to be checked by a licensed contractor.

Panels in multiple buildings. If the wiring extends to separated buildings, more than one common earth ground system will be used. Use isolator/repeaters to isolate the system bus. In this way the system is protected against variations in earth potential.

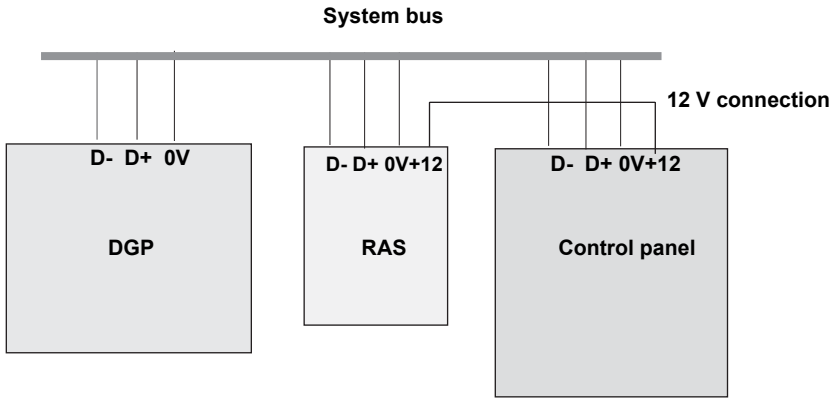
System bus connections

Connect DGP devices to the system bus to provide extra zones and remote arming stations (RAS) to the Alliance system control panel. Remote devices can be up to 5,000 ft. (1.5 km) from an Alliance system control panel. DGP and RAS devices must be connected via a 2-pair twisted, shielded data cable from the system bus connection. We recommend you use Beldon 8723. Connect the shield of the data cable to earth at the Alliance system control panel and leave it disconnected at any other end. Where the distance between the arming station and the nearest device is more than 328 ft. (100 m), use a separate power supply to power the arming station. To power the arming station do not connect the (+) from the system bus, connect the (+) of the local power supply to the (+) on the arming station and connect the (0 V) from the power supply and (0 V) from the system bus to the arming station (-) terminal.

Note: The first and last devices on the system bus must be terminated. All other devices on the system bus must not be terminated.

Figure 6 shows the system bus connection.

Figure 6. System bus connection

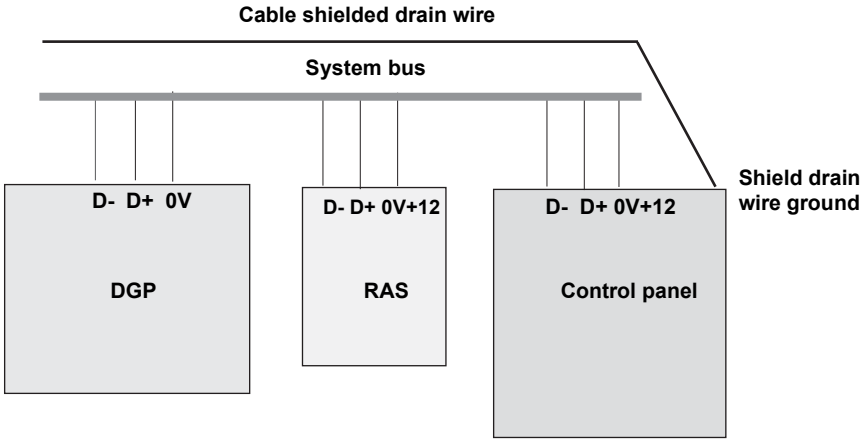


Shielded cable routing

Cnnect the shielding of all shielded cables used in the system at one side to one common earthing point in a building. If a shielded bus cable is routed via more than one plastic device, you must connect the shielding from in-coming and out-going cable (*Figure 7*).

Note: Metal chassis must be earth grounded. Splice shield drain wire at all junctions.

Figure 7. Shielded cable routing

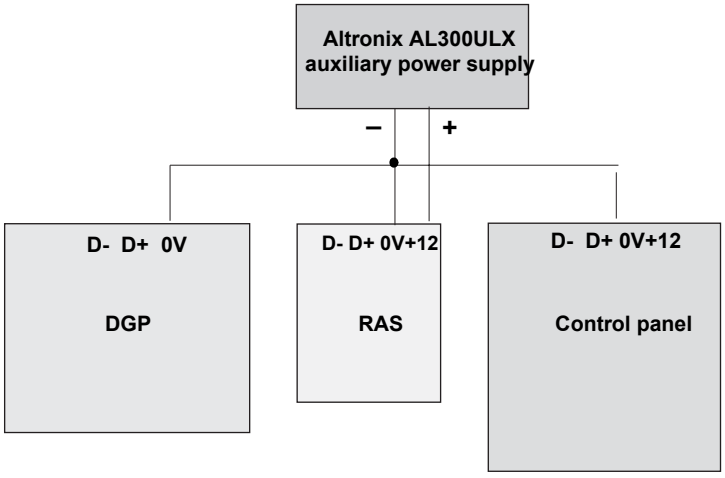


Auxiliary power supply connections

In systems where expansion module power is not supplied by the main control panel or an AC-powered DGP with auxiliary outputs, you must use a UL Listed power supply suitable for burglar alarm applications, such as the Altonix300ULX. (*Figure 8*).

Note: Tie all 0V together. Do not connect the +12 together.

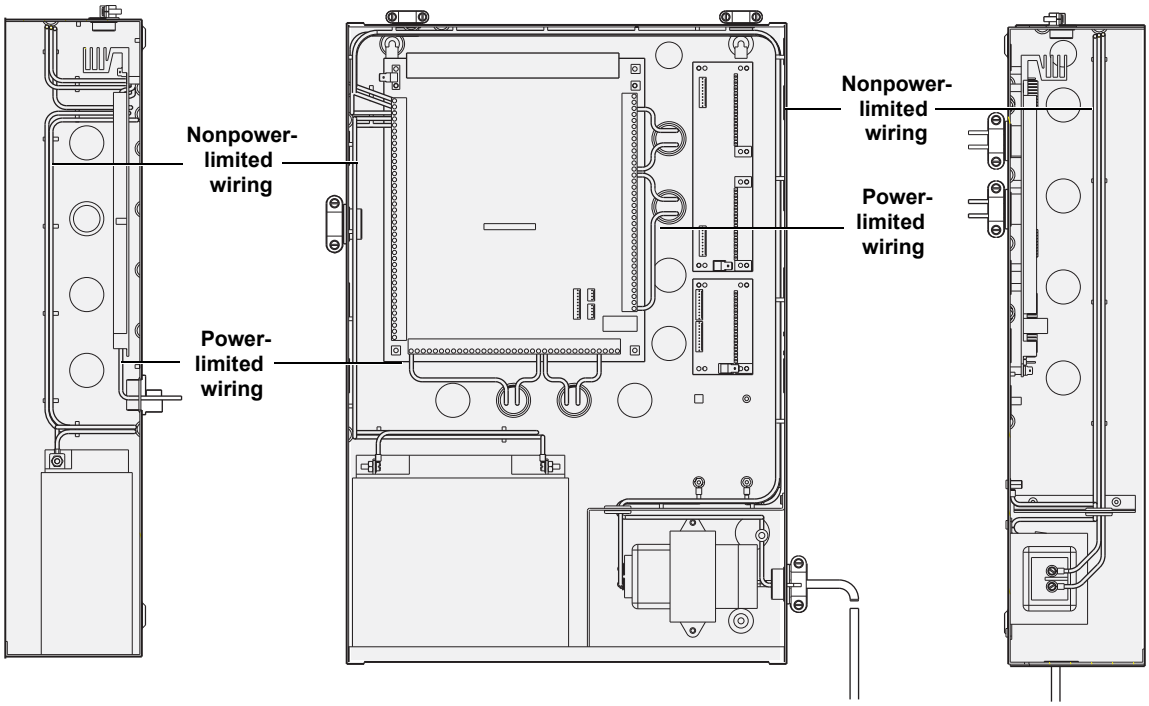
Figure 8. Auxiliary power supply connections



DGP connections

Keep nonpower-limited wiring away (1/4 in. minimum) from power-limited wiring (*Figure 9*). Disconnect the AC power via a dedicated circuit breaker before servicing.

Figure 9. Power and nonpower wiring



Wiring connections

Figure 10 shows the wiring connections on the DGP board. See *Battery capacity* on page 16 for the appropriate battery type. The total auxiliary power out is 1 Amp for the AL-1255 and 3 Amps for the AL-1256 and AL-1265 including unlock relays and door/elevator controller outputs. You must install a 1k resistor across the siren output.

Figure 10. Controller wiring connections

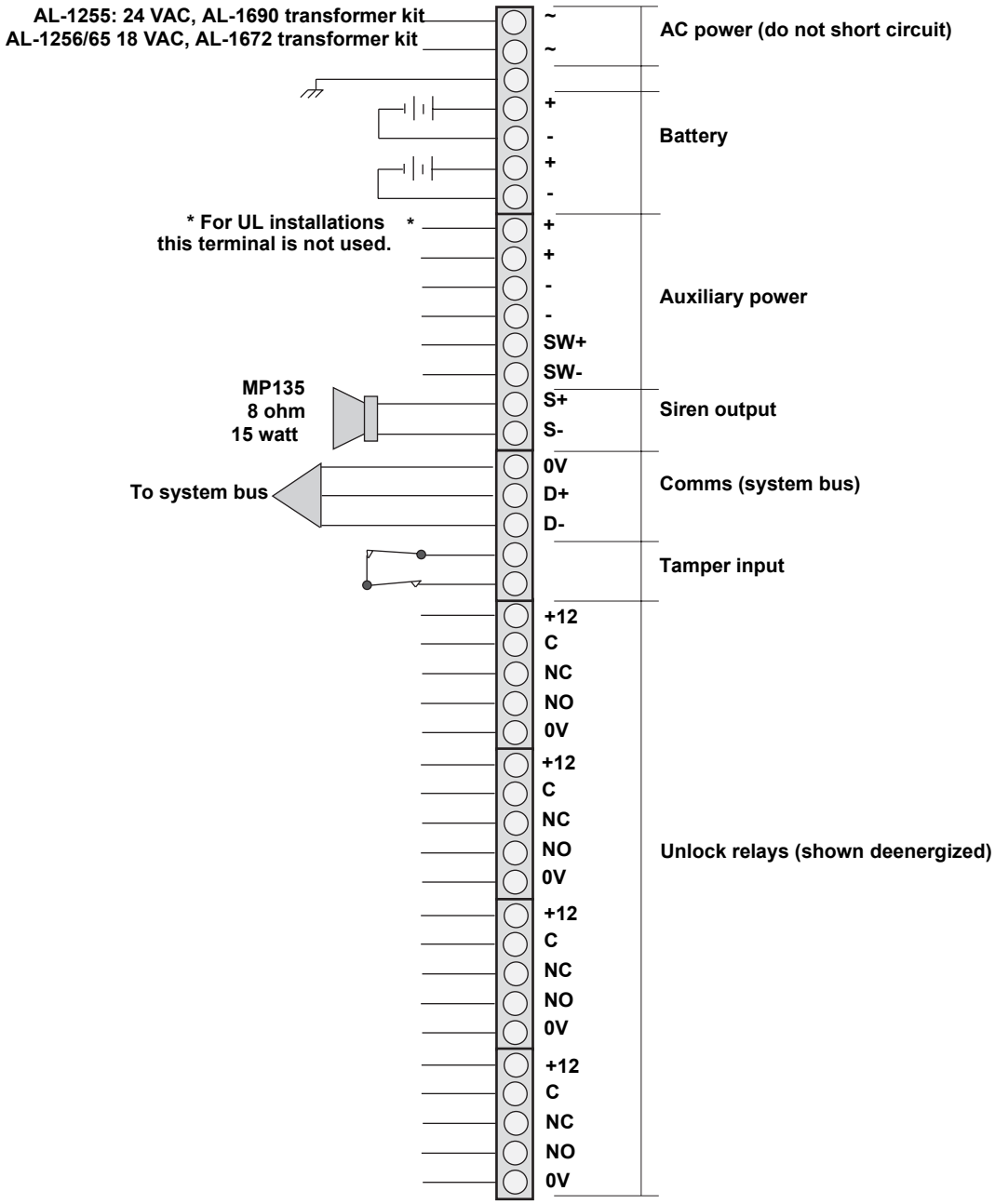
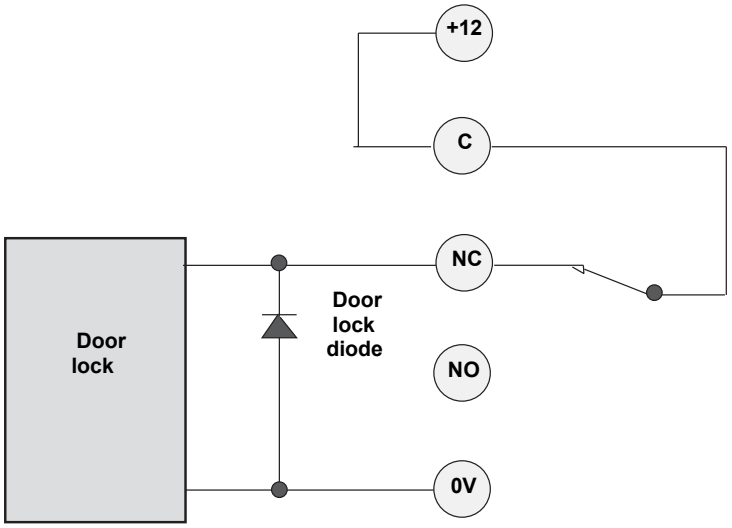


Figure 11 shows details of a typical magnetic door lock wiring configuration.

Figure 11. Typical magnetic door lock



Alarm input and bell output connections

Figure 12 shows alarm inputs and bell output (dry contacts) wiring connections.

Figure 12. Alarm input and bell output wiring

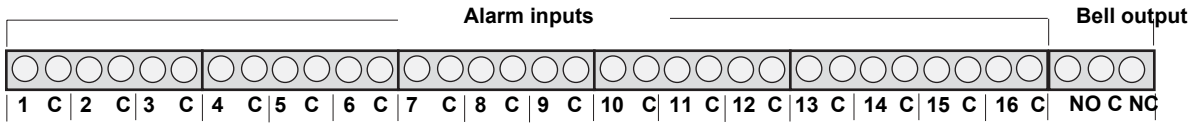
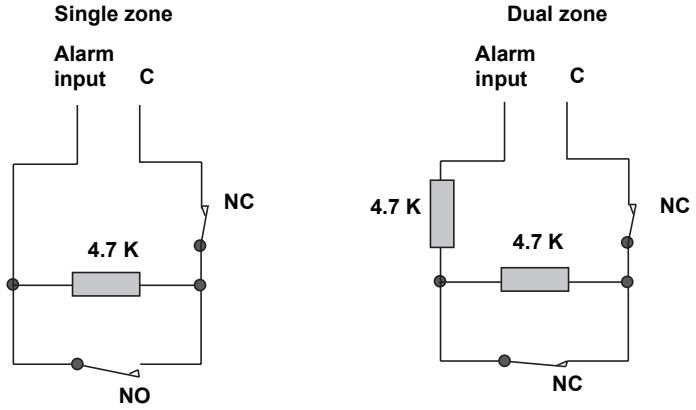


Figure 13 shows single and dual zone alarm input wiring.

Note: Dual zone is not acceptable for UL 365, UL 609, and UL 1610 compliance.

Figure 13. Single and dual zone alarm input wiring



Card reader connections

Figure 14 shows how to wire the DGP to an AL-1191/1193 card reader. You can connect the violet wire (open collector) to a zone via an EOL (end-of-line) resistor.

Figure 14. AL-1191/AL-1193 Card reader wiring

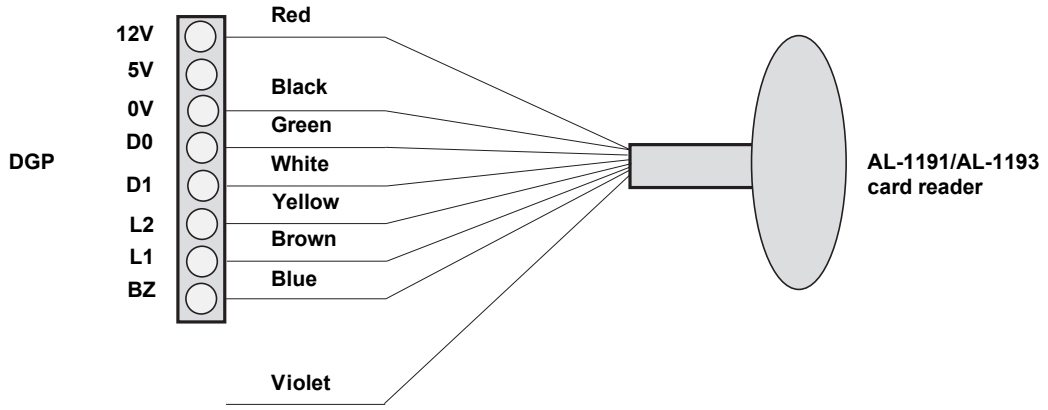
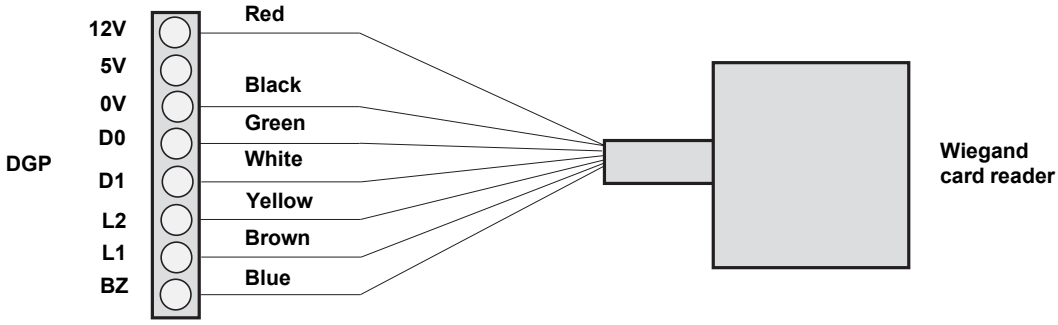


Figure 15 shows how to wire the DGP to a Wiegand card reader.

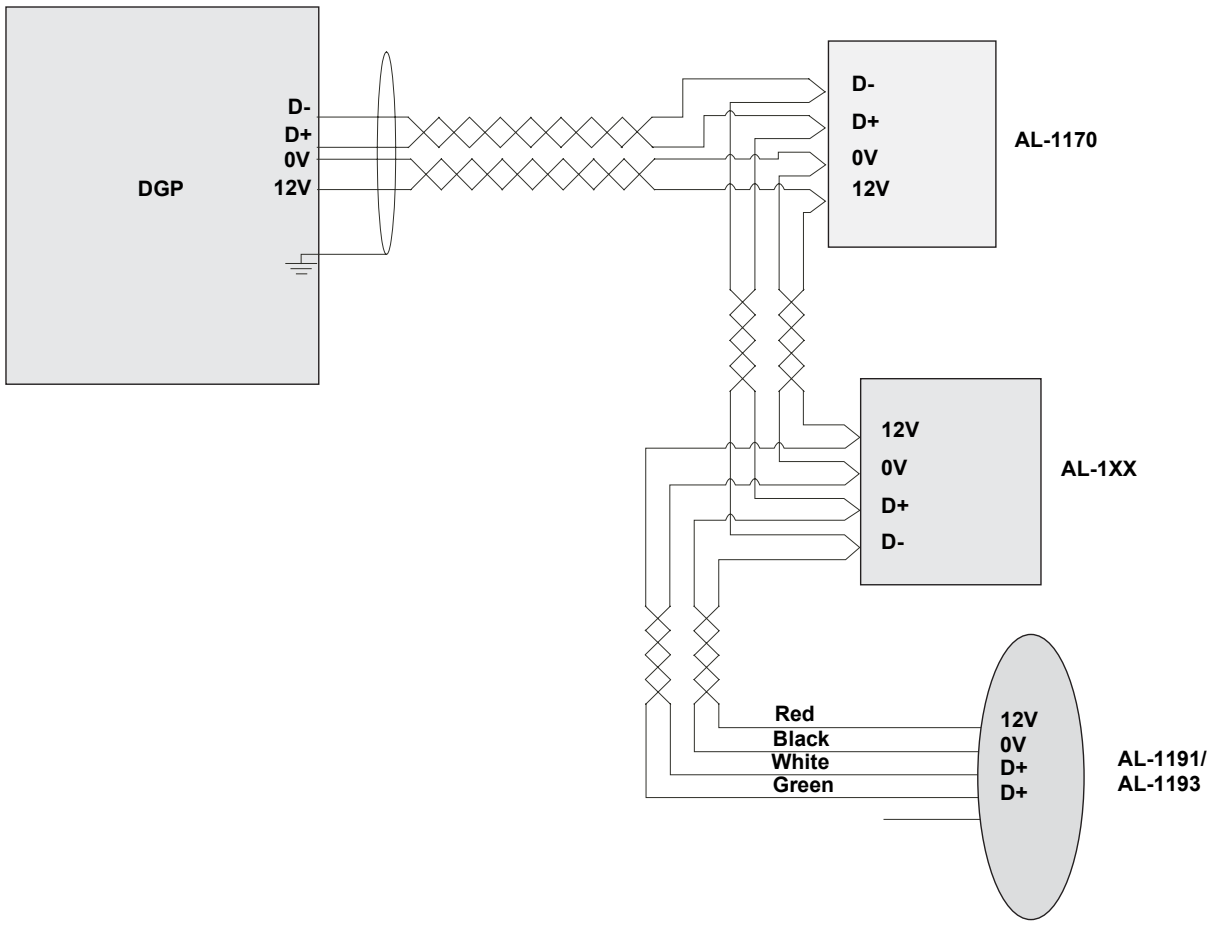
Figure 15. Wiegand card reader wiring



Local bus connections

You can connect up to 16 arming stations (LCD-RAS, Smart Card readers) to the J22 Comms local bus (*Figure 4* on page 4). Wire the door contacts and request-to-exit buttons associated with each door to the controller DGP inputs (*Figure 16*). Any zone used for DOTL (door open too long) cannot be used for any other function. Each unit on the local bus is assigned an address and is polled in sequence by the DGP. Remote units can be located up to 5,000 ft. (1.5 km) from the controller DGP.

Figure 16. Local bus connections



Programming options

The DGP provides the following programming options:

1. DGP options
2. Door options
    - Access
    - Request-to-exit
    - Alarm control
    - Reader
    - Hardware
    - Elevator
3. Initialize database
4. Display card
5. Door groups
6. Floor groups
7. System options
8. Program macro logic
9. Version number
10. To local devices

Refer to the programming manual for a complete programming map and programming instructions.

Battery capacity

You must do the battery capacity calculations separately for each part of the system that has a separate power supply and standby battery. See *Battery calculation worksheet* on page 18 for a sample worksheet. To determine the correct battery capacities for you system, do the following:

1. Determine the exact configuration of your system.
2. Use a separate battery calculation worksheet for each part of your system that has a separate power supply and standby battery:
   a. In the top row of the worksheet, list the primary component (control panel or expansion module) that is powered by the standby battery. Expansion modules include zone expander modules, relay modules, keypads, and card readers.
   b. Add rows for all expansion modules or other devices that are powered by the primary component on that worksheet.
   c. Add rows for any type of notification appliance that is connected to corresponding circuits on the primary component on that worksheet. Include rows for auxiliary power circuits that have attached devices.
3. Starting with the first worksheet, repeat the following procedures for each worksheet.
   a. In the row for the primary component, enter the current listed for that device in the *Total standby current* column. For the DGP worksheet, this value is 200mA.
   b. In rows for any expansion modules, enter the operating current for the module in the *Standby current* column. Multiply the value in the *Standby current* column by the attached quantity of modules of that type. Enter the result in the same row in the *Total standby current* column. If any row contains AL-1191 or AL-1193 card readers, enter 80 mA in the *Active current* column for that row. Multiply any value in the *Active current* column by the number of attached card readers and enter the result in the same row in the *Total active current* column.
   c. In each notification appliance row, enter the alarm current drawn by a single device in the *Alarm current per device* column. Multiply the value in the *Alarm current per device* column by the number of devices used on that circuit for each row. Enter the result in the same row in the *Total alarm current* column.
   d. In rows listing devices that are attached to auxiliary power terminals of the primary component, enter the operating current for each device in the *Standby current per device* column. Multiply the value in the *Standby current per device* column by the number of devices attached to that auxiliary power circuit and enter the result in the same row in the *Total standby current* column.
   e. At the bottom of each worksheet, total the values in the *Total standby current* column, the *Total alarm current* column, and the *Total active current* column.

4. Do the following calculations for each worksheet:

Formula 1. Transfer the total value at the bottom of the *Total standby* current column to the first blank in Formula 1. Enter the *required number of hours in standby* in the corresponding blank, and do the indicated calculation. The result is the standby amp-hours your system requires. The value for *required number of hours in standby* varies by locale. Check with the proper authority having jurisdiction to determine your requirements.

Formula 2. Transfer the total value at the bottom of the *Total alarm current* column to the first blank in Formula 2. Enter the *required number of minutes in alarm* in the corresponding blank, and do the indicated calculation. The result is the alarm amp-hours your system requires. The value for *required number of minutes in alarm* varies by locale. Check with the proper authority having jurisdiction to determine your requirements.

Formula 3. Transfer the total value at the bottom of the *Total active current* column to the first blank in Formula 3. To calculate the *required number of seconds active* value, multiply the number of times a card is typically passed by a card reader each hour, times the number of card readers, times 5 seconds. For a medium traffic area, 12 access per hour is a commonly used value (5 seconds per access).

Formula 4. Carry the calculated values from Formulas 1, 2, and 3 to the corresponding blanks in Formula 4. Do the calculation to find the minimum battery capacity requirement for your system.

Formula 5. Due to natural aging effects on batteries over time, temperature cycles, and varying levels of discharge, a derating factor is applied to compensate for these variables. Consult the battery manufacturer data sheets for the appropriate derating factor. Formula 5 shows how to apply a typical derating factor of 1.15 to the minimum battery capacity requirement to determine the actual battery capacity requirement. The batteries selected for the control panel and for any separately powered expansion modules, must have a capacity rating that is equal to or greater than the actual battery capacity requirement.

The system may require two batteries. Each battery must individually meet the actual battery capacity requirement. Do not mix batteries of different types.

Table 2 shows an example of a battery calculation using Formulas 1 to 5 based on 1 card activation of 15 seconds every 5 minutes for 72 hours.

Table 2. Battery calculation example

Formula	Calculation	Result
1	Total standby current x Conversion factor x Required hours in standby 225 mA x .001Amp/mA x 72 hours	Ah standby Amp-hours: 16.2
2	Total alarm current x Conversion factor x Required minutes in alarm x Conversion factor 1000 mA x .001Amp/mA x 15 minutes x .0167 hours/min.	Ah alarm Amp-hours: .2505
3	Total active current x Conversion factor x Required seconds active x Conversion factor 80 mA x .001Amp/mA x 12960 seconds x .000278 hours/sec.	Ah active Amp-hours: .288
4	Standby Amp-hours + Alarm Amp-hours + Active Amp-hours 16.2 + .2505 + .288	Minimum battery power required: 16.74 Ah
5	Minimum battery power required x Battery capacity derating coefficient 16.74 x 1.15	Total standby battery required: 19.2 Ah

Battery calculation worksheet

Table 3. Battery calculation worksheet

Alliance components	Standby current	Total standby current	Alarm current per device	Total alarm current	Active current	Total active current
AL-4017		200 mA				
Aux power		300 mA				
Ext siren			1000 mA			
Int siren			1000 mA			
Strobe			1000 mA			
AL-4617		200 mA				
Aux power		3000 mA				
Ext siren			1000 mA			
Int siren			1000 mA			
Strobe			1000 mA			
Comms bus		1000 mA				
AL-11XX	120 mA					
AL-1170	45 mA					
AL-1191	25 mA				80 mA	
AL-1193	25 mA				80 mA	
AL-1205		75 mA				
Aux power		250 mA				
Siren			1000 mA			
AL-1206	25 mA					
AL-1210	53 mA					
AL-1220	53 mA					
AL-1255		275 mA				
Aux power		1000 mA				
Siren			1000 mA			
AL-1256/1265		275 mA				
Aux power		3000 mA				
Siren			1000 mA			
AL-1801	80 mA					
AL-1810	100 mA					
AL-1811	200 mA					
AL-1830	5 mA					
AL-1832	15 mA					
Total current requirements						

Formulas

Table 4 provides the formulas to calculate battery requirements.

Table 4. Battery calculation formulas

Formula	Calculation	Result
1	Total standby current x Conversion factor x Required hours in standby _____ mA x .001Amp/mA x _____ hours	Ah standby Amp-hours _____
2	Total alarm current x Conversion factor x Required minutes in alarm x Conversion factor _____ mA x .001Amp/mA x _____ minutes x .0167 hours/min.	Ah alarm Amp-hours _____
3	Total active current x Conversion factor x Required seconds active x Conversion factor _____ mA x .001Amp/mA x _____ seconds x .000278 hours/sec.	Ah active Amp-hours _____
4	Standby Amp-hours + Alarm Amp-hours + Active Amp-hours _____ + _____ + _____	Minimum battery power required _____ Ah
5	Minimum battery power required x Battery capacity derating coefficient _____ x 1.15	Total standby battery required _____ Ah

Absolute maximum loads

Table 5 shows the maximum continuous loads that can be supported by two 17.2 Ah batteries or one 17.2 Ah battery. If the total standby current exceeds those listed in the table, you do not meet 24/72-hour standby requirements. Other battery sizes are possible, but two 17.2 Ah batteries are the maximum battery size supported. If your standby time is different, you can use the calculations in *Formulas* to calculate the total standby battery power required. If the answer exceeds the battery size you have chosen, you must install appropriate batteries or adjust the system configuration to meet the battery power requirements.

Table 5. Absolute maximum loads

Required batteries	Maximum continuous load for 24/72 hr. standby with 15 min. alarm and 1 active card read/5 min.			
	24-hour		72-hour	
Two 17.2 Ah	Maximum total 750 mA	Maximum aux 500 mA	Maximum total 225 mA	Maximum aux 100 mA
One 17.2 Ah	Maximum total 500 mA	Maximum aux 300 mA	_	_

Specifications

General specifications

Batteries	2 x 12 VDC 17.2 Ah, depending on current consumption auxiliary devices
Current consumption PCB	275 mA max.
Total external current	
AL-1255	1 A max. to all external devices
AL-1256/AL-1265	3 A max to all external devices
End-of-line resistors	Default: 4.7 k ohm (other: 10 kohm, 6.8 kohm, 5.6 kohm, 3.74 kohm, 3.3 kohm, 2.2 kohm, 2 kohm, 1.5 kohm) 5%, 0.25 W
Housing dimensions	21 x 14.5 x 4.5 in. (533 x 368 x 114 mm)
Operating temperature	32 to 120°F (0 to 49°C)
Humidity	85% noncondensing
Listings	UL 294, Standard for Access Control System Units UL 365, Standard for Police Station Connected Burglar Alarm Units and Systems UL 609, Standard for Local Burglar Alarm Units and Systems UL 1610, Standard for Central-Station Burglar-Alarm Units UL 1635, Standard for Digital Alarm Communicator System Units

Cabling distance

From	To	Distance	Cable type
Control panel system bus (J10)	AL-1255/56/65 local bus (J3)	5,000 ft. (1.5 km) total bus length without repeaters	Belden 8723 or equivalent
Reader interface (J13 to J17)	Reader	246 ft. (75 m)	Depends on type of reader
Local bus (J22)	RAS, DGP, or reader	5,000 ft. (1.5 km)	Belden 8723 or equivalent

External terminals

Part	Terminal	Description	Min.	Typ	Max	Unit
J1	AC	Secondary AC transformer connection AL-1255 AL-1256/65		 24 18		 VAC VAC
	BATT	Two connections (rating for each connection)			17.4	Ah
J2	AUX, POWER + +, -	Auxiliary power outputs (combined loads) AL-1255 AL-1256/65	9	13.8	14 1 3	VDC A A
	SW	Switch power outputs	9	13.8	14 1	VDC A
	S	Siren output		9	13.8 1	VDC14 A
		When using speaker	4	8		Ohm
J4 to J17 RELAY	C, NO, NC	Relay contacts for door-relay			30 1	VDC A
	+12 V	Power output for relays	9	13.8	14 1	VDC A
J13 to J16 Door	+12V	12 Volt power for card readers	9	13.8	14 1	VDC A
	+5	5Volt regulated power for card readers		5	 250	VDC mA
J17 BELL RELAY	C, NO, NC	Contacts relay low voltage			30 1	VDC A
J22 COMMS	+12V	Power for local bus	9	13.8	14 1	VDC A

Note: Do not exceed combined load (AL-1255, 1 Amp; AL-1256/65, 3 Amps. Do not exceed combined load 1.5 Amp power of combined outputs. When using an external supply, the relay load is not a part of the combined load of this DGP.

Contacting technical support

For assistance installing, operating, maintaining, and troubleshooting this product, refer to this document and any other documentation provided. If you still have questions, you may contact technical support during normal business hours (Monday through Friday, excluding holidays, between 6 a.m. and 5 p.m. Pacific Time).

Table 6. Sales and support contact information

	Sales	Technical support
Phone:	**Toll-free:** 888.437.3287 in the US, including Alaska and Hawaii; Puerto Rico; Canada). Outside the toll-free area: 503.885.5700.	
E-mail	info@utcfireandsecurity.com	
Fax	800.483.2495	541.752.9096 (available 24 hours a day)

Note: Be ready at the equipment before calling for technical support.

Online publication library

Another great resource for assistance with your UTC Fire & Security products is our online publication library, available to all of our customers on our website. To access our publication library, go to our website at the following location:

http://www.utcfireandsecurity.com

In the **Tools** area at the top, click the *Publication Library* link. After you register and log on, you may search through our online library for the documentation you need.[1]

1. Many documents are provided as PDFs (portable document format). To read these documents, you will need Adobe Acrobat Reader, which can be downloaded free from Adobe's website at www.adobe.com.