D9000/D7000 Series Control/Communicator
Approved Applications Compliance Guide

74-07693-000-D 12/97

Listings and Approvals

Fire

UL

Underwriters Laboratories lists the D9412, D9112, D7412, and D7212 Control/Communicators as Signal System Control Units for:

Central Station, Local, Auxiliary, Remote Station, and Household Fire Warning.

CSFM

Approved by the California State Fire Marshal.

NYC-MEA

Approved by New York City's Materials and Equipment Acceptance System.

Factory Mutual (FM)

Approved by Factory Mutual.

Burglary

UL

Underwriters Laboratories lists the D9412, D9112, D7412, and D7212 Control/Communicators for:

Central Station, Local, Police Connect, Bank Safe and Vault, Mercantile Safe and Vault, and Grade A Household systems.

Department of Defense (DOD)

The D9412, D9112, D7412, and D7212 have been granted approval for Department of Defense (DOD) installations in Sensitive Compartmented Information Facilities (SCIF).

Table of Contents

Introduction

The *System Chart* references components evaluated and listed by Underwriters' Laboratories for compatibility with the Control/Communicator. These components meet the basic system requirements for the applicable standard.

The *System Wiring Diagram, Issue A* shows the relationship between the panel and the accessory components referred to in the *System Chart.*

Optional Compatible Equipment

You can use UL listed components that do not require evaluation for electrical compatibility in many applications when installed according to the manufacturer's instructions.

Burglary Applications

You can use UL listed burglary alarm sensors that do not require evaluation for electrical compatibility in burglary applications. In some cases you must use a UL listed Radionics interface module in conjunction with the sensors. Consult the individual component specification and installation documents to determine suitability.

Test weekly: UL Standard 1023 requires a weekly test for residential burglary applications.

Bank Safe and Vault Applications

You must use the UL listed Model 5110 Bell and Model 4001-42 External Line Balancer (both made by Rothenbuhler) for the bell and balanced line module in bank safe and vault applications. Modifications must be made to the Radionics D8108A enclosure to meet UL standard 681. See the Radionics Technogram *D7212/D9112 UL Certificated Bank Safe and Vault Applications* (73-07302-000).

Test bell at arming: UL Standard 365 requires a bell test at arming for bank safe and vault applications.

Fire Applications

You can use UL listed fire initiating devices not requiring electrical compatibility evaluation in any application. For example: 4-wire smoke detectors, heat detectors, water flow switches, and manual pull stations are suitable fire initiating devices. Consult the individual component specification and installation documents to determine suitability.

Two-wire smoke detectors only connect to the panel through the D125B Powered Loop Interface so that an earth ground will not cause an alarm. Two-wire detectors must be evaluated for electrical compatibility, and must be UL listed for use with the panel. See the Radionics Technogram *Smoke Detectors Compatible with the D9000/D7000* (33284), or you may contact the detector manufacturer.

Other initiating devices, including four-wire smoke detectors connect to the panel through the D129 Dual Class A Initiation Circuit Module, the D125B Powered Loop Interface, or D8127 or D9127 POPITs. When using 4-wire smoke detectors, install a suitable power supervision unit according to the manufacturer's instructions. Use the D130 Relay Module, D8129 OctoRelay, or terminal 8, Switched Aux Power to provide reset capability. See the *Off-Board Relays* section of this manual for details on the installation of the D8129.

For battery calculations, refer to *Current Rating Chart for Standby Battery Calculations*, *Standby Battery Requirements*, and *Standby Battery Calculation for NFPA 72 Fire Alarm Applications*.

Test weekly: Radionics recommends you perform a Fire Test weekly. The AC power is automatically tested as is the battery per UL 864.

Enclosures

Radionics offers three optional enclosures for the control/communicator.

- The **D8103** enclosure is suitable for residential fire and/or burglary installations and commercial burglary applications that do not require attack resistance or approval by Factory Mutual or NYC-MEA. (See the *System Chart* for acceptable applications.)
- The **D8108A** is attack resistant. It is intended primarily for UL commercial burglar alarm and mercantile safe and vault applications requiring a local bell. You can use the D8108A in any burglar or fire alarm application where the 5591 or D8109 enclosure is suitable. The D8108A, with some modification, can be used for bank safe and vault applications (see the Radionics Technogram *D7212/D9112 UL Certificated Bank Safe and Vault Applications*, RPN: 73-07302-000). UL lists the D8108A for all commercial fire alarm applications. The D8108A is approved by Factory Mutual, California State Fire Marshal, and the New York City Materials and Equipment Acceptance System.
- The **D8109** is normally used for commercial fire alarm applications. UL lists the D8109 for all commercial fire alarm applications. The D8109 is approved by the California State Fire Marshal, NYC-MEA and FM.

Note: All references to NFPA and related requirements are based upon compliance with the 1993 edition of NFPA 72, National Fire Alarm Code. Since installation specifications are nearly always based upon a specific edition of a standard which has been legally adopted by the Authority Having Jurisdiction (AHJ), earlier editions of NFPA standards will generally apply. Consult with the appropriate AHJ for confirmation.

System Chart

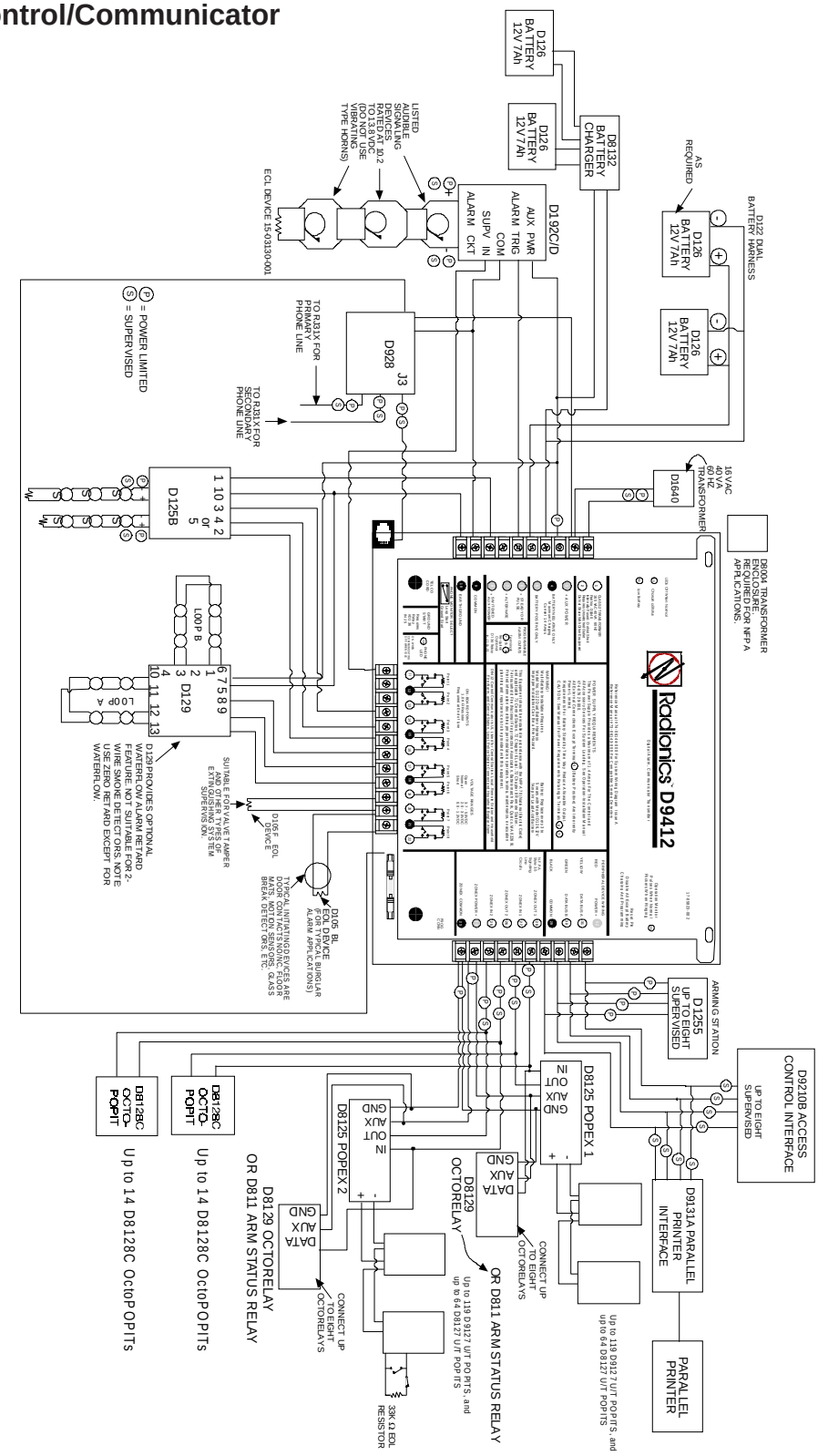
	Household Burglary	Household Fire	Household Fire/ Burglary Combined	Central Station Burglary (Grade C)	Police Connected Burglary	Local Burglary	Remote Station or Auxiliary Fire	Local Fire/Burglary Combined	Local Fire	Local and Central Station Fire Combined	Local and Central Station Fire/Burglary (Grade C)	Central Station Fire/ Burglary Combined	Central Station Fire	Electrically Actuated Transmitter
Minimum Hours of Standby Battery	4	24 + 4 mins alarm	24 + 4 mins alarm	4	4	4	60 + 5 mins alarm	24 + 5 mins alarm	24 + 5 mins alarm	24 + 5 mins alarm	24 + 5 mins alarm	24 + 5 mins alarm	24 + 5 mins alarm	24 + 5 mins alarm
D8103 Enclosure	Choose one. D101 lock required for enclosure				No	No	No	No	No	No	No	No	No	No
D8108A Enclosure					Req.	Req.	Choose One	Req.	Choose one.					
D8109 Enclosure					No	No		No						
D122 and D122L Dual Battery Harness	Calculate current draw to determine if second battery is required						Req.	Calculate current draw to determine if second battery is required						
D125B Powered Loop Interface	Opt.	#	#	Opt.	Opt.	Opt.	# - D125 or D129 required to connect fire alarm initiating devices to zones 1-8. D125 provides two powered loops for connecting listed 2-wire smoke detectors. D129 provides two non-powered Class A initiating circuits.							
D129 Class A Initiating Module		#	#											
D126 Battery	1+	1+	1+	1+	1+	1+	2+	1+	1+	1+	1+	1+	1+	1+
D127 Reversing Relay	Opt.	No	Opt.	Opt.	Opt.	Opt.	No	Opt.	No	No	Opt.	Opt.	No	No
D928 Dual Phone Line Module	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Required for communication on two phone lines and/or CPU watchdog function.							
D161 Telephone Cord	Required to connect panel to RJ31X TelCo. Block						2 Req.			Two Required to connect D128 Module to RJ31X TelCo. Blocks				
D185 Auxiliary Interface Kit							*							
D192A/C Bell Circuit Supervision	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Required for indicating circuits.					Opt.	Opt.	
Smoke Detector/Base		1++	1++				Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	
D268 / D269H Independent Zone Control	Optional, only connect to zones 1 to 8.													
Indicating Device	1+	1+	1+	Opt.	**	**	1+	1+, **	1+	1+	1+	Opt.	Opt.	
D461 Pull Station	Optional, may be required by job specifications and/or Authority Having Jurisdiction.													
D1255 Comnd Center	1+	1+	1+	1+	1+	1+	1+	1+	1+	1+	1+	1+	Opt.	
D1256	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.
D1257	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.
D1640 Transformer	Required for all applications.													
D8004 Transformer Enclosure	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Required.							
D8122 Derived Channel S.T.U.	Optional, contact TelCo. for availability of derived channel service.													
D8125 POPEX Module	Required for D8127T/U and D9127T/U POPITs.													
D8127T/U & D9127T/U POPIT Modules	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	
D8128C OctoPOPIT	Opt.	No	Opt.	Opt.	Opt.	Opt.	No	Opt.	No	No	Opt.	Opt.	No	No
D8129 OctoRelay	Optional, for remote annunciation of system functions.													
D8130 Release Module	Optional.													
D8132 Battery Charger	See Current Rating Chart and Standby Battery Requirements to determine if system requires a D8132 Module for increased battery standby.													
D9131A Parallel Printer Interface	Optional, use with parallel printer to print events from panel log locally.													
D9210B Access Control Interface	No	No	No	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	Opt.	No

2+ = Two or more required for this application. Consult the appropriate standard.
1++ = At least one detector required. You can substitute other 2-wire detectors listed for use with the D125. You could also use the D262 with the D270 four-wire base and a listed power supervision relay.
* = Auxiliary requires the D184 Auxiliary Local Energy Interface Kit.
** = Listed bell (siren) housing required for burglary alarm bell or siren.
[Empty Box] = Not used for this application.

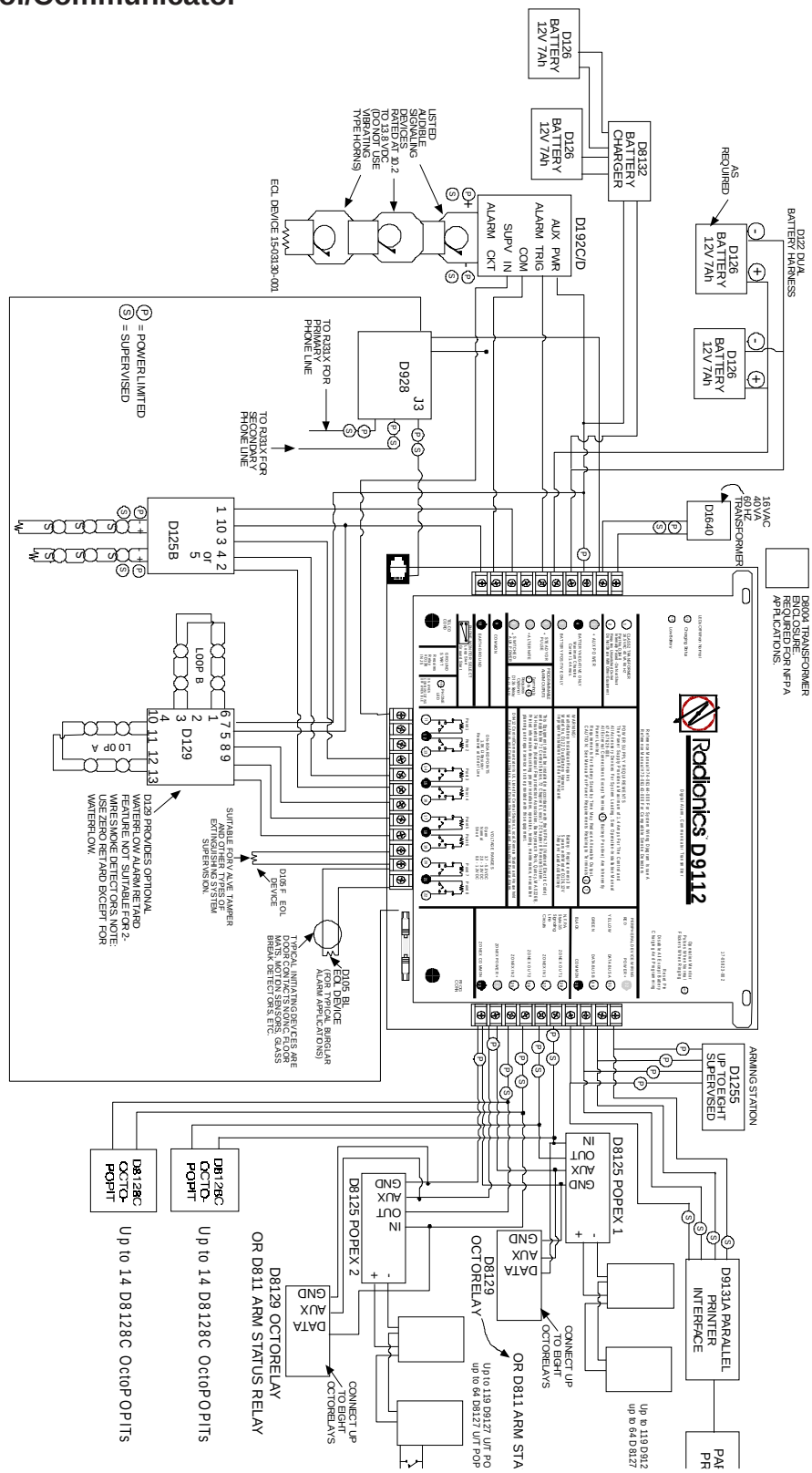
No = Not acceptable for this application
Req. = Required for this application
Opt. = Optional for this application
# = D125 or D129 required to connect fire alarm initiating devices to zones 1 to 8. D125 provides two powered loops for connecting listed 2-wire smoke detectors. D129 provides two non-powered Class A initiating circuits.
1+ = One or more required for this application. Consult the appropriate standard.

System Wiring Diagrams, Issue A

D9412 Control/Communicator



D9112 Control/Communicator



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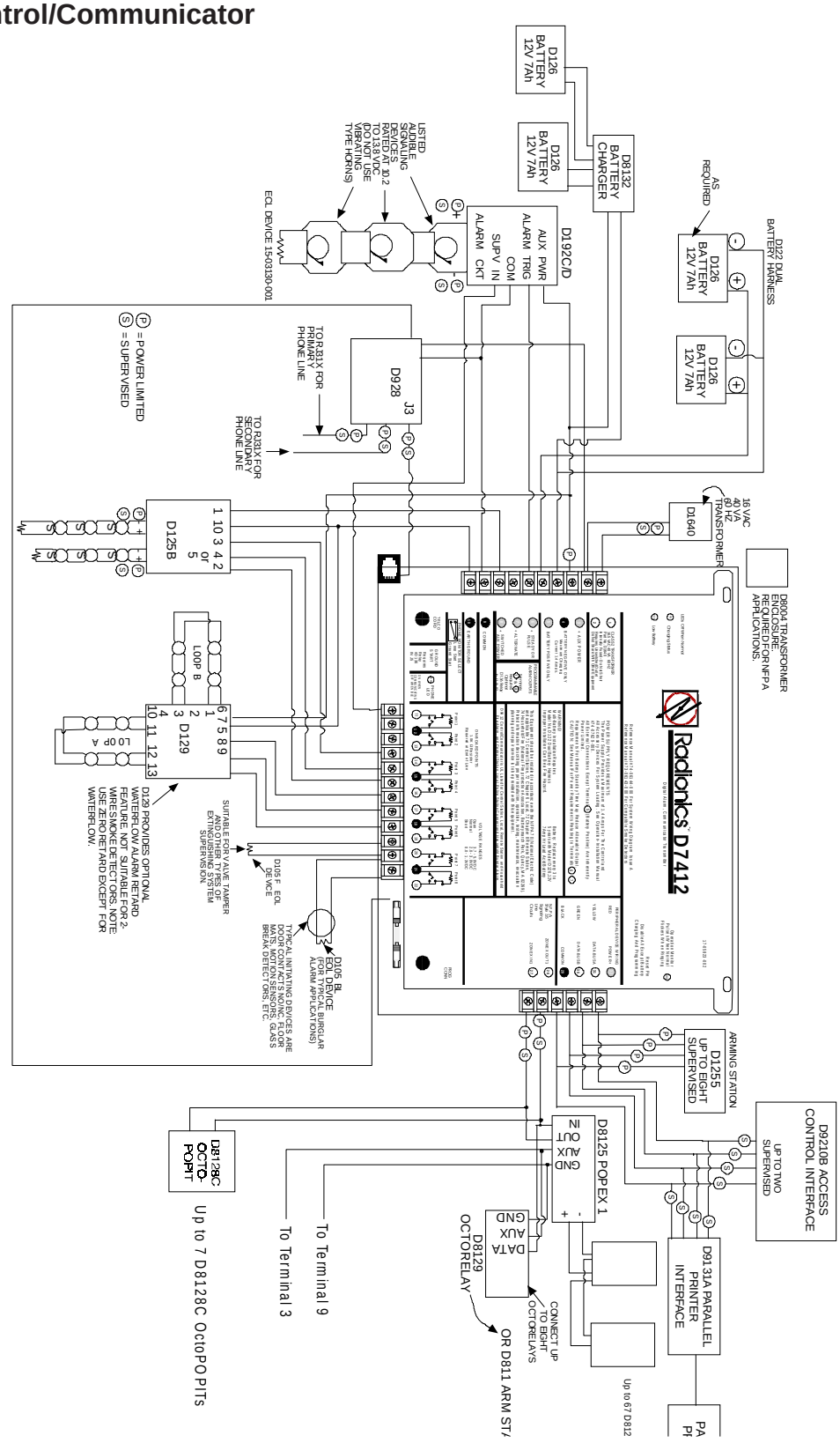
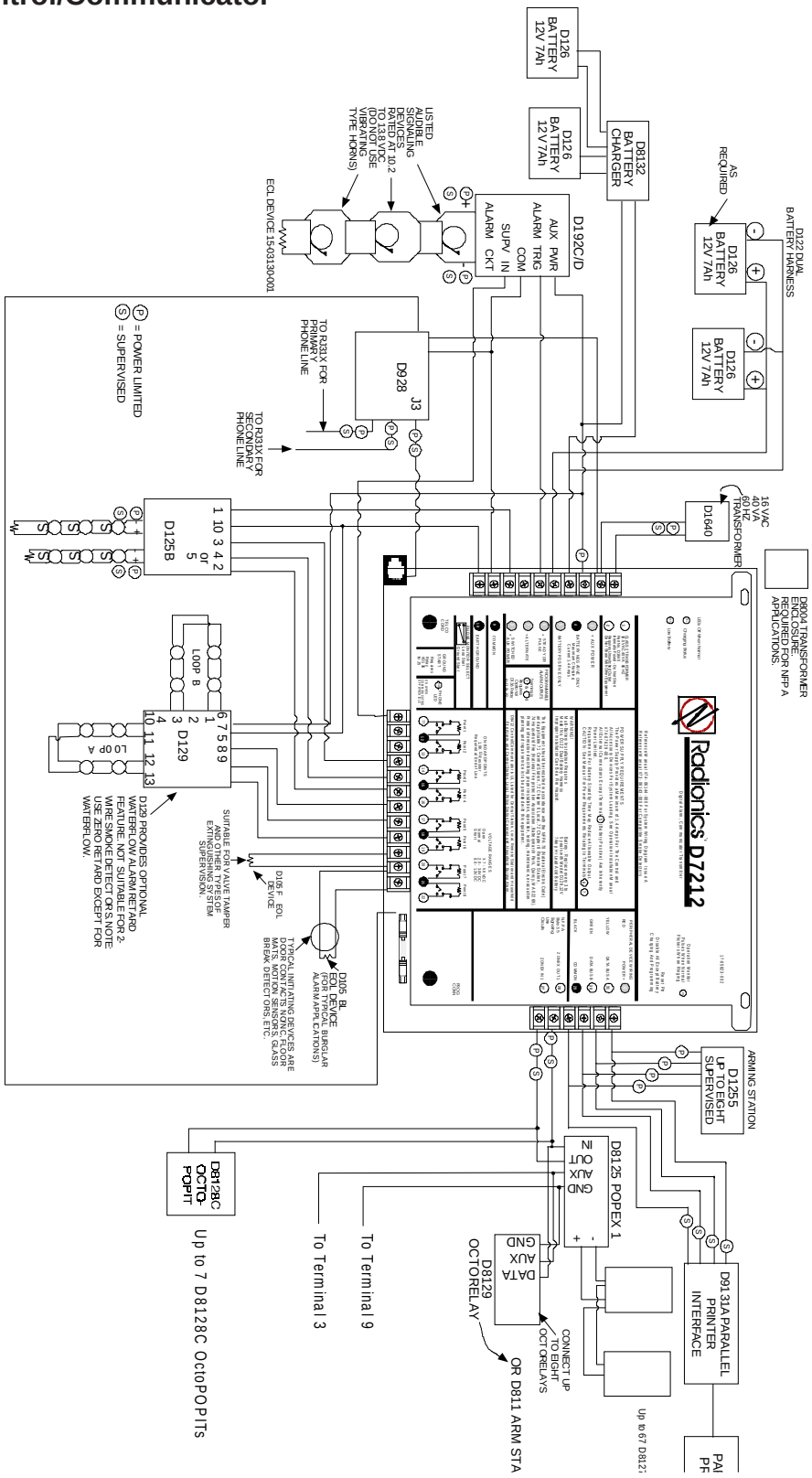


D7212 Control/Communicator



Current Rating Chart for Standby Battery Calculations

Model Number	Quantity Used	A AC Power On Normal Current Each Unit*	A Total	B AC Power Off Minimum Current Each Unit	B Total	C In Alarm Maximum Current Each Unit	C Total
D9412/D9112/ D7412/D7212	_____	350	x 1 = 350	350	x 1 = 350	500	x 1 = 500
D125B	_____	20	x Quant. = ____	19	x Quant. = ____	123	x Quant. = ____
D127	_____	13	x Quant. = ____	12	x Quant. = ____	45	x Quant. = ____
D129	_____	25	x Quant. = ____	25	x Quant. = ____	25	x Quant. = ____
D185	_____	120	x Quant. = ____	120	x Quant. = ____	350	x Quant. = ____
D192D	_____	15	x Quant. = ____	26	x Quant. = ____	50	x Quant. = ____
D192C	_____	15	x Quant. = ____	26	x Quant. = ____	50	x Quant. = ____
D1255	_____	104	x Quant. = ____	106	x Quant. = ____	206	x Quant. = ____
D1256	_____	104	x Quant. = ____	106	x Quant. = ____	206	x Quant. = ____
D1257	_____	104	x Quant. = ____	106	x Quant. = ____	206	x Quant. = ____
D720	_____	55	x Quant. = ____	20	x Quant. = ____	75	x Quant. = ____
D8125	_____	48	x Quant. = ____	48	x Quant. = ____	48	x Quant. = ____
D8127T/U	_____	3	x Quant. = ____	3	x Quant. = ____	4	x Quant. = ____
D8128C	_____	50	x Quant. = ____	50	x Quant. = ____	50	x Quant. = ____
D8129	_____	20	x Quant. = ____	20	x Quant. = ____	20	x Quant. + (25 x # of relays) = ___
D8130	_____	5	x Quant. = ____	5	x Quant. = ____	54	x Quant. = ____
D9127T/U	_____	0.5	x Quant. = ____	0.5	x Quant. = ____	0.8	x Quant. = ____
D9131A	_____	24	x Quant. = ____	22	x Quant. = ____	36	x Quant. = ____
D9210B	_____	100	x Quant. = ____	100	x Quant. = ____	120	x Quant. = ____
D928	_____	14	x Quant. = ____	14	x Quant. = ____	45	x Quant. = ____
Ratings of other devices in the system which are not shown above:							
_____	_____	____	x Quant. = ____	____	x Quant. = ____	____	x Quant. = ____
_____	_____	____	x Quant. = ____	____	x Quant. = ____	____	x Quant. = ____
_____	_____	____	x Quant. = ____	____	x Quant. = ____	____	x Quant. = ____
_____	_____	____	x Quant. = ____	____	x Quant. = ____	____	x Quant. = ____
_____	_____	____	x Quant. = ____	____	x Quant. = ____	____	x Quant. = ____
			Total A = _____		**Total B =** _____		**Total C** =** _____

NOTES:

* Currents shown in milliamperes (1 ampere = 1000 milliamperes)

** If the column C total exceeds 1400 mA, a D8132 is required to provide an additional 1400 mA. You may also use a UL listed external power supply for this purpose.

Standby Battery Requirements

Household Burglary and Commercial Burglary

Four hours of standby battery capacity required.

Bank Safe and Vault

72 hours of standby battery capacity required (UL 365). Aux Power current for all devices, including control centers, must be limited to 300 mA or less to meet this requirement.

Central Station or Local Fire Alarm

24 hours of standby plus 5 minutes of alarm operation required. See *Central Station or Local Systems Ampere-Hour Calculation Formula* in the *Standby Battery Calculation for NFPA 72 Fire Alarm Applications* section.

Remote Station or Auxiliary Fire Alarm

60 hours of standby plus 5 minutes of alarm operation required. See *Remote Station or Auxiliary System Ampere-Hour Calculation Formula* in the *Standby Battery Calculation for NFPA 72 Fire Alarm Applications* section.

Household Fire Warning Equipment

24 hours of standby plus 4 minutes of alarm operation required. See *Household Fire Ampere-Hour Calculation Formula* in the *Standby Battery Calculation for NFPA 72 Fire Alarm Applications* section.

Standby Battery Calculation for NFPA 72 Fire Alarm Applications

Current Chart First

See the *Current Rating Chart for Standby Battery Calculations* for totals B and C used in the formulas below. When connecting two batteries, use either the D122 Dual Battery Wiring Harness or the D8132 Battery Charger Module.

Central Station or Local Systems

Central Station or Local Systems require 24 hours of standby plus 5 minutes of alarm operation at the end of the 24 hour period. A single battery is sometimes adequate for Central Station Systems, but you must install two batteries to meet the basic standby requirements for a Local System installation. You must use battery ampere hour (Ah) calculations to verify compliance. The following formula includes the calculation for 5 minutes of alarm operation at the end of the 24 hour period, as well as a 10% contingency factor which allows for depletion of battery capacity with age.

Central Stations or Local Systems Ampere-Hour Calculation Formula

Total B		Hours	Total C		Hours	Contingency	Total Ah
(_____	x24) +		(_____	x .083) +		10%	= _____

Total Ah requirements must not exceed Ah capacity of batteries:

Two D126 Batteries = 14 Ah

Remote Station or Auxiliary Systems

Remote Station or Auxiliary Systems require 60 hours of standby plus 5 minutes of alarm operation at the end of the 60 hour period. A D8132 Battery Charger Module with additional batteries installed in a separate D8109 or D8108A enclosure may be required in the system to meet the basic standby requirements for a Remote Station or Auxiliary System installation. You must use battery ampere hour (Ah) calculations to verify compliance. The following formula includes the calculation for 5 minutes of alarm operation at the end of the 60 hour period, as well as a 10% contingency factor which allows for depletion of battery capacity with age.

Remote Station or Auxiliary Systems Ampere-Hour Calculation Formula

Total B		Hours	Total C		Hours	Contingency	Total Ah
(_____	x60) +		(_____	x .083) +		10%	= _____

Total Ah requirements must not exceed Ah capacity of batteries:

Two D126 Batteries = 14 Ah

Household Fire Warning Equipment

The Household Fire Warning Equipment Standard requires 24 hours of standby plus 4 minutes of alarm operation at the end of the 24 hour period. You must use battery ampere hour (Ah) calculations to verify compliance. The following formula includes the calculation for 4 minutes of alarm operation at the end of the 24 hour period, as well as a 10% contingency factor which allows for depletion of battery capacity with age.

Household Fire Ampere-Hour Calculation Formula

Total B		Hours	Total C		Hours	Contingency	Total Ah
(_____	x24) +		(_____	x .067) +		10%	= _____

Total Ah requirements must not exceed Ah capacity of batteries:

Two D126 Batteries = 14 Ah

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Radionics, Inc., PO Box 80012, Salinas, California 93901-0012