



Radionics™

D9000/D7000 Series Control/Communicator Installation and Troubleshooting Quick Reference

Introduction

This reference contains the very basic information a trained installer needs to install and troubleshoot a D9000/D7000 Series Control/Communicator system. See the D9000/D7000 Series Operation and Installation Manual (74-07692-000) and the D9000/D7000 Series Approved Applications Compliance Guide (74-07693-000) for a complete description of the D9000/D7000 Series Control/Communicator and detailed installation instructions.

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Basic Troubleshooting

Service Walk Test Shows Extra Points

The Service Walk Test differs from the standard Walk Test in that POPITs whose switches are set for a point number not programmed in the panel appear in the test.

The Service Walk Test allows a user to walk test all 246 points (75 in the D7000 series panels) from a panel-wide Command Center regardless of the Point Index type. Service Walk Tests may also be initiated by account-wide or area-wide Command Centers but will only test those points that fall within the scope of the Command Center that initiated the function. The Service Walk Test will not test points in areas that are currently armed.

Warning, fire and other 24-hour points do not transmit reports during Service Walk Test!

The steps below outline a simple Service Walk Test procedure. The flow chart on the next page shows all the Service Walk Test options.

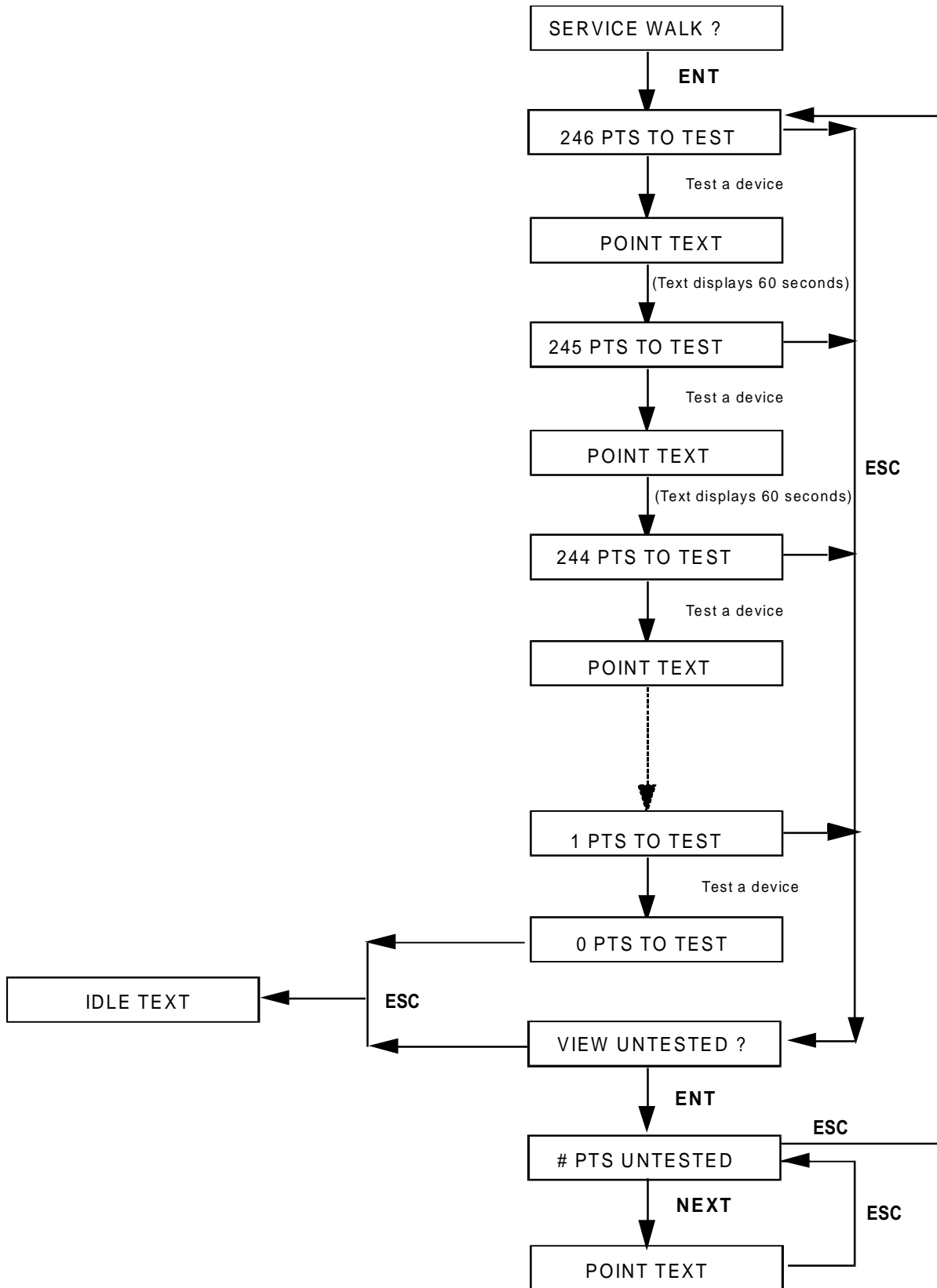
1. Choose a Command Center with panel wide scope to conduct the test. Be certain the display shows the idle disarmed text.
2. Enter a valid service passcode and press the **ENT** key to enter the Function List. Press **NEXT** repeatedly until you reach the **SERVICE WALK ?** prompt. Press **ENT**.
3. The display shows **### PTS TO TEST**. Test the first detection device.
4. As you fault the detection devices, the Command Center emits a brief tone and displays the point text of the point tested for 60 seconds. After 60 seconds, the display returns to the points to test message.

Extra Points display default text: If you incorrectly set the switches on a POPIT to a point number that is not in your program for the panel, the default text for that point number (**PT ###**) displays when you fault the point. The Program Record Sheet shows the default text for all points.

Faulting the point a second time produces the tone and displays the point text, but does not reduce the **PTS TO TEST** count.

5. During the Service Walk Test you may want to see the points that remain untested. When point text is displayed, press **ESC**. The display shows **### PTS TO TEST**. Press the **ESC** key. **VIEW UNTESTED ?** is displayed. Press **ENT**. **### PTS UNTESTED** is displayed. Press **NEXT** to see a list of the points that have not yet been tested. Move through this list by pressing the **NEXT** key. To resume the Service Walk Test, press **ESC**. **### PTS UNTESTED** is displayed. Press **ESC**. **### PTS TO TEST** is displayed. Resume testing points. To end the Service Walk Test, press **ESC** until the Command Center displays idle text.
6. After testing the last point, **0 PTS TO TEST** displays. Press **ESC**. The display momentarily shows **ALL PTS TESTED** before returning to idle text.

Automatic time-out returns the system to idle text: If there is no point or Command Center activity for 20 minutes, the walk test ends automatically. The Command Center returns to idle text.



Problems with Points

If you incorrectly set the switches on a POPIT you may create both a missing and extra point. When you find a missing point, perform a Service Walk Test to search for extra points. See the *Owner's Manual* (71-06150-000) for test instructions.

System	Diagnosis	Remedy
Point appears as missing at command centers and in reports to the receiver.	POPIT is not connected or incorrectly connected to the data expansion loop.	Verify that a POPIT module programmed for the missing point number is connected to the data expansion loop of the correct ZONEX module. Points 9 to 127 connect to ZONEX module 1. Points 129 to 247 connect to ZONEX module 2. Meter each POPIT to verify the polarity of the data expansion loop. Voltage should be 9 to 13 VDC at each POPIT.
	D8128C OctoPOPIT is installed at the last address on the ZONEX bus.	Install a D8125 POPEX and D9127 POPITs for points 121-127 on ZONEX 1 and for points 241-247 on ZONEX 2.
	Sensor loop switch (1 to 8) is turned off on OctoPOPIT.	If the sensor loop switch on an OctoPOPIT is turned off for a programmed point, the point reports as missing.
	POPIT is not programmed correctly.	Verify that the switches on the POPIT are set for the missing POPIT number. Switches set incorrectly can cause both missing and extra POPITs. Performing a Service Walk Test to search for extra points may help diagnose the problem.
Points intermittently appear as missing. Points are erratic.	Problem with data expansion loop.	See <i>Problems with Data Expansion Loop</i> .
	Debounce Count parameter set at 1. If an off-board point is in transition between normal and faulted conditions as the panel scans it, it appears as missing.	It is recommended that the Debounce Count be left at the default of 2, with the exception of Interior Follower Points, where the Debounce Count should be set to 3. Decreasing the Debounce Count to 1 may cause points to appear as missing. Increasing the Debounce may cause missed alarms.

Problems with Points (Continued)

Symptom	Diagnosis	Remedy
One or more points remain in trouble or alarm with all devices connected to the sensor loops normal.	<p>The sensor loop is open, shorted, or grounded.</p> <p>Opens, shorts, or grounds cause troubles or alarms depending on point programming.</p>	<p>Remove the sensor loop from the D9412/D9112 or POPIT and meter it for continuity. There should be no more than 100 ohm resistance, plus the value of the end of line resistor on the wires. If you meter less resistance than the value of the end of line resistor, check the wiring for shorts.</p> <p>With the wires for the loop removed, meter them for continuity to ground. A ground before the end of line resistor on an on-board point's sensor loop is interpreted as a short. A ground on a sensor loop for a POPIT point is interpreted as an open.</p>
Faulted points do not generate alarms or troubles as programmed.	Sensor Reset pressed at the time the alarm or trouble was generated.	The D9412/D9112 ignores input from all points in the same area programmed for sensor reset during sensor reset.
	Two points are programmed with the same address.	Points programmed with the same address do not function correctly. Check to be certain that you have not duplicated point addresses.
Panel transmits PT BUS TROUBLE reports. Erroneous alarm and/or trouble reports may follow PT BUS TROUBLE report. Erroneous alarm and/or trouble events for off-board points appear at command centers.	Short on D8125 POPEX module's Data Expansion Loop or short on D9412/D9112 ZONEX data terminals (25 & 26, or 27 & 28).	<p>A short on either the Data Expansion Loop or the ZONEX data terminals generates a PT BUS TROUBLE report.</p> <p>While the short remains, the panel responds as though the sensor loop for each point connected to the POPEX module was shorted.</p> <p>Check wiring for shorts.</p>
	The POPIT address switches are set incorrectly (for points 128 or 248) or the OctoPOPIT address switches are set incorrectly (for points 121-128 or points 241-248).	Check to be certain all POPIT and OctoPOPIT address switches are set correctly. POPITs cannot be used for points 128 or 248 (these are reserved for panel functions). OctoPOPITs cannot be used for points 121-128 or 241-248.

Problems with Points (Continued)

Symptom	Diagnosis	Remedy
All off-board points are MISSING.	Short on Aux Power, terminal 3 or ZONEX power, terminal 24.	Terminals 3 and 24 share a common circuit breaker. Check wiring and devices connected to these terminals for shorts or grounds.
	If only one POPEX module is connected to the panel, POPEX module may be incorrectly connected to the panel or Data Expansion Loop may be disconnected from POPEX module.	Check POPEX module for correct connections to the D9412/D9112 and the Data Expansion Loop. If you find missing points, the service walk test may help you diagnose the problem (see Extra Points below).
Keyswitch points (P## Type is programmed as 4, 5, 6, 7, or 9) report as missing. If area is armed, the point reports a MISSING ALARM. If the area is disarmed, the point reports a MISSING TROUBLE.	Point is disconnected from the SDI data bus. The POPIT cover may have been removed and not replaced or the cover is not seated properly.	The point will restore when the SDI bus is reconnected or when the POPIT cover is seated firmly on the POPIT.
Connected points show as extra points when the point bus is shorted beyond the programmed debounce time.	The points have no point index programmed.	This will be corrected when the short is returned to normal.

Extra Points

If the panel is not in the service walk test mode when an extra point trips, the panel responds to it as a local TROUBLE event at the control center or central station (see *Routing* in the Program Entry Guide). It displays the custom text for the point number set in the point's dipswitch or on-board point location.

When an extra point is tripped during the service walk test, it reports as an EXTRA point in the panel's event log and at the local printer (if installed). Once an extra point is identified you can check the programming to see if it has a **Point Index** programmed. You can then determine if the point index is appropriate for the application and that the area assignment is correct.

Problems Programming the Panel

Before attempting to program the panel, you should be familiar with the basic operation of the D5200 programmer. See the *D5200 Operation Manual* (74-06176-000). If you still experience problems, check for the symptoms below.

Symptom	Diagnosis	Remedy
The programmer displays PLUG IN D9412/D9112 when you press SEND or RECV.	The programmer is not correctly connected to the D9412/D9112.	<ol style="list-style-type: none"> 1. Verify that the data/power cord is plugged into the COMMUNICATOR port on the D5200. 2. Verify that the data/power cord is plugged securely into the D9412/D9112 programmer connector (J7). 3. Check each conductor in the data/power cord for continuity.
	AC induction through the on-board point sensor loops, the DATA BUS, or the ZONEX BUS.	<ol style="list-style-type: none"> 1. Verify a proper earth ground at terminal 10. 2. Disconnect on-board point sensor loops, the DATA BUS (terminals 30, 31), and the ZONEX BUS (terminals 25, 26,27,28).
After plugging in the programmer, the panel transmits SDI trouble reports for supervised SDI devices (command centers, printer interface modules, etc.). All SDI devices stop operating.	You haven't entered the D9412/D9112 handler within 30 seconds of plugging in the programmer.	<p>Enter the D9412/D9112 handler within 30 seconds of plugging in the programmer.</p> <p>Once the SDI reports are generated, sending or receiving a handler or disconnecting the programmer returns the SDI devices to normal operation.</p>

Phone Line Trouble

Phone line problems can result in the panel going into Communications Failure.

Symptom	Diagnosis	Remedy
SERVC PH LINE #1 (or 2 if two lines are used) appears in command center display.	D9412/D9112 phone line monitor detects a phone line as faulted.	<ol style="list-style-type: none"> 1. Verify that the telephone cord is correctly connected to the RJ31X and the panel. 2. Verify the Ground Start Jumper is in the correct position. 3. If using a ground start phone line, verify D136 relay is in socket K6/J5. 4. Verify that the RJ31X jack is wired correctly. The incoming phone line must be wired to terminals 4 and 5. The in-house phone system must be wired to terminals 1 and 8. 5. Verify that all telephones are on-hook. Leaving a telephone on hold after the other party hangs up creates an off-hook condition. Verify that no phones are on hold. <p>If completing the steps above does not restore the phone line, meter the phone lines. You should meter 4.5 to 7.5 VDC when the line is idle (on-hook). You should meter 8 to 13 mA of current when the line is active (off-hook). If your readings are below the minimum values, contact your telephone company repair service.</p>

Communications Failure

Follow the *Phone Line Trouble* procedure to verify that there is no problem with the phone lines at the installation. If the phone lines are good, monitor the lines (preferably at the receiver) for the symptoms listed below.

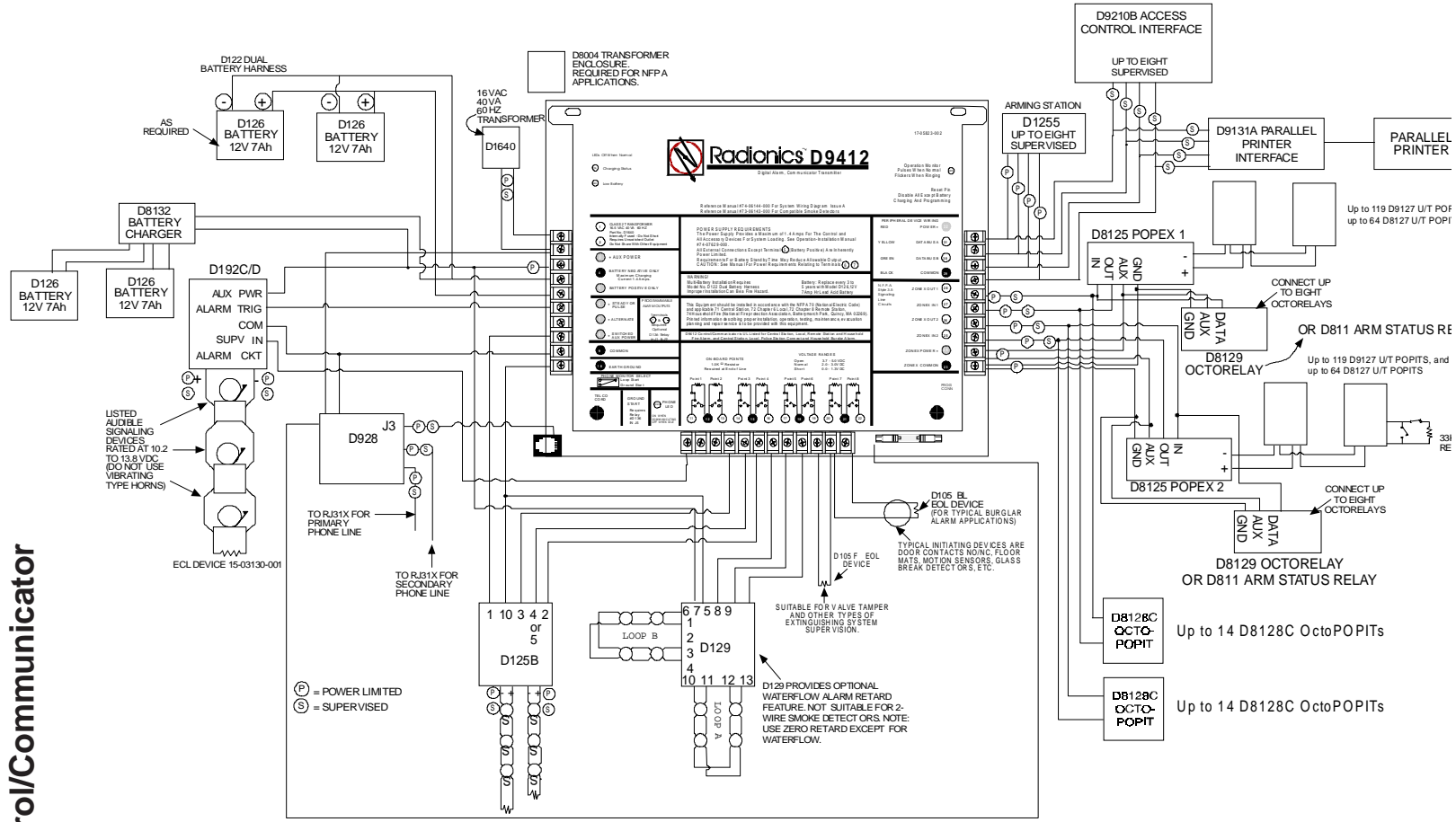
Symptom	Diagnosis	Remedy
Panel does not connect to central station.	The D136 relay in J10 for ground start phone systems is inserted incorrectly.	Insert the D136 relay in socket J10 correctly. Also check that phone line is connected and that phone jack is wired properly. See the <i>Relays</i> section of this manual for instructions.
The receiver answers the call and provides an initial "handshake" acknowledgment, but does not acknowledge the D9412's report transmission with a "kiss-off" acknowledgment .	The receiver is not compatible with the D9412/D9112 transmission format.	Verify that the receiver is compatible with the format the D9412 is using (either BFSK or Radionics Modem IIIa ² ™ Communications Format). See <i>Phone</i> in the <i>D9412/D9112 Program Entry Guide</i> (74-07695-000). D9412/D9112 requires D6500 MPU and Line Card EPROM revision 8.00 or higher.
	Noisy phone lines are interfering with report transmission.	Try making a voice call to the receiver on the line to verify the noisy condition. It may be necessary to have the phone company check the lines.

Communications Failure (Continued)

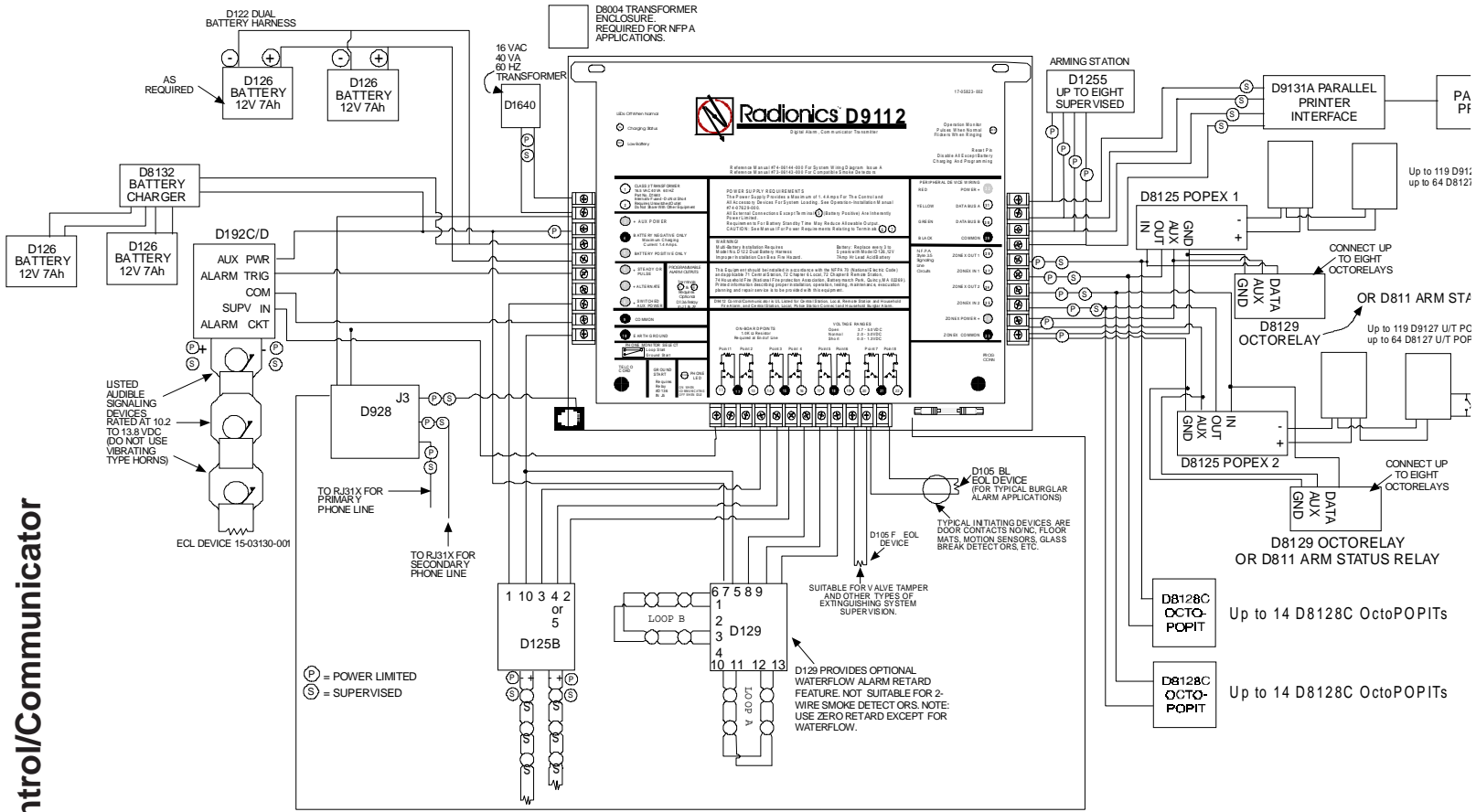
Symptom	Diagnosis	Remedy
<p>The line rings but the D6500 receiver does not pick up.</p> <p>RING indicator on line card does not light. Can not hear ring with headset at receiver location.</p>	Line is not ringing at the receiver.	<ol style="list-style-type: none"> 1. Verify that the lines are correctly connected to the receiver. 2. Verify that correct prefixes and phone numbers for the receiver have been programmed into the D9412/D9112. <p>If completing the steps above does not correct the problem, contact your telephone company repair service.</p>
The panel is unable to call out when all 248 points are faulted.	The total current draw is too much for the panel.	Put command centers on a separate power supply to get maximum current draw from points in alarm.
<p>The line rings but the receiver does not pick up.</p> <p>RING indicator on line card lights. Can hear ring with test set at receiver location.</p>	Line card in receiver may be faulty.	Review receiver manuals for trouble shooting procedures.
The D9412/D9112 reaches a busy signal for all ten attempts to reach the receiver.	Calls are not reaching the receiver.	<ol style="list-style-type: none"> 1. Verify that correct prefixes and phone numbers for the receiver have been programmed into the D9412/D9112. 2. Verify that the phone lines are not shorted between the phone company's equipment and the receiver by placing a call to the number for the receiver. If you hear the line ring, but the ring detector doesn't light, or if you hear a busy signal and the green on line (OL) indicator is not lit, call the phone company for service.
	The receiver's call load is too great.	Additional line cards and phone lines may be needed for the receiver.
The receiver answers the call and provides an acknowledgment tone, but the communicator does not transmit reports.	The receiver is not producing the correct acknowledgment tone.	Verify that the receiver is producing a 1400 Hz, 2300 Hz, or Modem acknowledgment tone.

System Wiring Diagrams, Issue A

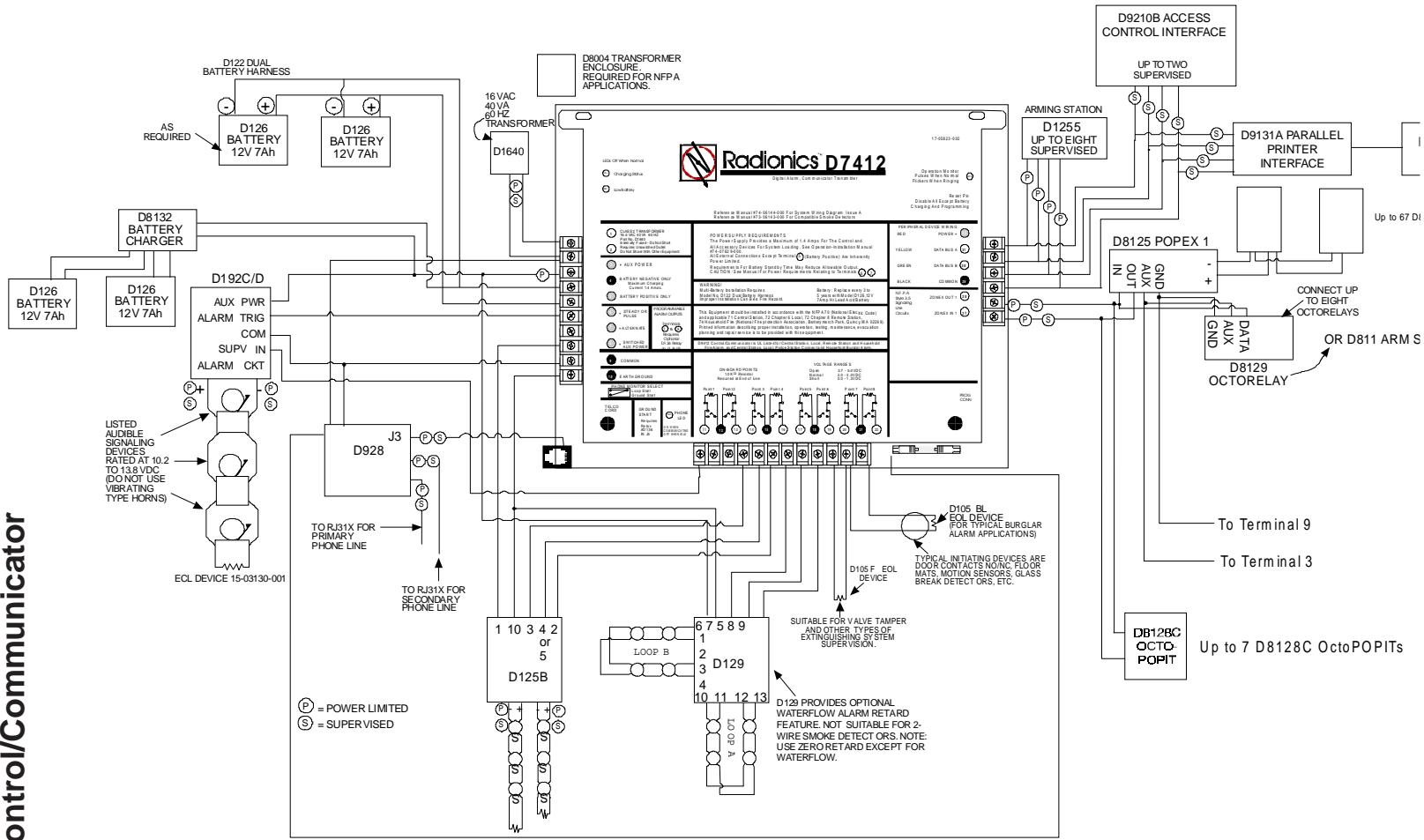
D9412 Control/Communicator



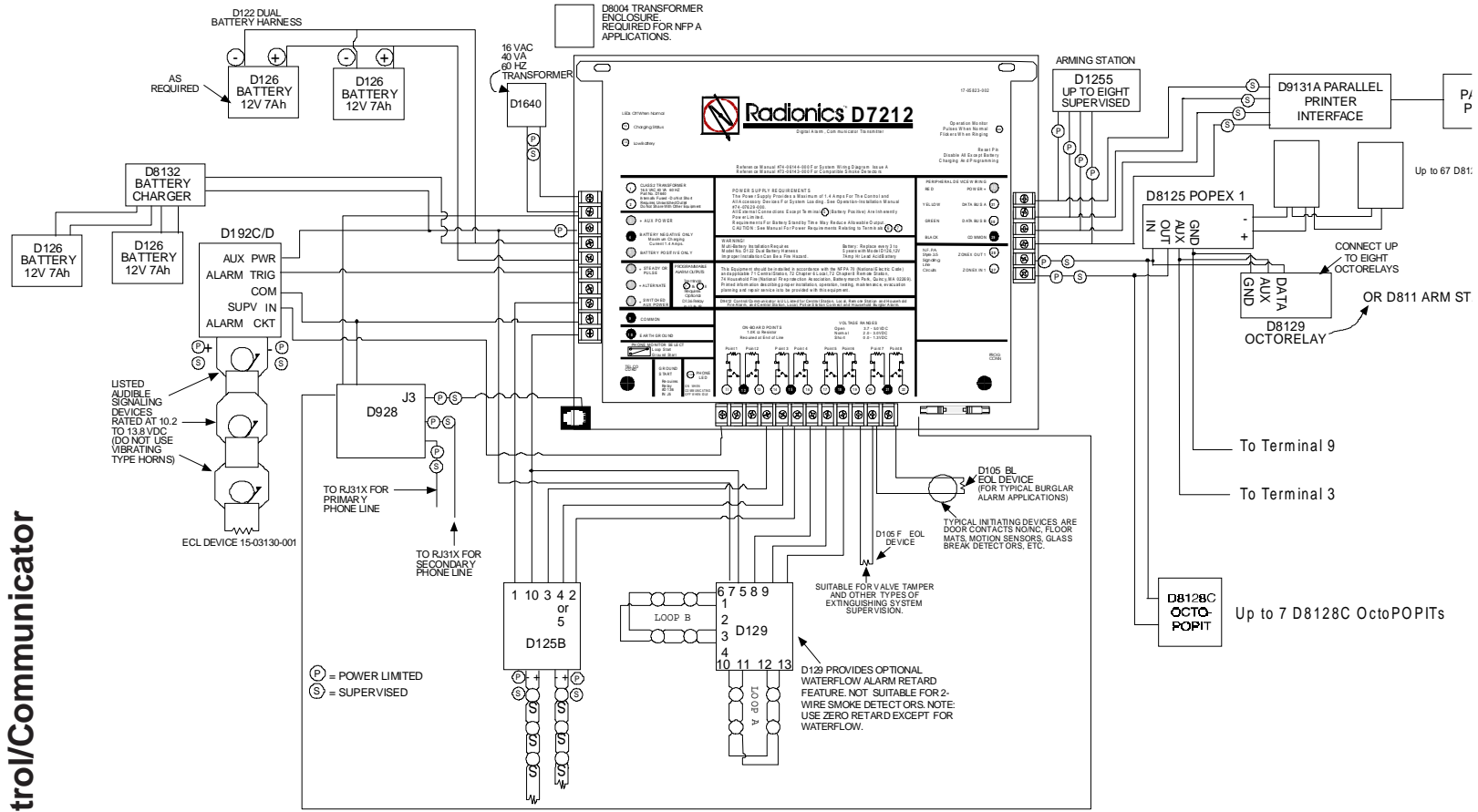
D9112 Control/Communicator



D7412 Control/Communicator



D7212 Control/Communicator



Quick Reference Terminal Description

Terminal	Name	Description
1, 2	CLASS 2 TRANSFORMER	Connect 16.5 VAC, 40 VA transformer for primary power supply.
3	+ AUX POWER	Supplies up to 1.4A at 10.2 VDC to 13.9 VDC to powered devices. Use terminal 9 for common. Shares circuit breaker with terminal 24 and the Expansion Port (J4).
4	BATTERY NEGATIVE ONLY	Connect 12V, 7Ah rechargeable lead acid type battery's negative terminal (-) to terminal 4.
5 (+)	BATTERY POSITIVE ONLY	Connect 12V, 7Ah rechargeable lead acid type battery's positive terminal (+).
6 (+)	+ STEADY OR PULSED ALARM POWER	Supplies up to 2 A at 10.2 VDC to 13.9 VDC for steady or pulsed alarm output. Use terminal 9 for common. Programmed as Relay A. Shares circuit breaker with terminals 7 and 8.
7 (+)	+ ALTERNATE ALARM POWER	Supplies up to 2 A at 10.2 VDC to 13.9 VDC for steady or pulsed alarm output. Use terminal 9 for common. Programmed as Relay B. Shares circuit breaker with terminals 6 and 8. D136 Plug-in Relay required: Install a D136 in socket K3 for output at terminal 7.
8 (+)	+ SWITCHED AUX POWER	Supplies up to 1.4 Amps at 10.2 VDC to 13.9 VDC. Use terminal 9 for common. Programmed as Relay C. Continuous output interrupted by RESET SENSORS or alarm verification. Shares circuit breaker with terminals 6 and 7. D136 Plug-in Relay required: Install a D136 in socket K1 for output at terminal 8.
9	COMMON	Terminal 9 is common for Auxiliary Power, Steady or Pulsed Alarm Power, Alternate Alarm Power, and Switched Aux Power (terminals 3, 6, 7, and 8).
10	EARTH GROUND	Connect to earth ground. A cold water pipe or grounding rod is preferred. Do not connect to telephone or electrical ground.
11, 13, 14, 16, 17, 19, 20, 22	ON-BOARD POINTS (Inputs)	Connect normally open and/or normally closed detection devices to loop wiring. 1 k Ω resistor required at end of loop.
12, 15, 18, 21	ON-BOARD POINTS (Common)	Loop returns for on-board points.
23 (-) 24 (+)	ZONEX COMMON ZONEX POWER+	[D9412/D9112 only] Use terminals 23 and 24 to power ZONEX modules such as the D8125 POPEX module, the D8128C OctoPOPIT, and the D8129 OctoRelay. Shares circuit breaker with terminal 3 and the Expansion Port (J4).
25 26	ZONEX IN 2 ZONEX OUT 2	[D9412/D9112 only] Connect ZONEX modules for points 129 to 247 and relays 65 to 128 to these terminals.
27 28	ZONEX IN 1 ZONEX OUT 1	Connect ZONEX modules for points 9 to 127 and relays 1 to 64 to these terminals. (The D7412/D7212 uses points 9 to 75.)
29 (-)	COMMON	Common terminal for SDI devices
30 31	DATA BUS B DATA BUS A	Terminals 30 and 31 are a two wire bus that drives the command centers, printer interface, and access control modules.
32 (+)	POWER +	Power for SDI devices. This separate protected power output for SDI devices is not affected by shorts on any other terminal.



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