R A D I O N I C S

D8114 Quad Serial Output Module
Operation and Installation Manual

Notice

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Features

- Improves D8112 serial interface drive capability.

- Provides isolated data interfaces for added protection.

- Compatible with serial devices such as card readers, OctoRelay modules, OctoPOPIT modules, POPEX modules, and command centers.

- Simple connection to the D8112 Control/Communicator.

Specifications

Operating Voltage:	12 VDC nominal (supplied by D8112 Auxiliary Power)
Operating Current:	20 mA (D8114 only — see the specifications of additional serial devices for the operating current of those devices.)
Operating Temperature:	0 to 50 °C (32 to 122 °F)
Humidity:	5 to 85% at 30 °C (86 °F) (non-condensing)
Wiring:	See Figures 4, 5, and 6.

Description

The D8114 Quad Serial Output Module extends the serial device drive capability of the D8112 Control/Communicator. Four isolated serial data output terminals are provided to prevent the interaction of serial devices (command centers, POPEX modules, OctoRelays, card readers, etc.). The D8114 is installed inside the control/communicator enclosure. The number of serial devices that can be connected to the D8114 depends upon the types of devices installed.

Note: This module can only be used with the D8112 series control/communicators.
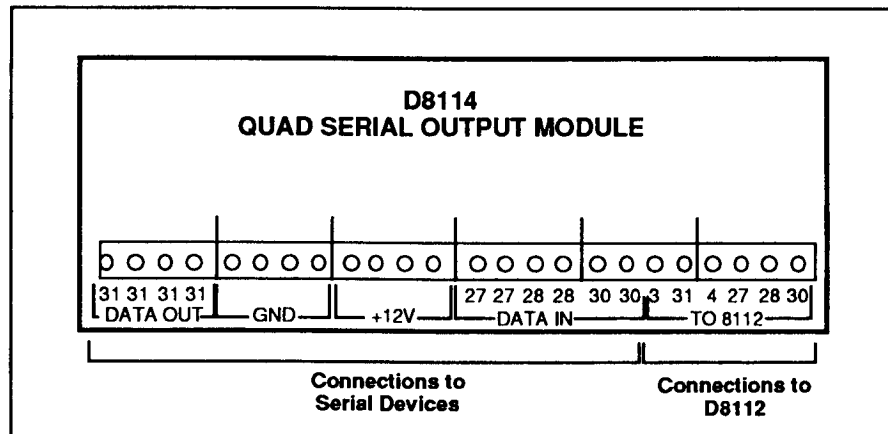

Figure 1: D8112 Quad Serial Output Module

Installation

Location in the Enclosure

The D8114 Quad Serial Output Module can be installed at any of the four standard mounting locations in the D8103, D8109, or D8108A enclosures. Only ONE D8114 can be connected to each D8112 Control/Communicator.

1. Carefully remove the appropriate knockouts in the enclosure.

2. Align the module with the appropriate holes in the control/communicator enclosure and secure in place with the three screws provided (see Figure 2).
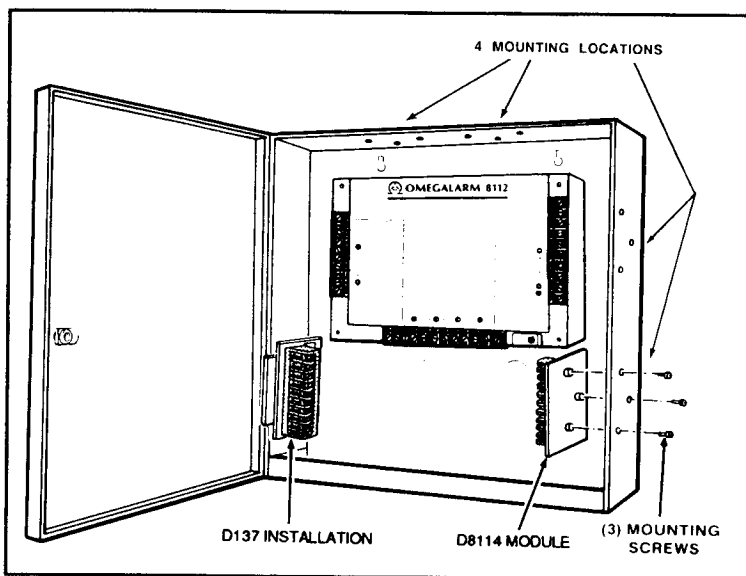

Figure 2: Mounting Locations

If other modules occupy the four standard mounting locations, the D8114 can be installed using the D137 Mounting Bracket.

1. Attach the D8114 to the bracket with the three screws provided (see Figure 3).

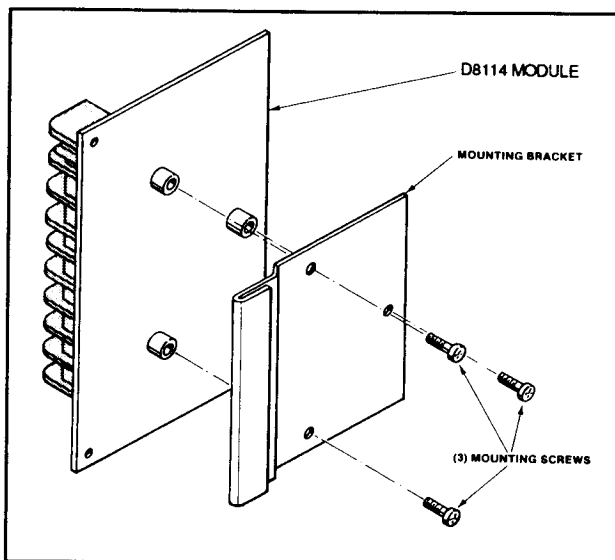2. Mount the assembly in the lower left corner of the D8112 enclosure (see Figure 2).

Figure 3: D137 Mounting Bracket

Wiring the D8114 to the D8112

Connect the Quad Serial Output Module to the D8112 as shown in Figure 4. Terminals 27, 28, and 30 on the D8112 are connected to the D8114 module ONLY if serial devices requiring connection to these terminals are going to be connected to the D8114 Module.

Note: If terminals 27, 28, and 30 on the D8112 are connected to the D8114, no other devices can be connected to these terminals on the D8112. All serial devices requiring connection to these terminals would have to be wired to the D8114 module DATA IN terminals.
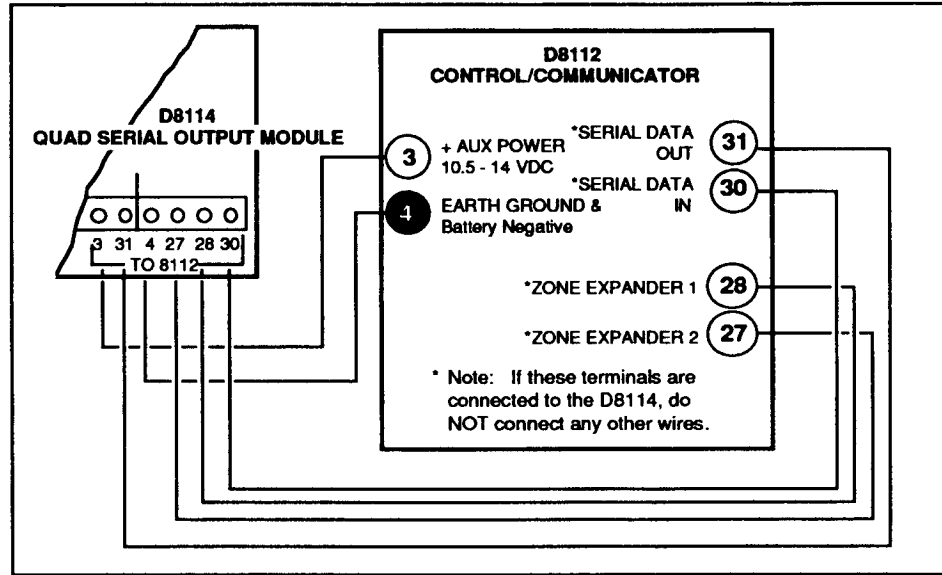

Figure 4: Wiring the D8114 to the D8112

Wiring the D8114 to Serial Devices

Six "DATA IN" terminals (two each of terminals 27, 28, and 30) are provided for connection to serial devices. Four ground ("GND") and four auxiliary power ("+12V") terminals are also provided (see Figure 5).
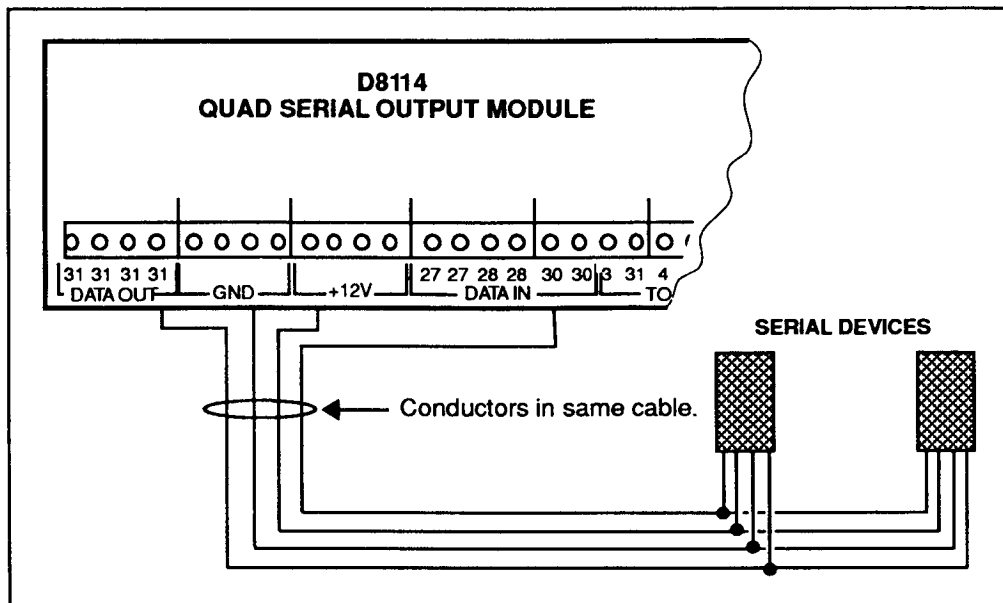

Figure 5: Typical Serial Device Wire Run (without an auxiliary power source)

Wiring the D8114 to Serial Devices (continued)

The four "DATA OUT" terminals (terminal 31) are isolated from each other to prevent problems on one serial device wire run from affecting the operation of the other wire runs.

Note: This module does NOT provide additional auxiliary power. You cannot exceed the 1 Amp of aulixary power provided by the D8112 without adding an auxiliary power source. See *Power Requirements.*

The terminals provided for connecting serial devices to the D8114 module are labelled the same as the terminals provided for connection of serial devices to the D8112 Control/Communicator. The instructions provided with each device for connection to the D8112 also apply to the D8114.

Use table 1 to determine the proper configuration to meet the requirements of your installation. Determine the number and the type of serial devices to be connected to each terminal 31 on the D8114. Before attempting to connect any serial devices to the D8114 review the *Power Requirements* section. An auxiliary power source may be needed for one or more wire runs. Figure 5 shows a typical serial device wire run without an auxiliary power source. Figure 6 (see *Adding the D8132 Battery Charger Module*) shows a wire run with an auxiliary power source added.

Serial Device Model to be wired to D8114 Module	Maximum number of these devices that can be wired to D8114	Maximim number of devices wired to one Terminal 31, Data Out [1]	Maximum distance (feet) from D8114 module[2]	Maximum Current Draw (mA) for a single device
D360 Command Center [3]	10	5	1000 ft	90 mA
D1252A Command Center [3]	10	5	1000	200
D8125 Popex Module	2	2	Installed in D8112 enclosure	210 (with 63 Popits)
D8128 OctoPOPIT Module	16	16	200	50
D8129 OctoRelay Module [4]	8	8	200	320
D8210 Weigand Interface Module	This device is used in place of the D8114 and should not be wired to it.			
D8220 Insert Reader [4]	8	8	500	47
D8225 Proximity Reader [4]	8	8	1000	200

Table 1: Device Specifications

[1] Each D8114 terminal 31, Data Out, can support the following:
- Any combination of D8225 Proximity Readers and D8220 Insert Readers totalling no more than 8 readers.
- A combination of D1252A and D360 Command Centers and D8129 OctoRelays totalling no more than 5 devices.
* A combination POPEX and OctoPOPIT modules with the maximum number of devices determined by ZONEX programming restrictions.

[2] Only ONE wire run should be connected to any one terminal 31 on the D8114 module. The maximum distance is the furthest, on that one wire, that this model device can be located. Other model devices (with greater maximum distances) could be located further away on the same wire. If more than one wire is connected to a terminal 31, the combined length of all wires connected to the terninal cannot exceed 1000 feet. Figure 5 shows a sample configuration.

[3] Each D8114 module can support a combination of D1252A and D360 Command Centers with a total not to exceed 10 command centers. (The D8114 is NOT compatible with D1250 or D350 Command Centers.)

[4] DO NOT connect D8129 OctoRelay Modules and D8220 or D8225 Card Readers to the same terminal 31.

Power Requirements

Current Draw and Wire Length

Table 2 shows the maximum wire lengths for various current draw totals. It can be used to aid you in calculating the power requirements for your configuration as follows:

1. Add the current draws for each device to be connected to each terminal 31 on the D8114 module.

2. Find the nearest figure in the first column of table 2 for each total.

   (If your total for a terminal 31 is 475 mA for example, the correct figure in the first column is 500.)

3. Move across the row to the entry in the second or third column for the gauge wire you plan to use.

   (Continuing with the example from step 2, using 18 AWG wire, you move to the third column. The entry there is 800.)

4. Compare the entry you found in step three (800 in our example) to the distance of the furthest device on the wire run from the D8114 module.

   If the distance of the furthest device is less than the entry from the table, you need not add an auxilary power source. If the distance exceeds the entry from the table an auxiliary power source will have to be added at the end of the wire run. See *Adding the D8132 Battery Charger Module*.

Total Current Draw (mA) for ONE D8114, terminal 31, Data Out wire run	Maximum Distance (feet) for 22 AWG Wire	Maximum Distance (feet) for 18 AWG Wire
200 mA	1000 ft	1000 ft
300	660	1000
400	500	1000
500	400	800
600	320	650
700	300	600
800	250	500
900	220	450
1000+	Auxiliary Power Supply must be used	

Table 2: Current Draw and Wire Length

You may need to add an auxiliary power source to one or more wire runs, even if the calculations you completed above do not call for auxiliary power. Remember, the TOTAL current draw for devices connected to the D8112 auxiliary power terminals cannot exceed 1 Amp.

The current draw for ALL devices connected to terminals 3 and 8 (including the D8114 module, the devices connected to the D8114, and any non serial devices) are used in calculating the total current draw connected to the D8112.

Note: Current draws for devices connected to terminal 8 are included only if terminal 8 is configured as switched AUX power.

If the total current draw exceeds 1 Amp, one or more auxiliary power sources must be added. See *Adding the D8132 Battery Charger Module*.

Adding the D8132 Battery Charger Module

If the current draw requires auxiliary power, the D8132 Battery Charger Module is used in its "Stand-Alone Power Supply" configuration as an auxiliary power source.

Connect the D8132 to the serial device installed furthest from the D8114 module, as shown in figure 6.

Note: The D8132 Battery Charger Module is not U.L. listed as a stand-alone power supply. A U.L. listed power supply must be used in certificated applications. An alternate power source is connected in the same manner as the D8132.
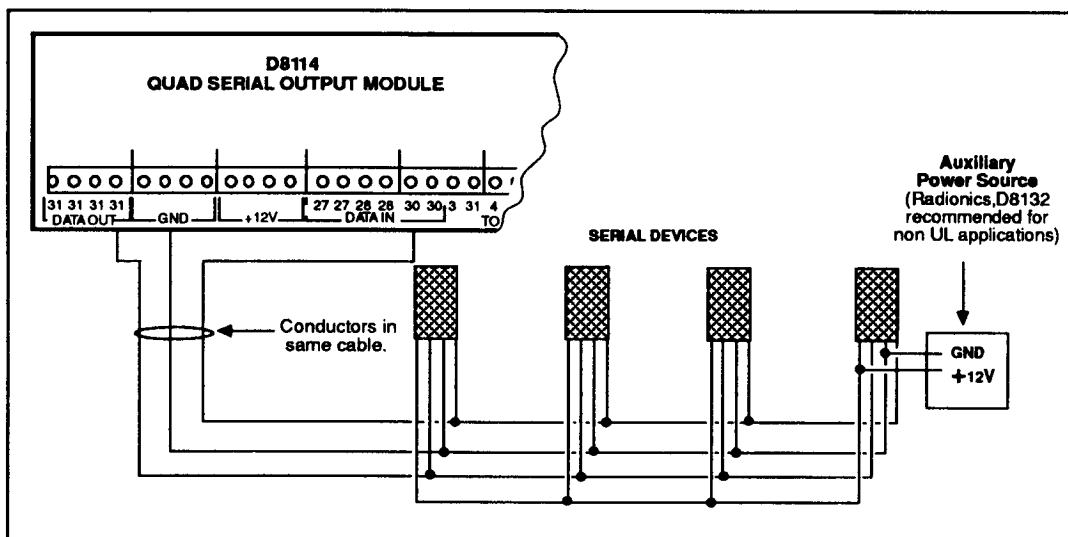

Figure 6: Typical Serial Device Wire Run with Auxiliary Power Source

Noise on Long Wire Runs

Although the D8114 improves the serial interface drive capability of the D8112, long wire lengths are susceptible to noise. Radionics recommends the use of standard installation practices to avoid AC and RF interference.

The use of shielded cable may be appropriate under certain conditions. Some potential sources of noise on a long wire run include:

1. Radio or television transmitter site.
2. Ham radio operator's transmitter site.
3. Computer network system.
4. Heavy machinery (large electrical motors).
5. PBX telephone system.
6. High voltage electrical equipment or transformers (arc welders, certain medical and dental equipment, etc.).
7. Public service office using radio communications (fire department, police department, etc.).
8. Close proximity to electrical lines, telephone cabling, or florescent lighting fixtures.

Noise on Long Wire Runs (continued)

There are many other possible sources of noise. If you suspect that noise may be a problem, the use of shielded wire is strongly recommended. Connect the drain wire from the shielded cable to terminal 4 on the D8112 Control/Communicator.

The drain wire must have continuity from the control/communicator to the last serial device on the wire run. If you cut the cable to install devices between the last device and the control/communicator, be certain to reconnect the drain wire to insure continuity to the last serial device.

If continuity is not maintained between the control/communicator and the last serial device, the shielded cable may aggravate potential noise problems rather than eliminate them. Connecting the drain wire to ground at other than terminal 4 on the control/communicator may also produce problems.

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