
Installation Guide

**HP J2434A
4-Port WAN Interface
for the HP Router 650**

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Product Numbers

This guide provides installation instructions for the following Hewlett-Packard Company product:
J2434A

Warranty

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Ensure that you have the following items.

Introduction

The 4-Port WAN Interface provides four synchronous ports supporting V.35, RS-232/V.24/V.28, RS-449/RS-422/V.36, or X.21 interfaces at speeds of 9.6 Kbit/s to 2.048 Mbit/s. These allow HP Point-to-Point, PPP, V.25 bis (dial-up/ISDN), SMDS, frame relay, and LAPB (X.25) connections between the HP Router 650 and other routers.

Installation

Ensure that you have the following items.

- 4 Cables (depending on option ordered)

Option	Cable
001	V.35 (28606-63008)
002	RS-232 (28606-63006)
003	X.21 (28606-63001)
004	RS-449/422 (28606-63005)

- 1 LED label strip (J2434-80012)
- 5 Interface card labels (5182-3315)
- 1 Cable tie (5182-1723)
- 1 Grounding wrist strap (9300-1408)
- 1 *Installation Guide* (this manual, 5962-8320)
- 1 *Caution: Static-Sensitive Devices* (5962-8318)

Installation
Install interface card.

Install interface card.

Notes

You can install the interface card without taking the system offline (that is, without switching the router off and taking all networks down)—refer to “Installing the Interface Card (System Online),” page 9. (Installing an interface card without taking the system offline is often called “hot swapping.”)

If you are installing the interface card in a slot that formerly was empty, or if you are installing the interface card in a slot that formerly held a different type of interface card (such as an Ethernet/802.3 interface card), you must specify the new card in the configuration. (Refer to “Configure and boot the router” in chapter 1 of the *HP Router 650 Installation Guide*.)

Installing the Interface Card (System Offline)

Note

If you will be installing the new interface card in a slot where another interface card is *not* currently installed, begin with step 2; otherwise, begin with step 1.

1. Disconnect all cables from the interface card you will be removing, and save them for reconnection when you later install that card again.

2. Open the front door of the router by pulling its lock—the round post at the upper right—to the right.

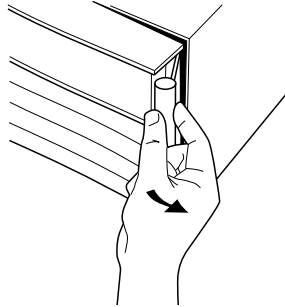


Figure 1. Opening Router Door

3. Switch the power supply off by pressing the bottom of its switch (marked with “○”). If two power supplies are installed, switch both off.
4. Connect a grounding wrist strap (one is provided with the interface card) to your wrist and to the back of the router.

Installation

Install interface card.

5. Press down slightly on the insides of both locks on the old card's bezel (see figure 2), then swing them outward until the bezel disengages (see figure 3).

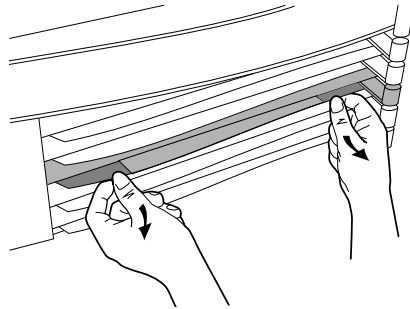


Figure 2. Unlocking Card Bezel

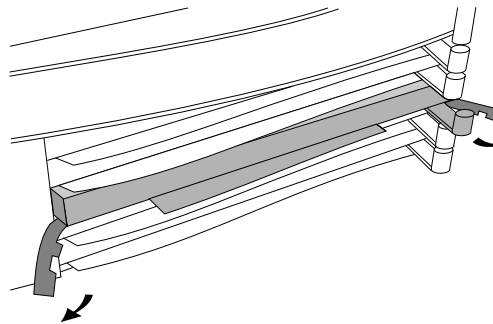


Figure 3. Disengaging Card Bezel

6. Grasping the left and right edges of the bezel, pull out until the tray is about half exposed.
7. Grasping the sides of the tray, remove the card from the router.
8. Holding the new interface card by the sides of its tray, slide the back of the tray about half-way into the router.

9. Pull the locks on the bezel outward, then push evenly on both ends until the card engages fully and the locks swing inward to about 45°.

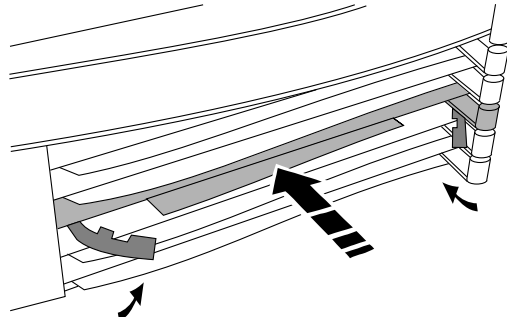


Figure 4. Installing Interface Card

10. Push the two locks evenly to close them, pressing downward slightly to secure them in place.
11. Remove the old card's LED label strip in the router door from the position corresponding to the slot where you have installed the interface card, then insert the LED label strip provided with the new card as far as it will go.
12. Bend the end of the label strip toward the back of the router, creating a 90° fold.
13. Switch on the power supply by pressing the top of the switch (marked with "|").
14. Close the router door.

Installation

Install interface card.

15. To replace the label at the left of the slot that identifies the department or site served by the interface card, slide it out from the right. Position the new label with its shiny side facing the router, and slide it in from the right. (Additional labels are provided in the router's accessories kit and also with each interface card.)

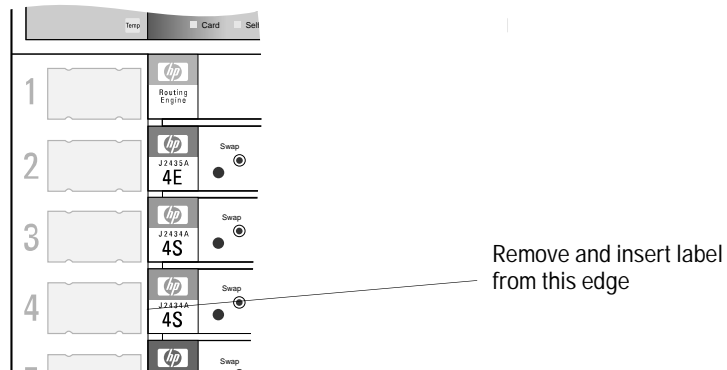


Figure 5. Interface Card Label Location

Installing the Interface Card (System Online)

Note

If you will be installing the new interface card in a slot where another interface card is *not* currently installed, skip steps 1 and 3.

1. Disconnect all cables from the interface card you will be removing, and save them for reconnection when you later install that card again.
2. Connect a grounding wrist strap (one is provided with the interface card) to your wrist and to the back of the router.
3. If the Swap LED on the interface card you will be removing is not on (see figure 6), press the adjacent Swap button, and hold it until the Swap LED turns on (about 1–5 seconds).

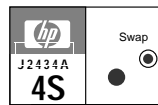


Figure 6. Swap Button and LED

Installation

Install interface card.

4. Press down slightly on the insides of both locks on the old card's bezel (see figure 7), then swing them outward until the bezel disengages (see figure 8).

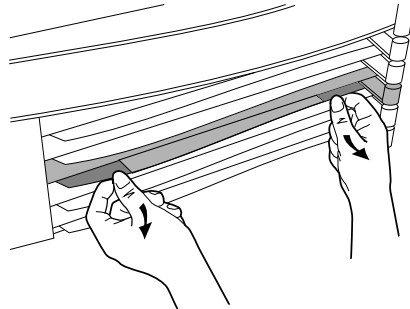


Figure 7. Unlocking Card Bezel

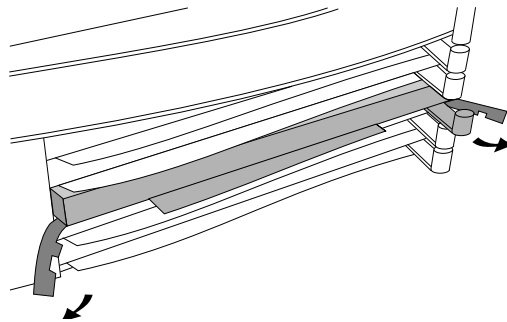


Figure 8. Disengaging Card Bezel

5. Grasping the left and right ends of the bezel, pull out until the tray is about half exposed.
6. Grasping the sides of the tray, remove the card from the router.
7. Holding the new interface card by the sides of its tray, slide the back of the tray about half-way into the router.

8. Pull the locks on the bezel outward, then push evenly on both ends until the card fully engages and the locks swing inward to about 45°.

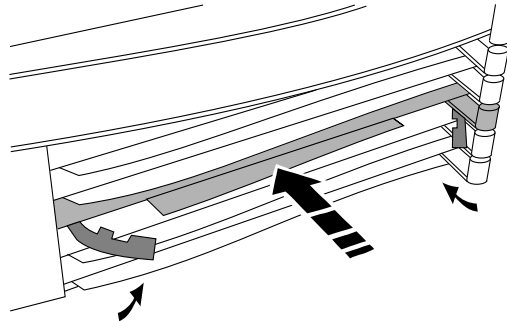


Figure 9. Installing Interface Card

9. Push the two locks evenly to close them, pressing downward slightly to secure them in place. A self-test of the new interface card begins.
10. When the self-test is complete (after about 5 seconds), check that the new interface card's Card LED (the first LED in the row of LEDs in the router door) has turned green, and the Self-test LED (the second LED in the row) has turned off.
 - If these LEDs continue flashing, the card is not seated properly. Adjust the position of the card by pushing evenly on both ends, and adjust the positions of the locks evenly.
 - If the Card LED remains orange and the Self-test LED remains on, the card has failed the self-test. Refer to "Interface Card Self-Test Failure During Hot Swap" in table 3-2, "LED Error Patterns During Router Operation."
 - If the Card LED remains orange but the Self-test LED has turned off, look in the event log (which can be displayed from the Main menu) for the entry "Slot x HWID and Line configuration mismatch" (where x is the number of the slot). If that entry appears in the event log, specify the new card for that slot in the configuration (refer to "Configure and boot the router" in chapter 1 of the *HP Router 650 Installation Guide*). If that entry does not appear in the event log, call for service from your HP dealer or service provider.

Installation

Install interface card.

11. Open the front door of the router by pulling its lock—the round post at the upper right—to the right.

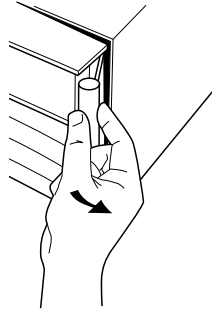


Figure 10. Opening Router Door

12. Remove the old card's LED label strip from the position corresponding to the slot where you have installed the new interface card, then insert the LED label strip provided with the new card as far as it will go.
13. Bend the end of the label strip toward the back of the router, creating a 90° fold.
14. Close the router door.

15. To replace the label at the left of the slot that identifies the department or site served by the interface card, slide it out from the right. Position the new label with its shiny side facing the router, and slide it in from the right. (Additional labels are provided with the interface card, as well as in the router's accessories kit.)

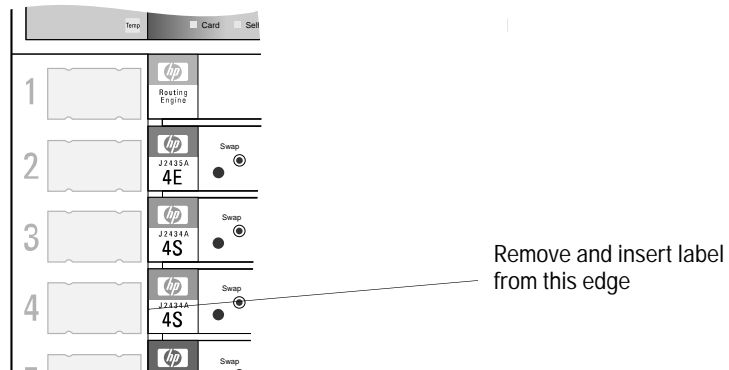


Figure 11. Interface Card Label Location

Installation

Connect network cables.

Connect network cables.

Connect the network cables as described below. You should also make sure that all network equipment and links are ready.

Caution

Static discharge may damage equipment. Do not touch the connector pins on the interface card or on the cable.

1. Attach the male end of the cable to the WAN port. Hand-tighten the screws attached to the cable connector.

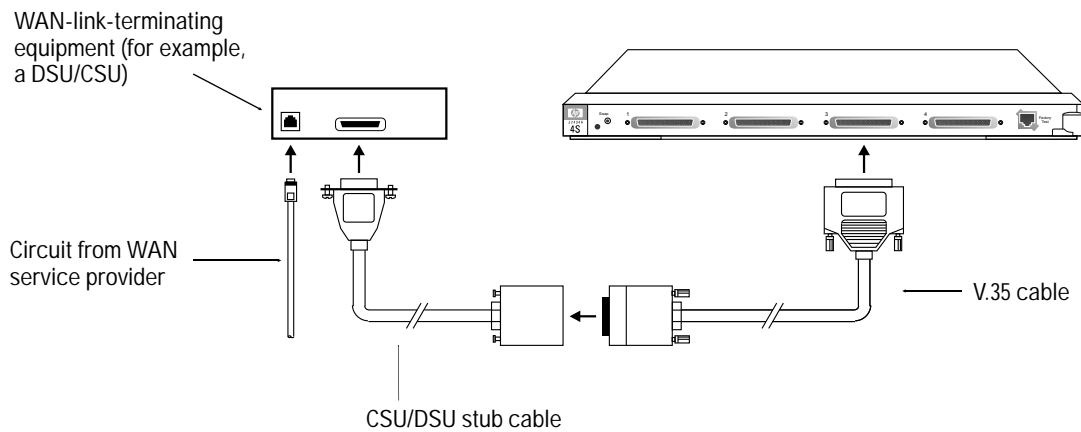


Figure 12. Connecting V.35 WAN Cable

2. Attach the other end of the cable to the WAN-link-terminating equipment (such as a modem or DSU/CSU).

Which interface is used for the port—RS-232/V.24/V.28, V.35, X.21, or RS-422/RS-449/V.36—is determined automatically by the router, depending on which cable is attached to the port.

The Clock Speed limit for an RS-232/V.24/V.28 cable connected to a WAN port depends upon the length of the cable; the maximum Clock Speed limit is 230.4 Kbit/s. For a 5-meter cable (HP part number 28606-63006), the Clock Speed limit is 64 Kbit/s.

The maximum cable length for an RS-232/V.24/V.28 cable connected to a WAN port is 15 meters (50 feet); for a cable of this length, the Clock Speed limit is 19.2 Kbit/s.

You can change the setting for this parameter using the Configuration Editor (for details, see the router's *Operator's Reference*).

Arrange network cables.

To help keep the network cables orderly—and out of the way when interface cards are being removed or installed—arrange the cables over the bars at the right of the router.

These cable-management bars have slots in them that you can use for tie-wrapping the network cables. Included with each interface card is a tie-wrap that you can use to wrap the cables and then attach the bundle to the cable management bar, as shown in figure 13.

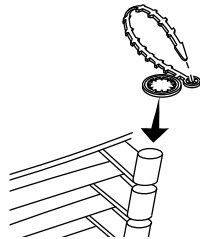


Figure 13. Cable-Management Bar and Tie-Wrap

Some WAN cables will not fit inside the cable management bars. You can use the tie-wraps to bundle the extra cables and hang them on the outside of the bar.

Prepare the router.

Prepare the router.

To prepare the router after installing the new interface card, you should do the following procedures, all of which are described in chapter 1 of the *HP Router 650 Installation Guide*:

- Connect a console.
- Plug in and verify router hardware.
- Configure and boot the router.
- Verify router initialization and configuration.

Note

If you are installing the interface card in place of a different type of interface card (for example, if the slot in which you are installing the interface card formerly held an Ethernet/802.3 interface card), or if you are installing the interface card in a slot that formerly was empty, you must specify the new card in the configuration.

If any port has no network attached, the port's Net Fail LED is lit during router operation. To avoid unnecessary event log messages, disable that port when you configure the router. (For information on interpreting the Net Fail LED and other LED error indications, refer to "Interpreting LED Error Patterns" in chapter 3 of the *HP Router 650 Installation Guide*.)

Troubleshooting

For general information about troubleshooting problems using any interface card in the Router 650, refer to chapter 3 of the *HP Router 650 Installation Guide*. The following troubleshooting information is specific to the WAN interface card.

If the Net Fail LED for any (*but not all*) of the ports is lit during router operation, either you have not yet connected a device or the connection to the remote device has been lost. The broken connection can be detected if the Remote signal and sense parameter is enabled in the configuration or if a protocol is running on this port. The circuit will be enabled again when the connection is restored.

Cables and Connectors

Cable and Connector on Router	Connector on Attached Device	HP Product or Part Number
RS-422/449/V.36 cable connecting to WAN port	For 37-pin female port	28606-63005 (5 meters)
V.35 cable (balanced X.27) connecting to WAN port	For 34-pin female port	28606-63008 (5 meters)
X.21 cable connecting to WAN port	For 15-pin female port	28606-63001 (5 meters)
RS-232/V.24/V.28 cable connecting to WAN port	For 25-pin female port	28606-63006 (5 meters) *
Back-to-Back test cable for WAN port connecting to HP routers having a 62-pin synchronous WAN port or the HP Remote Bridge RB	For 62-pin female WAN port(s) included on most HP routers and the HP Remote Bridge RB	5061-2556 (5 meters)
Back-to-Back test cable for WAN port connecting to HP 27270 Router CR	For 15-pin female COM port on HP 27270B Router CR	5061-2557 (5 meters)
Loopback connector		28606-63007
* For this cable, the Clock Speed limit is 64 Kbit/s.		

Cables and Connectors

RS-449/422 WAN Cable—Minimum Pin-Outs

RS-449/422 WAN Cable—Minimum Pin-Outs

WAN link end 37-pin male	Router end 62-pin male	RS-449 Signal Name and Circuit
4 ———	17	SD Send Data, A
5 ———	2	ST Send Timing, A
6 ———	1	RD Receive Data, A
7 ———	15	RS Request to Send, A
8 ———	3	RT Receive Timing, A
9 ———	4	CS Clear to Send, A
10 ———	54	Reserved
11 ———	5	DM Data Mode, A
12 ———	16	TR Terminal Ready, A
13 ———	6	RR Receiver Ready, A
14 ———	53	Reserved
15 ———	48	Reserved
16 ———	55	Reserved
17 ———	14	TT Terminal Timing, A
18 ———	8	Reserved
19 ———	9	SG Signal Ground
	30	
	32	
20 ———	47	Reserved
22 ———	38	SD Send Data, B
23 ———	23	ST Send Timing, B
24 ———	22	RD Receive Data, B
25 ———	36	RS Request to Send, B
26 ———	24	RT Receive Timing, B
27 ———	25	CS Clear to Send, B
28 ———	33	Reserved
29 ———	26	DM Data Mode, B
30 ———	37	TR Terminal Ready, B
31 ———	27	RR Receiver Ready, B
33 ———	29	Reserved
34 ———	34	Reserved
35 ———	35	TT Terminal Timing, B
37 ———	10	SC Send Common

V.35 WAN Cable—Minimum Pin-Outs

V.35 WAN Cable—Minimum Pin-Outs

WAN link end 34-pin male	Router end 62-pin male	CCITT Signal Name and Circuit
B ————— 9	102	Signal Ground
————— 22		
————— 23		
————— 24		
————— 25		
————— 26		
————— 27		
————— 47		
————— 31		
————— 32		
————— 52		
————— 50		
C ————— 57	105	Ready to Send
D ————— 4	106	Clear to Send
E ————— 46	107	Data Mode
F ————— 6	109	Receiver Ready
H ————— 58	108.2	Terminal Ready
J ————— 48		Reserved
P ————— 21	103	Send Data, A
R ————— 20	104	Receive Data, A
S ————— 42	103	Send Data, B
T ————— 41	104	Receive Data, B
U ————— 61		Transmit Timing, A
V ————— 18	115	Receive Timing, A
W ————— 60		Transmit Timing, B
X ————— 39	115	Receive Timing, B
Y ————— 19	114	Send Timing, A
AA ————— 40	114	Send Timing, B

Cables and Connectors

X.21 WAN Cable—Minimum Pin-Outs

X.21 WAN Cable—Minimum Pin-Outs

WAN link end 15-pin male	Router end 62-pin male	X.21 Signal Name and Circuit
2 ———	17	T Send Data, A
3 ———	16	C Control, A
4 ———	1	R Receive Data, A
5 ———	4	I Indicator, A
6 ———	3	S Send Timing, A
8 ———	9	G Ground
	32	
	47	
9 ———	38	T Send Data, B
10 ———	37	C Control, B
11 ———	22	R Receive Data, B
12 ———	25	I Indicator, B
13 ———	24	S Send Timing, B

RS-232 WAN Cable—Minimum Pin-Outs

WAN link end 25-pin male	Router end 62-pin male	EIA and Signal Name
2	59	BA Send Data
3	1	BB Receive Data
4	57	CA Request to Send
5	4	CB Clear to Send
6	46	CC Data Mode
7	9	AB Signal Ground
	22-27	
	47	
	30	
	31	
	52	
8	6	CF Receiver Ready
12	28	Reserved
13	7	Reserved
14	13	Reserved
15	2	DB Send Timing
16	49	Reserved
17	3	DD Receive Timing
19	12	Reserved
20	58	CD Terminal Ready
21	29	Reserved
22	48	Reserved
23	55	Reserved
24	56	DA Terminal Timing

Notes

The Clock Speed limit for an RS-232/V.24/V.28 cable connected to a WAN port depends upon the length of the cable; the maximum Clock Speed limit is 230.4 Kbit/s. For a 5-meter cable (HP part number 28606-63006), the Clock Speed limit is 64 Kbit/s. The maximum cable length for an RS-232/V.24/V.28 cable connected to a WAN port is 15 meters (50 feet); for a cable of this length, the Clock Speed limit is 19.2 Kbit/s.

You can change the setting for this parameter using the Configuration Editor (for details, see the router's *Operator's Reference*).

Back-to-Back Test Cable

Back-to-Back Test Cable

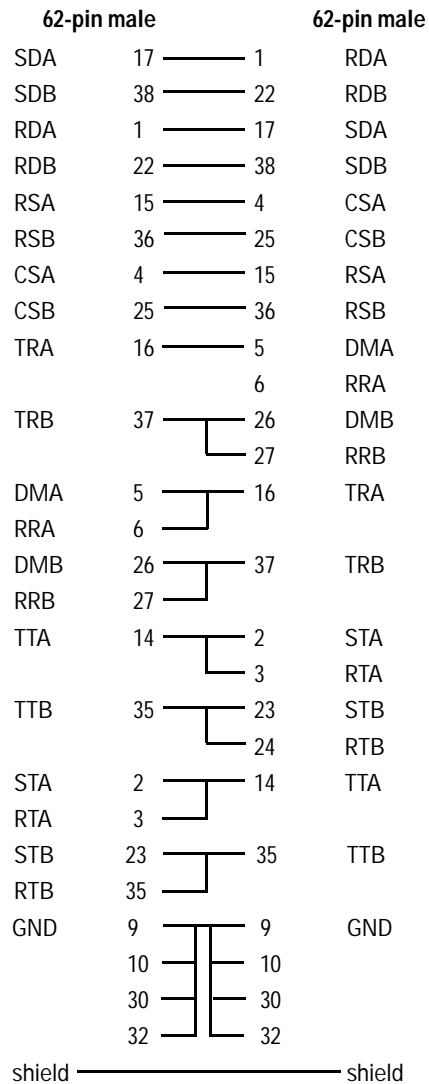
A 5-meter, back-to-back, synchronous test cable (HP part number 5061-2556) allows you to connect any HP router having a (62-pin) synchronous WAN port to another HP router (or an HP Remote Bridge) having the same port type, without using a modem eliminator, for up to 60 meters (200 feet). The cable, which can be used for demonstrations, instruction, or testing the router, uses the RS-422 signal level.

Note

If the WAN ports on both routers are not configured to Auto (the default on the router 650), the WAN port on one router must have the Point to Point Address configured to DCE and the WAN port on the other router must have it configured to DTE. In addition, one router must have the Clock Source parameter configured to External, and the other router must have it configured to Internal.

The minimum pin-outs for the cable are shown on the next page.

Back-to-Back Test Cable—Minimum Pin-Outs



Note In the cable, each of the differential signal pairs (SDA and SDB, RDA and RDB, and so on) must be twisted pairs of wire.

Loopback Connector

Loopback Connector

- pin 9 to pin 23
- pin 10 to pin 27
- pin 11 to pin 50
- pin 12 (not used) to pin 7
(not used)
- pin 13 (not used) to pin 49
(not used)
- pin 14 to pin 19
- pin 15 to pin 4
- pin 16 to pin 46
- pin 17 to pin 1
- pin 21 to pin 20
- pins 30, 31, and 32 to pin 27
- pins 33 and 34 (not used) to pin 29 (not used)
- pin 35 to pins 40 and 39
- pin 36 to pin 25
- pin 37 to pin 26
- pin 38 to pin 22
- pin 42 to pin 41
- pin 47 (not used) to pin 24
- pin 51 to pin 2
- pin 53 (not used) to pin 8 (not used)
- pin 54 (not used) to pin 29 (not used)
- pin 55 (not used) to pin 8 (not used)
- pin 56 to pin 3
- pin 57 to pin 28 (not used)
- pin 58 to pin 6
- pin 59 to pin 48 (not used)









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