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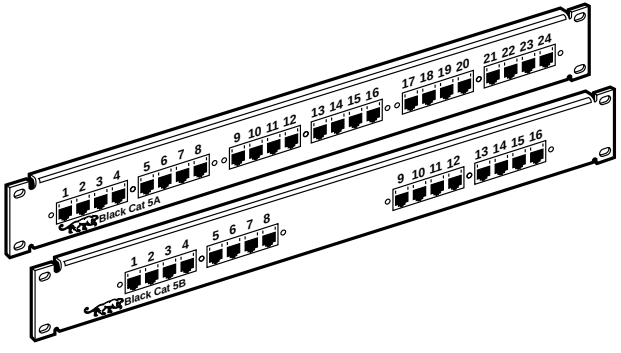
BLACK BOX®
NETWORK SERVICES

JUNE 1997

JPM110A-R2 **JPM111A-R2**
JPM112A-R2 **JPM113A-R2**
JPM114A-R2 **JPM115A-R2**
JPM116A-R2 **JPM117A-R2**
JPM118A-R2 **JPM119A-R2**
JPM120A **JPM121A**

Black Cat CAT5 Patch Panels



CUSTOMER SUPPORT INFORMATION

Order **toll-free** in the U.S.: Call **877-877-BBOX** (outside U.S. call **724-746-5500**)
FREE technical support 24 hours a day, 7 days a week: Call **724-746-5500** or fax **724-746-0746**
Mailing address: **Black Box Corporation**, 1000 Park Drive, Lawrence, PA 15055-1018
Web site: **www.blackbox.com** • E-mail: **info@blackbox.com**

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1. Specifications

Compliance — JPM110A-R2 through JPM114A-R2 and JPM120A: EIA/TIA-568B; JPM115A-R2 through JPM119A-R2 and JPM121A: EIA/TIA-568A

Connectors — Equal numbers of front-mounted RJ-45 female and rear-mounted Type 110 female:
JPM110A-R2, JPM115A-R2: 16;
JPM111A-R2, JPM116A-R2: 24;
JPM112A-R2, JPM117A-R2: 32;
JPM113A-R2, JPM118A-R2: 48;
JPM120A, JPM121A: 64;
JPM114A-R2, JPM119A-R2: 96

Material — Rolled-edge anodized aluminum

Size — JPM110A-R2, JPM111A-R2, JPM115A-R2, and JPM116A-R2: 1.8" (1U) H x 19"W x 1.6"D (4.6 x 48.3 x 4.1 cm);
JPM112A-R2, JPM113A-R2, JPM117A-R2, and JPM118A-R2: 3.5" (2U) H x 19"W x 1.6"D (8.9 x 48.3 x 4.1 cm);
JPM114A-R2, JPM119A-R2, JPM120A, and JPM121A: 7" (4U) H x 19"W x 1.6"D (17.8 x 48.3 x 4.1 cm)

Weight —

JPM110A-R2, JPM115A-R2:
Net: 0.7 lb. (0.3 kg);
Shipping: 1.6 lb. (0.7 kg);
JPM111A-R2, JPM116A-R2:
Net: 0.8 lb. (0.4 kg);
Shipping: 1.8 lb. (0.8 kg);
JPM112A-R2, JPM117A-R2:
Net: 1.3 lb. (0.6 kg);
Shipping: 2.7 lb. (1.2 kg);
JPM113A-R2, JPM118A-R2:
Net: 1.6 lb. (0.7 kg);
Shipping: 3 lb. (1.4 kg);
JPM120A, JPM121A:
Net: 2.4 lb. (1.1 kg);
Shipping: 5 lb. (2.3 kg);
JPM114A-R2, JPM119A-R2:
Net: 3.1 lb. (1.4 kg);
Shipping: 5.8 lb. (2.6 kg)

2. Introduction

The Black Cat CAT5 Patch Panels are designed to be high-performance mainstays of wiring sites for Category 5: rugged enough for everyday handling in demanding locations and applications, yet simple and convenient enough for anyone to work with. Some of their more important features include:

- A lot of ports in not a lot of surface area. Get 16 or 24 ports on a Panel one rack unit (1U) high, 32 or 48 ports on a Panel 2U high, or 64 or 96 ports on a Panel 4U high.
- A higher printed-circuit-board capacity than most other patch panels, which makes the Black Cats more reliable at Category 5 data rates.
- Sturdy rolled-edge anodized-aluminum construction.
- Type 110 connectors on the back of the Panel that don't protrude—so they don't snag cables—and that are specially arranged so that you can punch cables in a pair-by-pair sequence, preserving pair twist to within a half-inch (12.7 mm) of the connectors, as required by EIA/TIA-568.
- Come with a rackmountable Cable Management Bar, sets of cable ties and Type 110 connector caps, a sheet of label-paper strips and two adhesive-backed plastic sheaths.

3. Installation

3.1 The Complete Package

Before you install the Black Cat CAT5 Patch Panel, make sure you received everything that should come with it:

- The Black Cat CAT5 Patch Panel itself.
- One or more bags containing enough Type 110 connector caps to protect the 110 (rear) side of all of the Panel's connectors.
- A bag containing two or four 10/32" screw-and-washer pairs that can be used to rackmount the Panel.
- Cable ties.
- A Cable Management Bar (CMB) that can be rackmounted above or below the Panel.
- Two 10/32" screw-and-washer pairs that can be used to rackmount the CMB.
- A small sheet of perforated strips of heavy paper that can be used to make cable-identification labels.
- Two adhesive-backed plastic sheaths that can be stuck to the Panel or the CMB to hold and protect cable-identification labels.

If you didn't receive something, or if anything arrived damaged, call Black Box at (724) 746-5500 right away.

3.2 Rackmounting the Patch Panel

To install the Black Cat CAT5 Patch Panel in a rack, hold the Panel so that at least two of the mounting holes in its "ears" are positioned over mounting holes in the side rails of your rack.

If the rack's mounting holes are not threaded, or are pre-threaded for screws with a diameter of 10/32", you can use the screws and washers that we include with the Panel to mount the Panel on the rack. (The two screws and two washers we included are sufficient to hold the Panel on; one screw and washer can go in either mounting hole on one side of the rack, and the other screw and washer can go in either hole on the other side of the rack. If you have two more 10/32" screws and washers and want to use them in the other two holes, feel free.)

If the rack is pre-threaded for screws of a different width, you will have to use your own screws to mount the Panel.

Place the washers on the screws, push them through the Panel's mounting holes, and push or screw them through the rack's mounting holes. (If your rack is not pre-threaded, you will need "cage nuts" or "spring nuts" of the appropriate width—10/32" for the screws we provide—to secure these screws from the other side of the rack. If your rack *is* pre-threaded, you could use regular nuts to secure the screws, but they will probably stay in place without requiring nuts.)

3.3 Rackmounting the Cable Management Bar (Optional)

If you like, you can also rackmount the Cable Management Bar, an optional companion piece to the Black Cat CAT5 Patch Panel. (The Bar holds hardwired cables in place, in groups of as many as eight cables.)

Hold the Bar so that the "eyes" of its mounting hooks are positioned over mounting holes in the side rails of your rack above or below those you used to mount the Panel itself.

If the rack's mounting holes are not threaded, or are pre-threaded for screws with a diameter of 10/32", you can use the two screws and washers that we include with the Bar to mount the Bar on the rack. (If the rack is pre-threaded for screws of a different width, you will have to use your own screws to mount the Bar.)

Place the washers on the screws, push them through the eyes of the Bar's mounting hooks, and push or screw them through the rack's mounting holes. (If your rack is not pre-threaded, you will need "cage nuts" or "spring nuts" of the appropriate width—10/32" for the screws we provide—to secure these screws from the other side of the rack. If your rack *is* pre-threaded, you could use regular nuts to secure the screws, but they will probably stay in place without requiring nuts.)

3.4 Wiring the Patch Panel

CAUTION!

The Black Cat CAT5 Patch Panel is intended to be employed on the protected side of a listed primary telephone protector. Wiring it in such a way that it is not protected by a listed primary telephone protector could lead to the damaging or destruction of the Panel, your site's Category 5 wiring, all devices connected to your site's Category 5 wiring, all devices electrically connected to those devices, and your site's electrical system.

To hardwire (permanently attach) a Category 5 cable to the Black Cat CAT5 Patch Panel, take these steps:

1. It's very important that you plan your wiring scheme ahead of time. Laying out which cables you want to attach to which ports, and how you want to group and organize your cables (with the included cable ties and/or cable guide, or whatever), will save time and effort and prevent rewiring headaches.
2. If you are using the optional Cable Management Bar, thread the end of the cable through the desired hole in the desired cable-group bracket on the Bar.
3. Remove the outer jacket from the end of the cable. We do not recommend removing the jacket from more than the last half-inch or so of the cable. Do not strip the insulation from any of the individual wires. The wires in the cable must not be thicker than 22 AWG or thinner than 26 AWG.

4. Face the Type 110 (rear) side of the Panel and find the connector you want to use. The connectors are arranged in groups of eight: Viewed from the rear, the connectors with the lowest RJ-45 (front) side numbers (1 through 8) will be on the far right; the next group (9 through 16) will be the second from the right; and so on. The eight connectors in each group are indiviually numbered on the Type 110 side from 1 to 8, starting with "1" in the upper right-hand corner and zigzagging up and down to "8" in the lower left-hand corner. So, for example, on a 32-port Panel, the Type 110 connector for port 19 will be in the third group of eight from the right, and will be the second connector from the right in the upper row (the connector labeled "3"). See Figure 3-1 below.

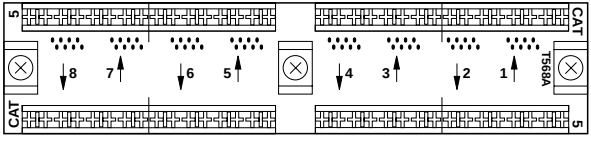

Figure 3-1. A group of eight Type 110 connectors on the back of an EIA/TIA-568A model of the Panel.

NOTE

When you attach the wires in your Category 5 cables to the Black Cat CAT5 Patch Panel, be careful not to let the pairs untwist more than a half-inch (13 mm). Because NEXT and other electrical performance features are affected by twist, in EIA/TIA-568 the EIA and TIA specify "preserving wire twist as closely as possible to the point of mechanical termination." In addition, TSB-40 declares that "the amount of untwisting in a pair as a result of termination to connector hardware shall be no greater than 13 mm (0.5 inches) for Category 5 and shall be no greater than 25 mm (1.0 inch) for Category 4 cable."

5. Place the ends of the eight individual wires in the cable across the contact gaps in the Panel's Type 110 connector, with the ends of the wires toward the *outside* (toward the *edge* of the Panel). The white-with-colored-stripe (white/colored) wire must be placed to the left of the correspondingly colored prong and the colored-with-white-stripe (colored/white) wire to the right of the prong. For example, place the white/brown wire to the left of the brown prong and the brown/white wire to the right of the brown prong.
6. Position an Type 110 punchdown tool over one of the wires, with the tool surface labeled "CUT" toward the *outside* (toward the *edge* of the Panel), as shown in Figure 3-2 on the next page.

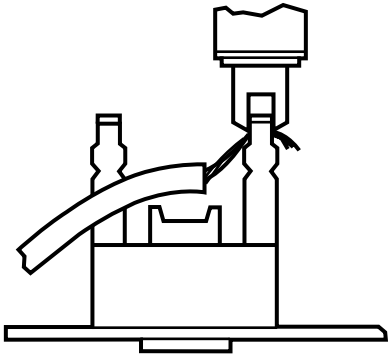

Figure 3-2. Using a punchdown tool to hardwire the Panel.

7. Push the tool and punch the wire down. The tool will force the wire into the contact gap and lop off the wire's protruding end.
8. Repeat steps 6 and 7 for each of the seven other wires.

That's all there is to it. Repeat this process for all of the cables you would like to hardwire to the Black Cat CAT5 Patch Panel.

Once you have finished hardwiring cables, put a connector cap on each of the Panel's Type 110 connectors that you have left empty. Now you can attach and remove patch cables terminated with RJ-45 plugs to and from the active sockets on the front of the Panel at will.

3.5 Organizing the Cables (Optional)

If you haven't installed the Cable Management Bar but would still like to group the cables, or at least keep them together for running elsewhere, you can tie bundles of them together with the included cable ties.

Whether you've installed the Bar or not, you can use the included sheet of label strips and plastic sheaths to identify which port or cable is which. First, remove the covering from the adhesive backing on one or both of the plastic sheaths, then mount the sheath(s) on the Panel and/or the Bar. Then tear off a strip of the label paper and fold it in half along the crease; cut it into small sections if you want to label ports, cables, or cable groups with individual squares of paper. Write, stamp, color-code, etc., the label paper as you like and slide it into one of the sheaths to the desired position. (If you would like to make more labels than there is paper for, or if you need to replace the labels later, you can make more labels from any thick or well-folded paper.)

A more elegant way to identify ports is by using Color Icons of various colors (FT940 through FT948). The Icons are designed to snap right into the Panels directly above their RJ-45 ports. Call Black Box if you would like some of these.

4. Troubleshooting

Once it has been mounted and wired properly, our Black Cat CAT5 Patch Panel should operate continuously without user intervention. If something goes wrong, follow the procedures outlined in this chapter.

4.1 Contacting Black Box

If your Black Cat CAT5 Patch Panel seems to be malfunctioning, *do not attempt to alter or repair the unit*. If contains no user-serviceable parts. Call Black Box Technical Support at (724) 746-5500; the problem might be solvable over the phone.

Before you call, make a record of the history of the problem. We will be able to provide more efficient and accurate assistance if you have a complete description, including:

- the nature and duration of the problem.
- when the problem occurs.
- the components involved in the problem.
- any particular application that, when used, appears to create the problem or make it worse.

4.2 Shipping and Packaging

If you need to transport or ship your Black Cat CAT5 Patch Panel:

- Package it carefully. We recommend that you use the original container.
- If the shipping is return- or repair-related, contact Black Box to get a Return Materials Authorization (RMA) number. If you are returning the Panel, include everything you received with it.

NOTES