

Blackboard

transaction *System*

CR3000 Copy Reader

Installation Guide



Commerce Suite



Blackboard

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CR3000 INSTALLATION GUIDE

The CR3000 Copy Machine Reader interfaces with Blackboard Transaction Systems (Unix or Windows) using a RS-485 or IP/Ethernet connection. The CR3000 can be configured to communicate with a variety of copy machines.

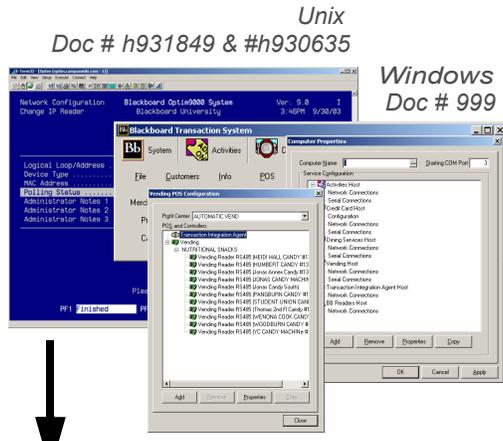
This guide's installation instructions include:

- [Install the Reader](#) (page 3) instructions
- [Configure the Reader](#) (page 6) instructions
- [Connect the Reader and Test](#) (page 9) instructions
- [CR3000 Transaction](#) (page 11) instructions
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What you get:



Installation Overview



2. Install the Reader (page 3)



3. Configure the Reader (page 6)



4. Connect the Reader and Test (page 9)



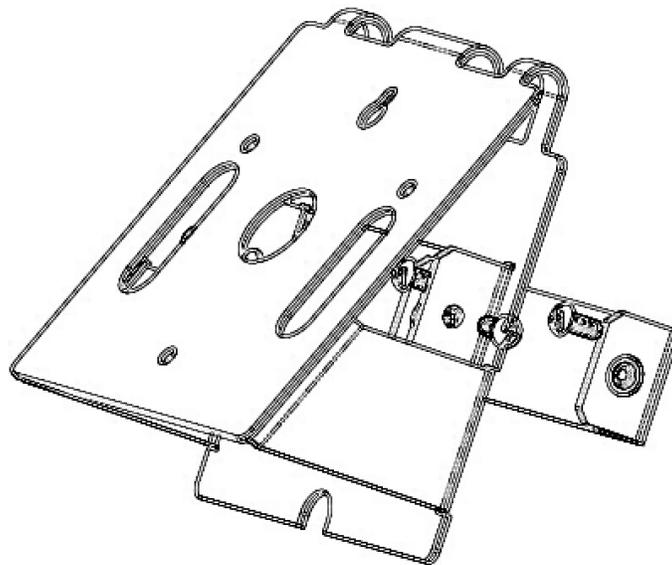
INSTALL THE READER

The CR3000 reversible mounting bracket can be attached to the back of the reader for mounting to either a wall or horizontal surface. Mounting holes on the bracket allow installation directly to a standard single gang box if the unit is to be wall mounted.

The CR3000 mounts using 3 different sizes of tamper-proof fasteners. These fasteners require special hex wrenches for installation, and are available in the Blackboard Configuration Kit (COM/CONFIGKIT).

The interface cable (a 2x6 connector to a male DB15 connector) provides the enable output signal from the CR3000 to the copy machine and the input signal for the copy count. If the copy machine does not support the DB15 connector, then a hard wire connection must be made to the copy machine.

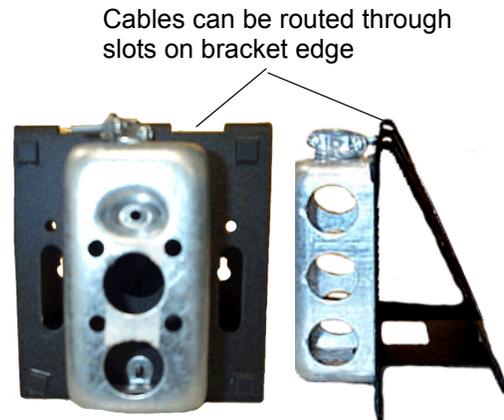
Note: Depending on what was shipped in the package either the mounting plate (PN 044-059-046) or the mounting plate (PN 044-059-071) along with a mounting bracket (PN 044-059-072) are included. See [Mount the Reader](#) (page 4).



CR3000 Mounting Bracket

Mount the Reader

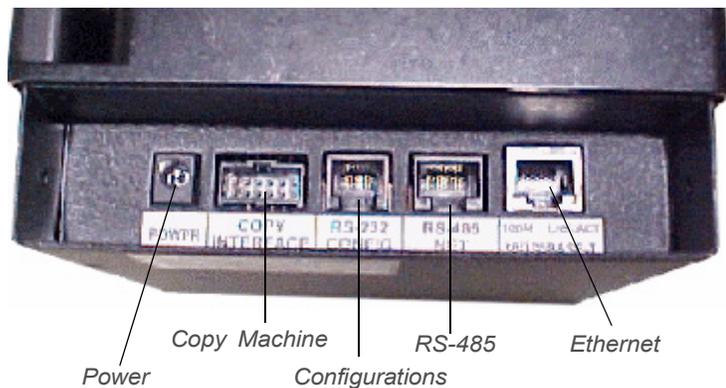
- 1 Power off the copy machine.
- 2 Find a location on a single gang box, a wall, the copier, a table, or elsewhere to mount the CR3000.
The Reader should not interfere with access to paper trays, service panels, or copy machine lid and should provide adequate space above and below to allow card swipes.



- 3 For wall-mount applications, attach the mounting bracket to the single gang box or other surface, using two 6-32 screws from the hardware kit.
- 4 Install two 8-32 x 3/8" screws from the hardware kit into the threaded holes on back of the Reader.
Install the screws partially so the screw heads can slide in the keyholes of the mounting bracket.
- 5 Slide the CR3000 onto the mounting bracket so the unit slides into the mounting keyholes.
- 6 Use the tamper-resistant hex wrench to secure the CR3000 to the mounting bracket.

Connect the Reader Cables

- 1 Remove the CR3000 cable cover (by removing the two tamper-resistant screws) to install cables.
- 2 Plug the 12VDC power supply into the CR3000 Power Port.
- 3 Connect one end of the supplied CAT5 network cable into the Reader:



- **10/100 BASE-T:** Ethernet/IP connection
- **RS-485 NET:** RS-485 connection

An IP Converter (IPC) is required for RS-485 or direct IP Connection with Universal Edition.

STOP! Do not connect the other end of the network cable to the wall plate until the reader configuration has been completed.

- 4 Connect the interface cable 2x6 connector to the CR3000 copy interface port.
- 5 Re-install the cable cover on the CR3000 and secure it with the two tamper-resistant screws.
- 6 Route the cables from the CR3000 enclosing cables in conduit or wire molding to avoid damage or tampering. The reversible mounting bracket has several slots and holes to allow various options for routing the cables.

All cables carry computer data and are susceptible to electrical noise that can corrupt the information. Avoid routing cables near electrical equipment, including fluorescent lights and motors. A certified copy machine technician should make the connections to the copy machine.

Connect the Interface Cable to a Xerox™ Copy Machine

- 1 Connect the DB15 connector to the copy machine.
DB15 is a common connection for third party card readers to interface to Xerox™ copy machines. Xerox usually provides a dry contact type copy pulse.

Connect the Interface Cable to a NON-Xerox™ Copy Machine

- 1 Cut the DB15 connector from the interface cable.
- 2 Remove approximately 2 inches of the outer sheath of the cable to expose the conductors.
- 3 Hard-wire the conductors to the copier interface using the butt splices in the hardware kit.
The CR3000 supports both Dry Contact and Voltage pulse interfaces. Refer to your copier machine service manual to determine the interface type and to the tables below for the connections.
- 4 Plug in the CR3000 and power-up the copy machine.

Reader to Copy Machine Connections

Wire color Interface cable p/n 044-042-040	DB15 Connector	Dry Contact / Relay Contact Pulse	Voltage Pulse (voltage level: 5 VDC to 30 VDC)
WHITE	Pin 3	Enable (common of relay)	Enable (common of relay)
GREEN	Pin 1	Enable (NO of relay)	Enable (NO of relay)
BLUE ^a	N/C	Enable (NC of relay)	Enable (NC of relay) *
BLACK	Pin 8	Copy + (collector if opto-isolator output)	Copy pulse V-
RED	Pin 9	Copy – (emitter if opto-isolator output)	Copy pulse V+

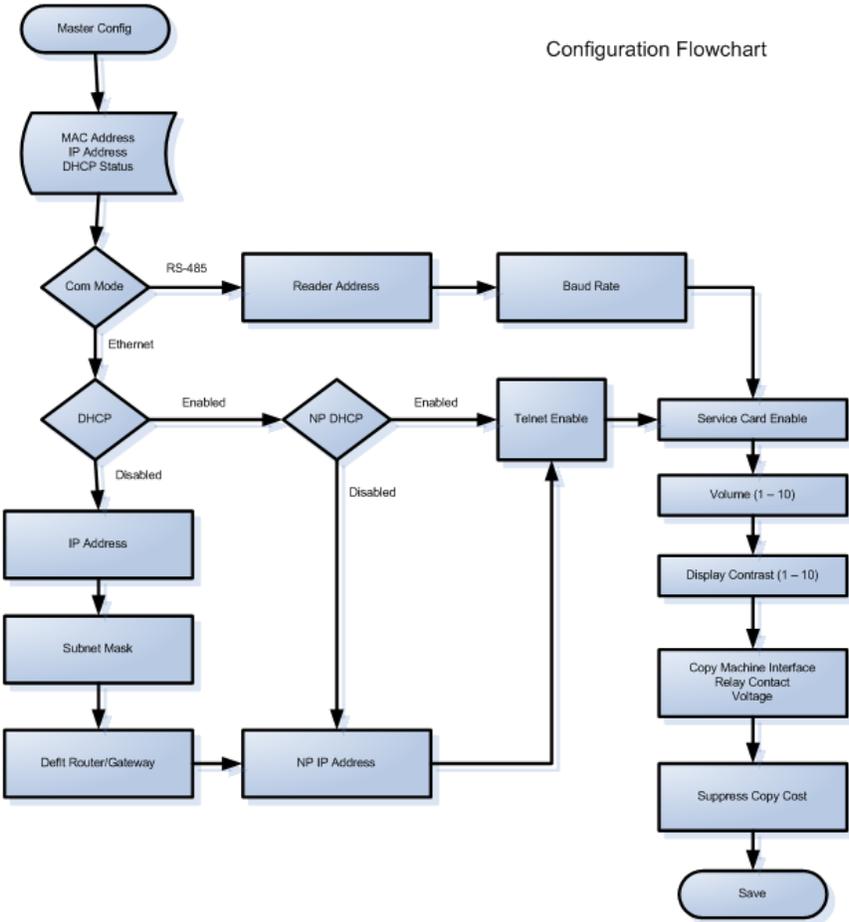
a. Normally not used.

CONFIGURE THE READER

The CR3000 does not need to be configured if using the default settings:

- DHCP enabled
- NP (host) IP address assigned by DHCP server
- Telnet enabled
- Service Card enabled
- Voltage Copy Machine Interface
- Copy cost display not suppressed

CONFIGURATION SETTINGS



CONFIGURATION METHODS

Unless using the default settings, the Reader needs to be configured with an IP address or for RS-485 communications using one of three configuration methods:

- **Front panel** (initiated by swiping a service card)
- **RS-232** using a RS-232 terminal (such as a computer and Hyperterminal software & Configuration Cable)
- **Telnet** via IP if using Ethernet connections

Configure CR3000 (using Front Panel & Service Card)

- 1 Swipe the specially encoded service card.
- 2 Press the **1** key on the Reader to start the configuration process.
- 3 Adjust each of the configuration settings as appropriate using the numeric keys on the Reader (see the Configuration Flowchart on the previous page).
 - **1** = advance through settings
 - **2** = increment setting
 - **5** = decrement setting

*To update the IP address, etc., press the **2** key when the parameter is displayed, then type in the number using zeroes (**0**) as placeholders.*

If no key activity is detected within 30 seconds during configuration, the Reader returns to normal mode.

- 4 To save the new settings and reboot the Reader, press **ENTER** when prompted.

The reader may be offline for several minutes until it resynchronizes with the Host. An asterisk () displayed in the second to the last position of the first line indicates the reader is offline.*

Configure CR3000 (using Config port)

- 1 Connect a cable from a computer's serial port to CR3000 Config port.
Cable connections are shown in Table .
- 2 Open a terminal program (such as Hyperterminal) and establish connection settings:
 - 9600 baud
 - 1 stop
 - no parity
 - no flow control

Command Reference -	
config	- Configure network parameters
showconfig	- Display current configuration
status	- Display reader status
ping <ip_addr>	- Ping another IP device
netstats	- Display network statistics
netclear	- Clear network statistics counters
password	- Change config utility password
ipreboot	- Reboot reader
exit	- Log out of session

Type command, followed by 'Enter' key>

- 3 Login using the default password: **IPrdr4U**.
The password is case sensitive. Consider changing the password.
- 4 At the prompt, type **config**, and then press **ENTER** to start configuration.

Other commands are available on the menu (see figure above).

RS-232 Config Port Connection

CR3000 Config Port (RJ-12)	PC Serial Port DB9 Connector	Signal
Pin 1	Pin 5	Ground
Pin 3	Pin 3	Receive (RX)
Pin 4	Pin 2	Transmit (TX)

Configure Controller Boards (using Telnet)

- 1 Open a Telnet session to the CR3000's IP address.
- 2 Login using the default password: **IPrdr4U**.
The password is case sensitive. Consider changing the password.
- 3 At the prompt, type **config**, and then press **ENTER** to start configuration.

Other available commands are displayed on the menu (see figure above).

Restore Factory Default Settings

If you forget your password, you can reset the Reader to the default factory settings and default password.

- 1 Connect a computer to the Reader via the Reader's RS-232 CONFIG port, and unplug the power cable.
- 2 Plug in the power cable to power up the Reader, and immediately type at least three ASCII x characters.

Typing "xxx" within 3 seconds of the Reader boot process will reset the Reader to the default settings.

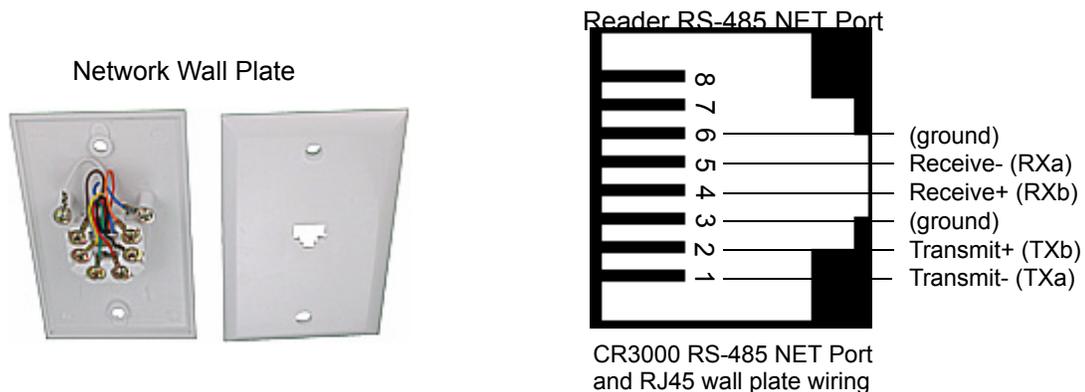
CONNECT THE READER AND TEST

Connect the Reader

- 1 After configuring the Reader, connect the other end of the CAT5 network cable into either a 10/100 Base-T network jack or a RS-485 wall plate, as appropriate.

The Reader is supplied with a straight-through CAT5 patch cable. The wall plate should be a RJ45 with connections shown below. If connecting to a 2-wire RS-485 communication loop (typically for Windows Transaction System networks), consider replacing a RJ12 or RJ11 wall plate with a RJ45 wall plate and connecting the RS485+ wire to pins 2 and 4 and the RS485- wire to pins 1 and 5.

Wall plates with screw terminals (versus punch-down) are useful for daisy chains and are sold by Blackboard (Part #COM/MHWP2).



Test the Reader

- 1 Swipe a valid account card in the reader, and then press the **Start** button on the copy machine.
*The red LED above the Reader's **Done** key comes on immediately after the card is swiped; the display indicates the number of copies made.*

- 2 Verify copy counts are accurate.
If the copy count is zero after a copy is made, then the reader did not detect the copy pulse. Verify the reader has been configured for the correct interface type (voltage pulse or dry contact).
If changing the configuration mode does not result in the copy pulse being detected, verify the polarity is not reversed on the two Copy interface signals.

COMM MODE SELECTION

OVERVIEW:

The 'Comm Mode' selections on the CR3000, LC3000 and VR/MDBMP have been changed a few times in the history of the products.

When a given communication mode is selected, the unit reboots and starts a specific software executable type based on the communication mode chosen. Because the readers have 3 different software types loaded in them (and they can be individually updated when the unit comes online with a host), it is possible for the same unit to display different 'Comm Mode' selections depending on the current selection (and thus the current software type running).

SUMMARY:

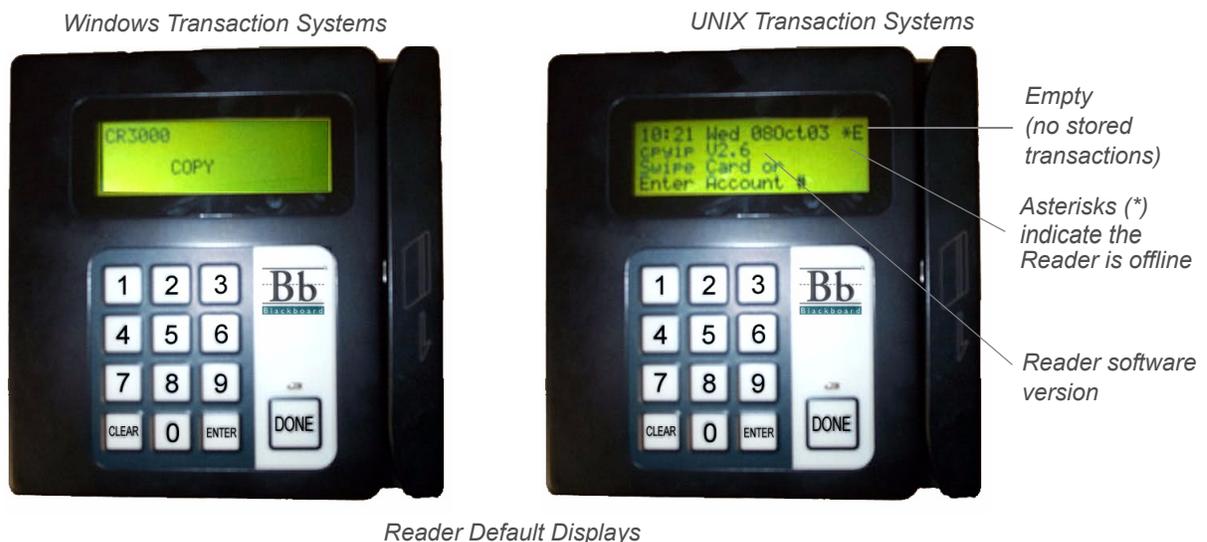
To correctly select the 'Comm Mode' for a CR3000, LC3000 or VR/MDBMP, you must determine which Selection List the currently running software has (by cycling through all the choices), then make the correct selection for the communication protocol you wish to use.

CR3000, LC3000 and VR/MDBMP 'Comm Mode' selections:

	Unix/Bb RS-485 protocol	Bb IP/Ethernet protocol	Danyl protocol
Selection list 1	RS-485	Ethernet	---
Selection list 2	485-UE	IP	485-WE
Selection list 3	485-Unix	IP	485-UE
Selection list 4	485-Bb	IP	485-Danyl

CR3000 TRANSACTION

- 1 Cardholder swipes card.
- 2 CR3000 queries BbTS server for validity and funds available.
- 3 Copy machine is enabled.
CR3000 counts the copies made and displays the accumulating cost.
- 4 Cardholder presses **Done** on the Reader (or the timeout period configured on the server expires).
- 5 Copy machine is disabled.
- 6 The number of copies and total transaction amount is sent to the **BbTS** server.
- 7 Reader displays cardholder balance.
- 8 (Unix only) To override the card account, the cardholder enters a 4-digit account number and presses **Enter** on the Reader, prior to swiping a card.



CR3000 FEATURES & SPECIFICATIONS

CR3000 Features

- Reader works with Unix or Windows **Blackboard Transaction Systems**
- Interfaces with most copy machines
- Communicates to the host via RS-485 or 10/100Base-T ethernet (IP)
- Small size mounts easily on copier or on adjacent wall
- Copy interface type is software selectable (no DIP switches)
- Display visible in all light conditions
- Graphics display supports 4 lines X 20 characters text
- Adjustable volume setting
- Configuration via keypad/display, CONFIG port or telnet
- Keypad/display and telnet access can be disabled
- All IP communications encrypted and authenticated for data security
- Stores up to 2500 transactions offline
- Tracks cash sales
- Displays balance, account warnings and other messages following copy session

CR3000 Specifications

Physical Size: 5.4" W x 5.6"H x 2.0" D (without bracket) 1.5 pounds

Input Power: 12-24VDC 400mA max (max 5W)

Copy Enable Relay: 1A 30VDC

Copy Pulse: Dry Contact: 10 ohms max resistance, capable of 15mA
Voltage: 5-28VDC, capable of 15mA

Operating : Temperature: 0 to +60 degrees Celsius
Relative Humidity: 0 to 95 percent, non-condensing
Altitude: 0 -10,000 feet

Non-Operating : Temperature: -20 to +70 degrees Celsius
Relative Humidity: 0 to 95 percent, non-condensing
Altitude: 0 - 35,000 feet

This device contains an integrated lithium battery. There is a risk of fire if the battery is replaced with an incorrect type. Proper disposal of a used battery is essential. Please follow the manufacturer's instructions.

APPENDIX

Configuring Multi-Pricing

The latest version of CR3000 software now supports multi-pricing. This allows the copy reader to charge different pricing based on color and/or paper size. This feature uses the two spare inputs provided on the machine interface connector to qualify the paper size and/ or color.

Multi-pricing must be configured locally on the reader. This requires connecting to the reader using either a telnet session or through the RS-232 config port. Reference section 'Configure the Reader'.

Login to the CR3000 using the default password: IPrd4U. Enter 'prices' at the command line. The software will prompt if multi-pricing is to be enabled. Enter a 'Y' to enable multi-pricing. Next, configure the CR3000 for the Copy machine interface type. The interface can support either 'voltage' or 'relay' to enable voltage pulse or dry contact.

The cash and card price values must be entered for each of the 4 possible states on the interface inputs. Pricing must be entered in 1/10th of cents. Both a cash and card value must be entered for each of the four states. To disable cash transactions, a value of zero must be entered for the cash price of each Copy Type. The Card Price for each Copy may be zero or non-zero. After all values have been entered, type 'Y' to accept the changes.

To display the current multi-price settings, type 'showprices' at the command line. This will display the cash and card amounts in 1/10th of cents if multi-pricing has been enabled.

LANIER MFP AND COPIERS

The interface connection between the CR3000 and the Lanier Copier/MFP machines is shown in the following table. A 2x10 connector (A1 to A10 for row 1 and B1 to B10 for row 2) is provided on the Lanier machine. The table below shows the connection points when using the interface cable (p/n 044-042-040) that is provided with the CR3000. The CR3000 cable has a 2x6 connector for connecting to the CR3000 and a DB-15 connector at the opposite end. The table includes wire colors to allow splicing wires if the DB-15 connector must be removed.

Contact your Copy Machine supplier for the availability of a direct connect interface cable.

Wire Color	CR3000 Pin No.	Lanier Pin No.	Signal Description	Interface Type
GRN	10	A9	Copy Enable	N/A
WHT	9	B9		
RED	1	A10	Copy Count	Voltage Pulse
BLK	2	B10		
ORG	3	A4	Modifier 1 (B/W or Color)	Voltage Pulse
BRN	4	B4		
YEL	5	A7	Modifier 2 (Paper Size)	Voltage Pulse
VIO	6	B7		

After wiring has been completed, the CR3000 must be configured as follows to enable multi-pricing:

- 1 Enter **prices** at the command prompt.
- 2 Enter **y** to enable copy multi-pricing.
- 3 Enter **voltage** for the input type.
- 4 Copy Type Pricing:

Enter cash and card values for Copy type 0 pricing – this type is 11x17 paper size, Color.

Enter cash and card values for Copy type 1 pricing – this type is 11x17 paper size, Black & White.

Enter cash and card values for Copy type 2 pricing – this type is 8.5 x 11 paper size, Color.

Enter cash and card values for Copy type 3 pricing – this type is 8.5 x 11 paper size, Black & White.

Note: If the Copier will use only one paper size, the cash and card values for Copy types with different paper size modifiers should be the same amount. For Example if only 8.5x11 paper size will be used, but color and B/W copies are supported, then Copy type 1 and Copy type 3 pricing would be set to the same amounts. This will effectively ignore the paper size modifier, since either state yields the same price amount.

- 5 Enter **y** to accept the changes.