

9000 series Keyboard User Manual

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Introducing the Cary 9000 Series Keyboard

The Cary 9000 is a Point of sale keyboard designed for demanding operations in retail and transaction processing environments. The 9000 key layout is optimized for retail conditions in grocery, convenience store, mass merchandise, and for financial transaction terminals as follows:

- 24 hour - 7 day per week continuous operation is expected for the life of the product
- Software configurable enhanced retail keyboard with relegendable keycaps
- Sealed keyboard capable of withstanding spills and the demands of retail operation
- Small system footprint occupies the minimum amount of retail counter space
- Added security through a multi-position style keylock with graduated access physical keys
- Retail peripheral support for magnetic card reader units, bar code scanners, MICR port, and cash drawers
- Simple cabling and attractive counter presentation

Cary 9000 Overview

The Cary 9000 housing includes the following sub-assemblies;

- i) Keyboard/Upper Case
- ii) Magnetic Card Reader module
- iii) Keyboard controller logic card
- iv) Keyboard Lower Case.
- v) Optional membrane expansion keyboard.

Before You Begin

You should always use your Cary 9000 in a safe and regulated environment.

Operating Conditions

The Cary 9000 has been designed for 24-hour/7-day-per-week operation in retail checkout operating conditions.

Environmental Conditions

The Cary 9000 has been engineered to operate within its specified environment; in retail stores. The design reliability targets were chosen to provide integrity levels similar to those of telecommunication products that must maintain high "up" time and long operating life.

Heat / Air Convection / Cooling

The Cary 9000 requires no cooling fans.

RFI Emission FCC Class "B"

INFORMATION FOR USERS

THIS EQUIPMENT HAS BEEN TESTED AND FOUND TO COMPLY WITH THE LIMITS FOR A "CLASS B" DIGITAL DEVICE, PURSUANT TO PART 15 OF THE FCC RULES. THESE LIMITS ARE DESIGNED TO PROVIDE REASONABLE PROTECTION AGAINST HARMFUL INTERFERENCE WHEN THE EQUIPMENT IS OPERATED IN A COMMERCIAL ENVIRONMENT. THIS EQUIPMENT GENERATES, USES, AND CAN RADIATE RADIO FREQUENCY ENERGY AND, IF NOT INSTALLED AND USED IN ACCORDANCE WITH THE INSTRUCTION MANUAL, MAY CAUSE HARMFUL INTERFERENCE TO RADIO COMMUNICATIONS. OPERATION OF THIS EQUIPMENT IN A RESIDENTIAL AREA IS LIKELY TO CAUSE HARMFUL INTERFERENCE IN WHICH CASE THE USER WILL BE REQUIRED TO CORRECT THE INTERFERENCE AT HIS OWN EXPENSE.

Safety

Always turn the power off prior to attaching or detaching power or signal cables, peripheral devices, or opening any housings.

This product contains a Lithium battery that represents a risk of fire, explosion, or severe burn. Replacement, when required, should be performed by a trained service technician. Disposal should comply with local solid waste regulations.

Static Electricity (ESD): Cary keyboards have been designed to withstand the rigors of day-to-day use, including superior ESD protection. Care, however, should be exercised when touching exposed cables. Static transmitted through these cables can damage sensitive electronics in the Cary 9000 or in attached peripherals.

When installing internal options or when undergoing service, proper ESD prevention techniques should be used. (Grounded wrist straps or anti static mats.)

Technical Highlights

Keyboard

- 57 programmable, reconfigurable keyswitches.
- Optional 56 programmable reconfigurable keyswitches on membrane expansion module with removable paper legend inserts.
- Keycap kit includes; numeric pad, single dual and quad sized keys, multi-colored labels and clear lenses.
- Rugged, splash and dirt-resistant design.
- High degree of protection from ESD.
- Easy to configure in the field. Unique design allows any keycap to be re-positioned anywhere on the array. No switch or stabilizer changes are required.
- Internal 256kbit non-volatile memory.
- Four position keylock with graduated security. Optional up to 8 positions.
- Internal programmable beeper.
- Available with AT standard DIN (90xx) or OS/2 style Mini DIN (91xx) connectors.

Peripherals

- Standard internal dual or optional three track MSR.
- Second keyboard port, AT or PS/2-compatible.
- Internal wedge.
- Scanner port (nondecoded) standard. Decoding is available as an option.
- Optional MICR port.
- Optional barcode decoder (wand, laser, OCIA or 4680).
- Optional optically isolated outputs for cash drawer or security video camera.

Programmable Features

The 9000 series Keyboard Programming Utility (included) supports the following features: A keyboard programming reference manual is also provided on the diskette.

- "Total Soft" Architecture, both configuration and firmware are programmable. Allows for in-store upgrades or customized peripheral interfaces.
- Download/upload via PC keyboard port or serial scanner port.
- Each key programmable with a variable length string.
- Five level Cary^{3D} memory.
- Auto repeat (TYPEOMATIC) and audible beeper selectable on a per key basis.
- Advanced variable length Macro capability allows extensive data manipulation on all keyboard, or peripheral programmable strings.
- Enhanced Wedge capabilities.
- Pollable Keylock supports programmable macros, key output suppression based on keylock position and Cary^{3D} level shifting.

The Cary 9000 keyboard controller supports features including:

- Full wedge capability
- Up to five memory levels actuated by keylock or keyswitch
- Both macro and firmware programming are field downloadable
- Upload and polling capabilities

Keyboard programming is covered in depth in the KEYBOARD PROGRAMMING MANUAL contained on Cary Utility Disc #1. This software allows you to configure all aspects of the keyswitches and other peripherals included in the keyboard section. Cary keyboards are sophisticated devices and can be configured to make transaction processing faster, more reliable, and with greater input accuracy. It is recommended that you read the manual to familiarize yourself with the optimum use of the keyboard.

Physical Keyboard

The Cary 9000 keyboard includes the following physical devices:

Keyswitch Matrix

The switch matrix consists of 57 sealed keyswitches. These are arranged in six banks to form a traditional "Big Ticket" retail format keyboard (refer to Figure 1-1). The tactile "feel" of the keyswitch array has been engineered for optimum ergonomics at retail counter heights and allows for alphanumeric data entry in an upright position.

Cary provides three sizes of keycaps:

Single size Either double shot (legend molded in) or relegendable (with replaceable legend inserts).

Dual size Relegendable (with replaceable legend inserts)

Quad size Relegendable (with replaceable legend inserts)

Cary's unique switch design lets you install any keycap anywhere on the array (where physically possible) without the need for spring stabilizers. A keycap removal tool is included.

Keycap Accessory Kit

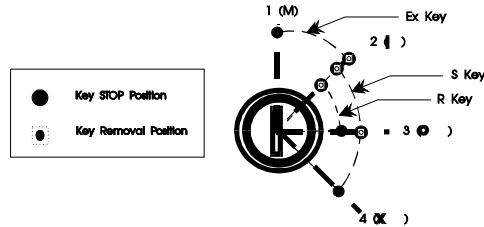
This kit includes the following:

1. Six spare dual keycaps with clear lenses
 2. Two quad sized keycaps with clear lenses
 3. Multi colored pre-perforated label sheets
 4. Keycap removal tool
 5. Two sets of keys for the keylock
- ↳ Details on customizing and programming the keyboard is discussed in detail, later in this section.

Beeper

The keyboard beeper provides audible feedback during keystrokes and provides various error and status messages for the keyboard, the magnetic card reader (MSR), and other peripheral devices.

Retail Keylock



Keylock

Figure 1-2

The four-position keylock is a standard feature on the Cary 9000 to provide graduated security operation. All standard Cary-style operations are supported. (Keylocks with up to eight positions (with various key combinations) are optional.) Two sets of three keys are standard. Figure 1-2 illustrates the various key position combinations available for physical, graduated security applications. Connection is via header JP9 on the keyboard logic card.

Magnetic Stripe Reader (MSR)

The onboard MSR converts all data into keystrokes routed through to the PC keyboard controller. Any combination of the three tracks is available, with ISO track 1 and 2 dual track units standard. The controller has extensive programmable "wedge" capabilities. The MSR sub-assembly includes the MSR reader, housing, and mounting plate. It snaps into the KSU lower case plastics and is connected via header JP12 on the keyboard logic card.

Bar Code Reader Port

The unit is pre-configured with a powered RS-232 port for connection to RS-232 decoded bar code scanners. It supplies power for low amperage, hand-held scanners via the DB9 connector on the back of the keyboard. Decoding is available as an option on a daughter board plugged into the keyboard controller on headers JP7 and JP10. External power can be enabled to pin 9 on the port via jumpers located on JP8 on the keyboard controller. A solid state fuse protects the motherboard on the external power feed pin.

Upstream Keyboard Port

The Cary 9000 has a standard 6-pin Mini DIN (or 5-pin DIN, depending on the model selected) connection for a second PC keyboard. This port can be programmed to actuate only in the "Manager's" keylock position. This versatile port can also be used to integrate external peripheral devices such as a magnetic ink character reader (MICR), scanners, or signature capture devices.

Dual Optically Isolated Input / Output Ports

The Cary 9000 can optionally provide two independently programmable ports (one input one output) that can be used to trigger cash drawers, read drawer status, or activate external security video equipment. Physical connections in the Cary 9000 are located on the logic card. This option requires installing additional circuitry at the factory. Connection is via header JP11 on the keyboard logic card. Please contact the factory for details.

PC Host Port

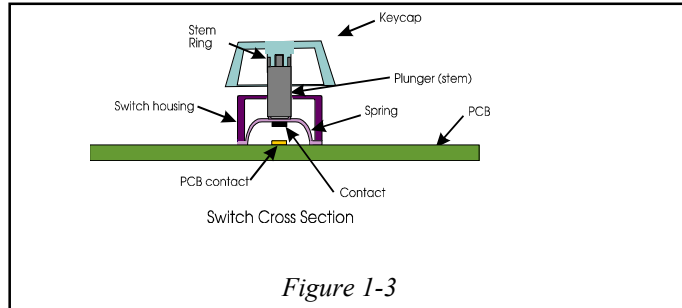
The Cary 9000 communicates to the PC keyboard port host via a standard Din or Mini Din cable depending on the model selected (96xx or 97xx). The cable is connected to header JP6 on the keyboard logic card.

Magnetic Ink Character Reader Port (MICR)

The hardware supports a port for a TTL level input from the MICR option that will be introduced at a later date. (Header JP2).

Customizing Your Keyboard

The following section describes the various physical user-customizable options on the Cary 9000 keyboard.




Reconfiguration

As previously described, the Cary 9000 allows you to place various types and sizes of keycaps anywhere on the keyboard.

The physical layout is separated into specific banks of keys to emulate the "Big Ticket" keyboard layouts found on traditional, proprietary POS terminals.

In applications where the Cary 9000 is replacing an existing POS system, it can be configured to duplicate the existing keycap layout, thereby minimizing cashier re-training issues. For new installations, the keyboard offers traditional POS versatility.

Retail applications use the various sizes of keycaps, uniquely positioned by the user, to facilitate identification of specific, often used keys.

 **Installation** Care should be taken when installing or removing keycaps. Try to keep the keycap perpendicular to the stem. Improper installation can cause distortion of the stem ring and cause the key to stick during operation. Keycap insertion requires a reasonable amount of force.

Removal Keycap removal should be done using the Cary keycap removal tool. Here again, care should be taken to avoid ring distortion caused by torquing the keycap inside the stem ring.

Once the keycap is properly installed, the stem ring re-enforces the connection between the keycap and stem and smoothes its travel in the housing.

POS keyboards differ from traditional keyboards in that they must allow keycaps to be easily removed for reconfiguration, while, at the same time, they must endure extreme physical and environmental abuse. All aspects of Cary keyboards, including the switch design, have been engineered for the retail environment.

↪ **Quick Fix Tip**

If a ring distortion causes a key to stick; it is possible to render a temporary field "Fix". Using an Xacto-style knife, cut away the ring section of the stem (shown in Figure 1-3). Re-insert the keycap onto the X-shaped mounting boss, making sure that no ring segments remain. The key will operate satisfactorily until the stem can be replaced by a service technician.

Relegending

POS keyboards allow the installation of user-definable legends into the keycaps. Cary provides this capability in our single, dual, and quad relegendable keycaps. (Customized double shot, screen or sublimation printed keycaps can be provided. Minimum quantities and tooling charges may apply. Please consult the factory for more detailed assistance)

The accessory kit included with your Cary 9000 keyboard contains various sizes of keycaps, lenses, and multi-color pre-perforated paper for printing labels. The clear, snap-in lenses protect the labels from wear.

When installing the lenses, ensure that the frosted side is up, and align the small side tabs with the insets on the keycap housing (refer to Figure 1-3).

To remove the lenses, insert a paper clip or pen into the holes at the underside of the top face of the keycap and push until the lens disengages.

The Cary Utilities Disk #1 includes a template for using CorelDraw!™ to create professional looking keycap legends. They can be printed on the pre-perforated sheets included with your keyboard.

Other special keycap labeling products such as Keytopper™ by Vertical Market Systems (tel 214 669-2714 or fax 214 669-2867) can also be used.

Both these products allow flexibility in background or text colors (if you're using a color plotter or printer), and also provide excellent black and white results when using a laser or ink jet printer.

☞ CorelDraw!™, allows you to insert graphics or textures should you wish to express your creative side.

☞ Care should be taken when printing to ensure the text is aligned inside the perforated area. Try a photocopy of the perforated paper and print onto it. Then use the "move" utility to adjust your work. Accuracy of less than one millimeter is necessary because you are printing onto small single keytop labels.

Keytop sizes are as follows

Single 14mm x 13.8mm

Dual 22mm x 13.8mm

Quad 22mm x 22mm

These dimensions are useful when using the “Duplicate” command. Set duplicate using the Special menu to ensure that text is spaced accurately between keycaps.

Ports & Connectivity

External Connectors

The Cary 9000 uses a single multi-wire shielded cable connection to the external PC host, available in AT or PS/2 styles

The Cary 9000 rear enclosure provides the following connections:

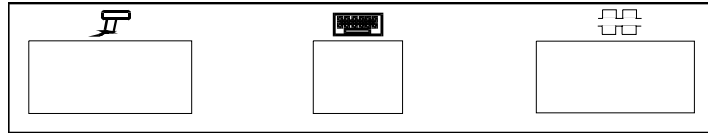





Figure 1-5

Connection	Symbol	Description
External Keyboard		Din or Mini Din on motherboard
Non Dedicated scanner		DB9P on motherboard
Option Serial Port		DB9P on motherboard

SCANNER PORT PIN ASSIGNMENT

DB9 Male

Pin	Description	Pin	Description
1	N/C	6	Connected to Pin 4
2	RXD	7	RTS
3	TXD	8	CTS
4	Connected to Pin 6	9	+5vdc @ 1 A max (fused)
5	GND		