SOFTWARE | HARDWARE | SERVICE

UTC RETAIL™

SERIES M700 POS KEYBOARD

PROGRAMMING GUIDE

Congratulations on your purchase of UTC RETAIL's innovative Series M700 POS Keyboard! The Series M700 is the most powerful, programmable, and feature-rich keyboard on the market. With it, you have a limitless selection of configurations and capabilities. Fully Unified Point Of Sale (UPOS) compatible, the Series M700 features an on-board microcontroller, indicator lights, annunciator, 4-position key switch, and a 3-track magnetic stripe reader (MSR). With an additional port for a serial barcode scanner, it is the perfect complement to thin client or network computing devices with limited input/output.

This guide is designed to acquaint you with the features and functionality of UTC RETAIL's Series M700 POS Keyboard.

Series M700 POS Keyboard Programming Guide

July, 2003

This Programming Guide was prepared by UTC RETAIL for use by Qualified Service Personnel Only. All attempts have been made to ensure that the information presented in this manual is correct. No liability, expressed or implied, will be assumed by UTC RETAIL, its dealers, or affiliates, for damage resulting from the use of this information.

If a unit needs to be shipped to UTC RETAIL for repairs, please return it in the original packing material and shipping container. If you purchased the M700 POS Keyboard through a dealer, and the dealer is unable to answer your questions, please call UTC RETAIL Technical Support at 1.800.349.0546.

This equipment has been tested and found to comply with the limits for a Class “A” 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/her own expense.

UTC RETAIL
100 Rawson Road
Victor, NY 14564
800.349.0546
fax: 585.924.1434
www.utcretail.com

TABLE OF CONTENTS

PRODUCT INFORMATION

The Series M700 POS Keyboard is a point-of-sale (POS) keyboard designed for use with a PC, ASCII terminal, or network computer. The keyboard contains one serial port for scanner connection. The keyboard is fully compatible with OPOS and JavaPOS device drivers, and has a built in 3-track MSR and a 4-position key switch. The Series M700 POS Keyboard is programmable via a utility called ULAP, the UTC RETAIL Layout And Programming Utility. ULAP is available on UTC RETAIL's web site, www.utcretail.com, in the M700 POS driver download section. This utility will run under Windows or Linux, and allows you to program every facet of your M700 Keyboard.

Series M700 POS Keyboard Components

You will find the following components inside the Series M700 POS Keyboard Box:

- Keyboard
- Cables
- Key

Features

Series M700 POS Keyboard Types & Configurations

- Full travel, standard ¾" key QWERTY layout – 121 keys
- Full travel, standard ¾" key matrix layout– up to 126 keys
- All key locations are configurable
- All keys can be permanently printed or re-legendable. Re-legendable keycaps have removable plastic covers for re-legending.
- Standard keyboard configurations, including QWERTY and typical POS layouts, are available. Custom configurations of any number of keys are also available.
- Custom bezel configurations are available. (2 versions only.)

- Remote Programming (from Host)
- All keys can be reprogrammed to output any code.
- Single wide and double wide keys can be placed anywhere on the keyboard.
- Fillers are available for most unused key locations.
- UPOS Keyboard drivers are available.

Magnetic Stripe Reader

- 3-track
- Programmable for prefix, suffix, separators, and audible annunciation
- UPOS drivers available

Key Switch

- 4-position key switch
- Programmable output for each key position
- UPOS Keylock drivers available

RS232 input Port

- Receive only
- Selectable baud rates (2400 bps - 57.6 Kbps)
- UPOS Scanner driver available

Three LED Indicators

- Programmable
- PC Controlled (Scroll, NUM and CAPS lock)

Built-in Annunciator

- Programmable
- Selectable tone and duration

General Specifications

NAME	SPECIFICATIONS
Dimensions	7.85: x 14.7” x 2.97”
Weight	3.95 lbs.
Electrical	135 − 185mA at 5VDC (supplied from host)
Storage Temperature	- 40°to 60℃
Operating Temperature	0°to 50℃
Approvals	FCC Class A; UL recognized (USA and Canada)

Service and Warranty

The Series M700 POS Keyboard comes with a one-year parts and labor warranty. Assistance and customer service is always available from UTC RETAILTechnical Support. If your dealer or service provider cannot answer your questions or provide satisfactory service, please call UTC RETAILTechnical Support. When calling for assistance or service information, please be ready to provide the model number, part number and serial number of the keyboard. This information is found on a decal located on the bottom of the keyboard.

If the keyboard needs to be returned to a repair facility, please use the original packing material and shipping carton.

The address and telephone numbers to be used for assistance, service, and warranty information are:

UTC RETAIL
100 Rawson Road
Victor, NY 14564
800.349.0546
fax: 585.924.1434
www.utcretail.com

PROGRAMMING

The operating parameters of the keyboard must be configured (programmed) remotely from a host computer via the keyboard port. The Series M700 POS Keyboard is programmable via a utility called ULAP, the UTC RETAIL Layout And Programming Utility. ULAP is available on UTC RETAIL's web site, www.utcretail.com, in the M700 POS driver download section. This utility will run under Windows or Linux, and allows you to program every facet of your M700 Keyboard.

Note: All keyboards come from the factory programmed with a default set of parameters.

Run-time Commands

Certain commands can be used during keyboard operation to control specific devices. A summary of the commands and their assigned Function Codes (OP Codes) and mnemonic is as follows:

Note: OP Codes are single 8-bit entities in hexadecimal.

- OP Code A4 - User notes storage (NOTES)
- OP Code A6 – Keyboard click (CLICKED)
- OP Code AD – Send row/column position (RAWED)
- OP Code AE - Secure Keyboard (SECURE)
- OP Code B0 - Indicator Light Command (LIGHT)
- OP Code B1 - Beeper Activation Command (BEEPON)
- OP Code B5 – Reset Keyboard (RESET)
- OP Code B6 - Key switch sending options (KSSND)
- OP Code B7 - Keyswitch Poll Command (KSSTATUS)
- OP Code B8 – MSR sending options (MSRSND)
- OP Code B9 - Enable/Disable Card Reader Command (CARDED)
- OP Code BD – Enable/Disable AUX Serial Port (PORTE)
- OP Code BE - Send Version Information Command (VERSION)

Remote Programming Mode Commands

OP CODE (HEX)	MNEMONIC DESCRIPTION	COMMAND/ACKNOWLEDGEMENT
A4	NOTES Used to store up to 40 characters in the M700 keyboard. Useful for keyboard programming versions.	COMMAND: A4xxxx-xxxxx<CR> A4 = Op Code x = user data <CR> = terminate command (0D hex) ACKNOWLEDGEMENT: NONE
A6	CLICKED Used to enable/disable keyboard click. Outputs a beep for each key press.	COMMAND: A6x<CR> A6 = Op Code x 0 = Off (30 hex) 1 = On (31 hex) <CR> = terminate command (0D hex) ACKNOWLEDGEMENT: NONE
AD	RAWED Used for testing, overrides preprogrammed macros, send actual row/column for each key. EG upper left corner = 1A (2 ASCII characters)	COMMAND: ADx<CR> AD = Op Code x 0 = user codes (30 hex) 1 = row column (31 hex) <CR> = terminate command (0D hex) ACKNOWLEDGEMENT: NONE

OP CODE (HEX)	MNEMONIC DESCRIPTION	COMMAND/ACKNOWLEDGEMENT
AE	SECURE Used to lock keyboard input.	COMMAND: AEx<CR> AE = Op Code X 0 = unsecured (30 hex) 1 = secured (31 hex) <CR> = terminate command (0D hex) ACKNOWLEDGEMENT: NONE NOTE: Value is stored in NVRAM, power cycle does not clear mode.
B0	LIGHT Provides on/off control for keyboard light emitting diode (LED) indicators. PC mode for NUM, CAP, and SCROLL lights are the default.	COMMAND: B0Lx<CR> B0 = Op Code L = lamp (see below) x 0 = lamp off (30 hex) 1 = lamp on (31 hex) <CR> = terminate command (0D hex) L: 0, 1, 2, 3, P in ASCII, where 0 = all. P is used for PC emulation of NUM, CAPS and SCROLL Lock ACKNOWLEDGEMENT: NONE

OP CODE (HEX)	MNEMONIC DESCRIPTION	COMMAND/ACKNOWLEDGEMENT
B1	BEEPON Controls pitch and duration of beep.	COMMAND: B1pd<CR> B1 = Op Code p = pitch in Hz d = duration in milliseconds <CR> = terminate command (0D hex) pitch (Hz) in ASCII 0 = 500 5 = 880 1 = 2000 6 = 1320 2 = 220 7 = 1760 3 = 440 8 = 2640 4 = 660 9 = 3520 duration (mS) in ASCII 0 = 1000 5 = 500 1 = 100 6 = 600 2 = 200 7 = 700 3 = 300 8 = 800 4 = 400 9 = 900 ACKNOWLEDGEMENT: NONE

OP CODE (HEX)	MNEMONIC DESCRIPTION	COMMAND/ACKNOWLEDGEMENT
B5	RESET Used to re-boot keyboard via host.	COMMAND: B5<CR> <CR> = terminate command (0D hex)
B6	KSSND Set reporting of keyswitch to solicited (command B7) or unsolicited (on change).	COMMAND: B6x<CR> x = function A = unsolicited (41 Hex) B =solicited (42 Hex) <CR> = terminate command (0D hex)
B7	KSSTATUS Send key switch MAKE code for current keyswitch position.	COMMAND: B7<CR> B7 = Op Code <CR> = terminate command (0D hex) ACKNOWLEDGEMENT: Sends current position MACRO
B8	MSRSND Send only if all tracks are good or any good track.	COMMAND: B8x<CR> x = function A = send any good track (41 Hex) B = send only if all tracks are good (42 Hex) <CR> = terminate command (0D hex)

OP CODE (HEX)	MNEMONIC DESCRIPTION	COMMAND/ACKNOWLEDGEMENT
B9	CARDED Enable/disable magnetic card reader Using this command allows you to enable or disable tracks on the mag card reader; see table.	Command: B9c<CR> B9 = Op Code c = function (In ASCII) A = track 1 on B = track 2 on C = track 3 on D = track 1,2 on E = track 2,3 on F = all tracks off G = track 1,2,3 on H = track 1,3 on <CR> = terminate command (0D hex) ACKNOWLEDGMENT: NONE
BD	PORTE Enable/Disable Aux serial port	COMMAND: BD1x<CR> BD = Op Code 1 (ASCII) = AUX serial port selector x 0 = disable port (30 Hex) 1 = enable port (31 Hex) <CR> = terminate command (0D hex) ACKNOWLEDGMENT: NONE

OP CODE (HEX)	MNEMONIC DESCRIPTION	COMMAND/ACKNOWLEDGEMENT
BE	VERSION Sends software version, engineering number, and keyboard type parameters.	COMMAND: BE<CR> BE = Op Code <CR> = terminate command (0D hex) ACKNOWLEDGEMENT: BEnnnnnvvvvkkkkx-x<CR> BE = Op Code nnnnn = engineering number vvvv = software version kkkk = keyboard type installed x-x = notes (maximum of 40 characters)

KEY LEGEND CHANGE

Three-quarter Inch Full Travel Keyboards

There are two methods for changing the key legends of full travel keyboards:

- For keys with permanently-printed legends, each keycap can be changed by placing a flat head screwdriver under the existing key and applying upward pressure to remove the key top. The new key can then be pushed on.

- For keys with changeable key tops, remove the clear top portion of the key, replace the existing legend tab with a new one, and then replace the clear top.

Note: Keycaps and legend tabs are available for purchase from UTC RETAIL in a variety of colors, with legends customized to meet the customer's specifications. You can contact UTC RETAIL at:

UTC RETAIL
100 Rawson Road
Victor, NY 14564
800.349.0546
fax: 585.924.1434
www.utcretail.com

MAINTENANCE

The SERIES M700 POS Keyboard requires minimal routine maintenance. However, reasonable care of the keyboard will extend its life. The precautions and routine maintenance actions that follow are recommended.

Precautions

- Do not drop keyboard or allow it to be subjected to impact.
- Keep liquids away from the keyboard.
- Thin liquids, such as water, spilled into the keyboard may cause permanent damage. If you spill a thin liquid into the keyboard, disconnect it from the system. Turn it over and allow it to drain. Allow it to dry for 24 hours, and then reconnect it to the system. If it does not work, consult a qualified service technician. The keyboard may need to be repaired or replaced.
- If you spill heavy or thick liquids into the keyboard, consult a qualified service technician. The keyboard may need to be repaired or replaced.

Cleaning

The frequency of needing to clean the keyboard is dependent upon the environment.

- Wipe the exterior with a soft cloth as needed. Do not use cleaning products, as they may discolor or damage the finish.
- Use a can of computer-servicing compressed air to remove any dust that has accumulated on the keyboard or between the keys.

APPENDIX A: Series M700 POS Standard Keyboard Layouts

QWERTY Keyboard Default Layout

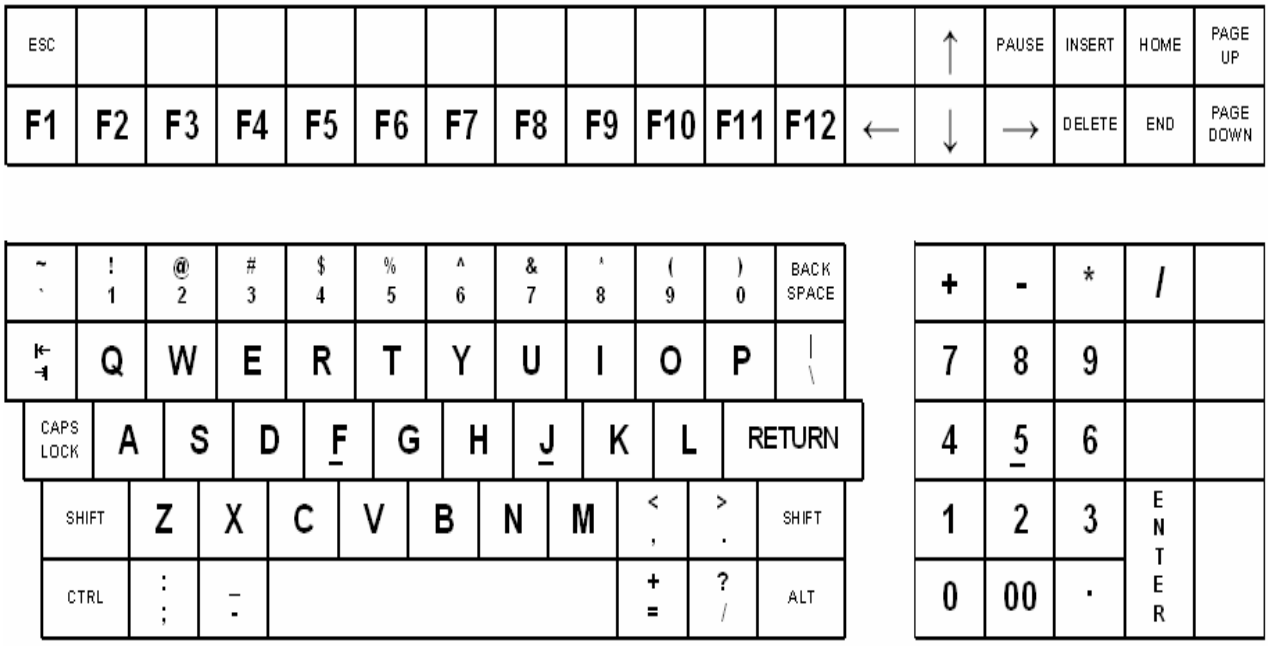

Figure 1: Qwerty Keyboard, default layout

Full Matrix Keyboard Default Layout

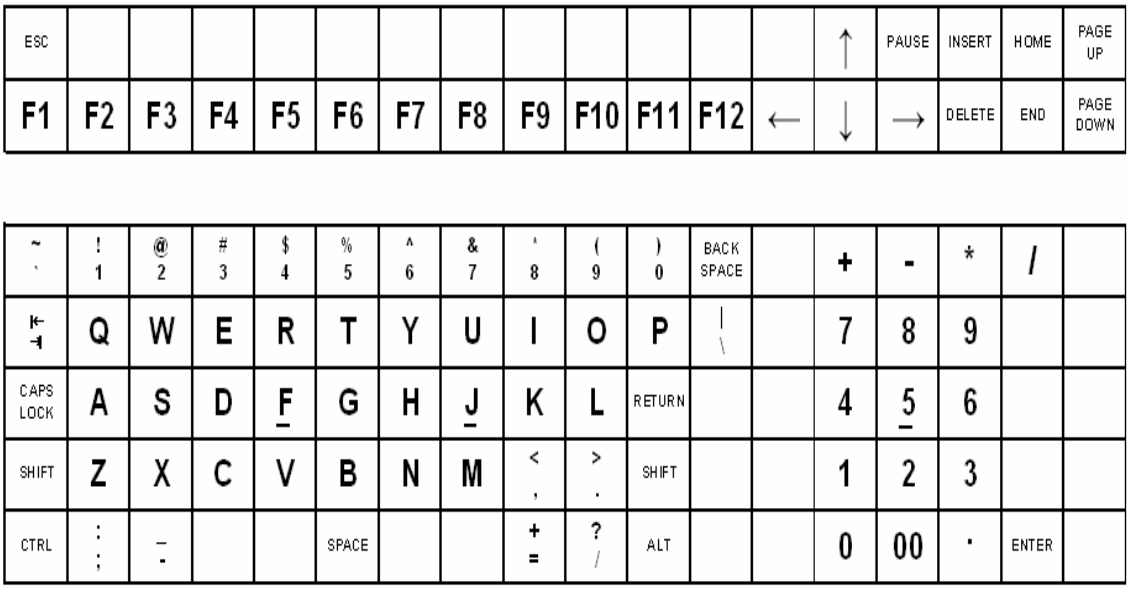

Figure 2: Full Matrix Keyboard, default layout

APPENDIX B: Keyboard Cable Connector Data

RS232 Port Pinout (DB9 Male Connector)

- 1 N/C
- 2 RXD IN
- 3 N/C
- 4
- 5 GND
- 6
- 7 N/C
- 8 N/C
- 9 +5 VDC OUT 450mA

Keyboard Pinout (MiniDIN Connector)

1. DATA
2. N/C
3. GND
4. +5VDC IN
5. CLOCK
6. N/C

GLOSSARY

TERM	DEFINITION
MSR	Magnetic Stripe Reader.
ULAP	The UTC RETAIL Layout And Programming Utility. ULAP is available on UTC RETAIL's web site, www.utcretail.com, in the M700 POS driver download section. This utility will run under Windows or Linux, and allows you to program every facet of your M700 Keyboard. ULAP will also allow you to create a custom keyboard layout via an intuitive, graphical interface.
UPOS	UnifiedPOS. The UnifiedPOS is a standard developed by the Association for Retail Technical Standards (ARTS) as a method of achieving device independence in the POS Application. Different implementations of the UnifiedPOS standard include OPOS, JavaPOS, and OPOS for .NET.