UNITED TECHNOLOGIES CARRIER

Commercial Division
Carrier Corporation

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SERVICE BULLETIN

SUBJECT:
3200MP SOFTWARE (EPROM) CHANGES

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PURPOSE

To provide information on the changes in 3200MP control logic relative to the basic and options EPROMs and to introduce a means of identifying compatible combinations of basic and options EPROMs called versions.

MACHINES AFFECTED

All 17/19 series machines with 3200MP Controls

Basic Software

The basic EPROM is located on the processor board. This is the only EPROM required if the expanded services panel (ESP) is not installed. If an ESP is installed, the basic EPROM will have the lowest part number (P/N) designation in the version. All basic software identified on the attached chart is valid except for the HK98EZ005.

Memory Expansion (MX) Eprom

The MX EPROM will have the next highest or middle part number designation in a version. When installed, control functions are performed from this software. For this reason, all changes to the basic EPROM are also included in the MX EPROM. In addition, the MX EPROM contains the software logic for ESP/Options control; thus the name Options Software.

ESP EPROM

The ESP EPROM will have the highest part number designation in a version. This EPROM permits the ESP/Options to be programmed and works with the MX EPROM to execute Options control functions.

Options Software Versions

When teamed up in a compatible combination, the Options Software (MX and ESP EPROMs) and the Basic (Processor EPROM) form a software version. A version is a matched family of EPROMs that has been tested and qualified as a software package to perform certain options functions in a particular manner. These options are listed under each particular version. For example, Version III added return chilled water control and chilled water reset based on T which Version II does not have. However, Version III does not have lead lag which was released beginning with Version IV. EPROM combinations outside the compatible version listings may not communicate or may cause improper machine control if used in an options configuration. For this reason, only the Basic/Options EPROM combinations (Versions) listed should be employed.

Upgrading Software

The decision whether to upgrade software should be based on 1) Version status, i.e., Valid/Void, 2) compatibility, and 3) the evaluation of the need for recent enhancements.

Configuration Details - If software is upgraded to Version VII or later (single compressor) or Version III (dual compressor), use specific product Start-Up,Operation and Maintenance instructions dated 1987 or later for dipswitch configurations.

Changing EPROMs - After making the decision to upgrade software, it must be incorporated in the system. This involves physically installing the EPROMs and reinitializing the system. The previous sections identify the boards in which the various EPROMs are to be installed.

After installing a new Basic EPROM, the initialization process takes place automatically when the power is restored. Perform the controls test to verify proper operation.

The installation of new Options EPROMs requires manual initialization to replace the old logic with the new logic and to eliminate Code 76. Follow the procedure outlined below.

1) Note the chiller identification numbers programmed at addresses 1, 2 and 3 in the ESP address format.

2) Turn off control power to control panel and ESP.

3) Change software and change the basic chiller identification number(s) (use DIP switches) to numbers different than programmed in ESP addresses 1, 2 or 3. Position L/R switch to local.

4) Turn on control power to control panel and ESP. If Code 81 is displayed, clear by initiating a POR on the Basic, then the ESP. Once the 81 is cleared, Code 76 will be displayed indicating that the Basic machine identifications do not match those programmed in addresses 1, 2 and 3.

5) Change the Basic chiller identification(s) back to the original DIP switch settings then POR the Basic, then the ESP. Process should be complete. If not, verify proper programming of machine identification(s) and repeat POR process. Perform controls test to verify proper configuration of Basic chiller identifications.

Alternate method to eliminate Code 76:

1) Follow previous steps 2, 3 and 4. If new software has already been installed, it is not necessary to change again.

2) Change the chiller identification numbers in addresses 1, 2 and 3 in the ESP address format to match those configured on the Basic chiller(s).

INSTRUCTIONS
REPLACEMENT COMPONENT DIVISION

For Use With: 32MP EPROM REPLACEMENT & COMPATIBILITY INSTRUCTIONS (Part Description) — SEE BELOW (Part Number)

Date: 3/14/89

Prepared By: D. RYDER

Instruction Sheet Number 99TA550104 REV. B

Part Numbers

Boards: 32MP400854, 32MP400874, 32MP400894

EPROMS & EPROM Kits: HK98EZ100, 32MP660012, 32MP660013, 32MP660014

NOTES:

1. The following current kits/parts replace void parts as noted:

CURRENT KIT/PART	DESCRIPTION	REPLACES
32MP400854	ESP	HK35EZ006, HK35EZ012
32MP400874	MEMORY EXPANSION	HK35EZ005, HK35EZ011
32MP400894	BASIC PROCESSOR BOARD	HK35EZ001, HK35EZ007
32MP660014	EPROM KIT	32MP660010

2. The following EPROM kits include parts as listed:

KIT PART	INCLUDES
32MP660012(Single ESP II)	HK98EZ100, HK98EZ110, HK98EZ120
32MP660013(Dual ESP II)	HK98EZ130, HK98EZ140, HK98EZ150
32MP660014(Single ESP I)	HK98EZ100, HK98EZ016, HK98EZ023, 32MP400023

EPROM REPLACEMENT INSTRUCTIONS

Purpose

The following procedure is to be used to replace the existing EPROMS on the processor boards.

Caution

To prevent damage from static electricity, do not unpackage EPROMS until ready to install. Do not touch the prongs on the EPROMS.

Procedure

1. Turn off control center power.

2. Dissipate static electricity from body by touching the control panel cabinet.

3. Locate the EPROM on the processor board. (EPROM has a sticker with a code HK98EZ___.)

4. Remove the EPROM with an EPROM puller or by using a small screwdriver inserted in the gaps at each end between the EPROM and the socket. Pry gently on each end of the EPROM making sure that surrounding components are not disturbed.

5. When installing the new EPROM, orientate the notch over the notch in the receptical.

   CAUTION: If the EPROM is reversed, it will be damaged when energized. Before inserting the EPROM, make sure all the prongs are straight and aligned in the socket.

6. Gently push the EPROM into the socket by applying pressure at each end.

Testing

Perform the control test per procedure illustrated in the Operation and Maintenance Instructions. This will determine if the EPROM is working properly. If controller fails to execute field test, remove EPROM and check for bent prongs and proper orientation.

CONVERSION FROM DUAL TO SINGLE MEMORY EXPANSION PRINTED CIRCUIT BOARD

Cut jumper W1 on 32MP400874 to convert it for use with ESP I EPROMS on single compressor chillers. See attached sketch. Jumper W1 is needed for ESP II and all 19DR dual compressors.

Replacement microprocessor boards may be shipped without EPROMS, or with EPROMS for a different application. It is necessary to reinstall the original EPROMS if they are valid and make up a valid set if the chiller has an ESP or purchase and install the latest version EPROMS. The following charts for single and dual compressors show which EPROM's are valid and which sets are compatible.

The following EPROMS and sets of EPROMS are stocked:

	SINGLE COMPRESSOR		DUAL COMPRESSOR	
	ESP I	ESP II	ESP I	ESP II
Basic EPROM (no ESP)	HK98EZ100	HK98EZ100	VOID	
EPROM Kit	32MP660014	32MP660012	VOID	32MP660013
Includes: Basic	HK98EZ100	HK98EZ100	VOID	HK98EZ130 *
M/X **	HK98EZ016	HK98EZ110	VOID	HK98EZ140 *
ESP **	HK98EZ023	HK98EZ120	VOID	HK98EZ150
OPT-PAK	32MP400023	-	VOID	

* In Version III, memory expansion board is required for basic control.

** EPROMS available in kits only.

3200MP DUAL COMPRESSOR BASIC/OPTIONS SOFTWARE

Note: If an ESP is installed, all software must be from the same basic/options version.

		ESP I		ESP II	
EPROM		VERSION I	VERSION II	VERSION III	
Processor Board	(Basic)	HK98EZ031	HK98EZ034	(Basic)	HK98EZ130 *
M/X Board	(Options)		HK98EZ040		HK98EZ140 *
ESP Board			HK98EZ050	(Options)	HK98EZ150
Status		VOID	VOID		VALID
ESP CONTROL FEATURES			1. Self-start after power failure 2. Chilled water setpoint adjustment 3. Demand limit setpoint adjustment 4. Ramp loading rate adjustment 5. Remote contact enable/disable capability 6. Reading operating parameters 7. Reading stored shutdown status codes		
				8. Standby operation of lag compressor 9. Individual indication of out-of-range sensors 10. Carrier comfort network compatibility	
ESP CONTROL OPTIONS			1. Auto chilled water reset based on 4-20 Ma input signal 2. Auto chilled water reset based on a remote temp. sensor input 3. Auto power demand limit based on contact closure 4. Auto power demand limit based on 4-20 Ma input signal 5. Return chilled water control 6. Chilled water reset based on $\triangle$ T		

3200MP SINGLE COMPRESSOR BASIC/OPTIONS SOFTWARE

Note: If an ESP is installed, all software must be from the same basic/options version

		ESP I							ESP II
EPROM		VERSION II	VERSION III	VERSION IV	VERSION V	VERSION VI	VERSION VIa	VERSION VII	VERSION VIII
Processor Board	(Basic)	HK98EZ003A	HK98EZ003A	HK98EZ004 (valid if no ESP)	HK98EZ004	HK98EZ005 ** (void if no ESP)	HK98EZ005A	HK98EZ006	HK98EZ100
M/X Board	(Options)	HK98EZ011A	HK98EZ012	HK98EZ013	HK98EZ014	HK98EZ014C	HK98EZ014C	HK98EZ015	HK98EZ110
ESP Board	(Options)	HK98EZ020	HK98EZ021	HK98EZ022	HK98EZ022	HK98EZ023	HK98EZ023	HK98EZ023	HK98EZ120
STATUS ** (Options Software)		VALID	VALID	VOID	VOID	VALID	VALID	VALID	VALID
CONTROL FEATURES		1. Self start after power failure 2. Chilled water setpoint adjustment 3. Demand limit setpoint adjustment 4. Ramp loading rate adjustment 5. Remote contact enable/disable capability 6. Reading operating parameters 7. Reading stored shutdown status codes							8. Individual indications of out of range sensors
CONTROL OPTIONS		1. Auto chilled water reset based on 4-20 Ma input signal 2. Auto chilled water reset based on a remote temperature sensor input 3. Auto power demand limit based on contact closure 4. Auto power demand limit based on 4-20 Ma input							
		5. Return chilled water control 6. Chilled water reset based on ΔT							
		7. Lead-lag							8. Standby operation of lag chiller 9. Carrier comfort network compatibility

* "Version" implies a set of 3 EPROMS comprised of the basic + options software necessary for ESP operation.

** "Status" applies only to the options software within a version. If no ESP is installed, all basic software shown except for the HZ98EZ005 is valid.

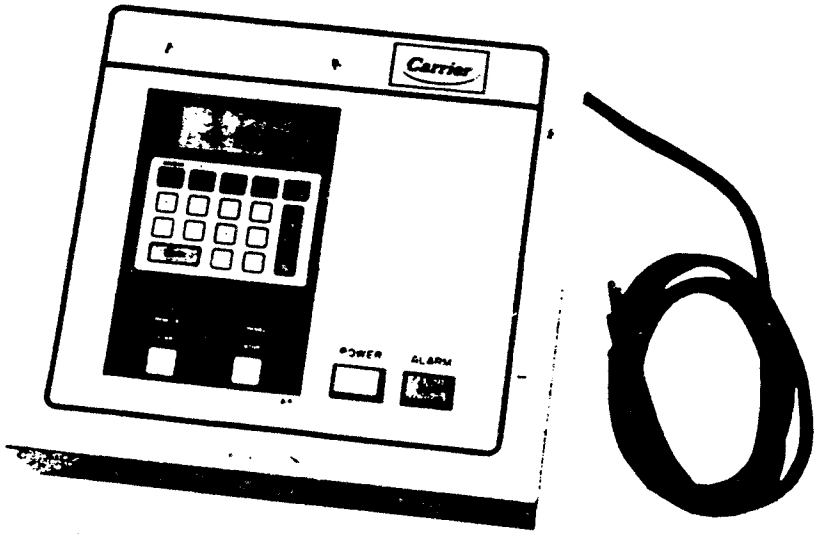

Fig. 1 – Remote ESP (Finished Enclosure Shown)

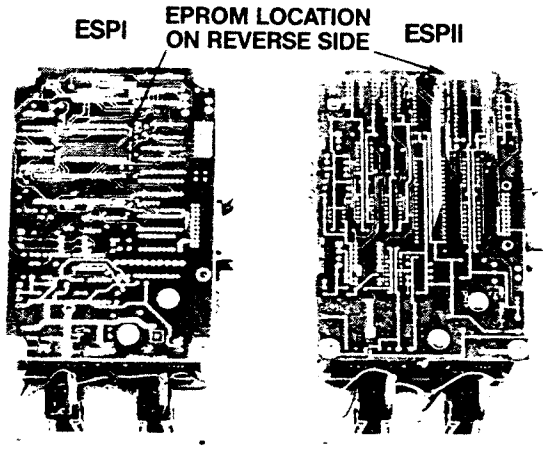

Figure 2 – Expanded Services Panel
(Back Inside View)

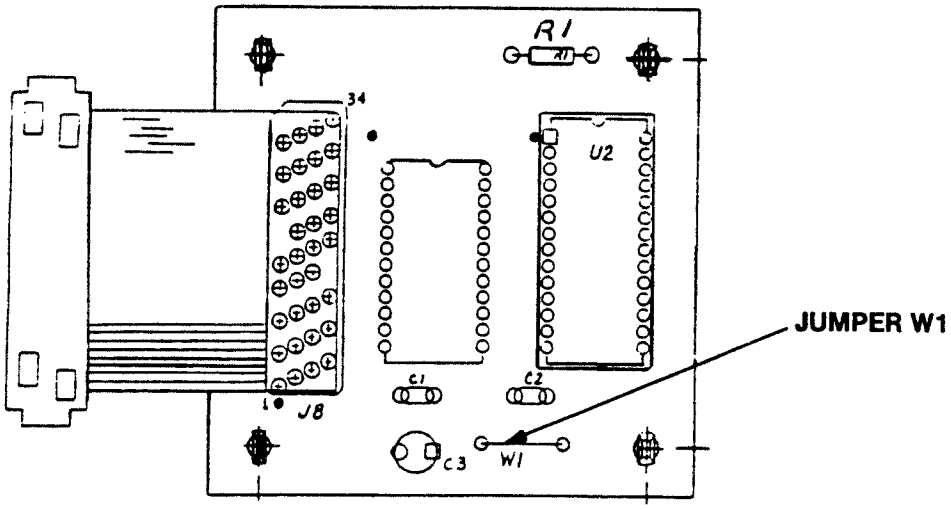

Fig. 3 – Memory Expansion