Programmer notes for KBD200/300 Release 1.20:

The old KBD200 source code was abandoned and the KBD300 source code was ported to the KBD200. IFDEF statements handle operations that are specific to each model. Blocks of source code are identified as follows:

```
ifdef  KBD200

[code segment]
         |
         |
[end of code segment]

endif   ;KBD200
```

To compile the source code for KBD300, for example, one must define the symbol KBD300 in MPLAB under Menu - "Project"; Submenu - "Make Setup." Once here, enter the following: " /dKBD300 " in the field entitled: "Extra Assembler Options." The released project files for the KBD200 and KBD300, kbd200mg.pjt and kbd300mg.pjt respectively, already have this Option selected.

Also added and modified in this Firmware release are the New Multiplexer Mode commands. All of these modifications are commented by - " ; MUX." Some of the KBD200 modifications do not affect the KBD300 and are commented with - " ; 200 " and other modifications are Multiplexer and KBD200 specific and are commented as - " ; 200 MUX "

Another modification made in the KBD300 code ONLY is specific to how the JOYSTICK PTZ commands are resolved and translated for transmission to the CM6700 matrix. The default communication protocol between the KBDs and the CM6700 is the Pelco ASCII Protocol. However, to improve PTZ response and accuracy with the KBD300-to-6700 communication a new Cryptic('Sly mode') protocol was adopted. This protocol is used ONLY by the KBD300 when communicating with a CM6700 whose firmware revision is v2.00 or greater.

The Cryptic('Sly mode') protocol is composed of five(5) hexadecimal bytes organized in the following pattern:

Byte #1 -- Header/Sync Byte == $A0

Byte #2 -- PTZ Command Byte == $xx (See Bit encoding below)

Byte #3 -- Pan Speed Byte == $00 to $40 (Current Rx/Drvrs only use 64-decimal speeds)
Byte #4 -- Tilt Speed Byte == $00 to $40 (Current Rx/Drvrs only use 64-decimal speeds)

Byte #5 -- ASCII Protocol Terminator == 'a' ($61)

The PTZ Command Byte is Bit encoded as follows:

Bit7 --> ALWAYS '0'; never used

Bit6 --> Zoom Wide direction when SET == '1'

Bit5 --> Zoom Tele direction when SET == '1'

Bit4 --> Tilt Down direction when SET == '1'

Bit3 --> Tilt Up direction when SET == '1'

Bit2 --> Pan Left direction when SET == '1'

Bit1 --> Pan Right direction when SET == '1'

Bit0 --> ALWAYS '0'; never used

This Cryptic('Sly mode') command format is transmitted ONLY for Joystick PTZ commands as shown in the above Bit Encoding. Also, note that the appropriate PTZ axis Bit can be SET and the corresponding Speed Byte can have a value of '0' which indicates a STOP of that PTZ axis (except for the Zoom Axis which does not transmit a Speed). Also, note that when a PTZ Axis is NOT moving the corresponding bit in the Command Byte is '0', regardless of the Speed value. The KBD300 code will sample the Joystick and SET the corresponding bit for the PTZ Axis/axes moving and in turn the code will Clear the corresponding bit (in the Command Byte) for a PTZ axis that has stopped moving or direction has changed (i.e. joystick is moving Right, then is changed to Left; the Command Byte bit #2 is Set then the change is made and the Command Byte bit #3 is set while bit #2 is cleared).

Two scenarios exist where the Cryptic('Sly mode') is not transmitted for PTZ movement from the Joystick. The first case is for an ALL STOP condition which indicates that all 3 axes of the Joystick are centered or in the "Dead Zone." In this case the normal ASCII All stop is transmitted: 'sa'. What is also transmitted as a Special Case is the Zoom Wide code. This case is special because the KBD300 must allow for alternate speed settings on the Zoom Axis. This multiple speed adjustment on the Zoom axis is handled by entering a digit between 1-4 followed by the Zoom Wide command. To allow the New Zoom Speed to be accepted by the Matrix, the KBD300 transmits the Zoom Wide command in the normal ASCII mode: 'Wa', followed by the Cryptic command.

Transmitting the Zoom Wide command in this fashion ensures that the Speed change for Zoom is Set and then activated immediately so that the KBD300 operator does not need to twist the joystick, return it to neutral and then twist the joystick one more time to move the lens at the newly set speed.

10-29-97 AVM

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Programmer notes for KBD200/300 Release 2.00:

This version of released code corrected a Hardware contention problem between the Pic16C642 and the Maxim114 AtoD Controller. This version also added a "Direct Mode" of operation for the keyboard that allows a user to connect directly to a Receiver/Driver (up to 16) via the RS-422 port. This method of control uses the PELCO "P" protocol for data communication. See the KBD300 specification #97-109 or the enclosed KBD300.hst (history file) for details.

12-16-97 AVM

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Programmer notes for KBD200/300 Release 3.00:

This version of released code added some Embedded Diagnostic code that allows a PC application to communicate with the keyboards in a special Diagnostic mode and perform Cryptic basic tests of all keys, switches, LEDs, and the joystick. Note this Diagnostic mode DOES NOT TEST any protocol properties of the keyboards. This Diagnostic mode is intended to assist the Production line in providing them with a Quick Pass/Fail test on a basic Hardware level of the keyboard...

The PC application will be released by Engineering for use by the Production Department ONLY... for now!!!

In addition to the above mods, the keyboard code was revised to include the ability to Light Both 7segment LEDs for the purpose of displaying a Monitor number. The immediate application is to make it compatible with the system CM9760. This version is released for archive purposes ONLY!!! NOT FOR PRODUCTION!!! ONLY 3 UNITS MADE AND SENT TO THE ISC WEST SHOW FOR

MARCH 24th - 26th.

3-18-98 AVM