APPLICATION		REVISIONS				
NEXT ASSY	USED ON	REV	DESCRIPTION		DATE	APPROVED
		A	PRODUCTION RELEASE/SEE E.O. 33431		12-16-97	L.D.HATCH
		B	SEE E.O. 34672		9--30--99	L.D.HATCH
		C	SEE E.O. 35345	_Alf_	9-20-01	_wr_

MANUAL

SHEET 0 -   THIS SHEET
SHEET 1 -   FEATURES
SHEET 2 -   GENERAL SPECIFICATIONS
SHEET 3 -   EXPLODED ASSY VIEW & PARTS REFERENCE
SHEET 4 -   ASSY INSTRUCTIONS
SHEET 5 -   CASH DRAWER MOUNTING CONFIGURATIONS
SHEET 6 -   OPERATION
SHEET 7 -   CHARACTER FONTS
SHEET 8 -   CHARACTER FONTS
SHEET 9 -   KIT NUMBERING SCHEME

REV STATUS OF SHEETS	REV	C	C	B	B	B	B	B	B	B	C								
	SHEET	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCE ARE :
FRACTIONS DECIMALS ANGLES
±   .XX±   ±
           .XXX±
DO NOT SCALE DRAWING
TREATMENT
FINISH

CONTRACT NO.

IEE INDUSTRIAL ELECTRONIC ENGINEERS, INC.
VAN NUYS, CALIFORNIA

APPROVALS		DATE
DRAWN	ISIS WOLFE	12-12-97
CHECKED	D.SUMMERS	12-16-97
ISSUED	L.D.HATCH	12-16-97

TITLE   MANUAL,
PDK-0013-XXXXXX
INSTALLATION & OPERATING INSTRUCTIONS

SIZE	CAGE CODE	DWG NO.	REV
A	05464	PDK-0013-INOPML	C

SCALE -   PROJ NO. 468   SHEET 0 OF 9

IEE FILE: ASIZE1.DWG

PDK-0013-XXXXXX* "Emax Compatible" Pole Display Kit

INSTALLATION and OPERATING INSTRUCTIONS

Key Features:

- **Vacuum Fluorescent (VF) Display - 2 line x 20 character 9mm 5x7 dot matrix - with contrast enhancing filter, EIA-232 interface, detachable DB-9F host interface/power supply cable and 24Vdc wall mount power supply.**
- **Emax NORMAL and AEDEX (command interpreter) MODES (default).**
- **IEE's Standard command, control and font set (software selectable), with five selectable character fonts, block cursor, dimming control and selective blinking.**
- **Display module housed in a compact, impact resistant enclosure with four-position tilt-recline and 330° swivel adjustment. Pole and mounting base kit are included.**
- **Display certified to the requirements of UL, CE, TUV and FCC Part 15, Class A.**

(* Refer to Page 9 for exact configuration of your kit).

Table of Contents:

PRODUCT SUPPORT

For information not found in these Instructions, please contact IEE's Sales Application Engineering Department:

Industrial Electronic Engineers, Inc.
7740 Lemona Avenue
Van Nuys, California 91409-9234 USA

Phone:	**(800) 422-0867 or (818) 787-0311**
Fax:	**(818) 901-9046**
E-mail:	**mail@ieeinc.com**

PDK-0013-INOPML
September 17, 2001

GENERAL SPECIFICATIONS

Interface:

• **Power:**	Supply voltage	11-29 Vdc		• **Pin Assignments:**	
	Supply current @24 Vdc	213 ma (max)	**(Host)**		**DB-9F**
	Supply risetime	100 milliseconds (max)			
• **Caution:**	Supply sequencing	Rapid ON/OFF sequencing	COM	1	COM
		is not recommended.	RXD	2	TXD
	Start cycle	The display is not ready to accept	TXD	3	RXD
		data until 1.2 seconds after	DTR	4	DSR
		application of power.	SIG GND	5	SIG GND
			DSR	6	DTR
• **Signal:**	Serial EIA-232	9600 baud - 8 bits - no parity	N.A.	7	N.C.
	Serial input levels	+3V to +15V (space/logic 0)	CTS	8	DTR
		-3V to -15V (mark/ logic 1)	N.A.	9	N.C.

Data Format

```
+V      (LSB)                                    (MSB)
      ┌────┬────┬────┬────┬────┬────┬────┬────┬────┐
      │    │ D₀ │ D₁ │ D₂ │ D₃ │ D₄ │ D₅ │ D₆ │ D₇ │
      │    │    │    │    │    │    │    │    │    │
─V    START            8 DATA BITS              STOP
      BIT                                        BIT
```
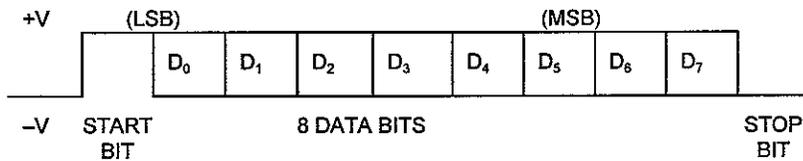
Environmental:

• **Operating Temperature:**   0 to +70 °C (+32 to +158 °F)

• **Storage Temperature:**   -20 to +70 °C (-4 to +158 °F)

• **Relative Humidity:**   0 to 95% (non-condensing)

ASSEMBLY and INSTALLATION

Overview

To achieve the greatest mounting and cabling flexibility available in a POS pole display system, this kit provides a cable break a few inches from the pod. The DIN8M on the module pigtail cable connects to the DIN8F on the Host/Power cable assembly after it has been installed and routed through the pole. This allows easy connect and disconnect of the display module.
The DIN8F should be routed through any holes, slots, etc. in the installation and mounting hardscape (organizers, hardware, mounting surfaces, mounting bases or kits) between the Host DB9 and Power Supply connections before it is routed through the pole, from the bottom (threaded end). The independent power supply cable provides additional flexibility in locating the wall mount power supply.
Pages 3, 4 and 5 provide information on the assembly and installation/attachment of the pole display. Details are provided for attaching the pole to a variety of bases, kits, surfaces and organizers.
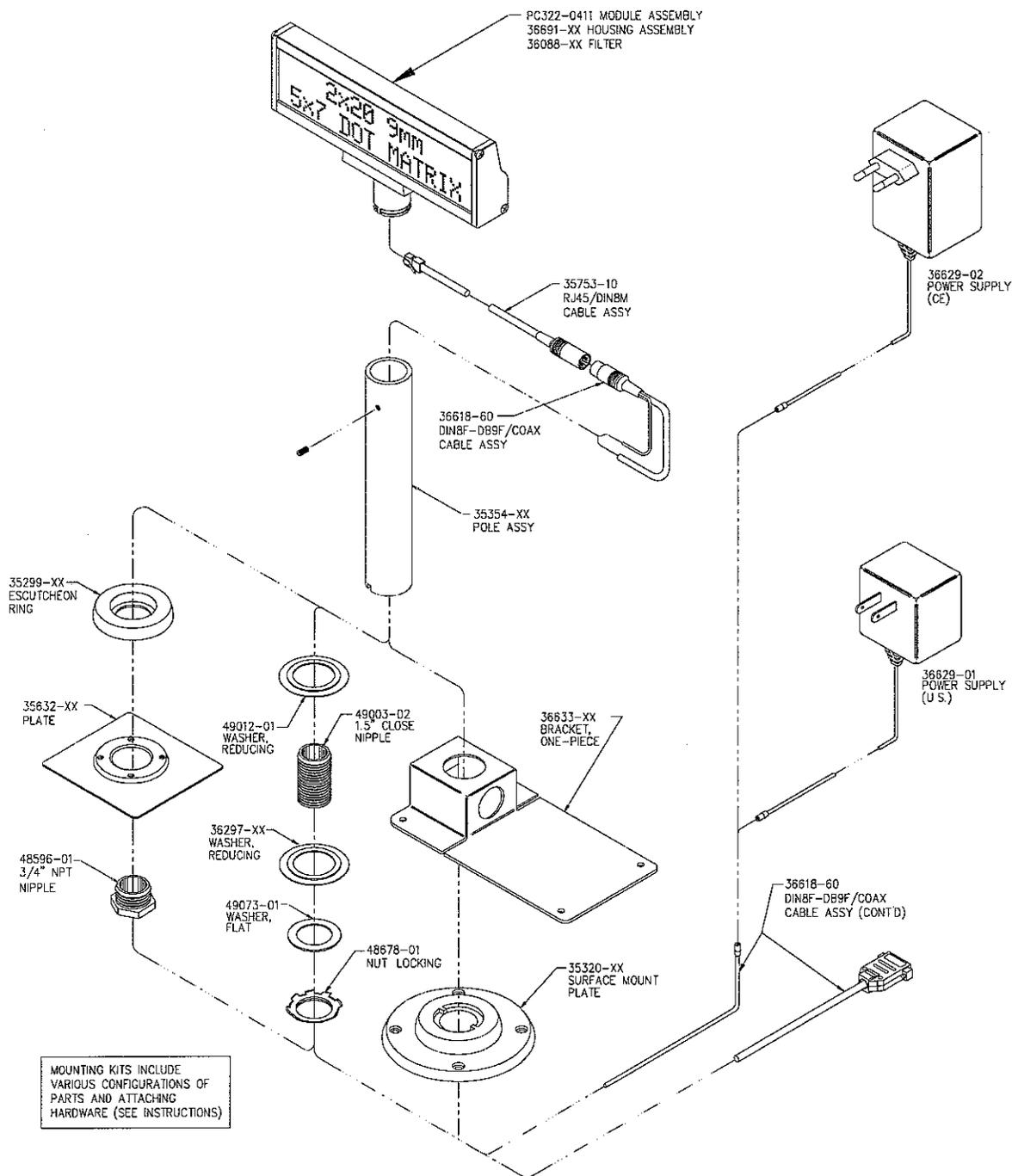
Installation Instructions:

Perform these electrical installation steps after, or as a part of, the attachment instructions appropriate for the specific mechanical installation
1. Connect the DB-9 (female) to the appropriate port on the host system.
2. Plug the wall mount power supply into an appropriate AC outlet.
3. A blinking cursor should appear in the left-most position on the top line. The POS display is now ready for operation using the commands and codes provided on pages 6, 7 and 8.

PDK-0013-XXXXXX
POS POLE DISPLAY DISTRIBUTOR KIT
TYPE 3C POD RS232 INTERFACE

PC322-0411 MODULE ASSEMBLY
36691-XX HOUSING ASSEMBLY
36088-XX FILTER

2x20 9mm
5x7 DOT MATRIX

35753-10
RJ45/DIN8M
CABLE ASSY

36629-02
POWER SUPPLY
(CE)

36618-60
DIN8F-DB9F/COAX
CABLE ASSY

35354-XX
POLE ASSY

35299-XX
ESCUTCHEON
RING

36629-01
POWER SUPPLY
(U.S.)

35632-XX
PLATE

49012-01
WASHER,
REDUCING

49003-02
1.5" CLOSE
NIPPLE

36633-XX
BRACKET,
ONE-PIECE

48596-01
3/4" NPT
NIPPLE

36297-XX
WASHER,
REDUCING

36618-60
DIN8F-DB9F/COAX
CABLE ASSY (CONT'D)

49073-01
WASHER,
FLAT

48678-01
NUT LOCKING

35320-XX
SURFACE MOUNT
PLATE

MOUNTING KITS INCLUDE
VARIOUS CONFIGURATIONS OF
PARTS AND ATTACHING
HARDWARE (SEE INSTRUCTIONS)

3

ASSEMBLY INSTRUCTIONS

Mounting Kits:

- **35360-0X SURFACE MOUNTING KIT (standard)**
  - (1) 35320-XX SURFACE MOUNT PLATE
  - (1) 48596-01 CONDUIT NIPPLE
- **35697-0X BASE KIT, HEAVY METAL**
  - (1) 35632-XX PLATE, MULTI-PURPOSE
  - (1) 35299-XX ESCUTCHEON RING
  - (1) 48596-01 CONDUIT NIPPLE
- **36231-0X ICD POLE KIT**
  - (1) 36297-XX WASHER, REDUCING
  - (1) 49003-02 CLOSE NIPPLE
  - (1) 49012-01 WASHER, REDUCING
  - (1) 48678-01 LOCKNUT

- **36631-99 APG BRACKET KIT**
  - (1) 36630-99 BRACKET, POLE
  - (1) 48596-01 CONDUIT NIPPLE
  - (2) 48989-02 #8-32 PAN HD. SCREW, LOCKWASHER
  - (2) 43311-04 #8-32 NUT, HEX
- **36632-0X MS CASH KIT**
  - (1) 36297-XX WASHER, REDUCING
  - (1) 49073-01 WASHER, FLAT
  - (1) 48596-01 CONDUIT NIPPLE
- **36634-0X MOUNTING KIT, SHEET METAL BASE**
  - (1) 36633-XX BASE, SHEET METAL
  - (1) 48596-01 CONDUIT NIPPLE
  - (4) 48765-10 #8-18 PAN HEAD SCREW , THD FORMING

## Surface Mount and Freestanding Configurations:

Mounting Kit, Sheet Metal

Thread the DIN8F connector through a hole in the mounting surface or one of the two side openings in the bracket and then through the conduit nipple. Thread the connector through the bracket top hole and into the threaded end of the pole, continue to feed the cables in until the connector emerges from the pole, and pull out some slack. Holding the conduit nipple in place screw the pole down snugly onto the bracket. The sheet metal base can be freestanding, mounted with 48765-10 screws or slid under the cash register etc.
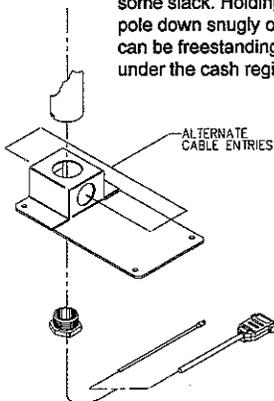

Surface Mount Plate

Thread the DIN8F connector through a hole in the mounting surface and conduit nipple, or breakout one of the tabs in the surface mount plate (use wide, square jaw pliers) and route the cable through the conduit nipple. Thread the cable through the surface mount plate and pole. Holding the pole in the plate, tighten the conduit nipple into the pole. Attach the mounting plate to the surface, being careful to route the cables through the breakout tab if applicable
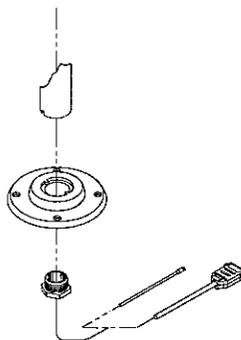
Base Kit, Heavy Metal

Thread the DIN8F connector through a hole in the mounting surface and conduit nipple or just through the conduit nipple. Thread the cable through the base, escutcheon ring and pole. Pull some cable slack through, push the nipple into the recess in the base, put the pole in place in the escutcheon ring and tighten it onto the nipple threads until snug
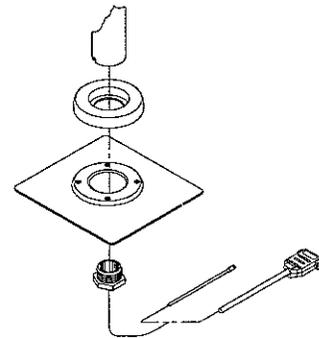

Display Module and Pole Assembly:

The display module is attached to the pole assembly by mating the DIN8 connectors, inserting the display yoke into the pole at the end closest to the set screw, and then rotating the display

1. Push the cable slack back into the pole.
2. Insert the display module partially into the pole and align the set screw with one of the two notches on the yoke bushing.
3. Push the yoke bushing completely into the pole, then rotate the module on the pole as desired.
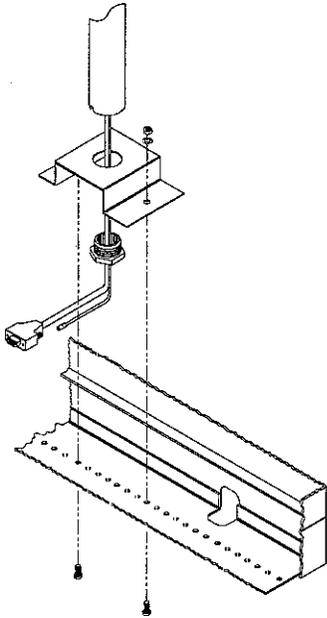
TO REMOVE THE MODULE:

Rotate the module in either direction until the set screw touches the stop on the yoke, then pull the module straight out from the pole until the DIN8 connectors are exposed and the module can be disconnected.
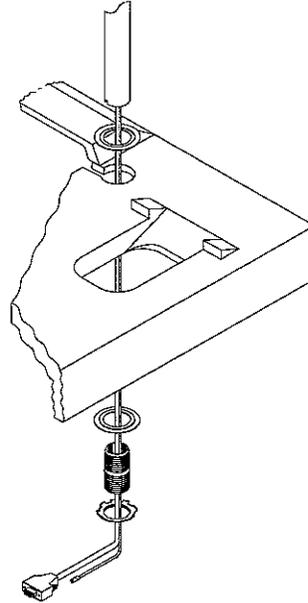

4
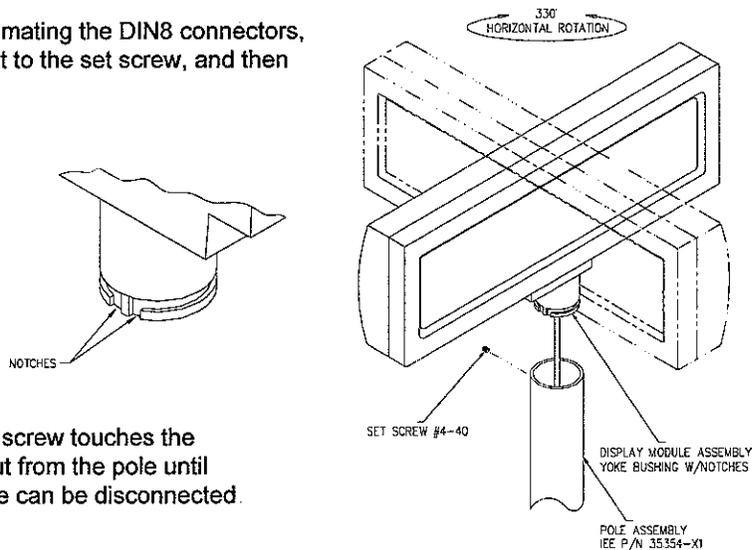
- **APG CASH DRAWER**

    Thread the DIN8F connector through the conduit nipple, bracket and pole, pulling out some slack. Hold the nipple in place and tighten the pole down onto the bracket. Mount the assembly (through the partner) in the selected position along the row of mounting holes at the rear of the drawer using the hardware as shown.
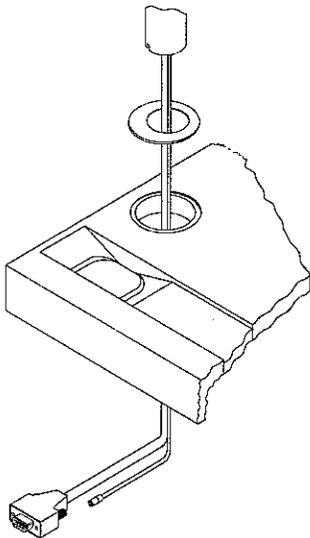

- **MMF CASH DRAWER**

    Loosen the U-clamp nuts on the pole mounting bracket in the POS platform system. Thread the DIN8F connector through the POS platform, eccentric washer and pole. Seat the pole in the bracket to full depth and tighten the U-clamp nuts to secure the assembly in place

- **INDIANA CASH DRAWER**

    Remove the mounting bracket on the underside of the shoe. Tighten the close nipple into the pole. Thread the DIN8F connector through the locknut, metal washer, shoe, painted washer and pole. Put the pole on the painted washer and tighten it in place with the locknut.


- **MS CASH DRAWER**

    Remove the clamp assembly from the mounting bracket on the underside of the POS deck. Thread the DIN8F connector through conduit nipple, small washer, POS deck, painted washer and pole, pulling out some slack. Slide the small washer under the edges of the spotwelded bracket at the underside surface of the POS deck. Hold the nipple in place through the washer and tighten the pole onto the nipple, over the painted washer, to secure the pole in place

5
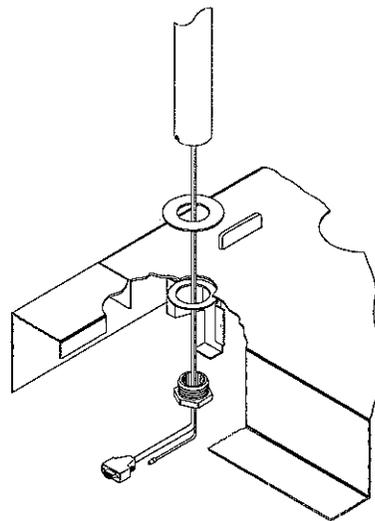
OPERATION

Introduction

After a hardware power-on reset, the display is set to the Emax NORMAL MODE with SPECIAL CONTROL CODES that also enable the Emax (AEDEX) command interpreter. The display internal memory is cleared. The internal software clock is reset to 00 hours, 00 minutes, 00 seconds and the clock display is disabled. The clock is started and the cursor is pointed to the first character position on the top line.

Numeric Order Control Codes - Emax Modes:

Emax NORMAL MODE

OAh	LINE FEED (clears the display, cursor position does not change)
ODh	CARRIAGE RETURN (cursor returned to the home position)
20-7Fh	Displays ASCII character
80-FFh	Displays AEDEX character

AEDEX MODE (command interpreter)

OAh	LINE FEED (not applicable)
ODh display	CARRIAGE RETURN and SELECT NORMAL MODE (clears
NORMAL	and returns cursor to home position, functionality set to
	MODE)
I#(1-6,8 AND 9) xxxx...xxx(CR)h	Display supports these AEDEX command strings
I#7(CR)h CONTROL	Disables SPECIAL CONTROL CODES and enables IEE
	CODES
20-7Fh	Clears display and displays ASCII character
80-FFh	Clears display and displays AEDEX character

Numeric Order Control Codes - IEE Standard:

NOTE: CARE SHOULD BE TAKEN NOT TO SEND UNDEFINED CONTROL OR COMMAND CODES TO THE POS DISPLAY AS THIS MAY CAUSE A MALFUNCTION OF THE MODULE.

01h	READ THE CHARACTER CAPACITY OF THE DISPLAY (Display responds sending 28h)
02h	DISPLAY SOFTWARE CHECKSUM AND SOFTWARE NUMBER
03h	READ CURSOR LOCATION VALUE (display responds with one byte) 01-14(h) for line1, 21-34(h) for line2
04h	READ DATA AT CURRENT CURSOR LOCATION
06h	BEGIN BLINK FIELD AT CURRENT CURSOR LOCATION
07h	END BLINK FIELD AT CURRENT CURSOR LOCATION
08h	BACKSPACE CURSOR LOCATION ONE POSITION (except at HOME position)
09h	ADVANCE CURSOR LOCATION ONE POSITION (cursor wraps to HOME from bottom right position)
0Ah	LINE FEED (vertical scroll from bottom line; cursor position does not change)
0Ch	CLEAR THE DISPLAY (cursor does not move)
0Dh	CARRIAGE RETURN (returns cursor to left-most position on the same line)
0Eh	MAKE CURSOR INDICATOR (FLASHING BLOCK) INVISIBLE (cursor location counter continues to function)
0Fh +	MAKE CURSOR INDICATOR (FLASHING BLOCK) VISIBLE
<10h> AND line is most	BOTTOM LINE DATA ENTRY WITH AUTOMATIC CARRIAGE RETURN LINE FEED (moves cursor to left-most position on bottom line, when filled a vertical scroll occurs and the cursor is moved back to the left-most position on the bottom line)
<11h> + LINE filled a position	NORMAL DATA ENTRY WITH AUTOMATIC CARRIAGE RETURN AND FEED (data enters from current cursor position, when bottom line is vertical scroll occurs and the cursor is re-positioned to the left-most on the bottom line)
<12h>	OVERWRITE OF RIGHT-MOST CHARACTER ON THE CURRENT LINE (automatic Carriage Return is set to OFF)
<13h> bottom	HORIZONTAL SCROLL MODE (characters move from right to left on line only, after line has been filled)
14h Defined	RESET (sets display to DEFAULT configurations and clears User Character locations)
15h + Mode	DISPLAY CLEAR (moves cursor to left-most position on bottom line in 10h, and HOME in Modes 11h, 12h, 13h and 1Ah)

+ Display automatically defaults to these conditions after Power-up or RESET.
< > These instructions are mutually exclusive.

16h +	CURSOR HOME (returns cursor to upper left most position)
17h	Enable SPECIAL CONTROL CODES (AEDEX command interpreter) and disable IEE CONTROL CODES (display clear and cursor HOME)
19h	SET BIT SEVEN HIGH FOR NEXT BYTE ONLY
<1Ah> entered	WRAP AROUND DATA ENTRY (after the bottom right character is the cursor is moved to the HOME position)

1Bh INITIATES FOLLOWING SEQUENCES:

1B-05-49	IEE SPECIFIC RESPONSE CODE (the following message is sent to the host without regard for flow control): D,2,IEE,35578,-02(CR) (18 BYTES)
1B-26-01-M-N	DOWNLOAD USER DEFINED CHARACTERS M=Byte location to begin download (F8-FF) N=Number of characters to be downloaded Each character pattern is defined by 5 data bytes
1B-3F-N	DELETE DOWNLOADED CHARACTER LOCATION N N=F8-FF
1B-40	TERMINATE SELF TEST (sets display to DEFAULT configurations and clears all USER CHARACTER locations)
1B-74-N →	SELECT CHARACTER SET N=01, ASCII and General European N=02, ASCII and Katakana N=03, ASCII and Cyrillic N=04, ASCII and Hebrew

1D-05(h) EPSON SPECIFIC RESPONSE CODE (display sends 05 to host)

1Fh INITIATES FOLLOWING SEQUENCES:

1F-24-C-L	MOVE CURSOR TO C, Column 01-14(h) L, Line 01,02(h)
1F-40	EXECUTE SELF TEST (use 1B-40 to terminate self test)
1F-45-T	SET ALL DISPLAY BLINK FIELDS TO AN INTERVAL= T X 50msec, range of T=00h(OFF)-3Fh, duty cycle=50%
1F-58-N +	SET BRIGHTNESS LEVEL, N=% of max brightness: N=04(100%), N=03(60%), N=02(40%), N=01(20%)
1F-72-N +	SELECT NORMAL/REVERSE DISPLAY MODE N=00 (Normal), N=01 (Reverse)

6

User Defined Character Loading

A maximum of eight characters may be created temporarily (until power-off or reset) by a user-defined downloaded character pattern. To do so, enter the following sequence of commands and data:

BYTE	DESCRIPTION
1-3	Start load 1B-26-01 (HEX)
4	Location to begin download F8-FF (HEX)
5	Number of characters to download (01-
08)	
6-10	*Character dot data

* Repeat bytes 6-10 for number of characters to be downloaded

CHARACTER DOT DATA

BYTE #	DATA BIT							
	7	6	5	4	3	2	1	0
6	29	20	11	2	28	19	10	1
7	31	22	13	4	30	21	12	3
8	33	24	15	6	32	23	14	5
9	35	26	17	8	34	25	16	7
10	0	0	0	0	0	27	18	9

CHARACTER MATRIX

1	2	3	4	5
6	7	8	9	10
11	12	13	14	15
16	17	18	19	20
21	22	23	24	25
26	27	28	29	30
31	32	33	34	35

Example: To download a Greek letter Psi into character location F8.

1Bh	BYTE 1, start load
26h	BYTE 2, start load
01h	BYTE 3, start load
F8h	BYTE 4, location to begin download
01h	BYTE 5, download 1 character
78h	BYTE 6, dots 20, 11, 2, 28 ON
71h	BYTE 7, dots 22, 13, 4, 3, ON
Ech	BYTE 8, dots 33, 24, 15, 32, 23 ON
1Ah	BYTE 9, dots 8, 34, 16 ON
02h	BYTE 10, dot 18 ON

```
O ● ● ● O
O O ● O O
● O ● O ●
● O ● O ●
O ● ● ● O
O O ● O O
O ● ● ● O
```

CHARACTER FONTS

The **ASCII CHARACTER SET** is located in standard ASCII locations from 20 (HEX) to 7F (HEX).
The alternate character set is loaded into ASCII locations from 80 (HEX) to F7 (HEX).

ASCII CHARACTER SET - always available from non-volatile memory.
EUROPEAN CHARACTER SET (Default setting) - loaded into RAM* at Power-up or Reset, can be re-loaded with command sequence 1B-74-01 (HEX)
KATAKANA CHARACTER SET - can be loaded into RAM* with command sequence 1B-74-02 (HEX).
CYRILLIC CHARACTER SET - can be loaded into RAM* with command sequence 1B-74-03 (HEX).
HEBREW CHARACTER SET - can be loaded into RAM* with command sequence 1B-74-04 (HEX).

* Pre-designated alterable character set location.

STANDARD ASCII CHARACTER SET

GENERAL EUROPEAN CHARACTER SET
(Default Setting)

CHARACTER FONTS

KATAKANA CHARACTER SET

CYRILLIC CHARACTER SET

HEBREW CHARACTER SET

8

KIT NUMBERING SCHEME

PDK-[0013]- 0₁ X₂ X₃ X₄ X₅ X₆

POLE POSITION

- 0 = CENTER/NO OPTION
- C = CENTER
- L = LEFT SIDE
- R = RIGHT SIDE

HOUSING COLOR

- W = WHITE (IEE IVORY GRAY)
- B = JET BLACK

FILTER COLOR

- A = AMBER
- B = BLUE
- G = GREEN
- N = NEUTRAL GRAY
    (DISPLAY APPEARS AQUA)

POLE LENGTH

- 0 = NOT PROVIDED
- B = MINIMUM LENGTH (2 IN.)
- S = SHORT (6 IN.)
- D = MEDIUM SHORT (10 IN.)
- M = MEDIUM (12 IN.)
- L = LONG (18 IN.)
- X = EXTRA LONG (22 IN.)

MOUNTING KIT

- 0 = NOT SUPPLIED
- 1 = MNTG KIT, UNIVERSAL
- 2 = MNTG KIT, HARD
- 3 = MNTG KIT, SHEET METAL
- 4 = BASE KIT, PASS THRU
- 5 = BASE KIT, HEAVY METAL
- 6 = SURFACE MOUNT KIT
- A = MNTG KIT, APG BRACKET
- I = MNTG KIT, ICD POLE
- C = MNTG KIT, MS CASH

POWER SUPPLY

- 0 = NOT SUPPLIED
- 1 = 115VAC-24VDC/US-COAX (2.1MM)
- 2 = 230VAC-24VDC/CE-COAX (2.1MM)

NOTE: THE SUB-SET **PDK -[0013] -0₁X₂X₃** DEFINES THE DISPLAY ASSEMBLY IN THIS PDK KIT.