



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	<i>del</i> 9-20-01	<i>LDH</i>

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	CONTRACT NO.		 INDUSTRIAL ELECTRONIC ENGINEERS, INC. VAN NUYS, CALIFORNIA
	APPROVALS	DATE	
TREATMENT	DRAWN	ISIS WOLFE	12-12-97
FINISH	CHECKED	D.SUMMERS	12-16-97
	ISSUED	L.D.HATCH	12-16-97
SIZE		CAGE CODE	DWG NO.
A		05464	PDK-0004-INOPML
SCALE -		PROJ NO. 468	SHEET 0 OF 9





DISPLAYS  
KEYBOARDS  
INTEGRATED PANELS

INDUSTRIAL ELECTRONIC ENGINEERS, INC. 7740 Lemona Ave., Van Nuys, CA 91409-9234, U.S.A. • Tel 818-787-0311

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## PDK-0004-0XXXXX\* VF POS Pole Display Kit

### INSTALLATION and OPERATING INSTRUCTIONS

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#### Key Features:

- Vacuum Fluorescent (VF) display - 4 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.
- IEE's extensive command and control set.
- Eight selectable character fonts, block cursor, dimming control and selective blinking.
- Display module housed in an 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:

**Page 2** provides General Specifications and an introduction to the Assembly and Installation of the pole display.

**Page 3** provides an exploded view of your pole display assembly with part numbers, so you can identify and verify that you have all the parts ordered.

**Pages 4 and 5** provide instructions for assembling the display and attaching it using one of many mounting configurations.

**Pages 6, 7 and 8** provide information on how to operate the display including provisions for self-test, software commands, character fonts and User Defined Character (UDC) loading.

**Page 9** provides the kit numbering scheme that defines the exact contents as referenced by the number on the lid of the shipping box. **PDK-0004-0XX** defines the characteristics of the display head (i. e. display type, software functionality, pole position, housing color and filter color) and cannot be revised.

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## PRODUCT SUPPORT

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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-0004-INOPML  
September 17, 2001

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## GENERAL SPECIFICATIONS

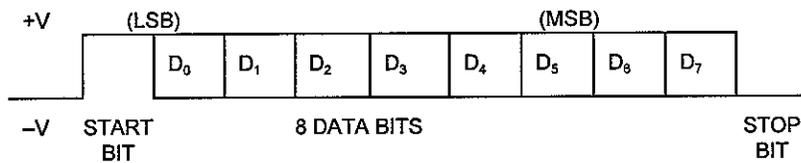
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### Interface:

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• <b>Power:</b>	Supply voltage	11-29 Vdc	• <b>Pin Assignments:</b>		
	Supply current @24 Vdc	355 ma (max)	(Host)	DB-9F	
• <b>Caution:</b>	Supply risetime	100 milliseconds (max)	COM	1	COM
	Supply sequencing	Rapid ON/OFF sequencing is not recommended.	RXD	2	TXD
	Start cycle	The display is not ready to accept data until 1 2 seconds after application of power	TXD	3	RXD
• <b>Signal:</b>	Serial EIA-232	9600 baud - 8 bits - no parity	DTR	4	DSR
	Serial input levels	+3V to +15V (space/logic 0)	SIG GND	5	SIG GND
		-3V to -15V (mark/ logic 1)	DSR	6	DTR
			N.A	7	N.C.
			CTS	8	DTR
			N.A	9	N.C.

#### Data Format



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### Environmental:

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- **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)

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## ASSEMBLY and INSTALLATION

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### Overview

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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.

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### Installation Instructions:

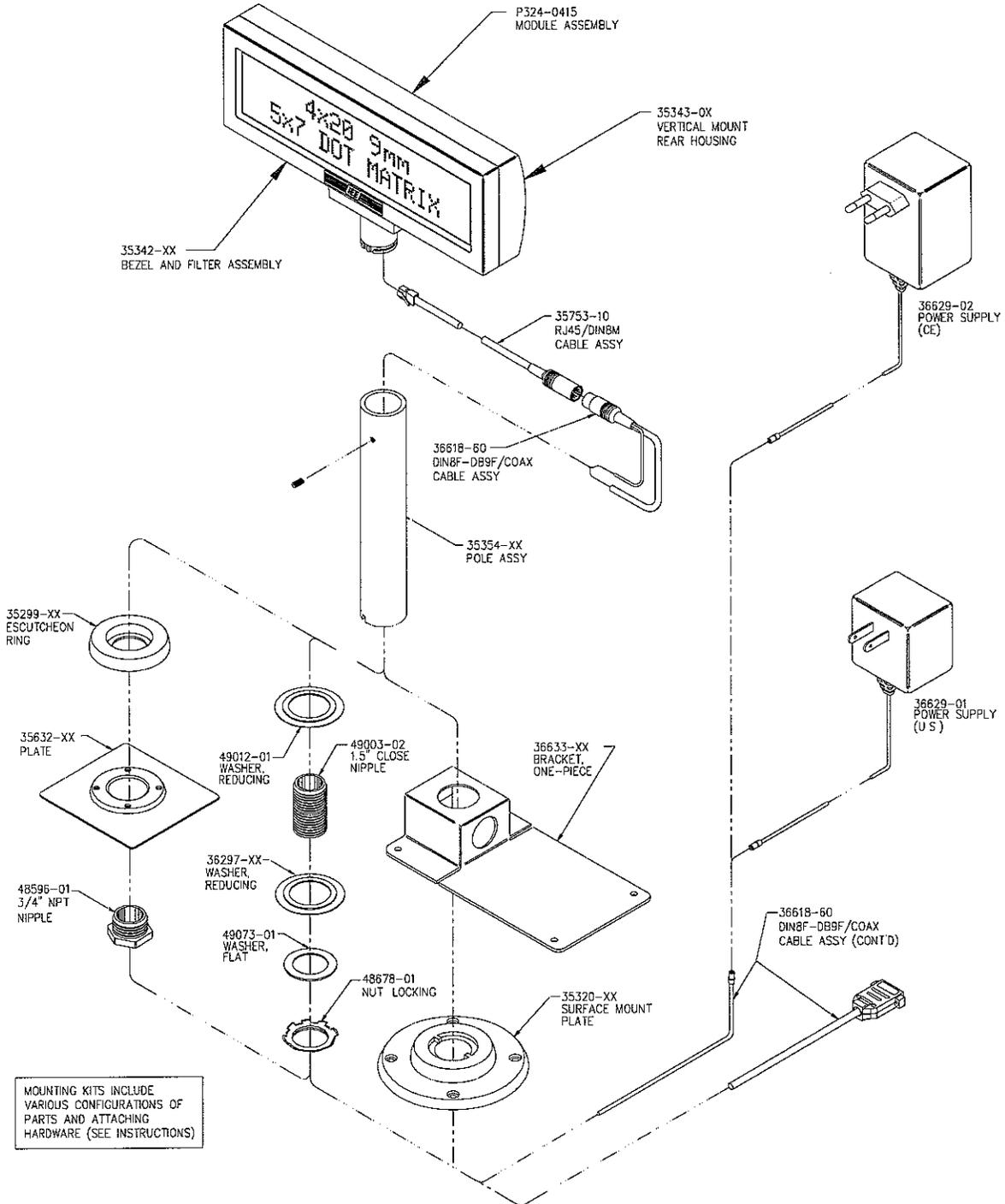
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Perform these electrical installation steps after, or as a part of, the attachment instructions appropriate for the specific mechanical installation

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.

# EXPLODED ASSEMBLY VIEW and PARTS REFERENCE

## PDK-0004-0XXXXX POS POLE DISPLAY DISTRIBUTOR KIT TYPE 1 POD RS232 INTERFACE



# ASSEMBLY INSTRUCTIONS

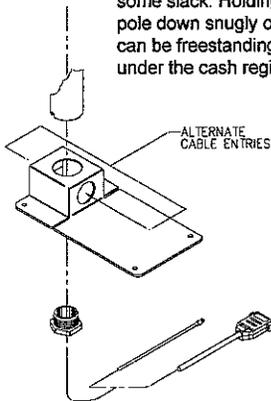
## Mounting Kits:

- **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

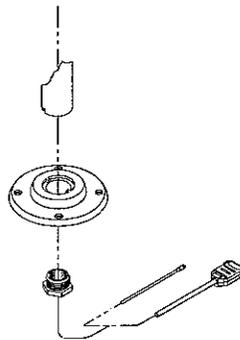
## Surface Mount and Freestanding Configurations:

### 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.



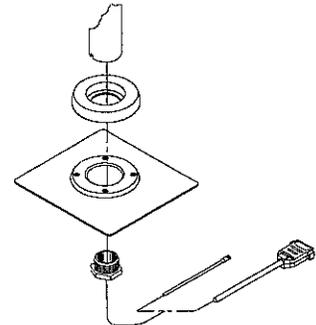
### Surface Mount Plate



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.



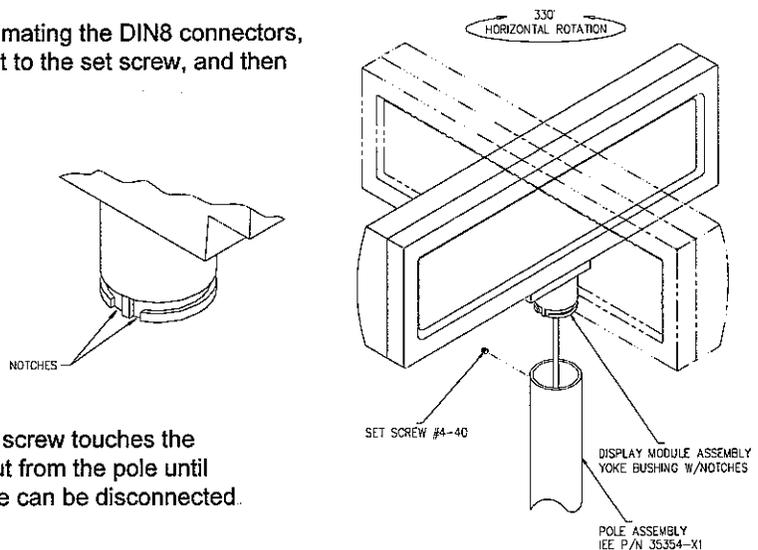
## Display Module and Pole Assembly:

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:

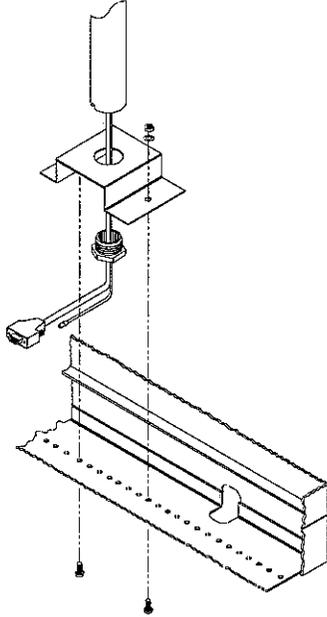
Rotate the module in either direction until the set screw touches the stop on the yoke, then pull the module straight out from the pole until the DIN8 connectors are exposed and the module can be disconnected.



## CASH DRAWER MOUNTING CONFIGURATIONS

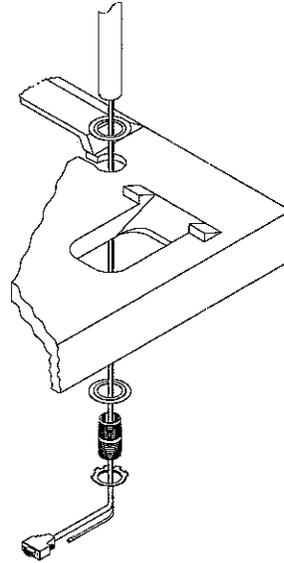
### • APG CASH DRAWER

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.



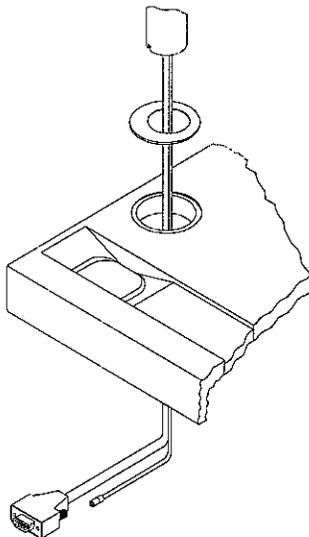
### • INDIANA CASH DRAWER

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.



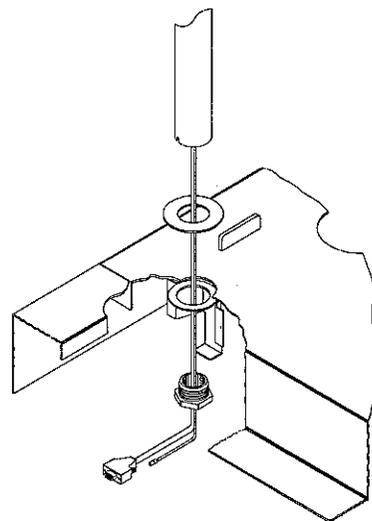
### • MMF CASH DRAWER

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.



### • 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.



# OPERATION

## Numeric Order Control Codes:

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 50h)  
 02h DISPLAY SOFTWARE CHECKSUM AND SOFTWARE NUMBER  
 03h READ CURSOR LOCATION VALUE (display responds with one byte) 01-14(h) for line 1, 21-34(h) for line 2, 41-54(h) for line 3, 61-74(h) for line 4  
 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> BOTTOM LINE DATA ENTRY WITH AUTOMATIC CARRIAGE RETURN AND 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> + NORMAL DATA ENTRY WITH AUTOMATIC CARRIAGE RETURN AND LINE FEED (data enters from current cursor position, when bottom line is filled a 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> HORIZONTAL SCROLL MODE (characters move from right to left on bottom line only, after line has been filled)  
 14h RESET (sets display to DEFAULT configurations and clears User Defined Character locations)  
 15h + DISPLAY CLEAR (moves cursor to left-most position on bottom line in Mode 10h, and HOME in Modes 11h, 12h, 13h and 1Ah)  
 16h + CURSOR HOME (returns cursor to upper left most position)  
 19h SET BIT SEVEN HIGH FOR NEXT BYTE ONLY  
 <1Ah> WRAP AROUND DATA ENTRY (after the bottom right character is entered the cursor is moved to the HOME position)

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

1Bh INITIATES FOLLOWING SEQUENCES:  
 1B-05-49 IEEE SPECIFIC RESPONSE CODE (the following message is sent to the host without regard for flow control):  
 D,2,IEEE.35980,-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)  
 DEFINED  
 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  
 N=05, ASCII and ISO 8859-1  
 N=06, ASCII and ISO 8859-2  
 N=07, ASCII and Greek  
 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 01-04 (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)

## 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	CHARACTER DOT DATA								CHARACTER MATRIX					
		BYTE #	7	6	5	4	3	2	1	0	1	2	3	4	5
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

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 ○○○○○



# CHARACTER FONTS

#	!	@	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
80	81	82	83	84	85	86	87	88	89	8A	8B	8C	8D	8E	8F													
90	91	92	93	94	95	96	97	98	99	9A	9B	9C	9D	9E	9F													
AD	A1	A2	A3	A4	A5	A6	A7	A8	A9	AA	AB	AC	AD	AE	AF													
BD	B1	B2	B3	B4	B5	B6	B7	B8	B9	BA	BB	BC	BD	BE	BF													
N/A																												
CD	C1	C2	C3	C4	C5	C6	C7	C8	C9	CA	CB	CC	CD	CE	CF													
N/A																												
DD	D1	D2	D3	D4	D5	D6	D7	D8	D9	DA	DB	DC	DD	DE	DF													
ED	E1	E2	E3	E4	E5	E6	E7	E8	E9	EA	EB	EC	ED	EE	EF													
FD	F1	F2	F3	F4	F5	F6	F7	F8	F9	FA	FB	FC	FD	FE	FF													

HEBREW CHARACTER SET

#	!	@	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
80	81	82	83	84	85	86	87	88	89	8A	8B	8C	8D	8E	8F													
90	91	92	93	94	95	96	97	98	99	9A	9B	9C	9D	9E	9F													
AD	A1	A2	A3	A4	A5	A6	A7	A8	A9	AA	AB	AC	AD	AE	AF													
BD	B1	B2	B3	B4	B5	B6	B7	B8	B9	BA	BB	BC	BD	BE	BF													
N/A																												
CD	C1	C2	C3	C4	C5	C6	C7	C8	C9	CA	CB	CC	CD	CE	CF													
N/A																												
DD	D1	D2	D3	D4	D5	D6	D7	D8	D9	DA	DB	DC	DD	DE	DF													
ED	E1	E2	E3	E4	E5	E6	E7	E8	E9	EA	EB	EC	ED	EE	EF													
FD	F1	F2	F3	F4	F5	F6	F7	F8	F9	FA	FB	FC	FD	FE	FF													

ISO 8859-1 CHARACTER SET

#	!	@	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
80	81	82	83	84	85	86	87	88	89	8A	8B	8C	8D	8E	8F													
90	91	92	93	94	95	96	97	98	99	9A	9B	9C	9D	9E	9F													
AD	A1	A2	A3	A4	A5	A6	A7	A8	A9	AA	AB	AC	AD	AE	AF													
BD	B1	B2	B3	B4	B5	B6	B7	B8	B9	BA	BB	BC	BD	BE	BF													
N/A																												
CD	C1	C2	C3	C4	C5	C6	C7	C8	C9	CA	CB	CC	CD	CE	CF													
N/A																												
DD	D1	D2	D3	D4	D5	D6	D7	D8	D9	DA	DB	DC	DD	DE	DF													
ED	E1	E2	E3	E4	E5	E6	E7	E8	E9	EA	EB	EC	ED	EE	EF													
FD	F1	F2	F3	F4	F5	F6	F7	F8	F9	FA	FB	FC	FD	FE	FF													

ISO 8859-2 CHARACTER SET

#	!	@	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
80	81	82	83	84	85	86	87	88	89	8A	8B	8C	8D	8E	8F													
90	91	92	93	94	95	96	97	98	99	9A	9B	9C	9D	9E	9F													
AD	A1	A2	A3	A4	A5	A6	A7	A8	A9	AA	AB	AC	AD	AE	AF													
BD	B1	B2	B3	B4	B5	B6	B7	B8	B9	BA	BB	BC	BD	BE	BF													
N/A																												
CD	C1	C2	C3	C4	C5	C6	C7	C8	C9	CA	CB	CC	CD	CE	CF													
N/A																												
DD	D1	D2	D3	D4	D5	D6	D7	D8	D9	DA	DB	DC	DD	DE	DF													
ED	E1	E2	E3	E4	E5	E6	E7	E8	E9	EA	EB	EC	ED	EE	EF													
FD	F1	F2	F3	F4	F5	F6	F7	F8	F9	FA	FB	FC	FD	FE	FF													

GREEK CHARACTER SET

# KIT NUMBERING SCHEME

PDK-[0004]- 0<sub>1</sub> X<sub>2</sub> X<sub>3</sub> X<sub>4</sub> X<sub>5</sub> X<sub>6</sub>

## POLE POSITION

0 = CENTER/NO OPTION

## 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 -[0004] -0<sub>1</sub>X<sub>2</sub>X<sub>3</sub> DEFINES THE DISPLAY ASSEMBLY IN THIS PDK KIT