



APPLICATION		REVISIONS				
NEXT ASSY	USED ON	REV	DESCRIPTION	DATE	APPROVED	
		A	PRODUCTION RELEASE/SEE E.O. 37182	09-03-02	<i>M. J.</i>	

MANUAL

- SHEET 0 - THIS SHEET
- SHEET 1 - FEATURES
- SHEET 2 - GENERAL SPECIFICATIONS & ASSEMBLY AND INSTALLATION
- SHEET 3 - EXPLODED ASSY VIEW & PARTS REFERENCE
- SHEET 4 - ASSY INSTRUCTIONS
- SHEET 5 - CASH DRAWER MOUNTING CONFIGURATIONS
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- SHEET 7 - CHARACTER FONTS
- SHEET 8 - CHARACTER FONTS
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REV STATUS OF SHEETS	REV	A	A	A	A	A	A	A	A	A	A								
	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	D. MCCOY	08-21-02
FINISH	CHECKED	<i>D. Summers</i>	8-27-02
	ISSUED	<i>M. J.</i>	09-03-02
	SIZE	A	CAGE CODE
		05464	DWG NO
			PDK-USB3-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

PDK-USB3-XXXXXX* VF POS 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, USB 1.1 interface, detachable USB 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 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, 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-USB3-XXX** defines the characteristics of the display head (i. e. display type, software functionality, pole position, housing color and filter color) and cannot be revised.

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
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E-mail: mail@ieeinc.com

PDK-USB3-INOPML
July 31, 2002

GENERAL SPECIFICATIONS

Interface:

• Power:	Supply voltage	11-29 Vdc	• Pin Assignments:		
	Supply current @24 Vdc	240 ma (max)	(Host)	USB	
	Supply rise time	100 milliseconds (max)			
• Caution:	Supply sequencing	Rapid ON/OFF sequencing is not recommended.	USB +5V	1	USB +5V
	Start cycle	The display is not ready to accept data until 1.2 seconds after application of power.	USB-	2	USB-
			USB+	3	USB+
			GND	4	GND
• Signal:	USB 1.0 or 1.1	12 MB Max			
	Input Levels	0 to +5V			

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 USB 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.

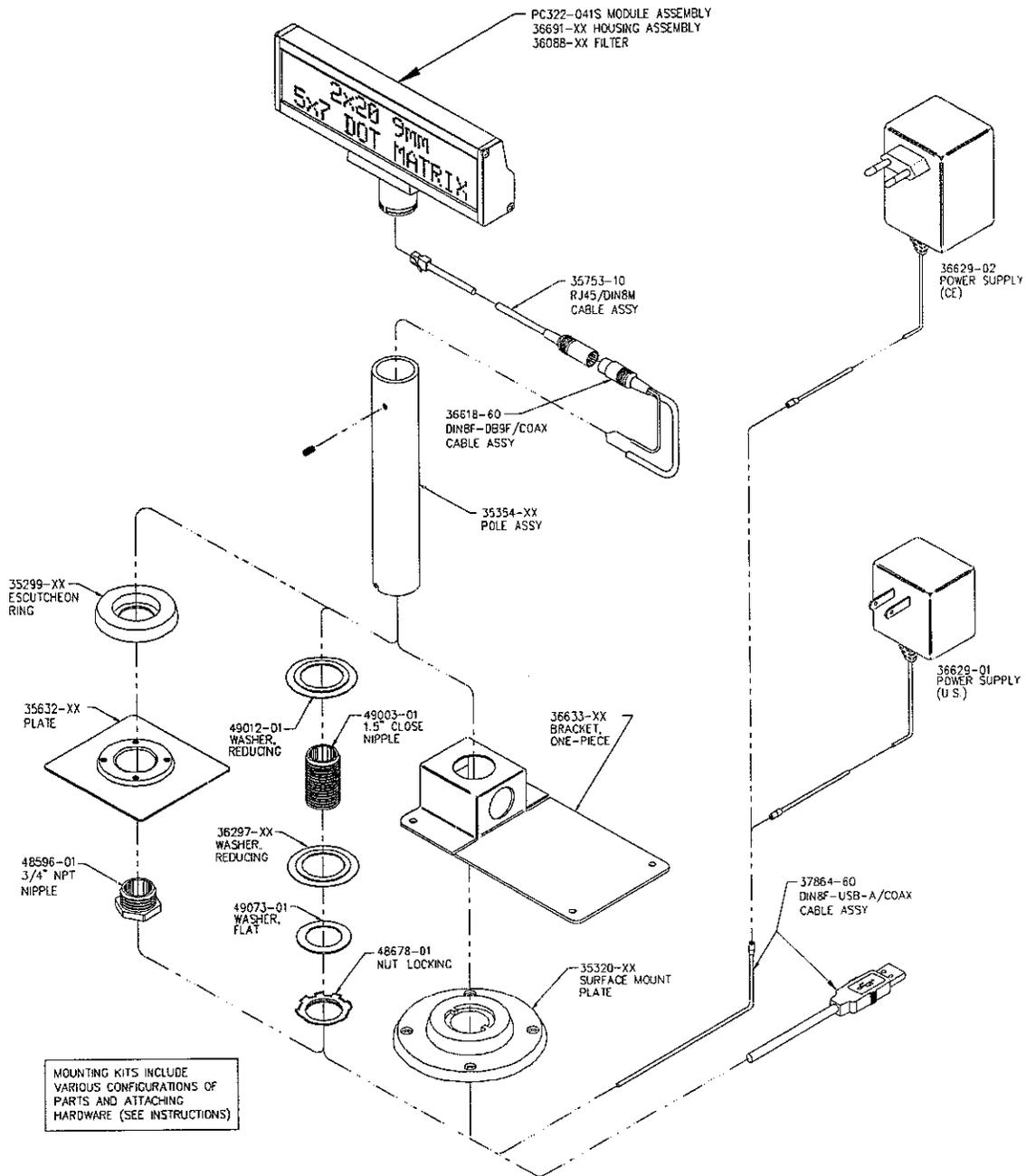
Installation Instructions:

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

1. With system power off, connect the USB connector to the appropriate port on the host system.
2. Apply power to the system and plug the wall mount power supply into an appropriate AC outlet.
3. When the system comes up, your Windows program will detect new hardware and search for a driver.
4. Insert the supplied diskette into your machine and click the "Have Disk" button.
5. After the driver loads, 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-USB3-XXXXXX POS POLE DISPLAY DISTRIBUTOR KIT TYPE 3C POD USBA 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

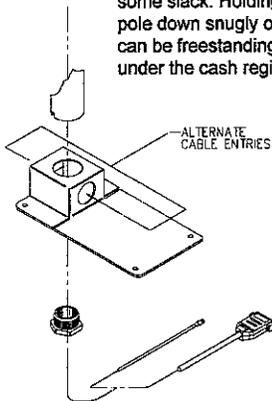
- **36634-0X MOUNTING KIT, SHEET METAL BASE**

- (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:

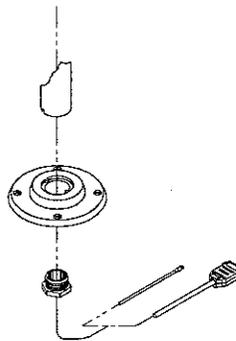
Mounting Kit, Sheet Metal

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.



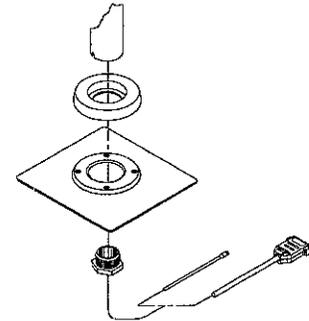
Surface Mount Plate

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.



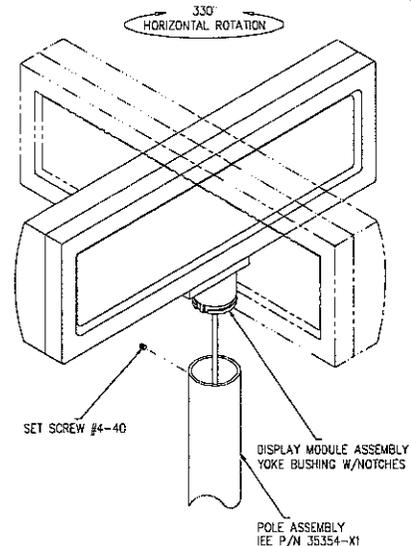
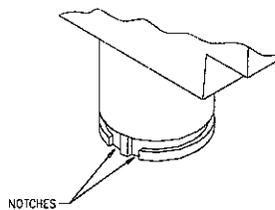
Display Module and Pole Assembly:

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:

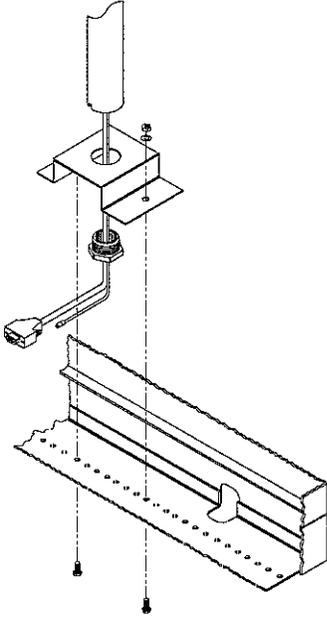
Rotate the module in either direction until the set screw touches the stop on the yoke, then pull the module straight out from the pole until the DIN8 connectors are exposed and the module can be disconnected.



CASH DRAWER MOUNTING CONFIGURATIONS

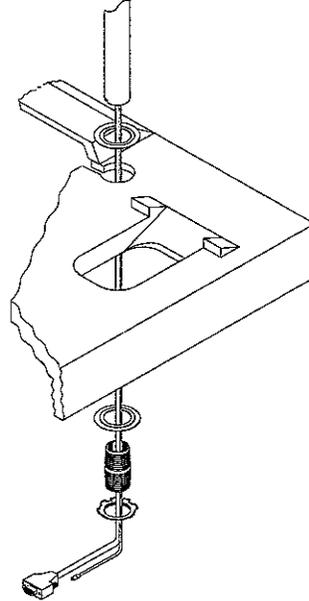
• APG CASH DRAWER

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.



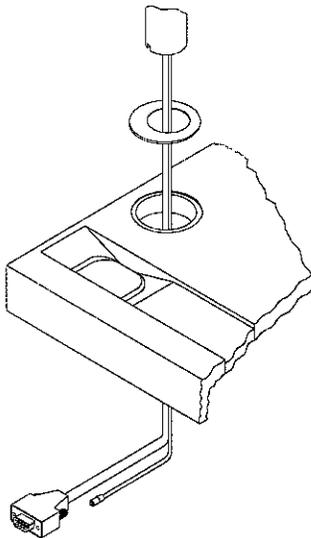
• INDIANA CASH DRAWER

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.



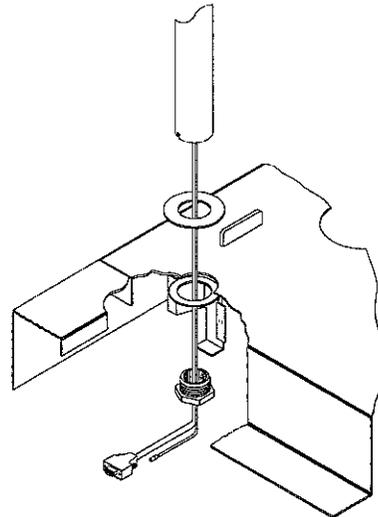
• MMF CASH DRAWER

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 28h)	1Bh	INITIATES FOLLOWING SEQUENCES: IEE SPECIFIC RESPONSE CODE (the following message is sent to the host without regard for flow control):D,2,IEE,35970,-02(CR) (18 BYTES)
02h	DISPLAY SOFTWARE CHECKSUM AND SOFTWARE NUMBER	1B-05-49	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
03h	READ CURSOR LOCATION VALUE (display responds with one byte) 01-14(h) for line1, 21-34(h) for line2	1B-26-01-M-N	DELETE DOWNLOADED CHARACTER LOCATION N N=F8-FF
04h	READ DATA AT CURRENT CURSOR LOCATION	1B-3F-N	TERMINATE SELF TEST (sets display to DEFAULT configurations and clears all USER DEFINED CHARACTER locations)
06h	BEGIN BLINK FIELD AT CURRENT CURSOR LOCATION	1B-40	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
07h	END BLINK FIELD AT CURRENT CURSOR LOCATION	1B-74-N	EPSON SPECIFIC RESPONSE CODE (display sends 05 to host)
08h	BACKSPACE CURSOR LOCATION ONE POSITION (except at HOME position)	1D-05(h)	INITIATES FOLLOWING SEQUENCES: MOVE CURSOR TO C. Column 01-14(h) L, Line 01,02(h)
09h	ADVANCE CURSOR LOCATION ONE POSITION (cursor wraps to HOME from bottom right position)	1Fh	EXECUTE SELF TEST (use 1B-40 to terminate self test)
0Ah	LINE FEED (vertical scroll from bottom line; cursor position does not change)	1F-24-C-L	SET ALL DISPLAY BLINK FIELDS TO AN INTERVAL=T X 50msec. range of T=00h(OFF)-3Fh duty
0Ch	CLEAR THE DISPLAY (cursor does not move)	1F-40	SET BRIGHTNESS LEVEL, N=% of max brightness: + N=04(100%), N=03(80%), N=02(40%), N=01(20%)
0Dh	CARRIAGE RETURN (returns cursor to left-most position on the same line)	1F-45-T	SELECT NORMAL/REVERSE DISPLAY MODE + N=00 (Normal) N=01 (Reverse)
0Eh	MAKE CURSOR INDICATOR (FLASHING BLOCK) INVISIBLE (cursor location counter continues to function)	1F-58-N	
0Fh	MAKE CURSOR INDICATOR (FLASHING BLOCK) VISIBLE	1F-72-N	
<10h>	BOTTOM LINE DATA ENTRY WITH AUTOMATIC CARRIAGE RETURN AND LINE FEED (moves cursor to left-most position on bottom line, when line is 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 position 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

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	DATA BIT								
		7	6	5	4	3	2	1	0	
1-3	CHARACTER DOT DATA	6	29	20	11	2	28	19	10	1
4	CHARACTER MATRIX	7	31	22	13	4	30	21	12	3
5	Start load 1B-26-01 (HEX)	8	33	24	15	6	32	23	14	5
08)	Location to begin download F8-FF (HEX)	9	35	26	17	8	34	25	16	7
6-10	Number of characters to download (01-08)	10	0	0	0	0	0	27	18	9
	"Character dot data"									

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

" 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

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).

ISO 8859-1 CHARACTER SET - can be loaded into RAM* with command sequence 1B-74-05 (HEX)

ISO 8859-2 CHARACTER SET - can be loaded into RAM* with command sequence 1B-74-06 (HEX)

GREEK CHARACTER SET - can be loaded into RAM* with command sequence 1B-74-07 (HEX)

* Pre-designated alterable character set location.

N/A															
00	01	02	03	04	05	06	07	08	09	0A	0B	0C	0D	0E	0F
N/A															
10	11	12	13	14	15	16	17	18	19	1A	1B	1C	1D	1E	1F
20	21	22	23	24	25	26	27	28	29	2A	2B	2C	2D	2E	2F
30	31	32	33	34	35	36	37	38	39	3A	3B	3C	3D	3E	3F
40	41	42	43	44	45	46	47	48	49	4A	4B	4C	4D	4E	4F
50	51	52	53	54	55	56	57	58	59	5A	5B	5C	5D	5E	5F
60	61	62	63	64	65	66	67	68	69	6A	6B	6C	6D	6E	6F
70	71	72	73	74	75	76	77	78	79	7A	7B	7C	7D	7E	7F

STANDARD ASCII CHARACTER SET

#	!	@"	#	\$	%	&	'	()	*	+	,	-	.	:
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
CD	C1	C2	C3	C4	C5	C6	C7	C8	C9	CA	CB	CC	CD	CE	CF
DD	D1	D2	D3	D4	D5	D6	D7	D8	DA	DB	DC	DD	DE	DF	
EO	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

GENERAL EUROPEAN CHARACTER SET
(Default Setting)

#	!	@"	#	\$	%	&	'	()	*	+	,	-	.	:
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
CD	C1	C2	C3	C4	C5	C6	C7	C8	C9	CA	CB	CC	CD	CE	CF
DD	D1	D2	D3	D4	D5	D6	D7	D8	DA	DB	DC	DD	DE	DF	
EO	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

KATAKANA CHARACTER SET

#	!	@"	#	\$	%	&	'	()	*	+	,	-	.	:
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
CD	C1	C2	C3	C4	C5	C6	C7	C8	C9	CA	CB	CC	CD	CE	CF
DD	D1	D2	D3	D4	D5	D6	D7	D8	DA	DB	DC	DD	DE	DF	
EO	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

CYRILLIC CHARACTER SET

KIT NUMBERING SCHEME

PDK-[USB3]- X₁ 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 = 230VAC-24VDC/CE-COAX

NOTE: THE SUB-SET PDK -[USB3] -X₁X₂X₃ DEFINES THE DISPLAY ASSEMBLY IN THIS PDK KIT.