

ICD-2002F- AR/AU

VFD Customer Display

User Manual

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Chapter 1 Introduction

1.1 Features

The ICD -2002F-AR/AU is Vacuum Fluorescent Displays which display 20 columns and 2 lines.

Blue – green fluorescent color is easy on the eyes.

The display panel is movable so that it can be adjusted for the best viewing angle.

The customer display has different height by adjusting the support.

The interface of customer display is RS-232 , with baud rates from 4800 up to 9600bps, or USB for ICD-2002.

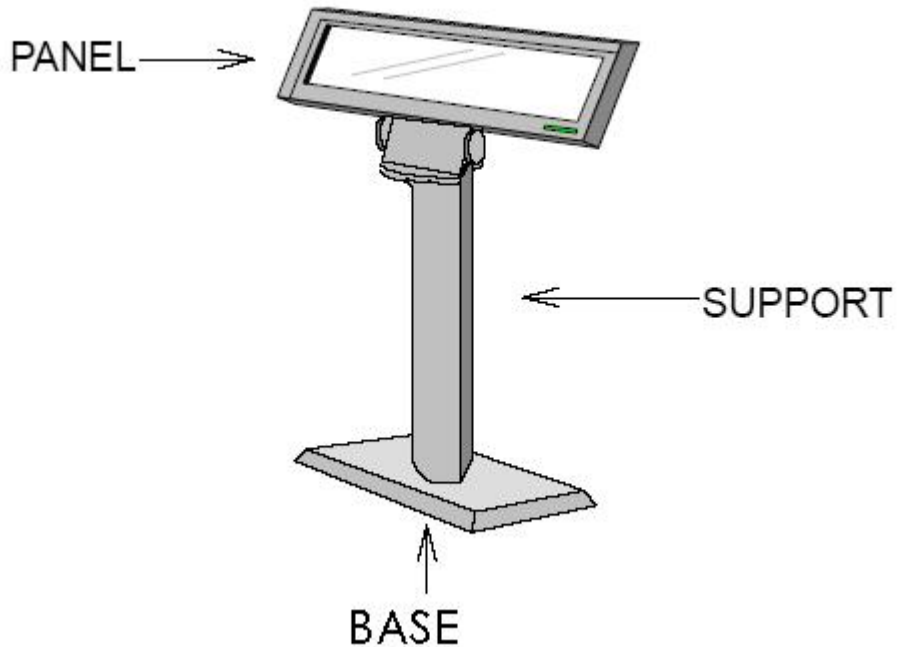
The user defined and international character sets are standard of customer display.

Attention

1. This specification shall apply only to the product(s) coming along with this manual inside.
2. This manual may not apply to the previous or later product(s).
3. This specification may be modified without any notice. If it is necessary for “customers” to have a latest manual about specification, please inquire your suppliers.

1.2 Outline

The customer display outline has included of three parts: the panel, the support, and the base.



The standard VFD customer display should include following accessories.

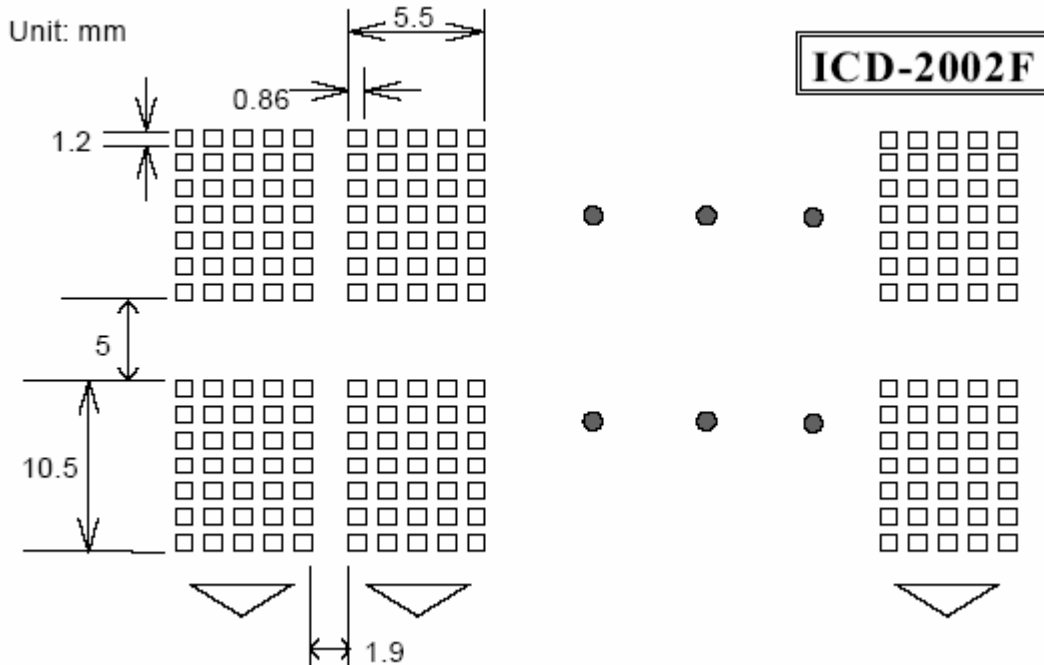
Item	Description	Dimension(mm)	Q'ty
1	Panel of ICD - 2002	225(W) x 50(D) x 92(H)	1
2	Support (Short)	88(H), 33(Diameter)	1
3	Support (Long)	220(H), 33(Diameter)	1
4	Base	190(W) x 95(D) x 50(H)	1
5	Metal Parts		1
6	Driver & Manual Disk		1
7	D - SUB 9PIN RS-232 Cable		1
8	Screw P3.1x15 for Interface Conversion Adapter		4
9	+ 5V PC 4P Plug Power Kit or USB Power Kit or 100V~240V Universal Adapter (5V / 2A) or 110V US or 230V Europe 2P Adapter (5V / 1A)		1

※Above accessories may be different due to customers' requirement when delivery

Chapter 2 General Specification

2.1 Tube Display

Customer Display	Vacuum Fluorescent Display Blue Green
Display pattern	5 x 7 Dot Matrix
Brightness	350 ~ 700 cd / m ²
Character Type	95 Alphanumeric & 32 International Characters
Character Size	5.5mm (W) x 10.5 mm (H) (ICD – 2002F) 7.2mm (W) x 11.25 mm (H) (ICD – 2002)
Character Number	20x2
Character Pitch	Refer the figure 2.1



2.2 Electricity

Central Control Unit	Processor : HT48RU80 ROM : 64K EPROM RAM : 32K SRAM
Connector	10 PIN Phone Jack Connector 5 PIN USB Connector
Power Source	DC + 5V
Power Consumption	3 Watts Average

2.3 Overall Dimensions

Dimension of Panel	225 mm (W) x 50 mm (D) x 92 mm (H)
Dimension of Support	
Long Support	220mm (H) x 33mm (Diameter)
Short Support	88mm (H) x 33mm (Diameter)
Dimension of Base	190 mm (W) x 95 mm (D) x 55 mm (H)
Viewing Angle	Max. 45°
Horizontal Rotation	Max. 340°
Weight	About 0.8 Kg

2.4 Environment

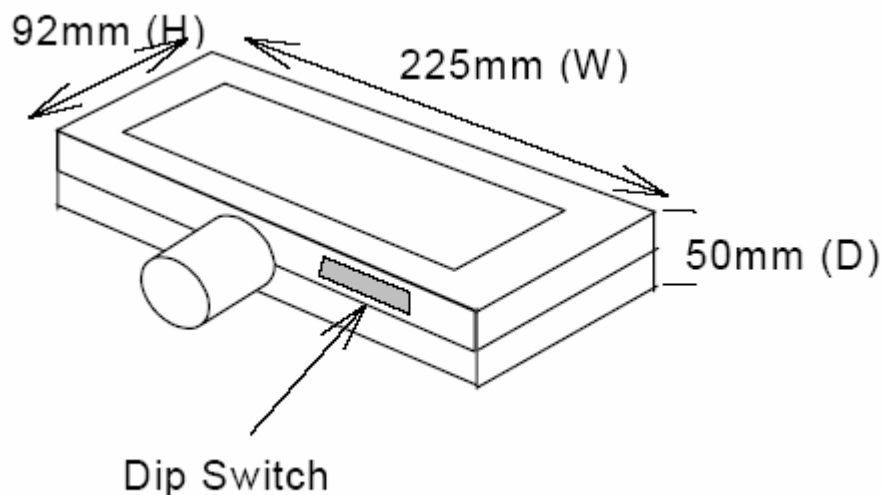
Operating Temperature	+ 10°C to + 40°C
Storage Temperature	- 10°C to + 50°C
Relative Humidity	0% to 90% RH

2.5 Driver Interface

Driver Interface	RS232 or USB
------------------	--------------

2.6 DIP Switch Settings

The default protocol is 9600 bps, non-parity, 8 data bits, 1 stop bit and with DTR/DSR control.



(I) Baud Rate Select

SW Number – SW1	Function Description Baud Rate (bps)
OFF	9600
ON	4800

(II) Command Type Select

SW Number			Function description	Software Defined
SW4	SW3	SW2	Command Type	Hex Code
OFF	OFF	OFF	ICD2002	00
OFF	OFF	ON	EPSON POS D101	01
OFF	ON	OFF	UTC Standard	02
OFF	ON	ON	UTC enhance	03
ON	OFF	OFF	AEDEX	04
ON	OFF	ON	ADM788	05
ON	ON	OFF	DSP800	06
ON	ON	ON	CD5220	07

(III) International Character Set

SW Number				Function Description	
SW 8	SW 7	SW 6	SW5	International Character Set (Code 20H-7FH)	Code Table (Code 80H-FFH)
OFF	OFF	OFF	OFF	U.S.A	PC-437 (USA) (Standard European)
OFF	OFF	OFF	ON	FRANCE	PC-850 (Multilingual)
OFF	OFF	ON	OFF	GERMANY	PC-850 (Multilingual)
OFF	OFF	ON	ON	U.K.	PC-850 (Multilingual)
OFF	ON	OFF	OFF	DENMARK I	PC-850 (Multilingual)
OFF	ON	OFF	ON	SWEDEN	PC-850 (Multilingual)
OFF	ON	ON	OFF	ITALY	PC-850 (Multilingual)
OFF	ON	ON	ON	SPAIN	PC-850 (Multilingual)
ON	OFF	OFF	OFF	JAPAN	Katakana
ON	OFF	OFF	ON	NORWAY	PC-850 (Multilingual)
ON	OFF	ON	OFF	DENMARK II	PC-850 (Multilingual)
ON	OFF	ON	ON	SLAVONIC	
ON	ON	OFF	OFF	RUSSIAN	
ON	ON	OFF	ON	Factory Define	
ON	ON	ON	OFF	Factory Define	
ON	ON	ON	ON	Factory Define	

Chapter 3 Interface

3.1 RS-232

Specifications

Data Transmission Method : Asynchronous Serial

Handshaking : DTR / DSR Control

Default Protocol : 9600 bps , non-parity , 8 data bits , 1 stop bit

Communication Protocol

1. Receive Data.

The DTR signal is as follow:

【HIGH】 This indicates that the display isn't ready to receive data.

It depend on the following conditions:

- The period from when the power is turned on to when the printer first becomes ready.
- When the remaining space in the receiving buffer becomes 128 bytes or less.
- When the DTR signal of the printer is HIGH when the printer is selected using the command.

【Low】 This indicates that the display isn't ready to receive data.

It depends on the following conditions:

- When the printer first becomes ready to receive data after power – on.
- When the remaining space in the receiving buffer becomes 128 bytes or more.
- When the DTR signal of the printer is LOW when the printer is selected using the command.

2. Transmit Data.

After confirming the DSR is LOW, data transmitted to printer.

3.2 USB

Fully Compliant with USB Specification v2.0 (Full-Speed)

On Chip USB 1.1 transceiver

On-chip 96MHz clock generator

Supports RS-422/RS-485 like serial interface (TXD, DTR_N, and RTS_N pins should be externally pulled-up to 5V)

Supports RS232-like Serial Interface

Chapter 4 Command Description

4.1 ICD2002 Command Mode

Command	Hex	Function Description
HT	09	Move cursor right (Only valid in overwrite mode)
BS	08	Move cursor left (Only valid in overwrite mode)
CR	0D	Move cursor to left-most position (Only valid in overwrite mode)
ECS @	1B40	Initialize customer display to initial state ,clears display buffer ,set Display mode to shift and sets current display row to upper row
ECS U	1B55	Select upper row as current row (Initial default)
ECS D	1B44	Select lower row as current row
ECS An	1B41n	Sets customer display disable or enable n = D, Disable ; n = E, Enable
ESC C r c	1B43 r c	Move cursor to specified position (Only valid in overwrite mode) r =U, upper row ; r = D, Lower row 1 ≤ c ≤ 20 (column number)
ESC E r n	1B45 r n	Set special effect or display mode of specified row
ESC R n	1B 52 n	Set international font sets (Please refer International Font Set Table)
ESC % n	1B 25 n	Set font pattern n = 0, selected ;n=1 canceled
ESC & n s [p]	1B 26 n s data	Define user font pattern n=code for first character s=code for last character data=5 bytes required for each character

(REMARK) * Using commands “ESC E r n”, the value (Hex) of parameter

- | | |
|----------------|---|
| r 58h=all rows | n special function ,the value is one of |
| 55h=upper row | 30h=shift mode (Default display mode) |
| 44h=lower row | 31h=rotation mode |
| | 32h=blink mode |
| | 33h=clear this row and switch to shift mode |
| | 34h=overwrite mode |
| | 35h=vertical mode |

* International Font Set Table

n (Hex)	International Font Set	n (Hex)	International Font Set
30h	U.S.A	32h	FRANCE
31h	GERMANY	33h	JAPAN

4.2 EPSON Command Mode

Command	Hex	Function Description
HT	09	Move cursor right
BS	08	Move cursor left
US LF	1F0A	Move cursor up
LF	0A	Move cursor down
US CR	1F0D	Move cursor to right-most position
CR	0D	Move cursor to left-most position
HOM	0B	Move cursor to home position
USB	1F42	Move cursor to bottom position
US \$ xy	1F24 x y	Move cursor to specified position $1 \leq x$ (column) ≤ 20 ; $1 \leq y$ (row) ≤ 2
US C n	1F 43 n	Select/cancel cursor display n=0,canceled ; n=1 selected
CLR	0C	Clear display screen
CAN	18	Clear cursor line
US X n	1F 58 n	Brightness adjustment $1 \leq n \leq 4$
US E n	1F 45 n	Blink display screen $0 \leq n \leq 255$ (n*50msec) ON / (n*50msec) OFF n = 0,blinking is canceled n = 255,display is turned off
ESC @	1B 40	Initialize display
ESC t n	1B 74	Select character code table $0 \leq n \leq 5$ (Please refer "chapter 5")
ESC R n	1B 52 n	Select international character set (Please refer International Font Set Table)
US r n	1F 72 n	Select/cancel reverse character n = 0, canceled ; n=1, select
US MD1	1F 01	Specify overwrite mode
US MD2	1F 02	Specify vertical scroll mode
US MD3	1F 03	Specify horizontal scroll mode
US . n	1F 2En	Specify period display n=display character code
US , n	1F 2Cn	Specify comma display n=display character code
US ; n	1F 3Bn	Specify semicolon (period + comma) display n=display character code
US # n m	1F23 n m	Specify display annunciator ,, turn the annunciator at "m" column on or off n=0 , 1 (off , on) ; $0 \leq m \leq 20$
ESC % n	1B 25 n	Select / cancel download character set n =0,cancel;n=1,selected
ESC % n	1B 57 n s (x1y1x2y2)	Specify /cancel the window range n=1,2,3,4(four windows);s=0,1(disable , enable) $1 \leq x1 \leq x2 \leq 20$ (column); $1 \leq y1 \leq y2 \leq 2$ (row)
US :	1F 3A	Set starting/ending position of macro definition
US@	1F 40	Execute self -test

US T h m	1F 54 h m	Display time $0 \leq h \leq 23 ; 0 \leq m \leq 59$
US U	1F 55	Display of time counter

***International Font Set Table**

n (Hex)	International Font Set	n (Hex)	International Font Set
00h	U.S.A.	06h	ITALY
01h	FRANCE	07h	SPAIN
02h	GERMANY	08h	JPAIN
03h	U.K.	09h	NORWAY
04h	DENMARK I	0AH	DENMARK II
05h	SWEDEN		

※ Specify decimal point , comma semicolon , annunciator *

(1) US . n (Decimal Point) US , n (Comma) / US ; n (Semicolon)

The displayed character codes are form 32 (20h) to 127 (7Eh), and 128 (80h) to 255 (FFh) in the chrarater code

table . The period /comma / semicolon displayed only for n. The period is not displayed for the subsequent display characters.

(2) US# n m (annunciator) :

[range] n = 0(00h) or 1(01h) / m = 0(00h) ~20(14h)

[notes] When n = 0, the annunciator at column m is turned off.

When n = 1, the annunciator at column m is turned off.

“m”specify column number (the most left column is column 1) at which annunciator to be turned on / off is placed.

When m=0, all annunciators are turned on or off.

Once an annunciator (s) is turned on, it remains on until turned off by this command ,the ESC@ or US@ command is executed, or the power is turned off .

[example] : To turn on the annunciator at the third column :

[n = 01h] , [m = 03h]

To turn off all the annunciators :

[n = 00h] , [m = 00h]

※ Above commands relating decimal point, comma, semicolon, and annunciator may not be available due to hardware limit of display tube.

4.3 UTC Standard Command Mode

Command	n (Hex)	Function Description
BS	08	Back space
HT	09	Horizontal tab
LF	0A	Line feed
CR	0D	Carriage return
DC0p	10p	Move cursor specified position, $0 \leq p \leq 39$ (Please refer Row character Position chart)
DC1	11	Over write display mode
DC2	12	Vertical scroll mode
DC3	13	Cursor on
DC4	14	Cursor off
ESC d	1B 64	Change to UTC enhanced mode
US	1F	Clear display

Row Character Position Chart (Decimal)

Row1	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Row2	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39

Row Character Position Chart (Hex)

Row1	00	01	02	03	04	05	06	07	08	09	0A	0B	0C	0D	0E	0F	10	11	12	13
Row2	14	15	16	17	18	19	1A	1B	1C	1D	1E	1F	20	21	22	23	24	25	26	27

4.4 UTC Enhance Command Mode

Command	n (Hex)	Function Description
ESC u A . . CR	1B 75 41 [data x 20] 0D	Upper line display
ESC u B . . CR	1B 75 42 [data x 20] 0D	Bottom line display
ESC u D . . CR	1B 75 44 [data x 45] 0D	Upper line message scroll continuously
ESC u E . . CR	1B 75 45 hh" : "mm 0D	Set and display 24 hour time $0 \leq h, m \leq 9$
ESC u F . . CR	1B 75 46 [data x 45] 0D	Upper line message scroll once pass
ESC u H . . CR	1B 75 48 n m 0D	Change attention code $32 \leq n, m$ (Default attention code n=1Bh, m=75h)
ESC u 1 . . CR	1B 75 49 [data x 40] 0D	Two line display
ESC RS . . CR	1B 0F 0D	Change to UTC standard mode

4.5 AEDEX Command Mode

Command	Hex	Function Description
! # 1..CR	21 23 31 [data x 20] 0D	Upper line display
! # 2..CR	21 23 32 [data x 20] 0D	Bottom line display
! # 4..CR	21 23 34 [data x 45] 0D	Upper line message scroll continuously
! # 5..CR	21 23 35 hh" : "mm 0D	Set and display 24 hour time $0 \leq h, m \leq 9$
! # 5 CR	21 23 35 0D	Display 24 hour time
! # 6..CR	21 23 36 [data x 45] 0D	Upper line message scroll once pass
! # 8..CR	21 23 38 n m 0D	Change attention code $32 \leq n, m$ (Default attention code n="1",m="#")
! # 9..CR	21 23 39 [data x 40] 0D	Two line display

4.6 ADM788 Command Mode

Command	Hex	Function Description
CLR	0C	Clear display
CR	0D	Carriage return
SLE1	0E	Clear up line and move cursor to upper line lsft most end
SLE2	0F	Set period to upper line last n postion
DC0	10 n	$1 \leq n \leq 7$
DC1	11 n	Set line blinking n=1, upper line n=2, lower line
DC2	12 n	Set line blinking n=1, upper line n=2, lower line
SF1	1E	Clear field 1 and move cursor to field 1 fast position
SF2	1F	Clear field 2 and move cursor to field 2 fast position

4.7 DSP800 Command Mode

Command	Hex	Function Description
EOT SOH I n ETB	04 01 49 n 17	Select international character set (Please refer <i>International Font Set Table</i>)
EOT SOH P n ETB	04 01 50 n 17	Move cursor specified position $49 \leq n \leq 88$
EOT SOH C n m ETB	04 01 43 n m 17	Clear display range from <u>n</u> position to <u>m</u> position and move cursor to <u>n</u> position to $49 \leq n \leq m \leq 88$
EOT SOH S n ETB	04 01 53 n 17	Save the current display data (40 character) to n'th layer for demo display $1 \leq n \leq 3$ (n specify the layer 1,2, or 3)
EOT SOH D n m ETB	04 01 44 n m 17	Display the saved data $1 \leq n \leq 3$ (n specify the layer 1,2, or 3) "m" can be ignored
EOT SOH A n ETB	04 01 41 n 17	Brightness adjustment $1 \leq n \leq 4$
EOT SOH = n ETB	04 01 3D n 17	Select peripheral device n=1, printer ; n=2, display
EOT SOH % ETB	04 01 25 17	Initialize display

*International Font Set Table

n (Hex)	International Font Set
30h	U.S.A.
31h	FRANCE
32h	GERMANY
33h	U.K.
34h	DENMARK I
35h	SWEDEN
36h	ITALY
37h	SPAIN
38h	JAPAN
39h	NORWAY
3Ah	DENMARK II

4.8 CD5220 Command Mode

Command	Hex	Function Description
ESC DC1	1B11	Overwrite mode
ESC DC2	1B12	Vertical scroll mode
ESC DC3	1B13	Horizontal scroll mode
ESC Q A CR	1B51 41 [N] 20 0D	Set string mode ,write string to upper line
ESC Q B CR	1B51 42 [N] 20 0D	Set string mode ,write string to lower line
ESC Q D CR	1B51 44 [N] m20 0D	Upper line message scroll continuously m < 40
ESC [D	1B 5B 44	Move cursor left
BS	08	Move cursor left
ESC [C	1B 5B 43	Move cursor right
HT	09	Move cursor right
ESC [A	1B 5B 41	Move cursor up
ESC [B	1B 5B 42	Move cursor down
LF	0A	Move cursor down
ESD [H	1B 5B 48	Move cursor to home position
HOM	0B	Move cursor to home position
ESC [L	1B 5B 4C	Move cursor to left-most position
CR	0D	Move cursor to left-most position
ESC [R	1B 5B 52	Move cursor to right -most position
ESC [K	1B 5B 4B	Move cursor to bottom position
ESC 1 x y	1B 6C x y	Move cursor to specified position 1 ≤ x ≤ 20 (column) ; y=1,2 (row)
ESC@	1B 40	Initialize display
ESC W s x 1 X2 y	1B 57 s x 1 x2 y	Enable or disable the window range at horizontal Scroll mode s=0,1 (disable , enable) 1 ≤ x1 ≤ x2 ≤ 20 (column) ; y=1,2 (row)
CLR	0c	Clear display screen , and clear string mode
CAN	18	Clear cusor line , and clear string mode
ESC*n	1B2A n	Brightness adjustment 1 ≤ n ≤ 4
ESC & s n m [a(p1..p5)](m- n+1)	1B 26 s n m [a (p1..p5)] (m-n+1)	Define download characters s=1 ; 32 ≤ n ≤ m ≤ 126 ; a=5 (p1..p5 = pattern1..parttern5)
ESC ? n	1B 3F n	Delete download characters 32 ≤ n ≤ 126 (n=character code)
ESC % n	1B 25 n	Select / cancel download character set. n=0,canceled ; n=1,selected
ESC _ n	1B 5F n	Set cursor ON/OFF n=0,1 (Off,On)

ESC f n	1B 66 n	Select international fonts set
ESC c n	1B 63 n	Select fonts, ASCII code or JIS code
ESC = n	1B 3D n	Select peripheral device n=1,printer ; n=2,display ; n=3, printer & display

(REMARK)

*While using command “ESC Q A”or “ESC Q B”, these two commands could be used combining with terminal printer – TP 2688 or TP36887

*If using command “ESC Q A”or “ESC Q B”,others commands can't be used except using command “CLR”or “CAN”to change operating mode.

*If using command “ESC Q D”,message on upper line will move continuously till receiving a new command , clearing upper line , and moving cursor to most left position on upper line.

*** International Font Set Table**

n (Decimal)	International Font Set
A	U.S.A.
G	GERMANY
I	ITALY
J	JAPAN
U	U.K.
F	FRANCE
S	SPAIN
N	NORWAY
W	SWEDEN
D	DENMARK I
E	DENMARK II
L	SLAVONIC
R	RUSSIA
	Reserved

*** Select Code Table**

n (Decimal)	International Font Set
A	compliance with ASCII code
J	compliance with JIS code
L	compliance with RUSSIA code
R	compliance with SLAVONIC code

Chapter 5 Character Set

5.1 U.S.A. / Standard Character Set (20h - 7Eh)

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
20h	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
30h	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
40h	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
50h	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
60h	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
70h	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F

5.2 International Character Selection

ASCII CODE

No.	International	23	24	40	5B	5C	5D	5E	60	7B	7C	7D	7E
0	USA	0	1	2	3	4	5	6	7	8	9	A	B
1	FRANCE	0	1	2	3	4	5	6	7	8	9	A	B
2	GERMANY	0	1	2	3	4	5	6	7	8	9	A	B
3	U.K.	0	1	2	3	4	5	6	7	8	9	A	B
4	DENMARK I	0	1	2	3	4	5	6	7	8	9	A	B
5	SWEDEN	0	1	2	3	4	5	6	7	8	9	A	B
6	ITALY	0	1	2	3	4	5	6	7	8	9	A	B
7	SPAIN	0	1	2	3	4	5	6	7	8	9	A	B
8	JAPAN	0	1	2	3	4	5	6	7	8	9	A	B
9	NORWAY	0	1	2	3	4	5	6	7	8	9	A	B
10	DENMARK II	0	1	2	3	4	5	6	7	8	9	A	B
11	SLAVONIC	0	1	2	3	4	5	6	7	8	9	A	B
12	RUSSIA	0	1	2	3	4	5	6	7	8	9	A	B

5.3 Character Code Table

5.3.1 Page 0 (PC437: U.S.A., Standard Europe) 00h – 7Fh

	HEX	0	1	2	3	4	5	6	7
HEX	BIN	0000	0001	0010	0011	0100	0101	0110	0111
0	0000	NUL		SP	0	@	P	-	^
		00	16	32	48	64	80	96	112
1	0001	VD1		|	1	A	Q	a	q
		01	17	33	49	65	81	97	113
2	0010	VD2		"	2	B	R	b	r
		02	18	34	50	66	82	98	114
3	0011	VD3		#	3	C	S	c	s
		03	19	35	51	67	83	99	115
4	0100			\$	4	D	T	d	t
		04	20	36	52	68	84	100	116
5	0101			%	5	E	U	e	u
		05	21	37	53	69	85	101	117
6	0110			&	6	F	V	f	v
		06	22	38	54	70	86	102	118
7	0111			'	7	G	W	g	w
		07	23	39	55	71	87	103	119
8	1000	BS	CAN	(	8	H	X	h	x
		08	24	40	56	72	88	104	120
9	1001	HT		)	9	I	Y	i	y
		09	25	41	57	73	89	105	121
A	1010	LF		*	:	G	Z	j	z
		10	26	42	58	74	90	106	122
B	1011	HOH	ESC	+	:	K	|	k	{
		11	27	43	59	75	91	107	123
C	1100	CLR		,	<	L	\	l	|
		12	28	44	60	76	92	108	124
D	1101	CR		-	=	M	]	m	}
		13	29	45	61	77	93	109	125
E	1110			.	>	N	^	n	~
		14	30	46	62	78	94	110	126
F	1111	US		/	?	O		o	SP
		15	31	47	63	79	95	111	127

To be continued on next page...

80h – FFh

	HEX	8	9	A	B	C	D	E	F
HEX	BIN	1000	1001	1010	1011	1100	1101	1110	1111
0	0000	ƒ 128	É 144	á 160	█ 176	L 192	L 208	α 224	≡ 240
1	0001	ü 129	Æ 145	í 161	█ 177	⊥ 193	⊥ 209	β 225	± 241
2	0010	ó 130	∞ 146	ó 162	█ 178	⊥ 194	⊥ 210	Γ 226	≥ 242
3	0011	ä 131	δ 147	ú 163	| 179	⊥ 195	L 211	π 227	≤ 243
4	0100	š 132	ö 148	ñ 164	⊥ 180	– 196	L 212	Σ 228	∫ 244
5	0101	á 133	ò 149	ñ 165	⊥ 181	⊥ 197	Γ 213	Q 229	∫ 245
6	0110	á 134	ü 150	š 166	⊥ 182	⊥ 198	Γ 214	μ 230	÷ 246
7	0111	g 135	ù 151	g 167	⊥ 183	⊥ 199	⊥ 215	F 231	∞ 247
8	1000	ä 136	ÿ 152	ú 168	⊥ 184	L 200	⊥ 216	φ 232	* 248
9	1001	š 137	o 153	⊥ 169	⊥ 185	Γ 201	⊥ 217	β 233	' 249
A	1010	ò 138	Ü 154	⊥ 170	| 186	⊥ 202	Γ 218	Q 234	' 250
B	1011	ˆ 139	e 155	⊥ 171	⊥ 187	⊥ 203	█ 219	β 235	√ 251
C	1100	ˆ 140	É 156	⊥ 172	⊥ 188	⊥ 204	– 220	∞ 236	π 252
D	1101	ˆ 141	* 157	| 173	| 189	– 205	| 221	φ 237	π 253
E	1110	Ä 142	∞ 158	< 174	– 190	⊥ 206	| 222	E 238	█ 254
F	1111	Ä 143	∞ 159	> 175	– 191	⊥ 207	– 223	∩ 239	∞ 255

5.3.2 Page 1 (Japanese Katakana)

	HEX	B	9	A	B	C	D	E	F
HEX	BIN	1000	1001	1010	1011	1100	1101	1110	1111
0	0000	▬ 128	▮ 144	SP 160	▬ 176	ク 192	キ 208	□ 224	日 240
1	0001	▬ 129	▮ 145	・ 161	フ 177	チ 193	人 209	■ 225	月 241
2	0010	▮ 130	▮ 146	「 162	イ 178	ツ 194	メ 210	■ 226	火 242
3	0011	▮ 131	▮ 147	」 163	ウ 179	テ 195	モ 211	○ 227	水 243
4	0100	▮ 132	▮ 148	・ 164	エ 180	ト 196	ヤ 212	● 228	木 244
5	0101	▮ 133	▮ 149	・ 165	オ 181	ナ 197	ユ 213	◇ 229	金 245
6	0110	▬ 134	▮ 150	ヲ 166	カ 182	ニ 198	ヨ 214	◆ 230	土 246
7	0111	▮ 135	✦ 151	ア 167	キ 183	ヌ 199	ラ 215	✧ 231	年 247
8	1000	▬ 136	↑ 152	イ 168	ク 184	ネ 200	リ 216	▷ 232	月 248
9	1001	▮ 137	↑ 153	・ 169	ケ 185	ノ 201	ル 217	◁ 233	分 249
A	1010	▮ 138	↓ 154	二 170	コ 186	ハ 202	レ 218	▲ 234	人 250
B	1011	▮ 139	✕ 155	・ 171	サ 187	ヒ 203	ロ 219	▼ 235	大 251
C	1100	▮ 140	✦ 156	・ 172	シ 188	フ 204	ワ 220	◀ 236	中 252
D	1101	▮ 141	± 157	ユ 173	ス 189	ヘ 205	ン 221	▶ 237	小 253
E	1110	▮ 142	≤ 158	■ 174	セ 190	ホ 206	・ 222	↑ 238	〒 254
F	1111	▮ 143	≥ 159	ソ 175	ソ 191	マ 207	・ 223	↓ 239	〒 255

5.3.3 Page 2 (PC850: Multilingual)

	HEX	8	9	A	B	C	D	E	F
HEX	BIN	1000	1001	1010	1011	1100	1101	1110	1111
0	0000	€	É	É	Ë	L	ð	à	-
		128	144	160	176	192	208	224	240
1	0001	ù	û	í	ï	ł	ó	â	=
		129	145	161	177	193	209	225	241
2	0010	đ	Æ	ó	Ë	τ	È	Γ	-
		130	146	162	178	194	210	226	242
3	0011	î	ô	ú	ı	ı	É	æ	‡
		131	147	163	179	195	211	227	243
4	0100	ÿ	ä	ñ	ı	-	È	z	ı
		138	148	164	180	196	212	228	244
5	0101	ï	ö	ñ	ı	+	ı	ó	ı
		139	149	165	181	197	213	229	245
6	0110	ı	ü	ş	Ä	ä	ı	µ	+
		134	160	168	182	198	214	230	248
7	0111	ş	ü	ş	Ä	Ä	ı	p	ı
		135	161	167	183	199	215	231	247
8	1000	ê	ÿ	ı	©	ı	ı	p	ı
		136	162	168	184	200	216	232	248
9	1001	ä	ö	©	ı	ı	ı	ó	ı
		137	163	169	185	201	217	233	249
A	1010	ä	ü	ı	ı	ı	ı	ü	ı
		138	164	170	186	202	218	234	250
B	1011	ı	ö	ı	ı	ı	ı	ü	ı
		139	165	171	187	203	219	235	251
C	1100	ı	é	ı	ı	ı	ı	ı	ı
		140	166	172	188	204	220	236	252
D	1101	ı	ö	ı	ı	-	ı	ı	ı
		141	167	173	189	205	221	237	253
E	1110	Ä	X	ı	ı	+	ı	-	ı
		142	168	174	190	206	222	238	254
F	1111	Ä	ı	ı	ı	ı	ı	ı	ı
		143	169	175	191	207	223	239	255

5.3.4 Page 3 (PC860: Portuguese)

	HEX	B	9	A	B	C	D	E	F
HEX	BIN	1000	1001	1010	1011	1100	1101	1110	1111
0	0000	Ç 128	È 144	á 160	■ 176	Ł 182	Ł 208	ç 224	■ 240
1	0001	ü 129	Á 145	í 161	■ 177	Ł 183	Ŧ 209	ç 225	■ 241
2	0010	é 130	Ê 146	ô 162	■ 178	Ŧ 184	Ŧ 210	Ŧ 226	Ŧ 242
3	0011	ê 131	ë 147	ó 163	┘ 179	Ŧ 185	Ł 211	Ŧ 227	Ŧ 243
4	0100	ê 132	ÿ 148	õ 164	┘ 180	— 186	Ł 212	Ŧ 228	┘ 244
5	0101	ê 133	ð 149	ñ 165	┘ 181	+ 187	┘ 213	Ŧ 229	┘ 245
6	0110	Á 134	Ó 150	ê 166	┘ 182	Ŧ 188	┘ 214	Ŧ 230	+ 246
7	0111	ç 135	ü 151	ê 167	┘ 183	Ŧ 189	+ 215	Ŧ 231	* 247
8	1000	ç 136	ı 152	ç 168	┘ 184	Ł 190	+ 216	Ŧ 232	ı 248
9	1001	É 137	ÿ 153	ð 169	┘ 185	┘ 191	ı 217	Ŧ 233	ı 249
A	1010	è 138	Û 154	— 170	┘ 186	Ł 192	┘ 218	Ŧ 234	ı 250
B	1011	í 139	ç 155	ı 171	┘ 187	Ŧ 193	■ 219	Ŧ 235	ı 251
C	1100	Ö 140	È 156	ı 172	┘ 188	Ŧ 194	= 220	Ŧ 236	n 252
D	1101	ı 141	Ó 157	ı 173	┘ 189	— 195	■ 221	Ŧ 237	ı 253
E	1110	Ä 142	Ŧ 158	ç 174	┘ 190	+ 196	ı 222	Ŧ 238	ı 254
F	1111	Ä 143	Ŧ 159	ç 175	┘ 191	Ł 197	= 223	Ŧ 239	* 255

5.3.5 Page 4 (PC863: Canadian-French)

	HEX	8	9	A	B	C	D	E	F
HEX	BIN	1000	'001	1010	'011	1100	1101	1110	1111
0	0000	Ç 128	É 144	Ì 160	Ï 176	Ì 192	Ï 208	Ò 224	Ó 240
1	0001	Ù 129	Ê 145	Í 161	Î 177	Ó 193	Ô 209	Û 225	Ü 241
2	0010	Ð 130	Ë 146	Ï 162	Ï 178	Ô 194	Õ 210	Ü 226	Ý 242
3	0011	Ñ 131	Ë 147	Ò 163	Ï 179	Õ 195	Ö 211	Ý 227	Û 243
4	0100	Ä 132	È 148	Ó 164	Ï 180	Ö 196	Ö 212	Û 228	Ü 244
5	0101	Å 133	Ï 149	Ô 165	Ï 181	Ö 197	Ö 213	Ü 229	Ý 245
6	0110	Æ 134	Ù 150	Õ 166	Ï 182	Ö 198	Ö 214	Ý 230	Û 246
7	0111	Ç 135	Ò 151	Ö 167	Ï 183	Ö 199	Ö 215	Û 231	Ü 247
8	1000	È 136	Û 152	Ö 168	Ï 184	Ö 200	Ö 216	Û 232	Ü 248
9	1001	É 137	Ü 153	Ö 169	Ï 185	Ö 201	Ö 217	Û 233	Ü 249
A	1010	Ê 138	Ü 154	Ö 170	Ï 186	Ö 202	Ö 218	Û 234	Ü 250
B	1011	Ë 139	Ý 155	Ö 171	Ï 187	Ö 203	Ö 219	Û 235	Ü 251
C	1100	Ì 140	Û 156	Ö 172	Ï 188	Ö 204	Ö 220	Û 236	Ü 252
D	1101	Í 141	Ü 157	Ö 173	Ï 189	Ö 205	Ö 221	Û 237	Ü 253
E	1110	Î 142	Ü 158	Ö 174	Ï 190	Ö 206	Ö 222	Û 238	Ü 254
F	1111	Ï 143	Ý 159	Ö 175	Ï 191	Ö 207	Ö 223	Û 239	Ü 255

5.3.6 Page 5 (PC865: Nordic)

	HEX	B	9	A	B	C	D	E	F
HEX	BIN	1000	1001	1010	1011	1100	1101	1110	1111
0	0000	Ċ	É	í	Ī	L	L	α	=
		120	144	160	176	182	208	224	240
1	0001	Ū	Ū	í	Ī	⊥	⊥	β	=
		120	145	161	177	183	209	225	241
2	0010	đ	Æ	đ	Ī	⊥	⊥	Γ	≥
		130	146	162	178	184	210	226	242
3	0011	ñ	đ	ú	|	⊥	L	π	≤
		131	147	163	179	185	211	227	243
4	0100	ā	ü	ñ	⊥	-	L	Σ	↑
		132	148	164	180	186	212	228	244
5	0101	ñ	đ	ñ	⊥	+	⊥	σ	⊥
		133	149	165	181	187	213	229	245
6	0110	đ	ü	ñ	⊥	⊥	⊥	μ	÷
		134	150	166	182	188	214	230	246
7	0111	ŕ	ü	ñ	⊥	⊥	+	τ	≈
		135	151	167	183	189	215	231	247
8	1000	š	ý	ž	⊥	L	+	φ	*
		136	152	168	184	200	216	232	248
9	1001	š	Ů	⊥	⊥	⊥	⊥	δ	'
		137	153	169	185	201	217	233	249
A	1010	š	Ů	⊥	|	⊥	⊥	σ	-
		138	154	170	186	202	218	234	250
B	1011	ÿ	φ	ž	⊥	⊥	⊥	δ	√
		139	155	171	187	203	219	235	251
C	1100	ĩ	š	ž	⊥	⊥	-	∞	ñ
		140	156	172	188	204	220	236	252
D	1101	ĩ	φ	|	|	-	⊥	φ	*
		141	157	173	189	205	221	237	253
E	1110	Ä	ŕ	◄	⊥	+	|	ε	|
		142	158	174	190	206	222	238	254
F	1111	Ä	ŕ	◄	⊥	⊥	=	∏	φ
		143	159	175	191	207	223	239	255

Chapter 6 Installation Guide

