PDAC3100-D1
INTERFACE BOARD USER MANUAL

LABAU Technology Corp.

Contents

Chapter 1 Specifications

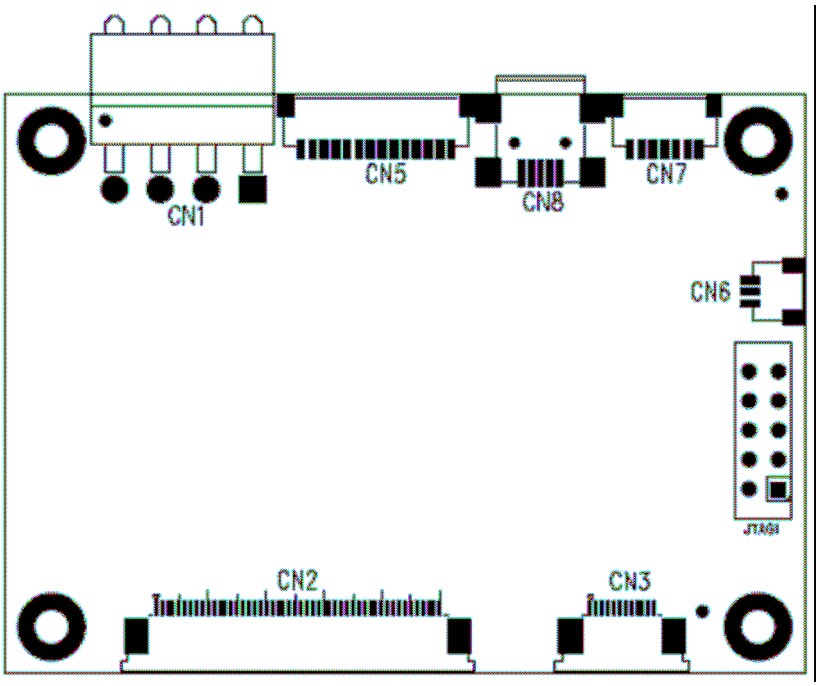
1.1. General Specifications

Table 1 General Specifications

Item	Specifications
Application Model	PDAC3100-D1
Input control method	Serial Input/Output and USB Input/Output
Printing method	Thermal dot line printing
Character type	CP-437 Katakana CP-850 CP-860 CP-863 CP-865
Character configuration 1-Byte character 2-Byte character	Font A Font B 9x17 12x24 -- 24x24
Printable dot number	576 dots
Maximum print speed	150 mm / second
Operating voltage range: Vp	+24 VDC ± 7%
Receive buffer	2KB/6KB/20KB/128KB(default) (selectable)
Non-volatile bit image buffer	128KB
Dimensions	69 mm (W) x 50 mm (D)

Chapter 2 Connector and Teminal

2.1. Connectors



2.2. Power Supply Connector (CN1)

Connect CN1 that has 4 pins to the power supply.

Table 2 CN1 Terminal Assignments

Terminal No.	Signal Name	I/O	Function
1	Vp	I	+24V
2	Vp	I	+24V
3	GND	-	GND
4	GND	-	GND

2.3. Thermal Head, Motor, Sensor Connector (CN2)

Connect CN2 that has 50 pins to the thermal head, motor and sensor of the LTPDx47/CAPDx47 series printer.

Table 3 CN2 Terminal Assignments

Terminal No.	Signal Name	I/O	Function
1	HVp	O	Head drive power

2	HVp	O	Head drive power
3	HVp	O	Head drive power
4	HVp	O	Head drive power
5	HVp	O	Head drive power
6	HVp	O	Head drive power
7	DAT	O	Print data output
8	CLK	O	Synchronizing signal for print data transfer
9	GND	-	Head GND
10	GND	-	Head GND
11	GND	-	Head GND
12	GND	-	Head GND
13	GND	-	Head GND
14	GND	-	Head GND
15	NC	-	Unused
16	DST4	O	Head strobe signal 4
17	DST3	O	Head strobe signal 3
18	Vcc	-	Logic power
19	TH GND	-	Thermistor GND
20	TH GND	-	Thermistor GND
21	TH	I	Thermistor signal
22	NC	-	Unused
23	DST2	O	Head strobe signal 2
24	DST1	O	Head strobe signal 1
25	GND	-	Head GND
26	GND	-	Head GND
27	GND	-	Head GND
28	GND	-	Head GND
29	GND	-	Head GND
30	GND	-	Head GND
31	LATCH	-	Print data latch
32	HVp	-	Head drive power
33	HVp	-	Head drive power
34	HVp	-	Head drive power
35	HVp	-	Head drive power
36	HVp	-	Head drive power
37	HVp	-	Head drive power
38	NC	-	Unused

39	PS	I	Signal of the out-of-paper sensor
40	Vps	O	Power supply of the out-of-paper sensor
41	GND	-	GND of the platen position/ out-of-paper sensor
42	HS	I	Signal of the platen position sensor
43	NC	-	Unused
44	FG	-	Frame GND
45	FG	-	Frame GND
46	NC	-	Unused
47	2A	O	Motor drive signal
48	1B	O	Motor drive signal
49	1A	O	Motor drive signal
50	2B	O	Motor drive signal

2.4. Autocutter Connector (CN3)

Connect CN3 that has 12 pins to the autocutter of the CAPDx47 series printer unit.

Table 4 CN3 Terminal Assignments

Terminal No.	Signal Name	I/O	Function
1	NC	-	Unused
2	Vcs	O	Power supply of the home position sensor
3	GND	-	GND of the home position sensor
4	CUTS	I	Signal of the home position sensor
5	2B	O	Autocutter motor drive signal
6	2B	O	Autocutter motor drive signal
7	2A	O	Autocutter motor drive signal
8	2A	O	Autocutter motor drive signal
9	1B	O	Autocutter motor drive signal
10	1B	O	Autocutter motor drive signal
11	1A	O	Autocutter motor drive signal
12	1A	O	Autocutter motor drive signal

2.5. External I/O Connector (CN5)

Connect CN5 that has 14 pins to following signals:

- Feed and reset input terminals
- Status output terminal
- Drawer drive terminals

Table 5 CN5 Terminal Assignments

Terminal No.	Signal Name	I/O	Function
1	FEED	I	Feed signal
2	RESET	I	Reset signal
3	GND	-	GND
4	ST1	O	Status signal
5	ST2	O	Status signal
6	ST3	O	Status signal
7	ST4	O	Status signal
8	GND	O	GND
9	DRS	O	Drawer sensor signal
10	DSW	O	Drawer switch signal
11	Vdu		Drive terminal for the drawer (V_p side)
12	GNDdu		Drive terminal for the drawer(GND side)
13	GND	O	GND
14	NC	O	Unused

2.6. Paper Near End Sensor

Connect CN6 that has 3 pins to the paper-near-end sensor.

Table 6 CN6 Terminal Assignments

Terminal No.	Signal Name	I/O	Function
1	Vns	O	Power supply of the near end sensor
2	NS	I	Signal of the near end sensor
3	GND	-	GND of the near end sensor

2.7. RS-232 Connector(CN7)

Connect CN7 that has 7 pins to the RS-232.

Table 7 CN7 Terminal Assignments

Terminal No.	I/O	Signal Name
1	O	TxDl
2	I	RxD
3	O	RTS
4	I	CTS
5	O	DTR
6	I	DSR

7	-	GND

2.8. USB Interface Connector (CN8)

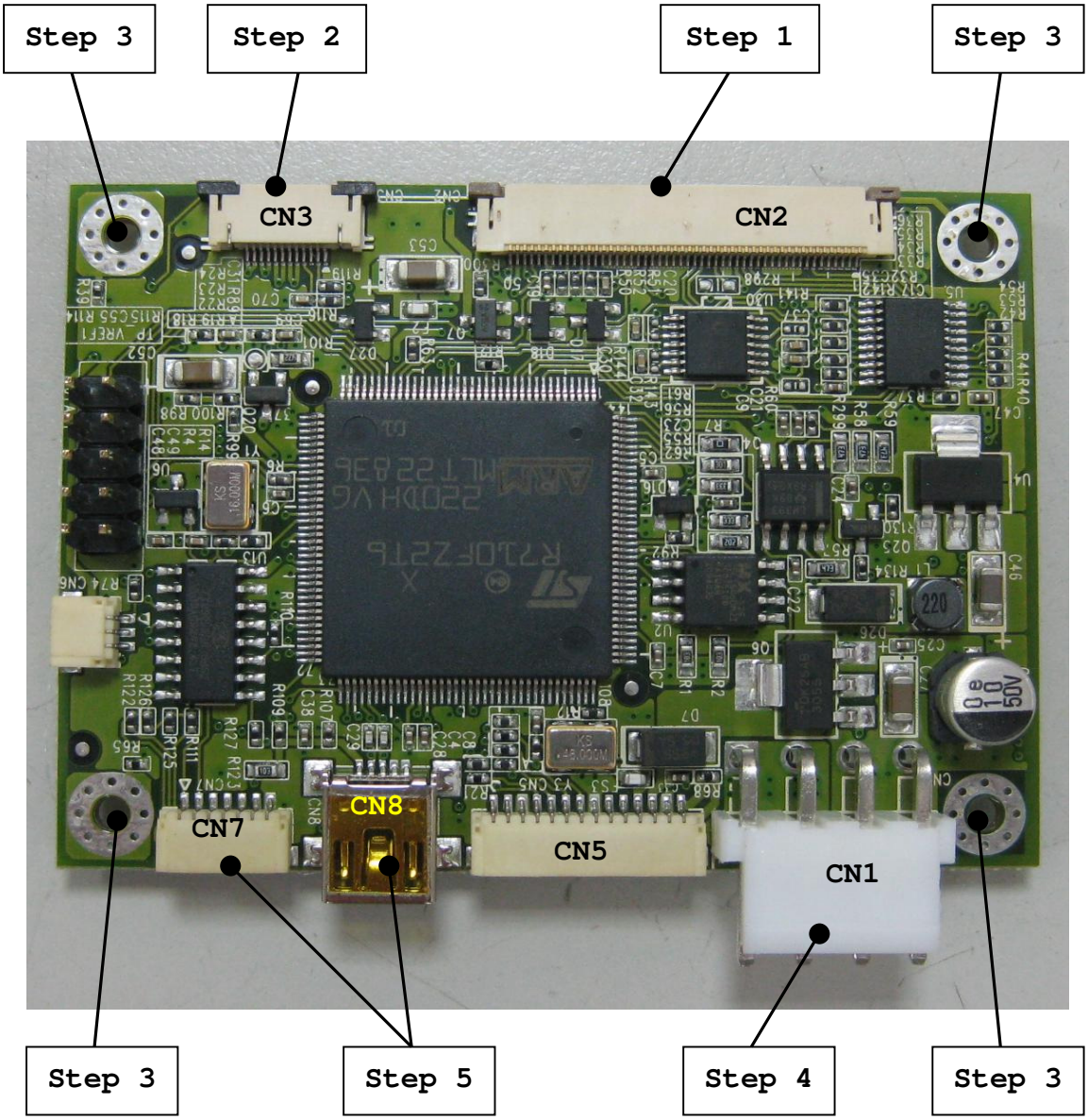
Connect CN8 that has 5 pins to the USB.

Table 8　CN8 Terminal Assignments

Terminal No.	Signal Name
1	Vbus
2	D-
3	D+
4	NC
5	GND

Chapter 3 Installation

This chapter described how to set the function settings, connection, power supply and the terminals for connecting the PDAC3100-D1 to the CAPDx47, LTPDx47 series printer host device. **Turn the power supply OFF before setting the printer**.



Step 1. Connecting the FPC for the thermal head, motor and sensor into the CN2 on the PDAC3100-D1。

Step 2. Connecting the FPC for the Autocutter into the CN3 on the PDAC3100-D1。

Step 3. Fix the PDAC3100-D1 on the system。

Step 4. Connecting the power supply into CN1 on the PDAC3100-D1。

Step 5. Connecting the serial I/O cable into CN7 or USB cable into CN8 on PDAC3100-D1。

Chapter 4 Operation

4.1. ESC/POS Command

ESC/POS Command List

Command	Hexadecimal	Name
LF	0A	Print and line feed
FF	0C	Print and return to standard mod (in page mode)
NUL LF	00 0A	Line feed (print after receiving end command)
NUL CR	00 0D	Carriage return (print after receiving end command)
CR+LF	0D 0A	Print, carriage return, and line feed
DLE EOT	10 04	Real-time status transmission
DEL DC4	10 14	Generate pulse at real-time (Drawer kick-out, as 1B 70 command)
ESC FF	1B 0C	Print date in page mode
ESC SP	1B 20	Set right-side character spacing
ESC !	1B 21	Select print mode(s)
ESC $	1B 24	Set absolute print position
ESC *	1B 2A	Select bit-image mode
ESC -	1B 2D	Turn underline mode on/off
ESC 2	1B 32	Select default line spacing
ESC 3	1B 33	Set line spacing
ESC =	1B 3D	Select peripheral device
ESC @	1B 40	Initialize printer
ESC J	1B 4A	Print and feed paper
ESC L	1B 4C	Select page mode
ESC M	1B 4D	Select character font
ESC R	1B 52	Select an international character set
ESC S	1B 53	Select standard mode
ESC W	1B 5C	Set relative print position
ESC a	1B 61	Select justification
ESC c	1B 63	Select paper sensor(s) to output paper-end signals
ESC d	1B 64	Print and feed n line
ESC i	1B 69	Full cut
ESC l	1B 6D	Partial cut
ESC p	1B 70	Generate pulse
ESC t	1B 74	Select character code table
ESC {	1B 7B	Turn upside-down printing mode on/off
FS !	1C 21	Set Chinese character size
FS &	1C 26	Set Chinese character mode
FS .	1C 2E	Cancel Chinese character
FS g	1C 67	Read/Write user's defined data
FS p	1C 70	Print NV bit image
FS q	1C 71	Define NV bit image
GS !	1D 21	Select character size
GS (A	1D 28	Execute test print
GS *	1D 2A	Define downloaded bit image
GS /	1D 2F	Print downloaded bit image
GS B	1D 42	Turn white/black reverse printing mode on/off
GS H	1D 48	Select printing position of HRI characters
GS I	1D 49	Transmit printer ID
GS L	1D 4C	Set left margin
GS P	1D 50	Set horizontal and vertical motion units
GS V	1D 56	Select cut mode and cut paper
GS a	1D 61	Enable/disable Automatic Status Back(ASB)
GS f	1D 66	Select font for HRI characters
GS h	1D 68	Set bar code height

GS k	1D 6B	Print bar code
GS r	1D 72	Transmit status
GS v	1D 76	Print raster bit image
GS w	1D 77	Set bar code width

4.2. RS232 Status(CN7)

The RS232 status:

Item	Specification
Synchronization	Asynchronous
Baud rate(bps)	9600, 19200, 38400, 115200(default)
Data bit length	8 bits
Stop bit length	1 bit
Parity	None

4.3. Status Output(CN5)

Status	ST1	ST2	ST3	ST4
Initializing	High	High	High	Low
Thermal head error	Low	Low	Low	Low
Thermal head temperature error	Low	High	Low	Low
Vp voltage error/ Vp voltage initialization error	Low	Low	High	Low
Autocutter error	Low	High	Low	High
Platen block position error	Low	Low	Hight	High
Out-of-paper error	Low	High	High	High
Printing	High	Low	Low	High
Print-ready	High	Low	Low	Low

Chapter 5 Error Processing

Errors are classified into eight types. Thermal head error, thermal head temperature error, Vp voltage error, Autocutter error, platen open error, out-of-paper error, Vp voltage initialization error, and paper jam error while detecting mark. The type of operation errors can be judged by the status signal from the status output terminal. Moreover, that can be received the error code by the Error Status Back Enable/Disable command .

Since the data is buffered except thermal head error or Vp voltage initialization error, printing can be resumed

once the causes of the errors are removed and the errors are canceled.

The causes of the errors and the solution for each error are listed below.

- Thermal head error

  When the power is switched on, or during the initialization just after reset, detects the abnormality of the head.

  The average resistance of the thermal head is lower than rated value, or the dot resistance is especially low.

  The average resistance of the thermal head is higher than rated value, or some of the physical blocks are damaged.

  This means that the printer mechanism is damaged, or not correctly connected to the PDAC3100-D1 and the printer.

  -> Nonrecoverable error.

- Vp voltage initialization error

  When the power is switched on, or during the initialization just after reset, Vp voltage is not over

  20.0V within 5 seconds. That cause of abnormal power supply or circuit.

  -> Nonrecoverable error

- Out-of-paper error

  No paper.

-> Load paper.

The PDAC3100-D1 goes to print ready status in about a second.

- Platen block position error

  The platen is not correct position.

  -> Set the platen to return the normal position.

  The PDAC3100-D1 goes to print ready status in about a second.

- Vp voltage error

  Vp voltage is out of the allowable range.

  -> Return Vp voltage to allowable range.

  The PDAC3100-D1 goes to print ready status in about a second.

- Thermal head temperature error

  The temperature of the thermal head is -25 ℃ or lower, or 85 ℃ or higher.

  -> If it ranges from -20 ℃ to 80 ℃, the PDAC3100-D1 goes to print ready status.

- Autocutter error

  There are two kinds of autocutter errors:

  ◆ An error occurs during operation of the cutter; the movable blade is in the home position.

  -> PDAC3100-D1 detects the autocutter error, and goes to print ready status in about a second.

  ◆ An error occurs during operation of the cutter; the movable blade is not in the home position (the movable blade is locked).

  -> PDAC3100-D1 detects the autocutter error. When the cause of the locking of the movable blade

  (such as paper jam) is removed and the platen block is set, the PDAC3100-D1 goes to print ready status in about a second.

- Paper jam error while detecting mark

After the mark detects, cannot detect the mark end.

-> Make out-of-paper status or platen open status, then set again and become the print ready status about one second later.

Chapter 6 Character Sets

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

The default code page in PDAC3100-D1 printer is PC437 (Page 0)

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
20		!	"	#	$	%	&	'	(	)	*	+	,	-	.	/
30	0	1	2	3	4	5	6	7	8	9	:	;	<	=	>	?
40	@	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
50	P	Q	R	S	T	U	V	W	X	Y	Z	[	\	]	^	_
60	`	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o
70	p	q	r	s	t	u	v	w	x	y	z	{	|	}	~	

6.2. International Character Selection

No.	International	23	24	40	5B	5C	5D	5E	60	7B	7C	7D	7E
	U.S.A.	#	$	@	[	\	]	^	`	{	|	}	~
1	FRANCE	#	$	à	°	Ç	§	^	`	é	ù	è	¨
2	GERMANY	#	$	§	Ä	Ö	Ü	^	`	ä	ö	ü	β
3	U.K.	£	$	@	[	\	]	^	`	{	|	}	~
4	DENMARK I	#	$	@	Æ	Φ	Â	^	`	æ	ø	â	~
5	SWEDEN	#	¤	É	Ä	Ö	Å	Ü	é	ä	ö	å	ü
6	ITALY	#	$	@	°	\	é	^	ù	à	ò	è	ì
7	SPAIN	₧	$	@	¡	Ñ	¿	^	`	¨	ñ	}	~
8	JAPAN	#	$	@	[	¥	]	^	`	{	|	}	~
9	NORWAY	#	¤	É	Æ	Ø	Å	Ü	é	æ	ø	å	ü
10	DENMARK II	#	$	É	Æ	Ø	Å	Ü	é	æ	ø	å	ü
11	SLAVONIC	#	$	@	[	\	]	^	`	{	|	}	~
12	RUSSIA	#	$	@	[	\	]	^	`	{	|	}	~

Note:*The character code tables show only character configurations. They do not show the actual print pattern.*

6.3. Character code table

There are six code page in PDAC3100-D1 printer and it can be change or update by setup utility. These six code pages list below:

Page No.	Code page
Page 0	PC437: USA, Standard Europe (default)
Page 1	Katakana
Page 2	PC850: Multilingual
Page 3	PC860: Portuguese
Page 4	PC863: Canadian-French
Page 5	PC865: Nordic

To be continued on next page…

6.3.1 Page 1 (Japanese Katakana)

	80	90	A0	B0	C0	D0	E0	F0
0	▄	▌		▬	タ	ミ	□	日
1	▄	▌	・	ア	チ	ム	■	月
2	▬	▉	「	イ	ツ	メ	■	火
3	▬	▉	」	ウ	テ	モ	○	水
4	■	▉	、	エ	ト	ヤ	●	木
5	■	▒	・	オ	ナ	ユ	◇	金
6	▄	▒	ヲ	カ	ニ	ヨ	◆	土
7	▬	→	ァ	キ	ヌ	ラ	◆	年
8	▬	←	ィ	ク	ネ	リ	▶	円
9	▬	↑	ゥ	ケ	ノ	ル	◀	分
A	■	↓	ェ	コ	ハ	レ	▲	人
B	■	×	ォ	サ	ヒ	ロ	▼	大
C	▌	÷	ャ	ッ	フ	ワ	《	中
D	▉	±	ュ	ス	ヘ	ン	》	小
E	▉	≤	ョ	セ	ホ	“	½	〒
F	▉	≥	ッ	ソ	マ	°	¼	℃

6.3.2 Page 2 (PC850: Multilingual)

	80h	90h	A0h	B0h	C0h	D0h	E0h	F0h
0	Ç	É	á	░	└	ð	Ó	≡
1	ü	æ	í	▒	┴	Ð	ß	±
2	é	Æ	ó	▓	┬	Ê	Ô	‗
3	â	ô	ú	│	├	Ë	Ò	¾
4	ä	ö	ñ	┤	─	È	õ	¶
5	à	ò	Ñ	Á	┼	ı	Õ	§
6	å	û	ª	Â	ã	Í	µ	÷
7	ç	ù	º	À	Ã	Î	þ	¸
8	ê	ÿ	¿	©	╚	Ï	Þ	°
9	ë	Ö	®	╣	╔	┘	Ú	¨
A	è	Ü	¬	║	╩	┌	Û	·
B	ï	ø	½	╗	╦	█	Ù	¹
C	î	£	¼	╝	╠	▄	ý	³
D	ì	Ø	¡	¢	═	¦	Ý	²
E	Ä	×	«	¥	╬	Ì	¯	■
F	Å	ƒ	»	┐	¤	▀	´	

6.3.3 Page 3 (PC860: Portuguese)

	80h	90h	A0h	B0h	C0h	D0h	E0h	F0h
0	Ç	É	á	░	└	╨	α	≡
1	ü	À	í	▒	┴	╤	ß	±
2	é	È	ó	▓	┬	╥	Γ	≥
3	â	ô	ú	│	├	╙	π	≤
4	ã	õ	ñ	┤	─	╘	Σ	⌠
5	à	ò	Ñ	╡	┼	╒	σ	⌡
6	Á	Ú	ª	╢	╞	╓	µ	÷
7	ç	ù	º	╖	╟	╫	τ	≈
8	ê	Ì	¿	╕	╚	╪	Φ	°
9	Ê	Õ	Ò	╣	╔	┘	Θ	∙
A	è	Ü	¬	║	╩	┌	Ω	·
B	Í	¢	½	╗	╦	█	δ	√
C	Ô	£	¼	╝	╠	▄	∞	ⁿ
D	ì	Ù	¡	╜	═	▌	φ	²
E	Ã	₧	«	╛	╬	▐	ε	■
F	Â	Ó	»	┐	╧	▀	∩	

6.3.4 Page 4 (PC863: Canadian-French)

	80h	90h	A0h	B0h	C0h	D0h	E0h	F0h
0	Ç	É	¦	░	└	╨	α	≡
1	ü	È	´	▒	┴	╤	ß	±
2	é	Ê	ó	▓	┬	╥	Γ	≥
3	â	ô	ú	│	├	╙	π	≤
4	Â	Ë	¨	┤	─	╘	Σ	⌠
5	à	Ï	¸	╡	┼	╒	σ	⌡
6	¶	û	³	╢	╞	╓	µ	÷
7	ç	ù	¯	╖	╟	╫	τ	≈
8	ê	¤	Î	╕	╚	╪	Φ	°
9	ë	Ô	⌐	╣	╔	┘	Θ	∙
A	è	Ü	¬	║	╩	┌	Ω	·
B	ï	¢	½	╗	╦	█	δ	√
C	î	£	¼	╝	╠	▄	∞	ⁿ
D	‗	Ù	¾	╜	═	▌	φ	²
E	À	Û	«	╛	╬	▐	ε	■
F	§	ƒ	»	┐	╧	▀	∩	

6.3.5 Page 5 (PC865: Nordic)

	80h	90h	A0h	B0h	C0h	D0h	E0h	F0h
0	Ç	É	á	░	└	╨	α	≡
1	ü	æ	í	▒	┴	╤	ß	±
2	é	Æ	ó	▓	┬	╥	Γ	≥
3	â	ô	ú	│	├	╙	π	≤
4	ä	ö	ñ	┤	─	╘	Σ	⌠
5	à	ò	Ñ	╡	┼	╒	σ	⌡
6	å	û	ª	╢	╞	╓	µ	÷
7	ç	ù	º	╖	╟	╫	τ	≈
8	ê	ÿ	¿	╕	╚	╪	Φ	°
9	ë	Ö	⌐	╣	╔	┘	Θ	∙
A	è	Ü	¬	║	╩	┌	Ω	·
B	ï	ø	½	╗	╦	█	δ	√
C	î	£	¼	╝	╠	▄	∞	ⁿ
D	ì	Ø	¡	╜	═	▌	φ	²
E	Ä	₧	«	╛	╬	▐	ε	■
F	Å	ƒ	¤	┐	╧	▀	∩	