



Application Programming Guide

JavaPOS Driver

Rev. 1.00
BCD-2000 / BCD-3000

<http://www.bixolon.com>

Introduction

This manual provides information on the BIXOLON JavaPOS driver as well as on the usage LineDisplay products offered by BIXOLON.

The following are terms contained in this manual.

- JDK : Java Development Kit
- JRE : Java Runtime Environment
- JavaPOS : Java Point of Sale
- JCL Utility : JavaPOS Configuration Loader Utility

[Reference Websites]

<http://www.javapos.com> : Java POS committee website

<http://java.com> : Official Java website

<http://www.bixolon.com> : BIXOLON website

We at BIXOLON maintain ongoing efforts to enhance and upgrade the functions and quality of all our products. In following, product specifications and/or user manual content may be changed without prior notice.

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1. Development environment

1-1 Communication Configuration

Communication Configuration for serial interface

You will set communication configuration in JCL Utility.

LineDisplay Model	Baud rate	Rows	Columns
BCD-2000	9600/19200/38400/57600/115200	4	30
BCD-2000K	9600/19200/38400/57600/115200	2	20
BCD-3000	USB to Serial	2	20

Note

- Check the default communication settings for each product.
For details, refer to the user manual.
- BCD-2000K is the compatible mode of BCD-2000.
It is possible to set compatibility mode by Customer Display Utility.

2. Properties / Methods

This section describes the properties and methods supported by the LineDisplay device.
For more details on UPOS, refer to the UPOS 1.13 agreement.

2-1 Properties Range / Default Value

2-1-1 Capability properties setting value

Capability Property	BCD-2000/2000K BCD-3000
CapBlink	DISP_CB_BLINKALL
CapBrightness	FALSE
CapCharacterSet	DISP_CCS_ASCII
CapDescriptors	FALSE
CapHMarquee	TRUE
CapVMarquee	FALSE
CapICharWait	TRUE
CapPowerReporting	JPOS_PR_STANDARD
CapBlinkRate	TRUE
CapCursorType	DISP_CCT_UNDERLINE
CapCustomGlyph	FALSE
CapReadBack	FALSE
CapReverse	DISP_CR_REVERSEEACH
CapBitmap	TRUE
CapMapCharacterSet	FALSE
CapScreenMode	FALSE
CapStatisticsReporting	FALSE
CapUpdateStatistics	FALSE
CapCompareFirmwareVersion	FALSE
CapUpdateFirmware	FALSE

2-1-2 Properties default value / range**1) CharacterSetList(Code page) setting value and default setting**

Model	Value
BCD-2000K	437,1,850,860,863,865,1250,1251,1252,866,852,858,20(Farsi), 862,1254,1257,864,775,737,1253,857,32(Hebrew Old), 1255,855,928,1256,1258,49(TCVN-3),50(TCVN-3 Capital),51(VISCII)
BCD-2000 BCD-3000	437,866,852,20(Farsi),864,857

2) Other properties setting value

Property Name	BCD-2000	BCD-2000K	BCD-3000
DeviceWindow	4	4	4
DeviceRows	4	2	2
DeviceColumns	30	20	20
MapCharacterSet	FALSE	FALSE	FALSE
MaximumX	240	240	160
MaximumY	64	64	32
ScreenMode	0	0	0
ScreenModeList	"4x30"	"2x20"	"2x20"

2-1-3 Description of Major Properties

1) deviceEnabled

- Description: It indicates whether LineDisplay is used or not. LineDisplay can be used by setting this value as true after calling open and claim method.
- Relevant method: void setDeviceEnabled(boolean)

2) characterSetList

- Description: It brings the list of character set from LineDisplay.
- Relevant method: String getCharacterSetList()

3) characterSet

- Description: It is the character set used in case of outputting LineDisplay.
It can be set among values in the characterSetList.
It should be set after deviceEnabled is set as true.

- Relevant method: void setCharacterSet(int)
- Example

lineDisplay.setCharacterSet(1);	// Katakana setting
lineDisplay. setCharacterSet (2);	// CP850(Multilingual) setting
lineDisplay. setCharacterSet (19);	// CP858(Euro) setting
lineDisplay. setCharacterSet (41);	// CP1258(Vietnam) setting

Note

Refer to “5-2-1 Basic codepage” for information on the supported code page.

4) deviceColumns

- Description: It refers to the number of characters which can be indicated in a line.
- Relevant method: void displayText(String, int)
void displayTextAt(int, int, String, int)

5) deviceRows

- Description: It refers to the number of lines which can be displayed on a screen.
- Relevant method: void displayText(String, int)
void displayTextAt(int, int, String, int)

6) blinkRate

- Description: It sets a period of blinking text (time unit: ms)
- Relevant method: `void displayText(String, int)`
`void displayTextAt(int, int, String, int)`

- Example

```
//Setting the blinkRate as 1000ms (1 sec)
lineDisplay.setBlinkRate(1000);

//Outputting "Blink Test" text
lineDisplay.displayText( "Blink Test", LineDisplayConst.DISP_DT_BLINK);
```

7) interCharacterWait

- Description: It sets the waiting time between characters in the text output in the Teletype mode (effect of outputting each character one by one, time unit: ms).
- Relevant method: `void displayText(String, int)`
`void displayTextAt(int, int, String, int)`

- Example

```
//Setting an interval of character output as 300ms (0.3 sec)
lineDisplay.setInterCharacterWait(300);

//Outputting "Teletype Test" text
lineDisplay.displayText("Teletype Test", LineDisplayConst.DISP_DT_NORMAL);
```

8) maximumX

- Description: It refers to the number of pixels with the maximum width from LineDisplay.
- Relevant method: `void displayBitmap(String, int, int, int)`
`void setBitmap(int, String, int, int, int)`

- Example

//Outputting a bitmap image in the center occupying half of the screen in size

```
String strPath = "logo.bmp";
int width = lineDisplay.getMaximumX() / 2;
lineDisplay.displayBitmap (strPath, width, LineDisplayConst.DISP_BM_CENTER,
lineDisplayConst.DISP_BM_CENTER);
```

Note

For more details related to the properties, refer to the UPOS 1.13 Protocol Document.

2-1-4 Methods

Method	Value
clearText	O
displayText	O
displayTextAt	O
scrollText	O
clearDescriptors	X
setDescriptors	X
createWindow	O
destroyWindow	O
refreshWindow	O
defineGlyph	X
readCharacterAt	X
displayBitmap	O
setBitmap	O

O: Supported X: Not Supported

2-1-5 Description of Major Methods

1) displayText

- Description: It outputs the text at the position of the screen cursor.
- Method prototype: void displayText(String, int)
- Parameter information
 - String data: It sets the text to output to the screen.
 - int attribute: It designates the property for the method indicated on the screen
(Refer to [JPOS constant value](#)).
- Example

```
//Outputting the text at the current position of the cursor  
lineDisplay.displayText("Normal", LineDisplayConst.DISP_DT_NORMAL);
```

2) displayTextAt

- Description: It outputs the text at the position designated on the screen.
- Method prototype: void displayTextAt(int, int, String, int)
- Parameter information
 - int row: It designates the starting row of text to output.
 - int column: It designates the starting column of text to output.
 - String data: It sets the text to output on the screen.
 - int attribute: It designates the property the method indicated on the screen
(Refer to [JPOS constant value](#)).
- Example

```
//Outputting the text on the position of row 1 and column 1  
lineDisplay.displayTextAt(0, 0, "normal", LineDisplayConst.DISP_DT_NORMAL);  
  
//Outputting the reverse on the position of row 2 and column 2  
lineDisplay.displayTextAt(1, 1, "reverse", LineDisplayConst.DISP_DT_REVERSE);
```

3) clearText

- Description: It erases all the texts output on the screen.
- Method prototype: void clearText(void)

4) scrollText

- Description: It scrolls the text output on the screen up, down, left and right.
- Method prototype: void scrollText(int, int)
- Parameter information
 - int direction: It designates a direction to scroll (Refer to [JPOS constant value](#)).
 - int units: It designates the number of rows or columns to scroll.
- Example

```
//Scrolling two spaces to the right  
lineDisplay.scrollText(LineDisplayConst.DISP_ST_RIGHT, 2);
```

5) createWindow

- Description: It generates viewport in the part of display screen by the first four parameters.
The size of window is determined by the last two parameters.
- Method prototype: void createWindow(int, int, int, int, int, int)
- Parameter information
 - int viewportRow: It designates the starting row of viewport.
 - int viewportColumn: It designates the starting column of viewport.
 - int viewportHeight: It designates the height of viewport.
 - int viewportWidth: It designates the width of viewport.
 - int windowHeight: It designates the height of window.
 - int windowWidth: It designates the width of window.
- Example

```
// Generating viewport of 2x4 on the window of 2x4 in the row 1 and column 4  
lineDisplay.createWindow(0, 3, 2, 4, 2, 4);  
lineDisplay.displayText("abcdABCD", LineDisplayConst.DISP_DT_NORMAL);
```

- Output result (in case of 2x20 Display)

	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
0				a	b	c	d													
1				A	B	C	D													

6) displayBitmap

- Description: It outputs a bitmap image on the screen.
- Method prototype : void displayBitmap(String, int, int, int)
- Parameter information
 - String fileName: It designates the path of bitmap image file.
 - int width: It designates the width of bitmap to output on the screen
(Refer to [JPOS constant value](#)).
 - int alignmentX: It designates the position of alignment in the transverse direction
(Refer to [JPOS constant value](#)).
 - int alignmentY: It designates the position of alignment in the longitudinal direction
(Refer to [JPOS constant value](#)).
- Example

```
//Bitmap image path
String strPath = "C:\\Logo.bmp";

//Outputting an image in the right center of the screen according to the width size
//of bitmap image
lineDisplay.displayBitmap(strPath, LineDisplayConst.DISP_BM_ASIS,
lineDisplayConst.DISP_BM_CENTER, LineDisplayConst.DISP_BM_CENTER);
```

Note

For more details related to the methods, refer to the UPOS 1.13 Protocol Document.

3. Extended Method

This section is to explain DirectIO method.

3-1 DirectIO Method

Parameter	Explanation	Type
command	Output format	int
data	Number of output data /Output data command	int[]
object	Output data	Object

3-1-1 BIXOLON JPOS DirectIO Commands Description

Command	Description
DISP_DI_OUTPUT	Send object data
DISP_DI_INTERNATIONAL_CHAR	Define International charsetset

3-2 DirectIO Command

3-2-1 Direct Output

Argument	command	DISP_DI_OUTPUT
	data	null
	object	Output data
Description	Sends data without any process after checking LineDisplay status. “object” is not affected by “BinaryConversion”	
Return Value	Result Code	ResultCodeExtended
	JPOS_SUCCESS	0
	JPOS_E_CLOSED	0
	JPOS_E_CLAIMED	0
	JPOS_E_NOTCLAIMED	0
	JPOS_E_DISABLED	0
	JPOS_E_BUSY	0
	JPOS_E_ILLEGAL	0
	JPOS_E_OFFLINE	0
	JPOS_E_FAILURE	0

3-2-2 International charset setting

Argument	command	DISP_DI_INTERNATIONAL_CHAR
	data	One of the commands: DISP_DI_CHAR_USA: 0 DISP_DI_CHAR_FRANCE: 1 DISP_DI_CHAR_GERMANY: 2 DISP_DI_CHAR_UK: 3 DISP_DI_CHAR_DENMARK1: 4 DISP_DI_CHAR_SWEDEN: 5 DISP_DI_CHAR_ITALY: 6 DISP_DI_CHAR_SPAIN: 7 DISP_DI_CHAR_JAPAN: 8 DISP_DI_CHAR_NORWAY: 9 DISP_DI_CHAR_DENMARK2: 10 DISP_DI_CHAR_SPAIN2 : 11 DISP_DI_CHAR_LATIN_AMERICA : 12 DISP_DI_CHAR_KOREA : 13 DISP_DI_CHAR_SLOVENIA_CROATIA : 14 DISP_DI_CHAR_CHINA : 15
	object	null
Description	Sets International character set. If CharSet property value is changed, International character set will be reset. Refer to International character code table and related method.	
Return	Result Code	ResultCodeExtended
	JPOS_SUCCESS	0
	JPOS_E_CLOSED	0
	JPOS_E_CLAIMED	0
	JPOS_E_NOTCLAIMED	0
	JPOS_E_DISABLED	0
	JPOS_E_BUSY	0
	JPOS_E_ILLEGAL	0
	JPOS_E_OFFLINE	0
	JPOS_E_FAILURE	0

3-3 DirectIOEvent

Not used.

4. Error Information

This section contains information about the return results when using the properties and methods related to LineDisplay.

4-1 ResultCode List

4-1-1 Properties

Property Name	ResultCode	ResultCodeExtended	Description
BinaryConversion	JPOS_SUCCESS	0	Refer to UPOS Specification
	JPOS_E_CLOSED	0	Refer to UPOS Specification
	JPOS_E_ILLEGAL	JPOS_EXX_BADARGUMENT	Set value is illegal
DeviceEnabled	JPOS_SUCCESS	0	Refer to UPOS Specification
	JPOS_E_CLOSED	0	Refer to UPOS Specification
	JPOS_E_NOTCLAIMED	0	Refer to UPOS Specification
FreezeEvent	JPOS_SUCCESS	0	Refer to UPOS Specification
	JPOS_E_CLOSED	0	Refer to UPOS Specification
PowerNotify	JPOS_SUCCESS	0	Refer to UPOS Specification
	JPOS_E_CLOSED	0	Refer to UPOS Specification
	JPOS_E_ILLEGAL	0	Refer to UPOS Specification
		JPOS_EXX_INCAPABLE	The function cannot be used
		JPOS_EXX_BADARGUMENT	Set Value is illegal
DeviceBrightness	JPOS_SUCCESS	0	Refer to UPOS Specification
	JPOS_E_CLOSED	0	Refer to UPOS Specification
	JPOS_E_NOTCLAIMED	0	Refer to UPOS Specification
	JPOS_E_DISABLED	0	Refer to UPOS Specification
	JPOS_E_ILLEGAL	0	Refer to UPOS Specification
		JPOS_EXX_INVALIDMODE	Marquee is under execution
		JPOS_EXX_DEVBUSY	The device is busy
		JPOS_EXX_TIMEOUT	Output result is not returned within the timeout period
		JPOS_EXX_INCAPABLE	The function cannot be used

Property Name	ResultCode	ResultCodeExtended	Description
CharacterSet	JPOS_SUCCESS	0	Refer to UPOS Specification
	JPOS_E_CLOSED	0	Refer to UPOS Specification
	JPOS_E_NOTCLAIMED	0	Refer to UPOS Specification
	JPOS_E_DISABLED	0	Refer to UPOS Specification
	JPOS_E_ILLEGAL	0	Refer to UPOS Specification
		JPOS_EXX_BADARGUMENT	Illegal value
CurrentWindow	JPOS_SUCCESS	0	Refer to UPOS Specification
	JPOS_E_CLOSED	0	Refer to UPOS Specification
	JPOS_E_ILLEGAL	JPOS_EXX_BADARGUMENT	Illegal value
CursorRow	JPOS_SUCCESS	0	Refer to UPOS Specification
	JPOS_E_CLOSED	0	Refer to UPOS Specification
	JPOS_E_ILLEGAL	JPOS_EXX_BADARGUMENT	Illegal value
CursorColumn	JPOS_SUCCESS	0	Refer to UPOS Specification
	JPOS_E_CLOSED	0	Refer to UPOS Specification
	JPOS_E_ILLEGAL	JPOS_EXX_BADARGUMENT	Illegal value
CursorUpdate	JPOS_SUCCESS	0	Refer to UPOS Specification
	JPOS_E_CLOSED	0	Refer to UPOS Specification
MarqueeType	JPOS_SUCCESS	0	Refer to UPOS Specification
	JPOS_E_CLOSED	0	Refer to UPOS Specification
	JPOS_E_ILLEGAL	JPOS_EXX_BADARGUMENT	Illegal value
		JPOS_EXX_INCAPABLE	The function cannot be used
MarqueeFormat	JPOS_SUCCESS	0	Refer to UPOS Specification
	JPOS_E_CLOSED	0	Refer to UPOS Specification
	JPOS_E_ILLEGAL	JPOS_EXX_BADARGUMENT	Illegal value
MarqueRepeatWait	JPOS_SUCCESS	0	Refer to UPOS Specification
	JPOS_E_CLOSED	0	Refer to UPOS Specification
	JPOS_E_ILLEGAL	JPOS_EXX_BADARGUMENT	Illegal value
InterCaracterWait	JPOS_SUCCESS	0	Refer to UPOS Specification
	JPOS_E_CLOSED	0	Refer to UPOS Specification
	JPOS_E_ILLEGAL	JPOS_EXX_BADARGUMENT	Set value is illegal

Property Name	ResultCode	ResultCodeExtended	Description
BlinkRate	JPOS_SUCCESS	0	Refer to UPOS Specification
	JPOS_E_CLOSED	0	Refer to UPOS Specification
	JPOS_E_ILLEGAL	JPOS_EXX_INCAPABLE	The function cannot be used
CursorType	JPOS_SUCCESS	0	Refer to UPOS Specification
	JPOS_E_CLOSED	0	Refer to UPOS Specification
	JPOS_E_ILLEGAL	JPOS_EXX_INCAPABLE	The function cannot be used
MapCharacterSet	JPOS_SUCCESS	0	Refer to UPOS Specification
	JPOS_E_CLOSED	0	Refer to UPOS Specification
	JPOS_E_ILLEGAL	JPOS_EXX_INCAPABLE	The function cannot be used
ScreenMode	JPOS_SUCCESS	0	Refer to UPOS Specification
	JPOS_E_CLOSED	0	Refer to UPOS Specification
	JPOS_E_ILLEGAL	JPOS_EXX_INCAPABLE	The function cannot be used

4-1-2 Methods

Method Name	ResultCode	ResultCodeExtended	Description
ClaimDevice	JPOS_SUCCESS	0	Refer to UPOS Specification
	JPOS_E_CLOSED	0	Refer to UPOS Specification
	JPOS_E_TIMEOUT	0	Refer to UPOS Specification
	JPOS_E_ILLEGAL	JPOS_EXX_BADARGUMENT	Set value is illegal
		JPOS_EXX_DEVBUSY	The device is busy
		JPOS_EXX_PORTUSED	Port number is illegal
CheckHealth	JPOS_SUCCESS	0	Refer to UPOS Specification
	JPOS_E_CLOSED	0	Refer to UPOS Specification
	JPOS_NOTCLAIMED	0	Refer to UPOS Specification
	JPOS_E_DISABLED	0	Refer to UPOS Specification
	JPOS_E_ILLEGAL	JPOS_EXX_BADARGUMENT	Set value is illegal
		JPOS_EXX_DEVBUSY	The device is busy
		JPOS_EXX_INVALIDMODE	Marquee is under execution
		JPOS_EXX_TIMEOUT	Output result is not returned within the timeout
DirectIO	JPOS_SUCCESS	0	Refer to UPOS Specification
	JPOS_E_CLOSED	0	Refer to UPOS Specification
	JPOS_NOTCLAIMED	0	Refer to UPOS Specification
	JPOS_E_DISABLED	0	Refer to UPOS Specification
	JPOS_E_ILLEGAL	JPOS_EXX_BADARGUMENT	Set value is illegal
		JPOS_EXX_DEVBUSY	The device is busy
		JPOS_EXX_INVALIDMODE	Marquee is under execution
		JPOS_EXX_TIMEOUT	Output result is not returned within the timeout

Method	ResultCode	ResultCodeExtended	Description
DisplayText DisplayTextAt ClearText CreateWindow RefreshWindow ScrollText	JPOS_SUCCESS	0	Refer to UPOS Specification
	JPOS_E_CLOSED	0	Refer to UPOS Specification
	JPOS_NOTCLAIMED	0	Refer to UPOS Specification
	JPOS_E_DISABLED	0	Refer to UPOS Specification
	JPOS_E_ILLEGAL	JPOS_EXX_BADARGUMENT	Set value is illegal
		JPOS_EXX_DEVBUSY	The device is busy
		JPOS_EXX_INVALIDMODE	Marquee is under execution
		JPOS_EXX_TIMEOUT	Output result is not returned within the timeout
DestroyWindow	JPOS_SUCCESS	0	Refer to UPOS Specification
	JPOS_E_CLOSED	0	Refer to UPOS Specification
	JPOS_NOTCLAIMED	0	Refer to UPOS Specification
	JPOS_E_DISABLED	0	Refer to UPOS Specification
	JPOS_E_ILLEGAL	JPOS_EXX_DEVBUSY	The device is busy
		JPOS_EXX_INVALIDMODE	Marquee is under execution
		JPOS_EXX_TIMEOUT	Output result is not returned within the timeout

4-2 Added error information

ResultCodeExtended	Description
JPOS_EXX_BADARGUMENT	Parameters for Method are out of range or have logical error.
JPOS_EXX_INCAPABLE	Not supported by LineDisplay
JPOS_EXX_TIMEOUT	JPOS driver failed to send data to LineDisplay during the period of default time out value.
JPOS_EXX_INVALIDMODE	Linedisplay is in marquee mode.
JPOS_EXX_DEVBUSY	Other application is occupying LineDisplay or LineDisplay is processing other requests.
JPOS_EXX_PORTUSED	Other device or application program occupies the current port.

5. Reference

5-1 JPOS Constant Value (defines)

5-1-1 Display Type

Code define	Description
DISP_DT_NORMAL	It outputs text on the screen.
DISP_DT_BLINK	It outputs blinking text on the screen.
DISP_DT_REVERSE	It outputs a reverse on the screen.
DISP_DT_BLINK_REVERSE	It outputs a blinking reverse on the screen.

5-1-2 Scroll Text

Code define	Description
DISP_ST_UP	It scrolls text upwards.
DISP_ST_DOWN	It scrolls text downwards.
DISP_ST_LEFT	It scrolls text to the left.
DISP_ST_RIGHT	It scrolls text to the right.

5-1-3 Marquee Type

Code define	Description
DISP_MT_NONE	Marquee mode is not used.
DISP_MT_INIT	Marquee initialization mode. Until this property is changed to another value, changes for the window are not applied.
DISP_MT_UP	Marquee mode to scroll upwards
DISP_MT_DOWN	Marquee mode to scroll downwards
DISP_MT_LEFT	Marquee mode to scroll to the left
DISP_MT_RIGHT	Marquee mode to scroll to the right

5-1-4 Marquee Format

Code define	Description
DISP_MF_WALK	Marquee mode starts in the opposite direction. For instance, when Marquee type is left, the text is scrolled from right to left.
DISP_MF_PLACE	Marquee mode starts by filling the text. For instance, when Marquee type is left, the text is scrolled when the text is full by being filled from left.

5-1-5 Bitmap

Code define	Description
DISP_BM_ASIS	It outputs an image on the screen according to the width.
DISP_BM_LEFT	It outputs an image aligned to the left.
DISP_BM_CENTER	It outputs an image aligned to the center.
DISP_BM_RIGHT	It outputs an image aligned to the right.
DISP_BM_TOP	It outputs an image aligned upwards.
DISP_BM_BOTTOM	It outputs an image aligned downwards.

5-2 Codepage**5-2-1 Basic codepage**

Codepage number	Description
Page 0	CP437 (USA, Standard Europe)
Page 1	Katakana
Page 2	CP850 (Multilingual)
Page 3	CP860 (Portuguese)
Page 4	CP863 (Canadian-French)
Page 5	CP865 (Nordic)
Page 14	CP1250 (Czech)
Page 15	CP1251 (Cyrillic)
Page 16	CP1252 (Latin I)
Page 17	CP866 (Cyrillic #2)
Page 18	CP852 (Latin2)
Page 19	CP858 (Euro)
Page 20	Farsi
Page 21	CP862 (Hebrew DOS code)
Page 25	CP1254 (Turkish)
Page 26	CP1257 (Baltic)
Page 27	CP864 (Arabic)
Page 28	CP775 (Baltic)
Page 29	CP737 (Greek)
Page 30	CP1253 (Greek)
Page 31	CP857 (Turkish)
Page 32	Hebrew Old code
Page 33	CP1255 (Hebrew New code)
Page 36	CP855 (Cyrillic)
Page 38	CP928 (Greek)
Page 40	CP1256 (Arabic)
Page 41	CP1258 (Vietnam)
Page 49	TCVN-3
Page 50	TCVN-3 (Capital)
Page 51	VISCII

5-2-2 International charset code table

	Country	ASCII code (hexadecimal number)											
		23	24	40	5B	5C	5D	5E	60	7B	7C	7D	7E
0	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	Ø	Å	^	'	æ	ø	å	~
5	Sweden	#	¤	É	Ä	Ö	Å	Ü	é	ä	ö	å	ü
6	Italy	#	\$	@	°	\	é	^	ù	à	ò	è	ì
7	Spain	Pt	\$	@	í	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	Spain 2	#	\$	á	í	Ñ	¿	é	'	í	ñ	ó	ú
12	LATIN AMERICA	#	\$	á	í	Ñ	¿	é	ü	í	ñ	ó	ú
13	KOREA	#	\$	@	[₩]	^	'	{		}	~
14	SLOVENIA /CROATIA	#	\$	Ž	Š	Đ	Ć	Č	ž	š	đ	ć	č
15	CHINA	#	¥	@	[\]	^	'	{		}	~

5-2-3 International charset Example

```
// Selecting Korean International charset
int[] data = { DISP_DI_CHAR_KOREA };
lineDisplay.directIO(DISP_DI_INTERNATIONAL_CHAR, data, null);

// Outputting '\ character converted to '₩'
// Output result : coffee : ₩2,400
lineDisplay.displayText("coffee : \2,400", LineDisplayConst.DISP_DT_NORMAL);
```

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Warning - U.S.A

This equipment has been tested and found to comply with the limits for a Class A digital device pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Notice - Canada

This Apparatus complies with class “A” limits for radio interference as specified in the Canadian department of communications radio interference regulations. Get appareil est conforme aux normes class “A” d’interference radio tel que specifier par ministre canadien des communications dans les reglements d’interference radio.

Caution

Some semiconductor devices are easily damaged by static electricity. You should turn the LineDisplay “OFF”, before you connect or remove the cables on the rear side, in order to guard the LineDisplay against the static electricity. If the LineDisplay is damaged by the static electricity, you should turn the LineDisplay “OFF”.

Revision history

[illegible]