

User's manual

LED sign with  
embedded console

**DIGWEST**

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## Introduction and important notes

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The purpose of this manual is to let the users of the embedded console LED displays know how they work, as well as the procedures involved in using and configuring them. The products covered by this manual are the following:

LB-0780-P762-A-C

LB-0780-P762-W-C

LB-1680-P762-A-C

LB-1680-P762-W-C

LB-1696-P10-A-C

LB-1696-P10-W-C

LB-1696C-P10-A-C

LB-1696C-P10-W-C

LB-16128-P10-A-C






LB-16128-P10-W-C

### Recycling and disposing of the device



The above symbol indicates that this product is compliant to the Directive 2012/19/UE of the European Parliament and Council, which regards Electrical and Electronic Waste (WEEE). Therefore, in the EU countries, these products must be disposed of in a selective manner. Digiwest advises and encourages this practice, according to the local waste management laws, and whenever possible, recurring to the selective disposal of electronic waste.

## Safety information and warnings

-  This equipment was designed to be powered by a voltage rating between 10 and 28 VDC. Do not power it with voltages outside this range.
-  Do not open nor try to repair this equipment, and do not replace any parts inside it.
-  Do not insert or allow any objects (Metallic parts, bolts, washers, swarf, etc.), or any kind of liquids (water, beverages, oils or other cleaning flu-ids) to penetrate the unit.
-  Immediately turn off the unit in any of these situations:
  - If smoke or unusual odor occurs;
  - If objects have fallen into, or liquid has been spilled into the unit;
  - If the unit has been exposed to rain or has become wet.
-  Protect the unit from strong impact such as bumps or drops.

## Technical regulations and conformity



These products are certified by the following European standards and directives:

Directives:

2014/30/EU – Electromagnetic compatibility;

2011/65/EU – ROHS

Standards:

EN 50498:2010 Electromagnetic compatibility – Product family standard for aftermarket electronic equipment in vehicles

## Overview

The embedded console displays on which this manual focuses are typically used to display information regarding bus destinations and bus lines. All of the configuration operations can be made directly and manually in the unit's console, except for the loading of logs.

## Description

All of the models whose operation is covered by this manual have an embedded console whose picture can be visualized below:



1. Alphanumeric keyboard
2. Directional and confirmation keys
3. LCD
4. USB port

All of the user's interaction with the unit is carried out through the console, be it through the alphanumeric keyboard or the directional keys. The USB port allows for the uploading of message lists, settings and firmware, with the use of a pen drive.

# System's menu structure



It is possible to quick access the menu options pressing the option number directly from the corresponding menu. To select the option "8. Diagnosis", for example, just press the "8" key.

## Menu navigation

### Navigation through the available options

The menu navigation is carried out through the keys **↑**, **↓**, **OK** and **Esc**. The directional keys allow the change of the visualized option. The **OK** key is used to select the option and the **Esc** key reverts to the previous menu.


### Parameter change

Some of the menu options require a parameter to be changed. To change such kind of parameters, use the keys **←** and **→**, and validate the option with the **OK** key.

### Inserting and editing text/numbers

To insert text and/or numbers, one must use the alphanumeric keyboard. The change between upper and lower-case letters is made with the keys **↑** for upper and **↓** for lower case. The **←** and **→** keys move the cursor and the key **Del** deletes the character before the cursor.



Key	Characters
<b>1</b>	1.,-j!¿?()€&
<b>2</b> <small>abc</small>	ABC2ÇÁÃÀÂª
<b>3</b> <small>def</small>	DEF3ÉÊ
<b>4</b> <small>ghi</small>	GHI4Í
<b>5</b> <small>jkl</small>	JKL5
<b>6</b> <small>mno</small>	MNO6ÓÔÕÑº
<b>7</b> <small>pqrs</small>	PQRS7
<b>8</b> <small>tuv</small>	TUV8ÚÛ
<b>9</b> <small>wxyz</small>	WXYZ9
<b>0</b> <small>_</small>	0+ ~
<b>↑</b>	(Upper case)
<b>↓</b>	(Lower case)
<b>←</b>	(Cursor back)
<b>→</b>	(Cursor forward)
<b>Del</b>	(Delete character)

 When selecting messages alphabetically it is possible to make a faster selection by introducing the first letter of the message.

## Select destination

To select a destination, select the following option:

```
1. Select destination
```

This selection can be achieved in two manners, by message number or alphabetically. By default, the selection is made alphabetically. The available messages are listed alphabetically and the navigation through them is made with the keys  and . If the message number selection has been activated, (refer to Settings – Selection mode), a message number request shall be displayed.

If the option “Settings – Multiple destinations” has been activated (refer to Settings – Multiple destinations), after a destination has been selected, the system will display a message asking for the introduction of additional destinations. By selecting <Yes>, it is possible to add additional destinations, until the option <No> is selected or 10 destinations have been added.

```
More destinat.?
<No>      Yes
```

If there are no messages stored in the device, the following message will be displayed:

```
No destinations!
```

## Write destination

To write a destination, select the following option:

```
2. Write destination
```

The destination's text can be introduced as explained in Inserting and editing text/numbers. If the message selection method is by code, (refer to Settings – Selection mode), after a message is introduced, the user will be prompted for a message code:


```
Destination code
```

The message can now be selected in the

Select destination option, and its settings can be edited in the option Configure destination. A newly created destination will have the following attributes by default:

Automatic font size;

Automatic brightness;

 The messages can be written directly on the device, manually, or through a list in a CSV file, which is loaded to the device with an USB drive. The CSV file can be created manually or with the DigLED software.

Speed 5 (medium);  
No line number.

## Configure destination

To change a message's characteristics, such as font size, brightness, scroll speed or line number, select the following option:


```
3. Configure
   destination
```

One must first select the message, using the defined selection mode (refer to Select destination). The message's attributes can then be chosen.

### Attribute – Text size

To change the text size of the selected message, select the following option:

```
Attribute
1. Text size
```

 In the case of the displays that don't have double line support, such as the LB-0780-P762-W-C, when a double line setting is selected, the system will override the double line configuration and apply the text size only.

There is a predefined set of sizes for the letters that make up the text:

Option	Description
Text size 1. Auto	The text size is selected automatically, in order to optimize the screen occupancy
Text size 2. Small	Single line text, small letter size
Text size 3. Medium	Single line text, medium letter size
Text size 4. Large	Single line text, large letter size
Text size 5. Extra large	Single line text, extra large letter size
Text size 6. 2 lines small	Double line text, small letter size
Text size 7. 2 lines medium	Double line text, medium letter size

### Attribute – Brightness

The message's brightness can be configured in the following option:



### Attribute 2. Brightness

The brightness can be set in automatic mode, where it is regulated according to the ambient light, or set to a fixed value of 1 to 10, where 1 is the lowest brightness value and 10 is the highest. These values are set according to the display's absolute maximum and minimum values, which can be defined in the option Brightness **Erro! A origem da referência não foi encontrada.** in Settings – Visualization options.

#### Attribute – Speed

The scroll speed of the message can be configured in the following option:

### Attribute 3. Speed

The scroll speed value can be set between 1 and 10. This attribute only applies to messages whose settings require their text to be scrolled. This attribute also sets the time during which a message is displayed when there are multiple destinations (refer to Settings – Multiple destinations), and also the speed at which the message changes between the message text and line number, when the line number is positioned in the center of the display (refer to Attribute – Line number).

#### Attribute – Line number

The line number can be configured in the following option:

### Attribute 4. Line number

There are 7 options for the line number to be displayed. The standard setting is to have the characters in lighted LEDs and the background with the LEDs turned off. In the inverted mode, the lighted LEDs make up the background whereas the characters are drawn with LEDs turned off. Another feature that can be configured is the position of the line number in the display. It can be positioned to the left, to the right or in the center. When in the center position, the line number is displayed alternately with the message text. The speed at which this happens is set in Attribute – Speed.

Option	Description
Line number 1. No number	No line number is displayed
Line number 2. Left	Line number to the left side, standard text
Line number 3. Right	Line number to the right, standard text

## System's menu structure

Line number 4. Center	Line number in the center (alternates with the message), standard text
Line number 5. Left reverse	Line number to the left side, inverted text
Line number 6. Right reverse	Line number to the right, inverted text
Line number 7. Cent. reverse	Line number in the center, inverted text

After the line number is set, the following step depends on the chosen settings:

Option	Outcome
Option 1 selected. No number.	The configuration is done.
Another option was selected and the message had no line number.	Line number introduction required.
Another option was selected and the message already had a line number.	Line number edit mode.

The line number introduction and edit are achieved in the same way as standard text introduction and edition. The line number may have up to 3 alphanumeric characters. Alphabetic characters can only be introduced in upper case. After this step the configuration of the line number is done.

### Remove destination

To remove one of the stored messages, select the following option:

```
4. Remove
   destination
```



It is necessary to select the message to remove, according to the defined message selection method (refer to Select destination).

### Load USB data

To upload message lists to the device, select the following option:

```
5. Load
   USB data
```

After selecting this option, an USB disk with the message list file in its root must be inserted into the USB port. The file must have a CSV extension, (.csv). It can be created manually or it can be obtained

with the DigileD software. For more information on how to create the file manually, refer to the Annex A. If there is more than one file in the drive's root, it is possible to scroll through the files with the keys  and .

If the device detects any error while loading the file, the following message will be displayed:

```
File load
error!
```

### Settings

To configure generic system settings, such as the language, message selection mode, multiple destinations, visualization options or LCD backlight, select the following option:

```
6. Settings
```

It is also possible to perform other operations, like resetting the system to factory defaults, loading settings from a file, or checking information such as the memory usage or the firmware version.

#### Settings – Language

To change the system's language, select the following option:

```
6.1 Language
```

It is possible to change between one of the following languages: Portuguese, Spanish, English and French.

#### Settings – Selection mode

To change the way messages are selected, select the following option:

```
6.2 Selection
mode
```

There are 2 ways to select a message: by code, or alphabetically. If the user wants to manually write messages in the device, the selection mode must be defined previously, because the system will only prompt the user for a message code if code message selection mode is defined. If not, when a message is written, it will not have a message code, and therefore it will not be possible to select that message when the active message selection mode is by code.

## Settings – Multiple destinations

To toggle the multiple destinations option, select the following option:

```
6.3 Multiple
   destinations
```

The multiple destinations' option allows for multiple messages to be displayed in a sequential manner, up to 10 messages (refer to Select destination). The time during which each of the messages is displayed is defined by the scroll speed set in the option Attribute – Speed.

## Settings – Visualization options

To edit the visualization options, such as mode, window or brightness, select the following option:

```
6.4 Visualizat.
   options
```





### Mode

The visualization mode defines what information is displayed when a message is selected. The available options are text only (the message text), number only (line number) or text and number (both).

### Window

The visualization window allows for the deactivation of LED rows or columns on the display's extremities. The purpose of this feature is to avoid parts of the displayed message from not being visible, if those parts of the display are obstructed. By selecting this option, the following is displayed:

```
[◀] [▶] [▲] [▼]
  0   0   0   0
```

The keys  and  move the cursor between the 4 editable values, whereas the keys  and  change the value where the cursor is positioned. The values [◀] and [▶] turn of the defined LED columns to the left and right, and the [▲] and [▼] values turn off rows from above and below.

Whenever the windows size is not configured to its maximum, the text size will always be set to automatic, regardless of what is defined in Attribute – Text size.

### Brightness

This option defines the display's maximum and minimum levels of brightness. The values range from 0 to 100%, in steps of 5. The values set here will limit the brightness settings for each message as set in Attribute – Brightness.

### Settings – LCD backlight

To define the duration of the LCD backlight, select the following option:

```
6.5 LCD
    backlight
```

This parameter defines the timer after which, when no activity is detected, the LCD backlight is turned off. There are 4 available options: 30 seconds, 2 minutes, 10 minutes or always on.

### Settings – System restore

To reset the system to factory defaults, select the following option:

```
6.6 System
    restore
```

The system restore resets all user-defined settings, as well as all of the messages. A confirmation prompt is displayed, and after this confirmation the system is reset and rebooted.

### Settings – Load settings

To load a systems' settings file through an USB drive, select the following option:

```
6.7 Load
    settinas
```

The configuration file must be a .ini file, and it should be formatted as specified in Annex B – Configuration file. The procedure to perform this operation is the same as the option Load USB.



*Depending on the messages' size, and whether or not it has line number or logo, the system can store up to 3000 messages.*

### Settings – Used memory

To view the used memory, select the following option:

```
6.8 Used
    memory
```

It is possible to view how many messages are stored in the system, (it can store up to 3000), as well as the memory percentage being used.

### Settings – Firmware version

To view the firmware version, select the following option:

```
6.9 Firmware
    version
```

The firmware version and date are displayed.

### Deactivate screen

To temporarily deactivate the screen, select the following option:

```
7. Deactivate
   screen
```

When this message is selected, all of the LEDs are turned off, and the LCD displays the following message:

```
Screen OFF
[Press OK]
```

After **OK** is pressed, the system returns to normal mode. Even if the device is rebooted, the system won't return to normal mode until the **OK** key is pressed.

### Diagnosis

To perform system tests such as LED matrix, brightness sensor, keyboard, or LCD test, select the following option:

```
8. Diagnosis
```

#### Diagnosis – LED screen

To test the LED screen, select the following option:

```
8.1 LED screen
```



The system displays a series of test patterns, to help diagnose matrix malfunctions. The speed and direction of the patterns can be changed with the keys **←** and **→**. To end the test, press **OK** or **Esc**.

#### Diagnosis – Light sensor

To turn on the light sensor test mode, select the following option:

```
8.2 Light sensor
```

# System's menu structure

A gauge is displayed, showing the brightness level measured by the sensor. To finish the test, press  or .

## Diagnosis – Keypad

To test the keyboard, select the following option:

```
8.3 Keypad
```

The system starts a test sequence, requiring the user to press the keys and confirm that they are working.

```
Testing keypad
Press 0
```

The test ends after the final key, , is pressed.

## Diagnosis – LCD

To perform an LCD test, select the following option:

```
8.4 LCD
```

A test sequence is started, displaying 8 screens with predefined characters.

## Menu locking

To block the menu or change the system password, select the following option:

```
9. Menu locking
```

The menu locking keeps unwanted users from accessing the device's menu by means of a password.


When the menu is locked, only the

Select destination and Unlock menu options are available.

### Menu locking – Lock the menu

To lock the menu, select the following option:

```
9.1 Lock the
    menu
```

 *When the device's password is changed, it must be safekept. The password reset cannot be performed by the user, only the system supplier.*

# System's menu structure

When this option is selected, the user will be asked for the password, to make sure the menu isn't locked by unauthorized users. The default password is **GJM**. When the password is entered, the menu is locked.

## Menu locking – Change password

To change the system password, select the following option:

```
9.2 Change
    Password
```

To change the password, the old password must first be entered, then the new password must be entered and repeated. If the 2 instances of the new password don't match, the old password is kept in use.

## Unlock menu

To unlock and access the normal mode menu, select the following option:

```
2. Unlock
    menu
```

All that is required is to enter the password and the system returns to normal mode menu.



### Other features

---


#### Firmware update

To update the firmware, an USB drive with the new firmware file is needed. The firmware update procedure is as follows:

Power off the device;

Insert the USB drive in the port;

Press ;

Power on the device while keeping the  key pressed, until the LCD backlight starts blinking;

The device will then reboot, with the new firmware version.

#### Password reset

If the password has been changed and lost, the only way to access the device is resetting the password to default, GJM. This procedure is reserved to technical staff only, and the device vendor must be contacted.

Annexes

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### Annex A – Message list CSV file

---

This device may receive message lists in the form of a CSV file, which can be created manually or with the DigiLED software.

The file has the following characteristics:

Each line corresponds to a message;

Each message has 8 fields of information;

The fields are separated by semicolons (;);

The field layout is Text;Mode;Brightness;Speed;Effect;Code;Color;Circuit

#### Character coding

The following character coding formats are compatible:

ANSI;

Western Europe (Windows-1252/WinLatin 1);

Western Europe (ISO-8859-1);

Western Europe (ISO-8859-14);

Western Europe (ISO-8859-15/EURO).

#### Field description

##### “Text” field

This field is the message text. There are two special characters for text formatting:

'|' for line change ;

'+' for separating lines within a message.

##### “Mode” field [0-6]

Defines the font and word layout.

0 - Automatic text size, in order to maximize screen occupancy;

1 - Single line text, small size font;

2 - Single line text, medium size font;

3 - Single line text, large size font;

4 - Single line text, extra large size font;

5 - Double line text, small size font;

6 - Double line text, medium size font.

## Annex A – Message list CSV file

### “Brightness” field [0-10]

Defines the message brightness. 0 is automatic mode, where it is regulated according to the ambient light. The values 1 to 10 set a fixed value of brightness from the minimum (1) to the maximum (10).

### “Speed” field [1-10]

This field sets the text scroll speed, the duration of multiple phrases within one message or the duration of multiple destinations. It ranges from 1 (slowest) to 10 (fastest).

### “Effect” field

(reserved for future use)

### “Code” field [0 - 9999]

Numeric message ID code. This code is used to select a message when the message selection mode is set to “by code”.

### “Color” field

Color code, only used in color displays.

### “Circuit” field

Defines the line number, or logo, and their position in the display.

For example:

L123 - “123” circuit, placed to the left, non-inverted;

Rabcd - “abcd” circuit, placed to the right, non-inverted;

l123 - “123” circuit, placed to the left, inverted ;

r789 - “789” circuit, to the right, inverted ;

c123 – “123” circuit in the middle, alternating with the message, inverted;

C123 - “123” circuit in the middle, alternating with the message, non-inverted;

L~01 - Logo01.bmp logo, to the left ;

R~02 - Logo02.bmp logo, to the right ;

C~03 - Logo03.bmp logo, centered, alternating ;

(Space) – No line number.

### CSV file example

```
Digiwest+Wireless and Embedded Solutions;0;0;5;0;100;0;
```

```
Lisboa;0;0;5;0;101;0;L123;
```

```
Porto;0;0;5;0;102;0;L456;
```

### Annex B – Configuration file

---

It is possible to create a .ini file and load it to the device with an USB drive (refer to Settings – Load settings). This file can be created in any text editor, but it's extension must always be .ini.

### Annex C – Inserting logos

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As referred in Annex A, it is possible to load logo images in the device, created from image files.

The file must be a bmp type, monochrome, in which each black pixel is an off LED and a non-black pixel is a lit LED. The file must be stored with a name like “Logoxx.bmp”, where xx is a value from 01 to 08 (ex: Logo01.bmp, ..., Logo08.bmp).

All of the area of the image that exceeds the size of the display will be cut, as the system does not resize the images. The image files must be stored in the USB disk root along with the .CSV file containing the message list. The messages created directly in the device cannot have logos.

### Contact Information

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Version	Description
V0.0	User manual template created
V0.1	English version created

The logo for DIGWEST, featuring the word "DIGWEST" in a bold, sans-serif font. The letter "i" in "DIG" is lowercase and has a small blue dot above it. The rest of the letters are uppercase.