



# USER MANUAL

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## Elo Touch Solutions Elo Backpack



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# Section 1: Introduction

## Product Description

Your new Elo Backpack system provides the reliable performance from Elo that can be paired with an external monitor. This creates a natural flow of information between a user and the Elo Backpack.

This Elo Backpack has the following features that enhance system performance such as:

- Plug & Play compatibility
- HDMI Out
- LAN/Wi-Fi/Bluetooth
- A general-purpose input/output header via an optional GPIO cable
- Two USB type A ports
- SD card slot

This manual contains detailed guidelines for operating (Sections 2 and 3) and maintaining (Section 4) your new Elo Backpack system.

# Section 2: Unpacking and Operation

## Box Contents

Verify that the box contains:

- Elo Backpack
- Quick Install Guide
- Power adaptor
- North American power adaptor head
- Europe power adaptor head

## Elo Backpack



1. Connect the included 12V DC Power cable to Elo Backpack and the wall power outlet.
2. Connect USB cable from Elo touchmonitor to one of the USB Type A connections
3. Connect HDMI cable between Elo touchmonitor and HDMI Out connection
4. Press the power button to power on the Elo Backpack

## Kiosk Mode/ Managed OS



- Android Navigation, Status Bar and device buttons disabled
- EloView maintains an app or a webpage in the foreground
- System pop-ups disabled
- Built-in peripheral support
- Security updates

## Content Delivery/ Playback



- Upload Android apps and websites (online/ HTML kits) to a library
- Remotely and silently install Apps to field devices
- Apps do not need to be rebuilt to run on Elo platform

## Device Management



- See connection status, screenshot, device parameters
- Set a number of device settings; reboot and data reset remotely
- Deliver over-the-air (OTA) upgrades remotely and silently

## Automated Provisioning



- Device calls home upon initial startup out of the box to retrieve instructions
- Set up an app to auto-download, install and play on device connect
- Can be used to set up a third party device management or content agent

## Power

The first time the DC power is connected to the system, the system will automatically turn on. Press and hold power button when the system is on to bring up the Power Off option popup.

In the event that the system freezes and does not respond, press and hold the power button until the system turns off. If the system does not turn off via the power button, the system will need to be powered down by unplugging the power cord from the wall.

The Elo Backpack power button is equipped with an LED that indicates the power status of the system, as follows:

Power status	Led status
OFF (disconnected from wall)	Off
OFF (connected to wall)	Orange (Solid)
SLEEP	White (Blinking)
ON	White (Solid)

For detailed power consumption specifications, refer to technical specifications available on the Elo website [www.elotouch.com](http://www.elotouch.com).

To bring the system out of sleep/standby mode, press the power button once. If the system is in sleep mode, touching the external screen (if using an Elo Touch monitor) will wake up the system,

If long periods of non-use are planned, turn off and unplug your Elo Backpack to save power.

The operating voltage, frequency and current for the system is provided in the power ratings table below:

Product	Operating Voltage Range	Operating Frequency Range	Operating Current
Elo Backpack	100 - 240Vac	50 – 60 Hz	1.2A

## Operating System

System comes with Android pre-loaded.

## Wi-Fi + Bluetooth

The following protocols are supported for Wi-Fi and Bluetooth:

- Bluetooth 4.1+ BLE, A2DP/ HID (Keyboard/Mouse)/Barcode scanner support
- IEEE 802.11b/g/n/ac; WEP/WPA/WPA2 capable; 2.4Ghz/5Ghz

## HDMI Output

Elo Backpack is equipped with an HDMI port that can be connected to an external monitor and support resolutions up to 1920 x 1080 @ 60Hz input. When using an Elo touchmonitor as an external display, touch can be enabled by connecting a USB cable to the type A USB port on the Elo Backpack to the type B USB port on the monitor side.



## General-purpose Input / Output (GPIO) Support

The Elo Backpack supports GPIO, limited to the following conditions:

- Max Voltage: 5V
- Max Current: 200mA

There are two input connections and one output connection.

Pin 1 → 5 Volt output connection

Pin 2 → Input connection 1




Pin 3 → Input connection 2

Pin 4 and Pin 5 are tied to ground

Elo has an optional GPIO cable (PN: E086398) which extends this GPIO connection and allows easy connection of peripherals to the Elo Backpack. More information on this cable is available from Elo website.

# Global Positioning Satellite (GPS)

The Elo Backpack supports GPS functionality through software. User can input the longitude and latitude coordinates that define the device location. This allows GPS functionality indoors. In your EloView cloud account, enter the Edit mode under Details and the GPS co-ordinate option will be accessible.

Details	Software	Settings	Whitelist
Device Name	Device Name 		
Site Name	Name		
Device Model Name			
Site Contact	First	Last	
	Phone Number		
Address	Street Address		
	United States 		
	City		
	California 	Zip	
GPS Co-ordinate	Latitude	Longitude	

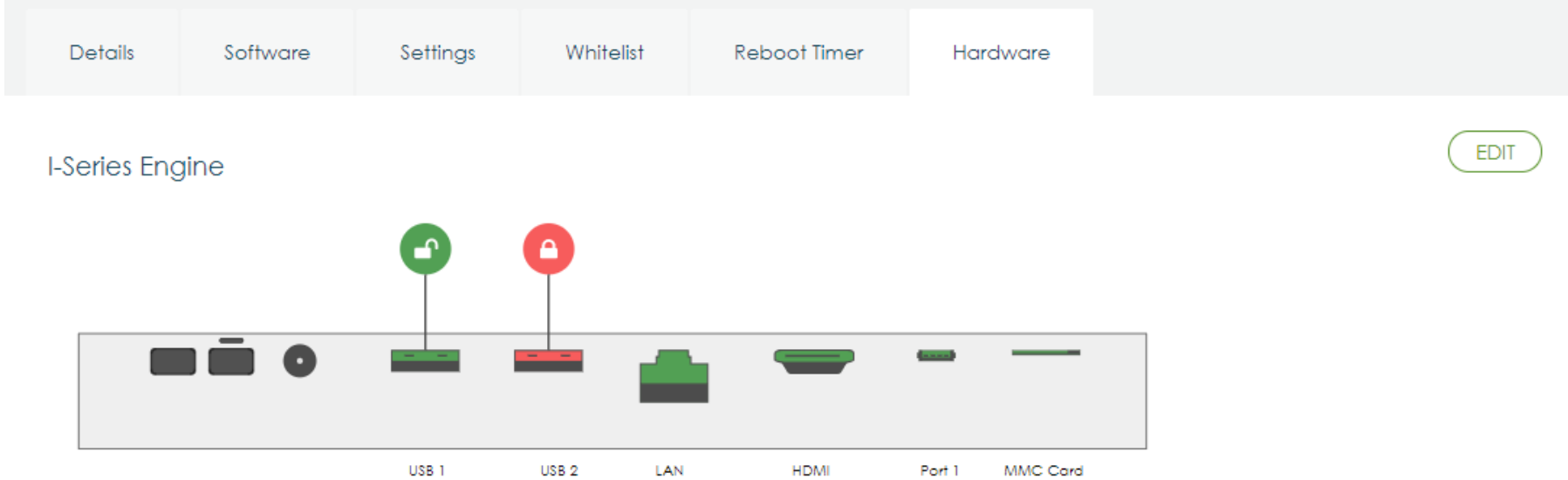
For more details on how to use this feature, please reference the apps notes at [www.elotouch.com/eloview](http://www.elotouch.com/eloview).

# USB Control

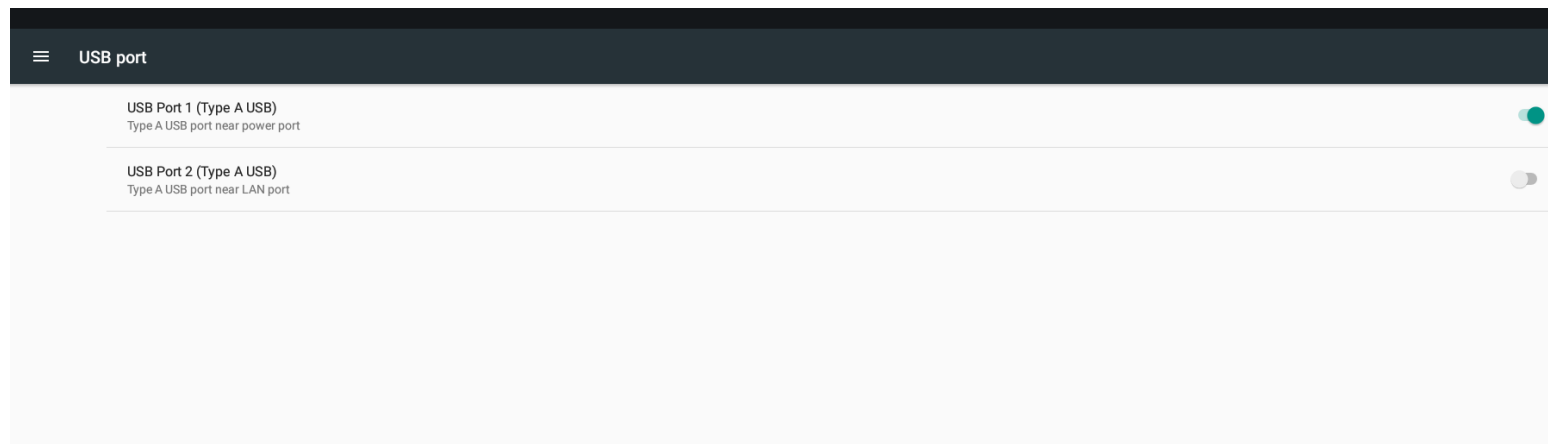
The Elo Backpack allows users to enable or disable specific USB ports.

**From EloView:**

Select the port that you want to enable or disable. If the lock is green, then the USB port is enabled. If the lock is red, then the port is disabled.



From Android Settings → USB port:



## Android Debug Bridge (ADB) control

The Elo Backpack supports debugging via Wi-Fi, Ethernet or using the Type A USB port.

Enter the Android Settings → Android Tablet → tap 7 times on the Build Number to enter developer mode. Go back to the Settings and you will see “Developer Options.” From here, enable the option called “USB debugging.”

To connect via Wi-Fi, ensure that your Elo Backpack is online and not behind a firewall. Find the IP address (by going to Settings → About Phone → Status → IP Address. On your host computer, use the command `adb connect <IP address>` to be able to perform ADB actions.

To connect via Ethernet, enter the Developer Mode and enable the “Ethernet debugging with static IP” option. Connect the Ethernet cable and run the command `adb connect 192.168.1.5` to connect to the device.

To connect via the Type A USB port, perform the following steps:

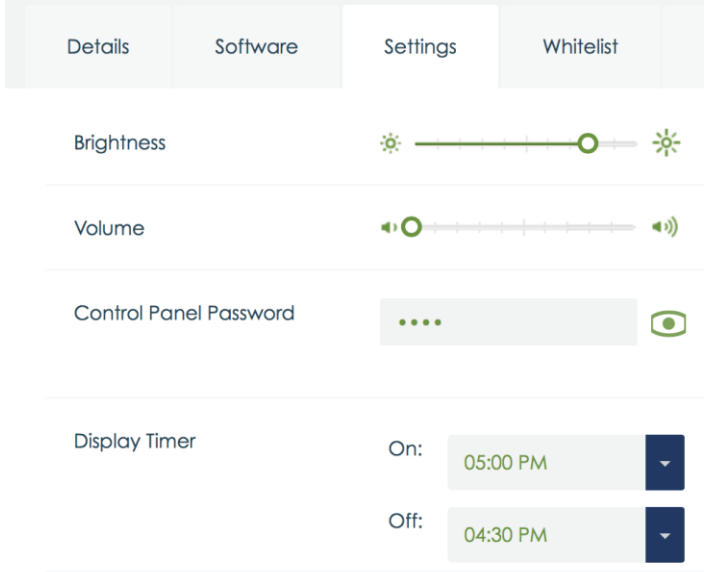
1. Ensure the USB cable (type A) is not connected to the Elo Backpack.
2. From the settings, enter Developers Options
3. Turn on the “Enable USB Debugging” option
4. Turn on “Switch USB to device mode” option.  
Note, enabling this option will cease communication between the USB peripheral ports.
5. Plug USB cable into the Type A USB1 port.
6. In the host PC, input “adb devices” to check if the Elo Backpack serial number shows up. If it is there, then you have connected successfully.

Note: When connecting to ADB over the USB port, all external USB ports will be disabled.

# Intelligent Brightness Control

To extend the life of the panel, Elo incorporates intelligent brightness control, which automatically turns off the panels backlight during hours when the system is not being used.

This function is fully controllable through your EloView account. Navigate to the Settings tab and use the dropdown menus that relate to the Display Timer.



This function is ON by default and will turn off the backlight during the hours of midnight and 6AM daily.

## Secure Digital Card (SD Card)

The Elo Backpack supports SD cards (up to 128 GB).

## 3G/4G LTE Module Information

The following devices from ConnectedIO are supported:

North America: [EM1000T-NA](#)

Europe: [EM1000T-EU](#)

Refer to the links above for more details about the modems.

# Software Section

(To download SDK, go to [www.elotouch.com](http://www.elotouch.com))

## Glossary

### 1. Abbreviation

SoC: System on a chip

### 2. Terms

- IDLE\_MODE: ELO specification for device interaction with POWER\_KEY action
- MSR: Magnetic Stripe Reader
- BCR: Barcode Reader
- NFC: Near Field Communication
- ELOPeripheralService: The fundamental class to provide different functions for ELO application developmentEx

## System Overview

Fig 3-1 shows the software stack for an Android system. This implementation is based on standard Android design and extends the framework functionality at Java services layer to fulfill customer requirement. The extended functionality at Java service is named as "ELOPeripheralService" which provides the interfaces for application development.



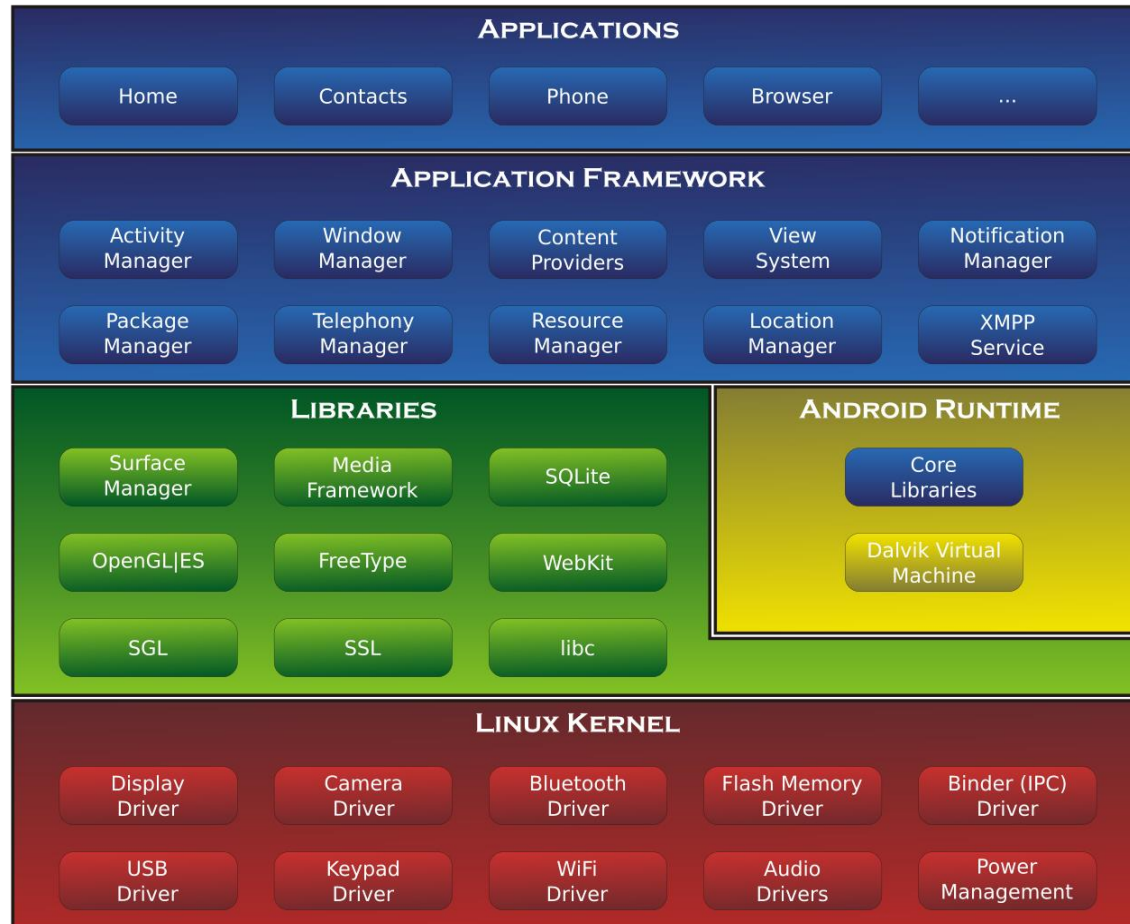


Fig 2-1. Android System Structure

### Android Framework Java Service

Based on developed programming language, Android services can be divided into native (C base) and Java service. Android services are a kind of server-client structure where the server side can receive a request from the client and output the result to client. Also, the server-client structure can deal with synchronization issues from multi-client requests. Therefore, this framework ability, which forms the fundamental class “ELOPeripheralService,” is based on this kind of server-client design feature from Android.

## **ELOPeripheralService**

ELOPeripheralService is the major module to accept a client request from application layer. For service, complete the Android framework system design then the below classes are added into system:

### **ELOPeripheralNative**

Execution of some native-C function flows for ELOPeripheralService

### **ELOPeripheralManager**

Provides the interface to the application layer, which is the client component relative to ELOPeripheralService

### **EloPeripheralEventListener**

Application extends abstract class to receive the driven event from EloPeripheralManager

Uses event driven notification method to notify the application program about the status change

### **IELOPeripheralService.aidl**

Android programming language for java layer IPC communication

Used for Client-Server (ELOPeripheralManager-ELOPeripheralService) IPC communication where sending the application's request to server side

### **IELOPeripheralServiceListener.aidl**

Android programming language for java layer IPC communication

Used for server to notify the event driven status change to ELOPeripheralManager, then ELOPeripheralManager will notify to application layer

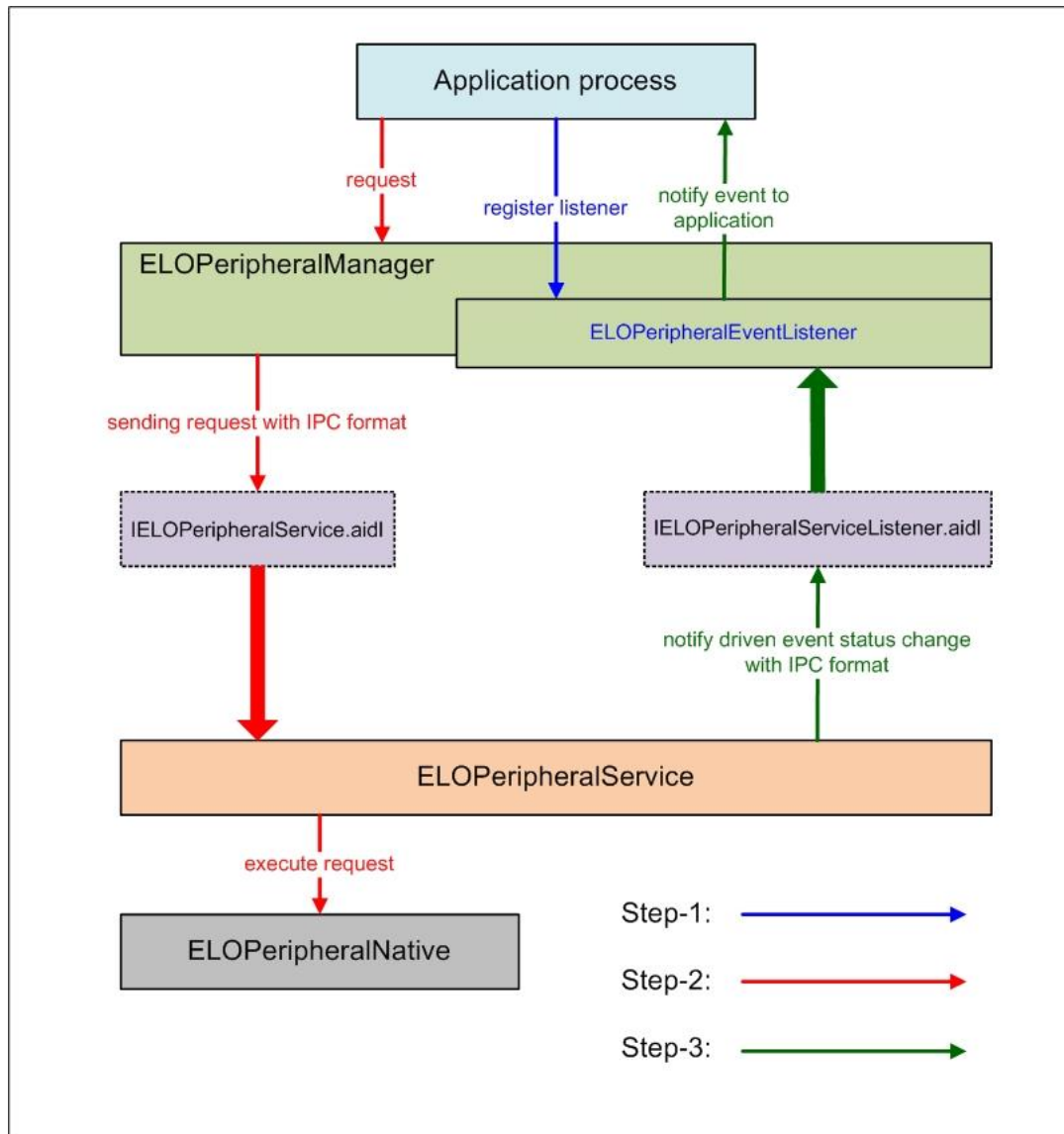


Figure 2-2. ELOPeripheralService

## ELOPeripheralManager and ELOPeripheralEventListener

As we mentioned in the last section, ELOPeripheralManager and ELOPeripheralEventListener are the components that provide interface for application development. Inner member data of ELOPeripheralManager and ELOPeripheralEventListener are listed below:

### 1. ELOPeripheralManager

This manager contains some inner class member (as shown below) and for each inner class, provides specific functionality to peripheral equipment or defined action flow.

<b>ELOPeripheralManager</b>	public void <a href="#">registerListener</a> (ELOPeripheralEventListener listener)
	public void <a href="#">unregisterListener</a> (ELOPeripheralEventListener listener)
mBCR_APIS	
mMSR_APIS	
mNFC_APIS	
mGPIO_APIS	
mIDLE_APIS	

- **public void registerListener(ELOPeripheralEventListener listener)**  
Provide interface for application to register the feedback structure instance  
Needs to register before request (Activity life cycle: onResume)
- **public void unregisterListener(ELOPeripheralEventListener listener)**  
Provide interface for application to unregister the feedback structure instance  
Needs to unregister before leave the application (Activity life cycle: onPause)

### 1.1.1. BCR

```
public class BCR {  
    public boolean activeBCR() throws RemoteException {}  
  
    public boolean disactiveBCR() throws RemoteException {}  
  
    public boolean isBCRDeviceConnected() throws RemoteException {}  
}
```

#### **activeBCR**

Activates the BCR device to read barcode data

BCR is active and successfully reading the barcode sequence data. Now, the application will be notified by "ELOPeripheralEventListener" about receiving data

#### **disactiveBCR**

Deactivate the BCR device

#### **isBCRDeviceConnected**

Checks whether the BCR device is connected to the Android device

## 1.1.2. GPIOs

```
public class GPIOs {  
    public void pullHighGPIO (String iface) throws RemoteException {}  
    public void pullLowGPIO (String iface) throws RemoteException {}  
    public String[] getGPIOInterafces () throws RemoteException {}  
}
```

### pullHighGPIO

Pull high the state of GPIO-[iface](#)

### PullLowGPIO

Pull low the state of GPIO-[iface](#) disactiveBCR

### getGPIOInterfases

Get the list string data of interest GPIOs at designed system.

Refer to Table 3-1 GPIOs list

Note:  
The pull action is only workable with output pin defined GPIO  
The GPIO input pin can notify the application about the status change read by “ELOPeripheralEventListener”

GPIO	PIN definition
gpio80	Output
gpio81	Input
gpio82	Input

Table 3-1 GPIOs List

### 1.1.3. IDLE

```
public class IDLE {  
    public boolean activateIdleMode() {}  
  
    public boolean deactivateIdleMode() {}  
}
```

#### activateIdleMode

Forces system to enter IDLE\_MODE (IDLE\_MODE on)

#### deactivateIdleMode

Forces system to leave IDLE\_MODE (IDLE\_MODE off)

## 1.2. ELOPeripheralEventListener

```
public abstract class ELOPeripheralEventListener {  
    /**  
     * Active barcode scanner reading function by USB-ID-PIN  
     */  
    void onBCR_StateChange(int state, String data) {}  
  
    void onGPIO_StateChange(int state, String data) {}  
}
```

#### onBCR\_StateChange

Refer to Table 3-2

Notifies the application about the BCR status change data

#### onGPIO\_StateChange

Refer to Table 3-2

Notifies the application about the GPIOs status change data

<b>BCR state</b>	<b>value</b>
ELOPeripheralManager.BCR_STATE_DEVICE_CONNECTION	1 << 0
ELOPeripheralManager.BCR_STATE_DEVICE_DISCONNECTION	1 << 1
ELOPeripheralManager.BCR_STATE_DATA_RECEIVIED	1 << 2
ELOPeripheralManager.BCR_STATE_PIN_AUTO_DISABLE	1 << 3

<b>GPIO state</b>	<b>value</b>
ELOPeripheralManager.GPIO_STATE_HIGH	1 << 4
ELOPeripheralManager.GPIO_STATE_LOW	1 << 5

<b>GPIO data</b>
gpio81
gpio82

Table 3-2



# Section 3: Technical Support and Maintenance

## Solutions to Common Problems

### Problem

The Elo Backpack does not turn on when power is applied to the system.

### Suggested Troubleshooting

Check that the power cable is properly connected to the wall and the Elo Backpack. If the power LED is solid white, then the system is ON. If the power LED is orange, then the system is OFF.

If the system stays in the OFF state, try unplugging the power cable and then re-plugging it after five seconds

In the case that the power button LED displays solid white light, there may be an issue with the display. Please contact Elo Support.

Monitor connected to the Elo Backpack has a blank screen

If the power button LED is blinking, the system may be in SLEEP mode. Press the power button to bring the unit out of SLEEP mode.

## Technical Assistance

### Technical Specifications

visit [www.elotouch.com/products](http://www.elotouch.com/products)  
for technical specifications for this device

### Support

visit [www.elotouch.com/support](http://www.elotouch.com/support) for technical support

Refer to last page for worldwide technical support phone numbers.

## Elo Backpack Care and Handling

The following tips will help maintain optimal performance of your Elo Backpack:

- Disconnect the power cable before cleaning.
- To clean the unit, use a soft cotton or microfiber cloth lightly dampened with a mild detergent.
- It is important that your unit remains dry. Do not get liquids on or inside the unit. In the event that liquid does get inside, have a qualified service technician inspect the unit before you power it on again.

# Section 4: Regulatory Information

## Electrical Safety Information

Compliance is required with respect to the voltage, frequency, and current requirements indicated on the manufacturer's label. Connection to a different power source than those specified herein will likely result in improper operation, damage to the equipment or pose a fire hazard if the limitations are not followed.

There are no operator serviceable parts inside this equipment. There are hazardous voltages generated by this equipment which constitute a safety hazard. Service should be provided only by a qualified service technician.

Contact a qualified electrician or the manufacturer if there are questions about the installation prior to connecting the equipment to mains power.

## Emissions and Immunity Information

Notice to Users in the United States: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy, and if not installed and used in accordance with the instructions, may cause harmful interference to radio communications.

Notice to Users in Canada: This equipment complies with the Class A limits for radio noise emissions from digital apparatus as established by the Radio Interference Regulations of Industrial Canada.

Notice to Users in the European Union: Use only the provided power cords and interconnecting cabling provided with the equipment. Substitution of provided cords and cabling may compromise electrical safety or CE Mark Certification for emissions or immunity as required by the following standards:

This Information Technology Equipment (ITE) is required to have a CE Mark on the Manufacturer's label which means that the equipment has been tested to the following Directives and Standards: This equipment has been tested to the requirements for the CE Mark as required by EMC User Manual – Elo Backpack

Directive 2014/30/ EU as indicated in European Standard EN 55032 Class A and the Low Voltage Directive 2014/35/EU as indicated in European Standard EN 60950-1.


General Information to all Users: This equipment generates, uses and can radiate radio frequency energy. If not installed and used according to this manual the equipment may cause interference with radio and television communications. There is, however, no guarantee that interference will not occur in any particular installation due to site-specific factors.

1. In order to meet emission and immunity requirements, the user must observe the following:
    - a. Use only the provided I/O cables to connect this digital device with any computer.
    - b. To ensure compliance, use only the provided manufacturer's approved line cord.
    - c. The user is cautioned that changes or modifications to the equipment not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.
  
  2. If this equipment appears to cause interference with radio or television reception, or any other device:
    - a. Verify as an emission source by turning the equipment off and on. If you determine that this equipment is causing the interference, try to correct the interference by using one or more of the following measures:
      - i. Move the digital device away from the affected receiver.
      - ii. Reposition (turn) the digital device with respect to the affected receiver.
      - iii. Reorient the affected receiver's antenna.
      - iv. Plug the digital device into a different AC outlet so the digital device and the receiver are on different branch circuits.
      - v. Disconnect and remove any I/O cables that the digital device does not use. (Unterminated I/O cables are a potential source of high RF emission levels.)
      - vi. Plug the digital device into only a grounded outlet receptacle. Do not use AC adapter plugs. (Removing or cutting the line cord ground may increase RF emission levels and may also present a lethal shock hazard to the user.)
- If you need additional help, consult your dealer, manufacturer, or an experienced radio or television technician.

## Radio Equipment Directive

Elo hereby declares that the radio equipment type, Elo Backpack, is in compliance with Directive 2014/53/EU. The full text of the EU Declaration of Conformity is available at the following internet address: [www.elotouch.com](http://www.elotouch.com)

This device is designed and intended for indoor use only.

	AT	BE	BG	HR	CY	CZ	DK
	EE	FI	FR	DE	EL	HU	IE
	IT	LV	LT	LU	MT	NL	PL
	PT	RO	SK	SI	ES	SE	UK

This device is restricted to indoor use

Operation frequency and radio-frequency power are listed as below:

- WLAN 802.11b/g/n/ac
  - 2400 - 2483.5MHz < 17 dBm EIRP
  - 5150 - 5250MHz < 18 dBm EIRP
- BT 2400-2483.5MHz < 11 dBm EIRP

**ECC/DEC/(04)08:**

The use of the frequency band 5 150-5 350 MHz is restricted to indoor operation because of the protection requirements of satellite services

**FCC:**

Notice to Users in the United States: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy, and if not installed and used in accordance with the instructions, may cause harmful interference to radio communications.

**IC:**

Notice to Users in Canada: This equipment complies with the Class A limits for radio noise emissions from digital apparatus as established by the Radio Interference Regulations of Industrial Canada.

This device complies with Industry Canada's licence-exempt RSSs. Operation is subject to the following two conditions:

- (1) This device may not cause interference; and
- (2) This device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes:

- (1) l'appareil ne doit pas produire de brouillage, et
- (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement."

This equipment should be installed and operated to ensure a minimum of 20 cm spacing to any person at all times.

## Agency Certifications

The following certifications and marks have been issued or declared for this peripheral:

- FCC/IC
- CE
- UL/cUL/CB
- Japan MIC
- VCCI

## Waste Electrical & Electronic Equipment Directive (WEEE)



This product should not be disposed of with household waste. It should be deposited at a facility that enables recovery and recycling.

Elo has put in place recycling arrangements in certain parts of the world. For information on how you can access these arrangements, please visit [www.elotouch.com/e-waste-recycling-program/](http://www.elotouch.com/e-waste-recycling-program/).

Caution:

Risk of explosion if battery is replaced by an incorrect type.

Dispose of used battery according to the local laws and regulations.



# Power Specifications

## Electrical Ratings

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Input	110/240VAC
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## Operating Conditions

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Temperature	0°C - 40°C
Humidity	20% to 80% (non-condensing)

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## Storage Conditions

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Temperature	-20°C - 50°C
Humidity	10% to 95% (non-condensing)

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# Section 5: Warranty Information

For warranty information, go to <http://support.elotouch.com/warranty/>

# www.elotouch.com

Visit our website for the latest

- Product Information
- Specifications
- Upcoming Events
- Press Releases
- Software Drivers

To find out more about our extensive range of Elo touch solutions, go to [www.elotouch.com](http://www.elotouch.com), or call the office nearest you.

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