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USER GUIDE

Elo Touch Solutions

**Interactive Digital Signage Android Computer Module
For
IDS 3201L/4201L/5501L/5501LT/7001L/7001LT**

UM600069 Rev 01

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Chapter 1 - Introduction

Product Description

The Android Interactive Digital Signage Computer Module (AECMG) is designed to slide into the bay on the rear of the Interactive Digital Signage Generation 2 (IDS 01) touchmonitors, without any effect on the monitor's form factor or requiring any extra cabling, turning your Interactive Digital Signage TouchMonitor into an Interactive Digital Signage All-In-One TouchComputer.

Precautions

Follow all warnings, precautions and maintenance as recommended in this user's manual to maximize the life of your unit and prevent risks to user safety.

This manual contains information that is important for the proper setup and maintenance of the Computer Module. Before setting up and powering on your new computer module, read through this manual, especially the Computer Module Installation chapter.

Chapter 2 – Unpacking

Unpacking the Digital Signage Computer Module

Check that the following items are present and in good condition:
- Computer Module
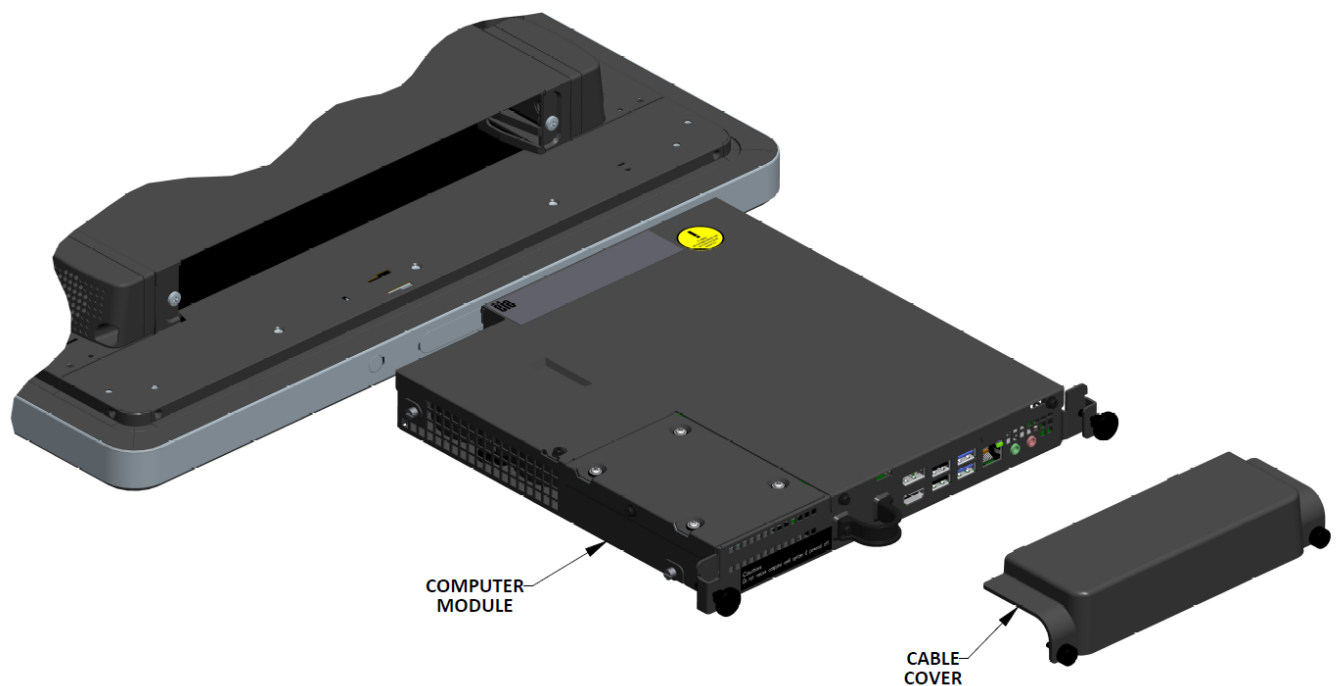- Quick Install Guide
- PC Box Cable Cover

Chapter 3
Computer Module Installation

Installation

1. Use a Phillips head screwdriver to remove the access cover plate on the back of the touchmonitor.

2. Slide the Computer Module all the way into the bay until it snaps into place.

3. Tighten the thumbscrews to secure the computer module inside the bay.

NOTE: If any cables are connected to the computer module, a cable security cover is included with the computer module kit. Install it by attaching the mounting clip and bracket as shown in the user guide for the computer module and then fastening the thumbscrews on the cover.

COMPUTER
MODULE

CABLE
COVER

Connector Panel & Interfaces

DisplayPort USB 3.0 LAN

Caution:
Do not remove computer until system is powered off.

HDMI USB 2.0 Audio Line Out Microphone Jack
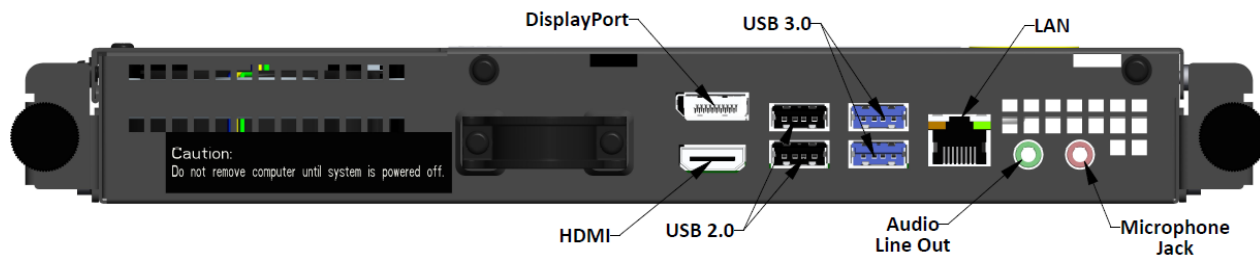
Touchmonitor & Computer Module Connections

1. Once the Computer Module has been installed, connect the AC power cable between the touchmonitor's POWER IN connector and the AC power source.

   NOTE: Computer Module can be installed when the AC power cable is connected (Hot pluggable). Do not remove the computer module unless it is completely shut off.

2. Make any desired connections to the Computer Module connector panel.

3. Press the touchmonitor's power button to turn on the Computer Module.

Operating System Setup – Android

Android version 4.4 will be pre-loaded on the system.

Gesturing Images:

For multi-touch monitors, the following gestures are possible:

Dual Touch Gestures and their Functions:
Swipe – The action of moving a finger across the screen.
- The ability to swipe through from one picture to another or drag an icon

Pinch-Zoom – Zoom into a picture
- Place two fingers on the screen and move them closer together to zoom in. Move your fingers away from each other to zoom out.

| Before zoom | After zoom |

For Optical Monitors:
- If multi touch is required, contact Elo Customer Service for the process to enable six simultaneous touches.

Physical Button Functionality

Parameter	Available Adjustment
Home Button	Returns to the Home page

Audio

Earphone output with microphone input is supported.

Note: If Bluetooth speakers are used, ensure that the speakers are not placed directly in front of the monitor. This can cause interference and disrupt your listening experience.

Wifi + Bluetooth

The following protocols are supported for Wifi and Bluetooth:
- Bluetooth 4.0+EDR Class 2, A2DP/ HID (Keyboard/Mouse), SPP (printer), Barcode scanner (HID/SPP) support.
- IEEE 802.11b/g/n; WEP/WPA/WPA2 capable
- iBeacon capable

General Purpose Input/Output (GPIO) Support

The AECM supports a GPIO which can be used under the following conditions:

Max Voltage: 5V
Max Current: 200mA

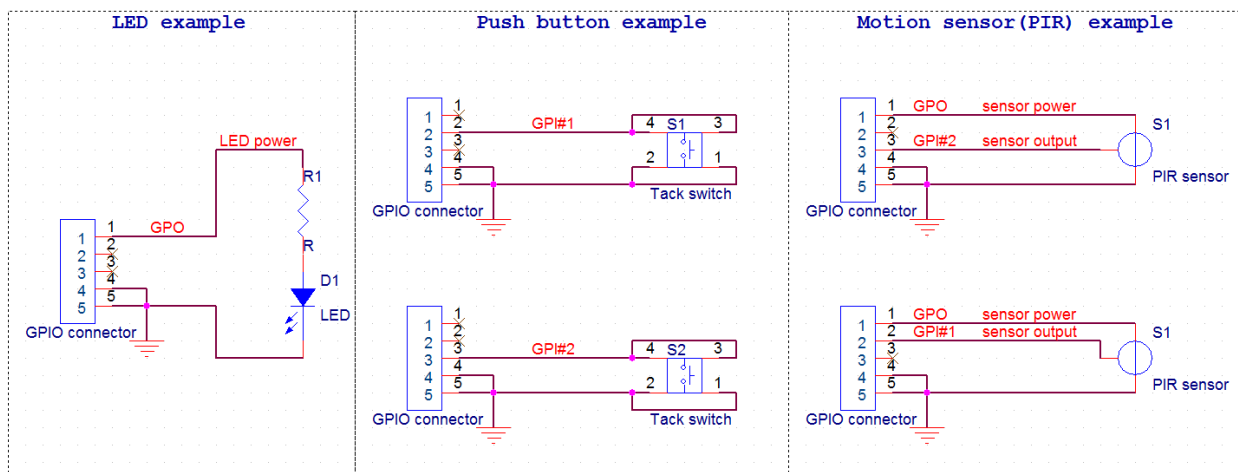There are two input connections and one output connection.

Pin 1→ 5 Volt output connection
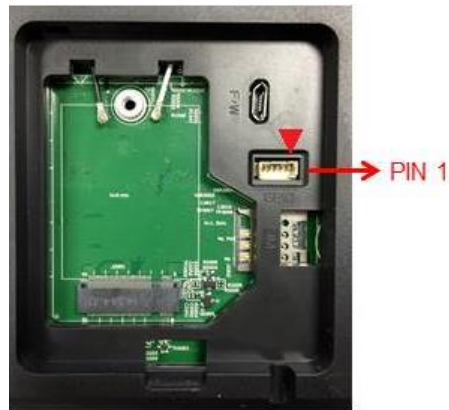Pin 2 → Input connection 1
Pin 3 → Input connection 2
Pin 4 and Pin 5 are tied to ground

Elo has a cable (PN # E086398) which extends this GPIO connection so that it is easy for users to connect their own peripherals. This cable can be found on the Elo website.

Example Circuit

USB On The Go (OTG)

USB OTG is supported via the micro-USB connector located in the following position.
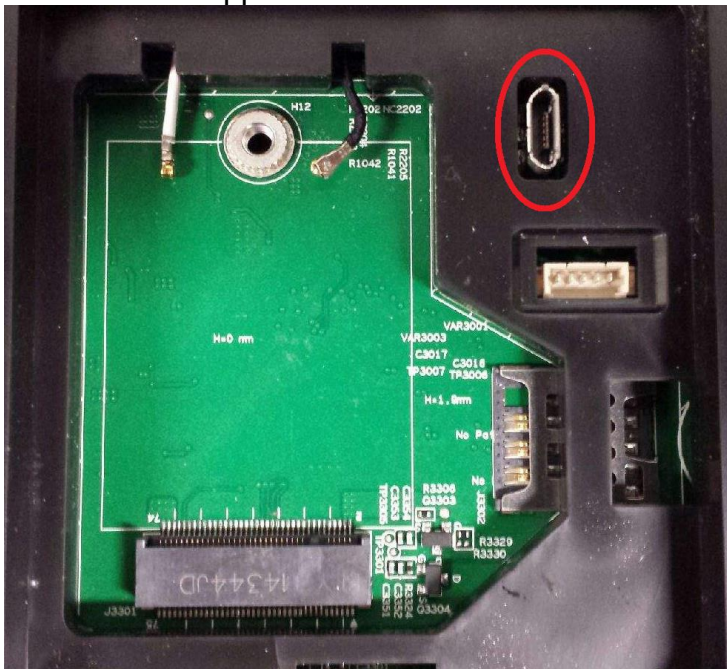
Note: Improper use of this connector can result in a broken connector.

Software Section (Download SDK from www.elotouch.com)

1. Glossary

1.1. Abbreviation

- SoC: System on a chip

1.2. 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

2. System Overview

Fig 3-1 shows the software stack of Android system. This implementation based on 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.
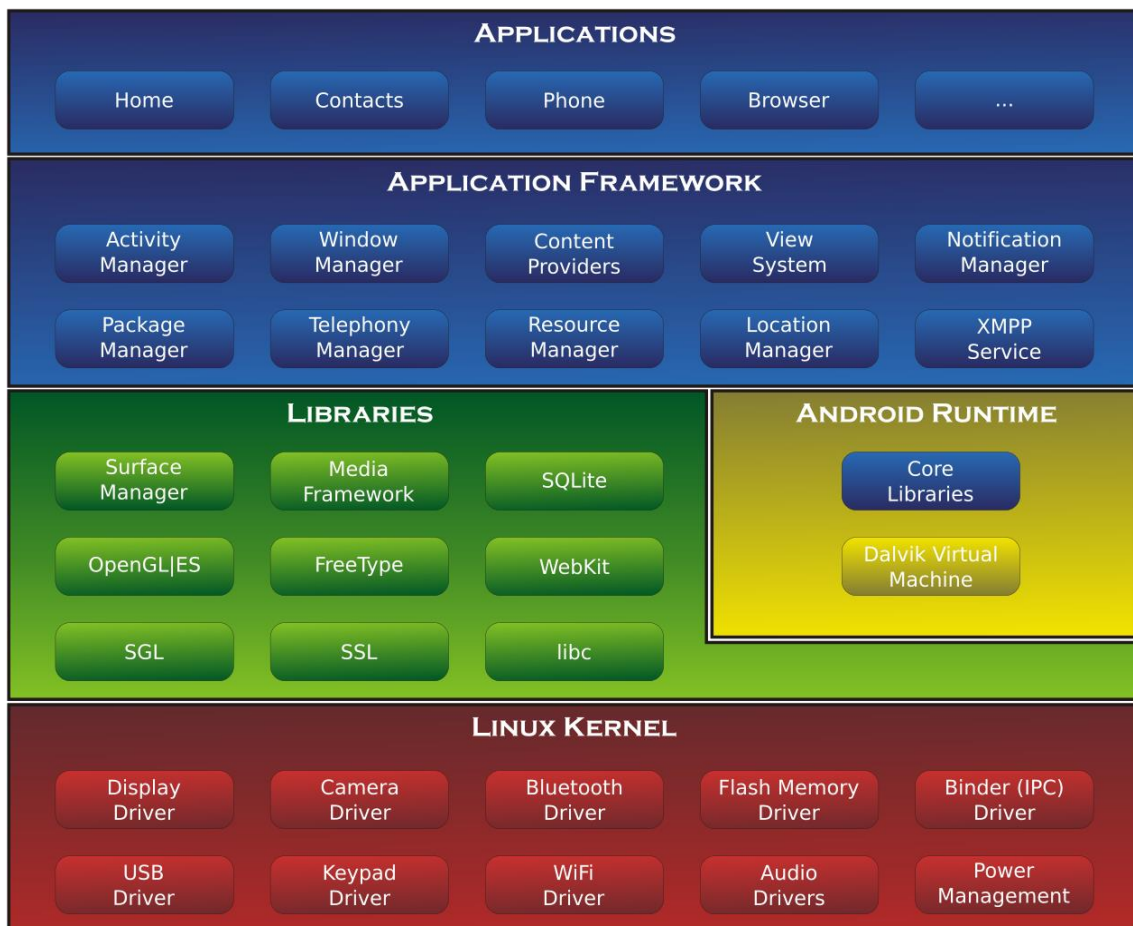
Fig 2-1. Android System Structure

2.1. 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.

2.2. ELOPeripheralService

ELOPeripheralService is the major module to act client request from application layer. In order to complete the Android framework system design for service then below classes is 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
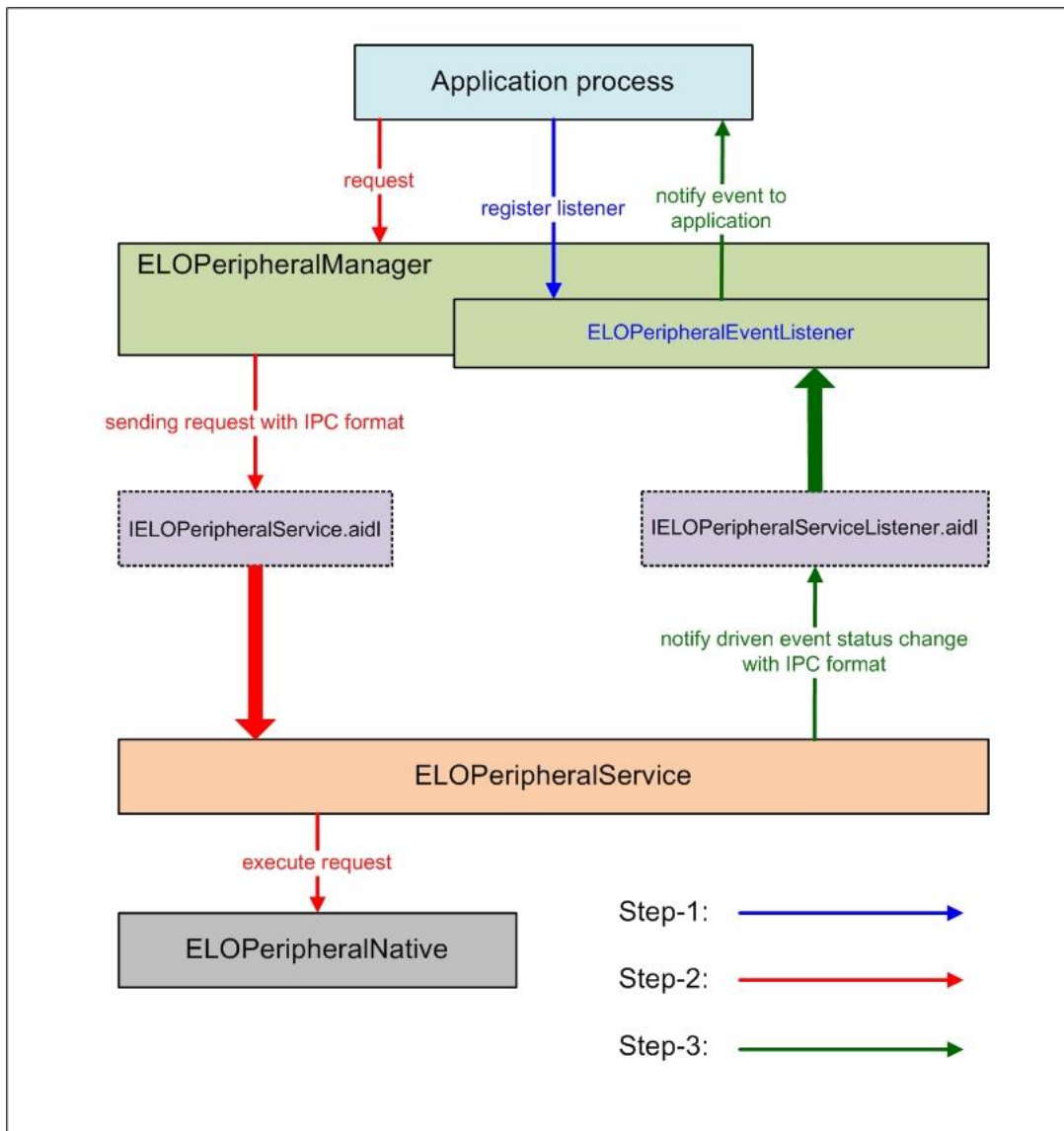
Figure 2-2. ELOPeripheralService

3. ELOPeripheralManager and ELOPeripheralEventListener

As we mentioned at last section, ELOPeripheralManager and ELOPeripheralEventListener will be the component to provide interface for application development. Therefore, we provide the inner member data of ELOPeripheralManager and ELOPeripheralEventListener as below.

3.1. ELOPeripheralManager

Inside this manager contains some inner class member as below and for each inner class provides specific functionality to peripheral equipment or defined action flow.

ELOPeripheralManager	public void registerListener(ELOPeripheralEventListener listener)
	public void unregisterListener(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)

3.1.1. BCR

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

    public boolean disactiveBCR() throws RemoteException {}

    public boolean isBCRDeviceConnected() throws RemoteException {}
}
```

- activeBCR
  - Activate the BCR device to reading the barcode data
  - BCR is active and successful reading the barcode sequence data then system by
  "ELOPeripheralEventListener" to notify application about the receiving data
- disactiveBCR
  - Deactivate the BCR device reading action
- isBCRDeviceConnected
  - Check the BCR device is connection with Android device or not

3.1.2. GPIOs

```java
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

- getGPIOInterfaces

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

■ Refer to Table 3-1 GPIOs list

- Note:

■ The pull action only workable with output pin defined GPIO

■ The input pin defined GPIO can notify the application about the status change by "ELOPeripheralEventListener" also

GPIOs	PIN define
gpio80	Output
gpio81	Input
gpio82	Input

Table 3-1 GPIOs List

3.1.3. IDLE

```java
public class IDLE {
    public boolean activeIdleMode() {}

    public boolean disactiveIdleMode() {}
}
```

- activeIdleMode

■ Force system to enter IDLE_MODE (IDLE_MODE on)

- disactiveIdleMode

■ Force system to leave IDLE_MODE (IDLE_MODE off)

3.2. ELOPeripheralEventListener

```java
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

  ■ Notify the application about the BCR status change data

- onGPIO_StateChange

  ■ Refer to Table 3-2

  ■ Notify the application about the GPIOs status change data

BCR state	value
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

GPIO state	value
ELOPeripheralManager.GPIO_STATE_HIGH	1 << 4
ELOPeripheralManager.GPIO_STATE_LOW	1 << 5

GPIO data
gpio81
gpio82

Table 3-2

Chapter 4 – Technical Support

If you are experiencing trouble with your touchmonitor, refer to the following suggestions.
If the problem persists, please contact your local dealer or contact Elo Touch Solutions Customer Service.

Solutions to Common Problems

Problem	Suggested Troubleshooting
The Computer Module does not turn on when the power button is pressed.	Disconnect the AC power cable and verify that the Computer Module is properly installed. Reconnect the AC power cable and turn on the system.
Monitor display is dim	Use the OSD to increase the touchmonitor brightness and/or contrast.
Monitor display is blank.	If the Power Status LED is blinking, the monitor or Computer Module may be in SLEEP mode. Press any key, move the mouse, and/or touch the touchscreen and verify that the monitor displays content.
Monitor displays an "Out Of Range" message	Adjust computer resolution/timing mode to be within the allowable timing ranges specified for the touchmonitor. Refer to www.elotouch.com for Elo touchmonitor specification.

Technical Assistance

Visit www.elotouch.com/go/websupport for online self-help.

Visit www.elotouch.com/go/contactsupport for technical support.

See this user manual's last page for worldwide technical support phone numbers.

Technical assistance for Computer Modules running Windows OS are also available on the computer in the Support Information section of the Systems Properties menu. The Systems Properties menu can be accessed by:
1. Right-clicking the My Computer icon and selecting Properties from the drop-down menu, or
2. Clicking the Start button; go to the Settings -> Control Panel menu and selecting the System icon

Chapter 5 – Safety & Maintenance

Safety

To avoid risk of electric shock, follow all safety notices and do not disassemble the touchmonitor or Computer Module. They are not user-serviceable.

The slots located on the sides and top of the touchmonitor case are for ventilation. Do not block or insert anything into the ventilation slots.

Ensure that the environmental conditions listed below are maintained for the computer module.

Environmental conditions for transportation and storage

Temperature:

Operating	0°C to 40°C
Storage/Transportation	-20°C to 60°C

Humidity (non-condensing) :

Operating	20% to 80%
Storage/Transportation	10% to 90%

Altitude:

Operating	0 to 3,000m
Storage/Transportation	0 to 12,192m

Caution

There is risk of explosion if battery is replaced by an incorrect type. Dispose of used batteries at the end of its useful life according to local laws and regulations.

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. Ensure that product is disposed at the end of its useful life according to local laws and regulations.

Elo has put in place recycling arrangements in certain parts of the world. For more information on how you can access these arrangements, please visit http://www.elotouch.com/AboutElo/ewaste-program/.

Chapter 6 - Regulatory Information

I. Electrical Safety Information:

Compliance is required with respect to the voltage, frequency, and current requirements indicated on the manufacturer's label. Connecting a device to a power source that does not meet requirements other than those specified herein may result in improper operation, damage to the equipment or pose a fire hazard.

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.

II. Emissions and Immunity Information

Notice to Users in the United States:
This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

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. 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.

FCC Caution: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

Notice to Users in Canada:

This device complies with Industry Canada license-exempt RSS standard(s). 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.

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 Directive 2004/108/EC as indicated in European Standard EN 55022 Class A and the Low Voltage Directive 2006/95/EC 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.

III. Radio Frequency Exposure

Notice to Users in the United States:
FCC RF Exposure Compliance: This equipment complies with radio frequency (RF) exposure limits adopted by the Federal Communications Commission for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20 cm between the radiator and your body.

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. IC RSS-102 RF exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20 cm between the radiator and your body.

Déclaration d'exposition aux radiations: Cet équipement est conforme aux limites d'exposition aux rayonnements IC établies pour un environnement non contrôlé. Cet équipement doit être installé et utilisé avec un minimum de 20 cm de distance entre la source de rayonnement et votre corps.

CE RF Exposure Compliance:
This device meets the EU requirements (1999/519/EC) and the International Commission on Non-Ionizing Radiation Protection (ICNIRP) on the limitation of exposure of the general public to electromagnetic fields by way of health protection.

IV. Agency Certifications

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

Europe CE   Canada CUL, IC   United States FCC, UL

Chapter 7 – Warranty Information

For warranty information, go to http://www.elotouch.com/Support/warranty.asp

Check out our website

www.elotouch.com

Get the latest...

- Product Information

- Specifications

- Upcoming events

- Press releases

- Software drivers

Getting in Touch with Us

To find out more about the extensive range of Elo touch solutions, visit our website at www.elotouch.com, or simply call the office nearest you:

North America	Tel 800-ELO-TOUCH	**Europe**	**Asia-Pacific**	**Latin America**
Elo Touch Solutions	Tel 1-408-597-8000	Tel +32 (0) 16 70 45 00	Tel +86 (21) 3329 1385	Tel 786-923-0251
1033 McCarthy Blvd	Fax 1-408-597-8050	Fax +32 (0) 16 70 45 49	Fax +86 (21) 3329 1400	Fax 305-931-0124
Milpitas, CA 95035	customerservice@elotouch.com	elosales@elotouch.com	www.elotouch.com.cn	www.elotouch.com