



10.1" S-Series HMI Ubuntu 16.04

W10FA3S-PCH2AC-PoE
W10FA3S-PCH2-PoE

Quick Start Guide

V1.0

For more information on this and other Winmate products, please visit our website at:

www.winmate.com

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FCC Statement



This device complies with part 15 FCC rules. Operation is subject to the following two conditions:

- This device may not cause harmful interference.
- 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 "B" 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.

European Union



Electromagnetic Compatibility Directive (2014/30/EU)

- EN55024: 2010/ A1: 2015
 - IEC61000-4-2: 2009
 - IEC61000-4-3: 2006+A1: 2007+A2: 2010
 - IEC61000-4-4: 2012
 - IEC61000-4-5: 2014
 - IEC61000-4-6: 2014
 - IEC61000-4-8: 2010
 - IEC61000-4-11: 2004
- EN55032: 2012/AC:2013
- EN61000-3-2:2014
- EN61000-3-3:2013

Low Voltage Directive (2014/35/EU)

- EN 60950-1:2006/A11:2009/A1:2010/A12:2011/
A2:2013

This equipment is in conformity with the requirement of the following EU legislations and harmonized standards. Product also complies with the Council directions.

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Warranty

Winmate Inc. warranty guarantees that each of its products will be free from material and workmanship defects for a period of one year from the invoice date. If the customer discovers a defect, we will, at his/her option, repair or replace the defective product at no charge to the customer, provide it is returned during the warranty period of one year, with transportation charges prepaid. The returned product must be properly packaged in its original packaging to obtain warranty service. If the serial number and the product shipping data differ by over 30 days, the in-warranty service will be made according to the shipping date. In the serial numbers the third and fourth two digits give the year of manufacture, and the fifth digit means the month (e. g., with A for October, B for November and C for December).

For example, the serial number 1W16Axxxxxxx means October of year 2016.

Customer Service

We provide a service guide for any problem by the following steps: First, visit the website of our distributor to find the update information about the product. Second, contact with your distributor, sales representative, or our customer service center for technical support if you need additional assistance.

You may need the following information ready before you call:

- Product serial number
- Software (OS, version, application software, etc.)
- Description of complete problem
- The exact wording of any error messages

In addition, free technical support is available from our engineers every business day. We are always ready to give advice on application requirements or specific information on the installation and operation of any of our products.

Safety Information

WARNING! / AVERTISSEMENT!

Always completely disconnect the power cord from your chassis whenever you work with the hardware. Do not make connections while the power is on. Sensitive electronic components can be damaged by sudden power surges. Only experienced electronics personnel should open the PC chassis.



Toujours débrancher le cordon d'alimentation du chassis lorsque vous travaillez sur celui-ci. Ne pas brancher de connexions lorsque l'alimentation est présente. Des composants électroniques sensibles peuvent être endommagés par des sauts d'alimentation. Seulement du personnel expérimenté devrait ouvrir ces chassis.

CAUTION/ATTENTION

Always ground yourself to remove any static charge before touching the CPU card. Modern electronic devices are very sensitive to static electric charges. As a safety precaution, use a grounding wrist strap at all times. Place all electronic components in a static-dissipative surface or static-shielded bag when they are not in the chassis.



Toujours vérifier votre mise à la terre afin d'éliminer toute charge statique avant de toucher la carte CPU. Les équipements électroniques modernes sont très sensibles aux décharges d'électricité statique. Toujours utiliser un bracelet de mise à la terre comme précaution. Placer toutes les composantes électroniques sur une surface conçue pour dissiper les charge, ou dans un sac anti-statique lorsqu'elles ne sont pas dans le chassis.



INTRODUCTION

Congratulations on purchasing Winmate® 10.1" S-Series HMI. Interactive and smart automation systems of intelligent buildings are in a fast growing phase. Winmate multi-touch S-Series HMI is suitable for home automation and room management systems. Flat surface is easy-to-clean and delivers aesthetically pleasing look for any interior. By connecting to centralized database, it can provide real time update for booking status and available schedule, or perform as a synchronous display in meetings. Optional HF RFID is especially useful in access control applications.

S-Series HMI runs on Freescale® Cortex® A9 i.MX6 Dual Core 1GHz (optional Quad Core) processor and support Ubuntu 16.04 operating systems. The HMI device features P-Cap touch-screen. These models designed with front IP 65 dust and water proof, and IP22 on the back side.

S-Series HMI has an exceptional feature - LED light bar. With the help of red, green and blue LED indicators you can see the status of the machine or processes afar. It significantly reduces power consumption by keeping the display turned off.

Features

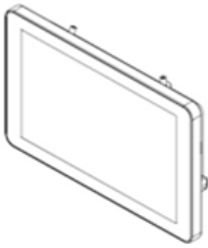


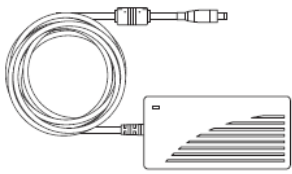
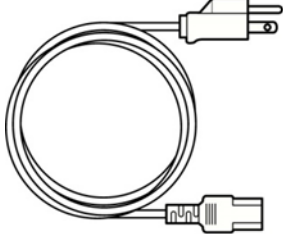
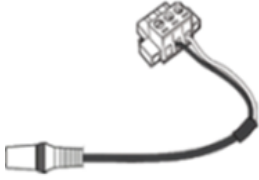
Winmate® 10.1" S-Series HMI features:

- 10.1" 1280 x 800 Resolution with P-Cap multi-touch screen
- Freescale® Cortex® A9 i.MX6 Dual Core 1GHz (optional Quad Core)
- Ubuntu 16.04 OS
- PoE standard IEEE 802.3at (25 W)
- Fanless cooling system and ultra-low power consumption
- Room booking schedule, access control, room information display
- Front IP65 water and dust proof
- LED Status Light Bar indicators on both sides
- Optional HF RFID Reader
- Optional 2MP Front Camera

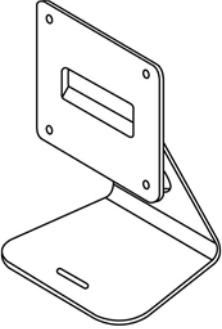
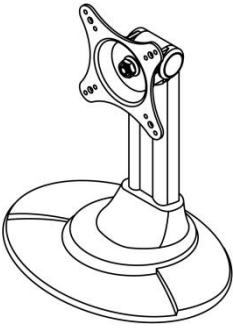
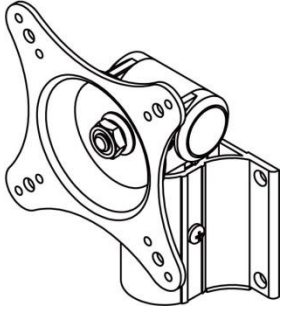
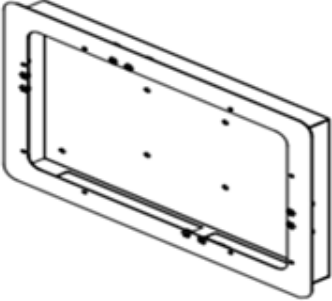
Package Contents

Carefully remove the box and unpack your device. Please check if all the items listed below are inside your package. If any of these items are missing or damaged contact us immediately.

Standard factory shipment list:

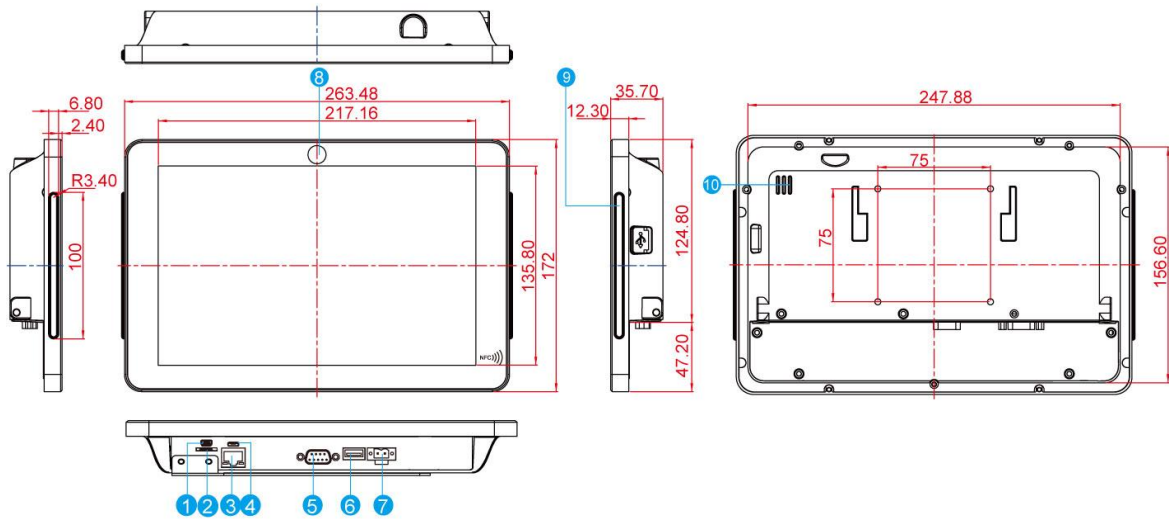
		
10.1" HMI Device	Quick Start Guide (Hardcopy)	Driver CD & User Manual
Varies by product specifications	Varies by product specifications	91711111102P
		
AC Adapter (12V/ 50W)	Power Cord	Terminal Block 2 pin
922D050W12VA	Varies by country	94J602G020K0

Package may include optional accessories based on your order:

		
<p>VESA Desk Stand PCVS-V1</p>	<p>VESA Desk Stand LA-100</p>	<p>VESA Wall Mount Bracket LA-106</p>
<p>99KK00A0000E</p>	<p>9B0000000128</p>	<p>9B0000000412</p>
		
<p>Front Side Wall Mount PCFW-V1</p>		
<p>99KK00A0000C</p>		

Product Overview

Unit: mm



No	Description	No	Description
①	Console Port (for Linux)	⑥	USB 2.0 x 1
②	Micro SD Card Slot	⑦	12V DC
③	LAN/ PoE*	⑧	2MP Front Camera (Optional)
④	USB OTG	⑨	LED Status Light Bar**
⑤	RS-232/422/485	⑩	1W Speaker

* Power Device (PD): IEEE 802.3at (25 W), IEEE 802.3af (15 W)

**RGB LED light bar only available for the model number W10FA3S-PCH2AC-PoE.

INSTALLATION

Wiring Requirements

The following common safety precautions should be observed before installing any electronic device:

- Strive to use separate, non-intersecting paths to route power and networking wires. If power wiring and device wiring paths must cross make sure the wires are perpendicular at the intersection point.
- Keep the wires separated according to interface. The rule of thumb is that wiring that shares similar electrical characteristics may be bundled together.
- Do not bundle input wiring with output wiring. Keep them separate.
- When necessary, it is strongly advised that you label wiring to all devices in the system.



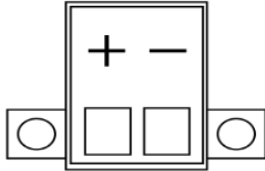
CAUTION

- Do not run signal or communication wiring and power wiring in the same conduit. To avoid interference, wires with different signal characteristics (i.e., different interfaces) should be routed separately.
- Be sure to disconnect the power cord before installing and/or wiring your device.
- Verify the maximum possible current for each wire gauge, especially for the power cords. Observe all electrical codes dictating the maximum current allowable for each wire gauge.
- If the current goes above the maximum ratings, the wiring could overheat, causing serious damage to your equipment.
- Be careful when handling the unit. When the unit is plugged in, the internal components generate a lot of heat which may leave the outer casing too hot to touch.

Connecting to Other Devices

Power Input Connector

The DC power source input of the 7" S-Series HMI is a 2 pin terminal block connector that supports 12V DC power input.

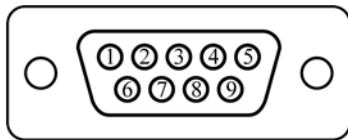


Voltage

Minimum Voltage 11.4V
Maximum Voltage 12.6V
Maximum Current 4.2A

Serial Port Connector

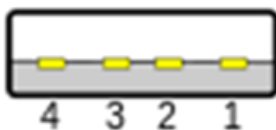
The 7" S-Series HMI has one serial port connector to connect your HMI to external devices such as mouse, modem or printer. You can configure serial port settings via APP.



Pin No	RS-232 (Default)	RS-422	RS-485
1	DCD	TxD-	D-
2	RXD	TxD+	D+
3	TXD	RxD+	NC
4	DTR	RxD-	NC
5	GND	GND	GND
6	DSR	NC	NC
7	RTS	NC	NC
8	CTS	NC	NC
9	RI	NC	NC

USB 2.0 Connector

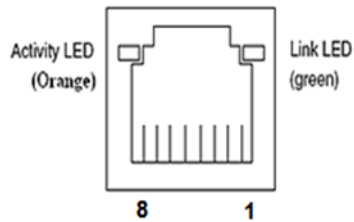
Use USB A Type (USB 2.0) connector to connect your HMI device to other USB 2.0 compatible devices.



Pin No	Signal Name	Pin No	Signal Name
1	+5V	2	USB_D-
3	USB_D+	4	GND

Ethernet Connector

The 7" S-Series HMI supports one RJ45 10/100/1000 Mbps Ethernet interface for connecting to the internet.



Pin No	Signal Name	Pin No	Signal Name
1	TX1+	2	TX1-
3	TX2+	4	TX2-
5	TX3+	6	TX3-
7	TX4+	8	TX4-



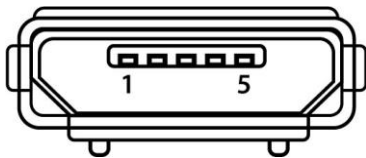
IMPORTANT:

Power Device (PD):

IEEE 802.3at (25 W), IEEE 802.3af (15 W)

USB OTG Connector

Use USB OTG connector to connect the HMI device to other USB On-The-Go compliant devices such as flash drives, digital cameras, mice or keyboards. Use USB OTG cable to install software on the HMI device.

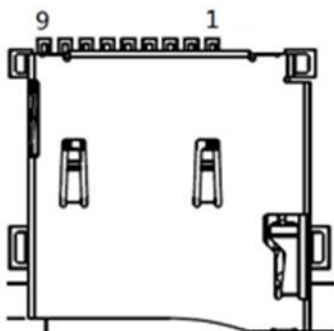


Refer to the User Manual for more details on how to install software.

Pin No	Signal Name	Pin No	Signal Name
1	+5V	2	USB_OTG_D-
3	USB_OTG_D+	4	USB_OTG_ID
5	GND		

Micro SD Card Slot

Insert microSD card to microSD card slot to extend the memory of your HMI device.



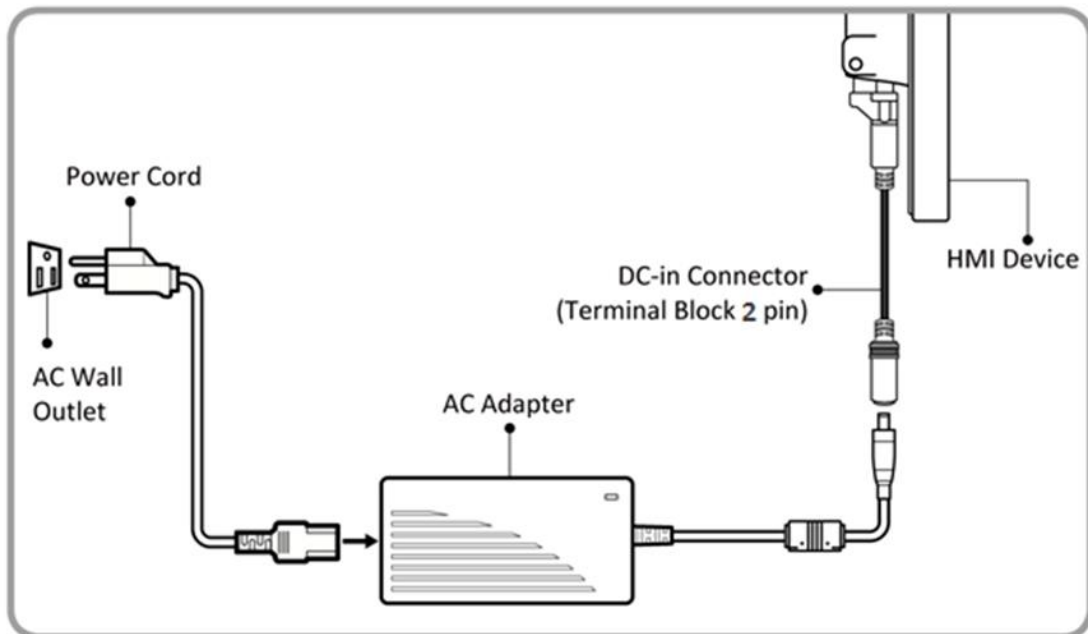
Pin No	Signal Name	Pin No	Signal Name
1	DATA2	2	DATA3
3	CMD	4	+3.3V
5	CLK	6	GND
7	DATA0	8	DATA1
9	Card_Det		

GETTING STARTED

Turning On Your Device

Follow the following steps to turn on your device:

1. Connect the HMI device to a thermal block (2-pin).
2. Connect the other side of the thermal block to the AC adapter.
3. Connect the AC adapter to the power cord.
4. Plug in the power cord to a working AC wall outlet. The device will boot automatically.



CAUTION

Use only the AC adapter included in your package. Using other AC adapters may damage the device.




ALTERNATING CURRENT

This product must be grounded. Use only a grounded AC outlet. Install the additional PE ground wire if the local installation regulations require it.

Turning Off Your Device

To **turn off** the HMI device:


1. Click the lower right Logout button on the desktop .
2. Choose **Shut Down** option to shut down the HMI device.
3. Disconnect the HMI device from the power source (if necessary).

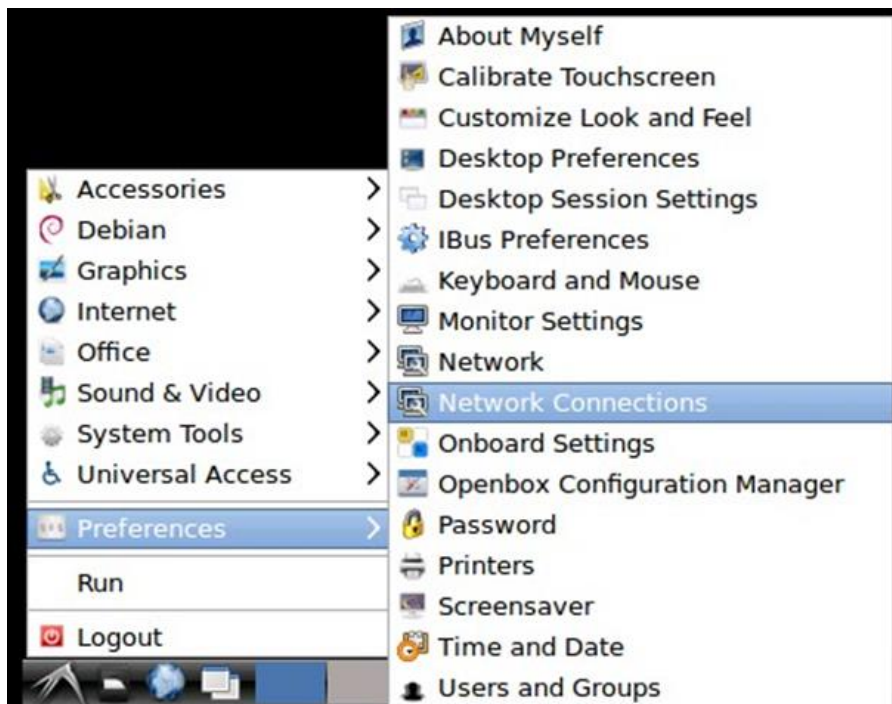
OPERATING THE DEVICE

Your HMI supports Linux Ubuntu 16.04 operating system. This section describes how to get started with Ubuntu 16.04 and basic settings.


For more advanced Ubuntu settings, please [click here](#) to download SDK from Winmate Download Center.

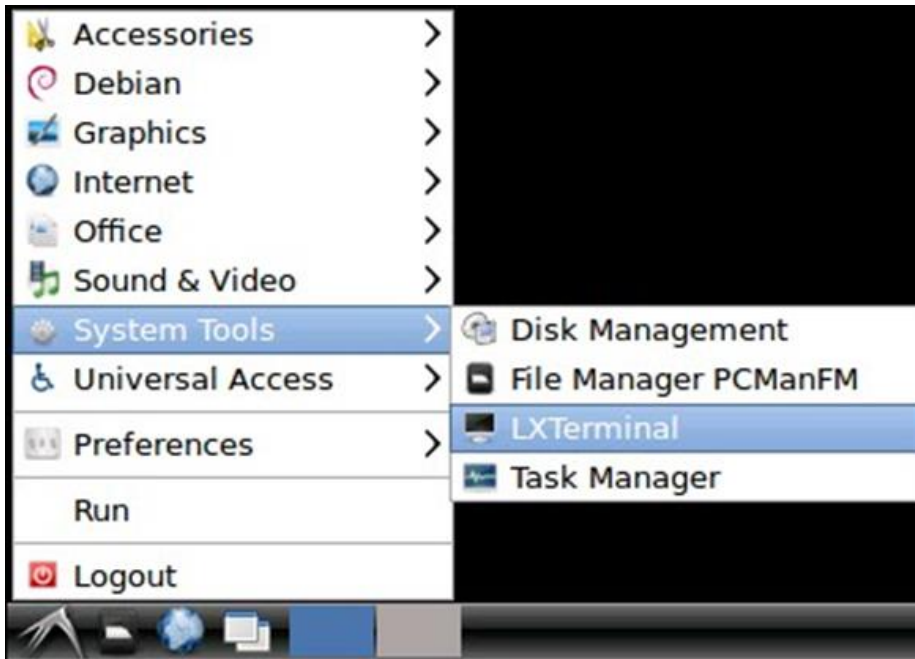
Start Menu

1. Click the lower left **Start button**  on the desktop to expand Start Menu.
2. Click **Preferences** and select required program.



Linux Terminal

1. Click on the **Start button**  at the bottom left side of the desktop, in drop-down menu choose **System Tools > LXTerminal**.

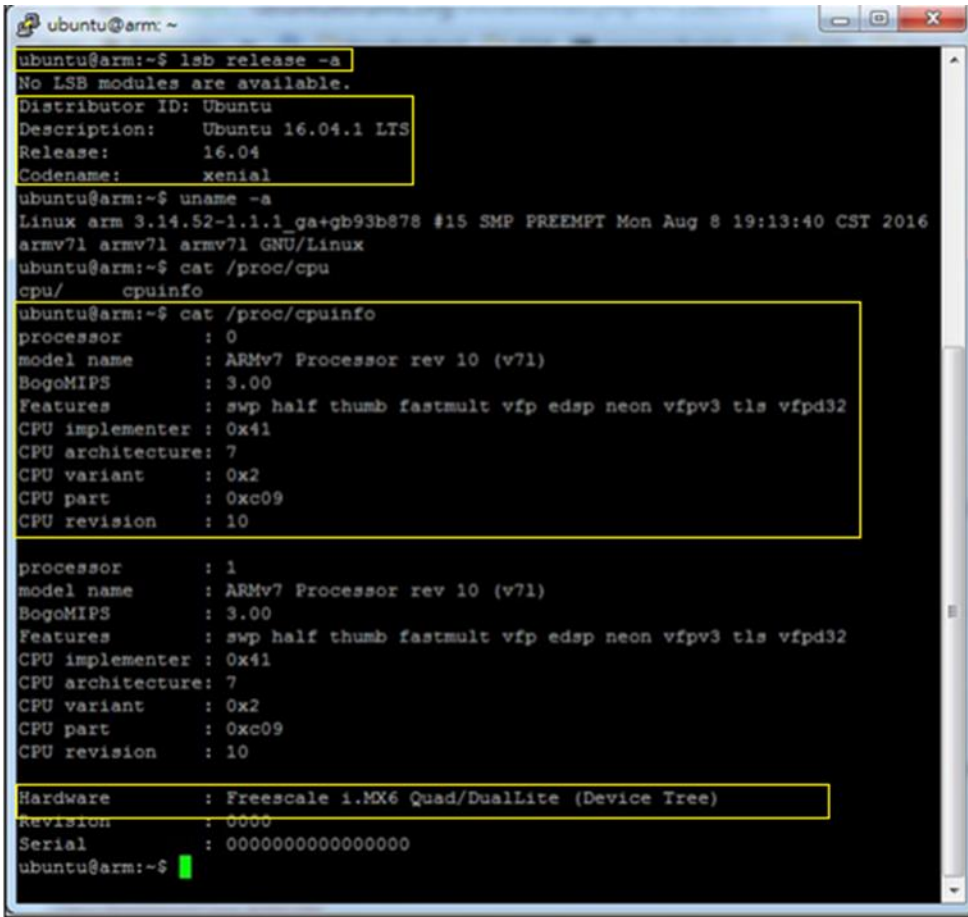


2. You are in Linux Ubuntu terminal.



System Information

1. Open **Linux Terminal**, enter command code to check OS and CPU information.



```
ubuntu@arm:~$ lsb_release -a
No LSB modules are available.
Distributor ID: Ubuntu
Description:   Ubuntu 16.04.1 LTS
Release:      16.04
Codename:     xenial

ubuntu@arm:~$ uname -a
Linux arm 3.14.52-1.1.1_ga+gb93b878 #15 SMP PREEMPT Mon Aug 8 19:13:40 CST 2016
armv7l armv7l armv7l GNU/Linux

ubuntu@arm:~$ cat /proc/cpu
cpu/      cpuinfo

ubuntu@arm:~$ cat /proc/cpuinfo
processor      : 0
model name    : ARMv7 Processor rev 10 (v7l)
BogoMIPS     : 3.00
Features     : swp half thumb fastmult vfp edsp neon vfpv3 tls vfpd32
CPU implementer : 0x41
CPU architecture: 7
CPU variant   : 0x2
CPU part     : 0xc09
CPU revision  : 10

processor      : 1
model name    : ARMv7 Processor rev 10 (v7l)
BogoMIPS     : 3.00
Features     : swp half thumb fastmult vfp edsp neon vfpv3 tls vfpd32
CPU implementer : 0x41
CPU architecture: 7
CPU variant   : 0x2
CPU part     : 0xc09
CPU revision  : 10

Hardware     : Freescale i.MX6 Quad/DualLite (Device Tree)
Revision    : 0000
Serial      : 000000000000000000
ubuntu@arm:~$
```

To find System Information command code, please refer to [Appendix C](#) of this manual.

Brightness Adjustment

1. Open **Linux Terminal**, enter command code to change brightness settings.
2. **brightness.png** -> Use “**echo**” and “**cat**” command to control the backlight of the LCD panel. The range is 0 (lowest brightness) to 7 (highest brightness).



```


ubuntu@arm: /sys/class/backlight/backlight.25
login as: ubuntu
ubuntu@192.168.120.51's password:
Welcome to Ubuntu 16.04.1 LTS (GNU/Linux 3.14.52-1.1.1_ga+gb93b878 armv7l)



 * Documentation:  https://help.ubuntu.com
 * Management:    https://landscape.canonical.com
 * Support:       https://ubuntu.com/advantage
Last login: Thu Aug 11 12:49:04 2016 from 192.168.120.203
ubuntu@arm:~$ cd /sys/class/b
backlight/ bdi/      block/      bluetooth/
ubuntu@arm:~$ cd /sys/class/backlight/backlight.25
ubuntu@arm:/sys/class/backlight/backlight.25$ ls
actual_brightness  brightness  max_brightness  subsystem  uevent
bl_power           device      power           type
ubuntu@arm:/sys/class/backlight/backlight.25$ sudo sh -c "echo 3 > brightness"
[sudo] password for ubuntu:
ubuntu@arm:/sys/class/backlight/backlight.25$ sudo sh -c "echo 7 > brightness"
ubuntu@arm:/sys/class/backlight/backlight.25$
  
```

To find Brightness adjustment command code, please refer to [Appendix C](#) of this manual.

Ethernet Settings

To configure Ethernet Settings, follow the instruction below:

1. Connect Ethernet Cable to the HMI device.
2. Click on the **Ethernet connection** icon  located at the bottom right side of the desktop.

Icon	Description
	Ethernet is not connected to the HMI device.
	Ethernet is connected to the HMI device.

3. In the drop-down menu select “**Edit Connections**”.



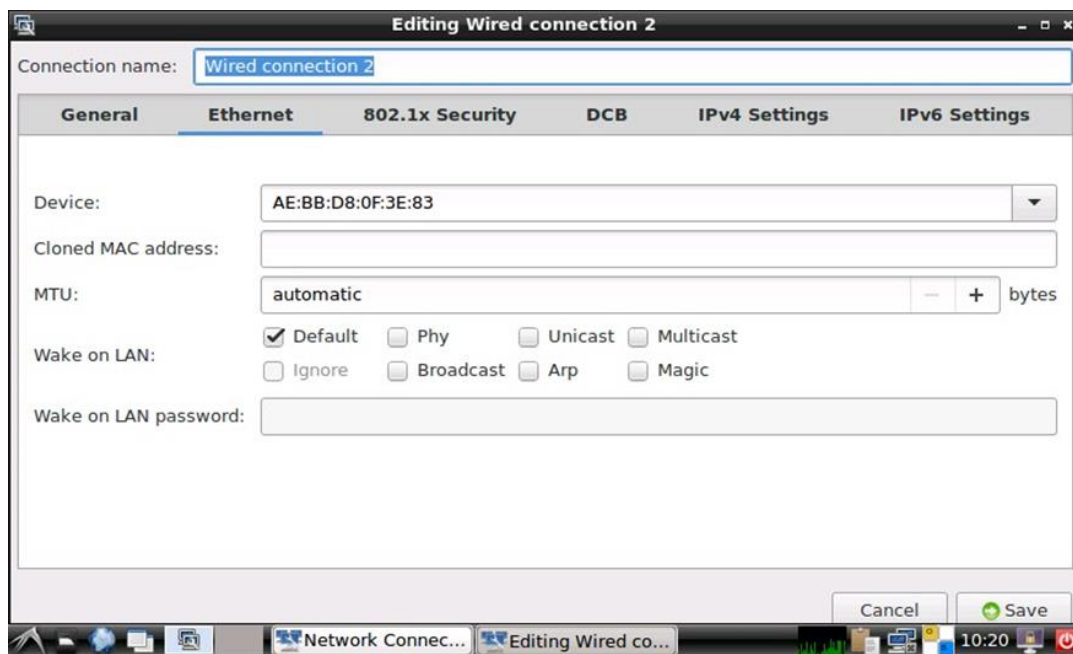
4. In the drop-down Ethernet menu double-tap “**Wired connection 1**” to enter the menu.



- In General menu select “**Automatically connect to this network when it is available**” and “**All users may connect to this network**”.



- Go to **Ethernet** menu, confirm that **MTU** is set as **automatic** and **Wake on LAN** is chalk marked as **Default**.




7. Go to **IPv4 Settings** menu, tap on **Method**. If you want to use DHCP, in the **Method** drop-down menu select **Automatic (DHCP)**.



8. If you want to use **Static IP**, in the **Method** drop-down menu select **Manual**. Then configure your Static IP settings.



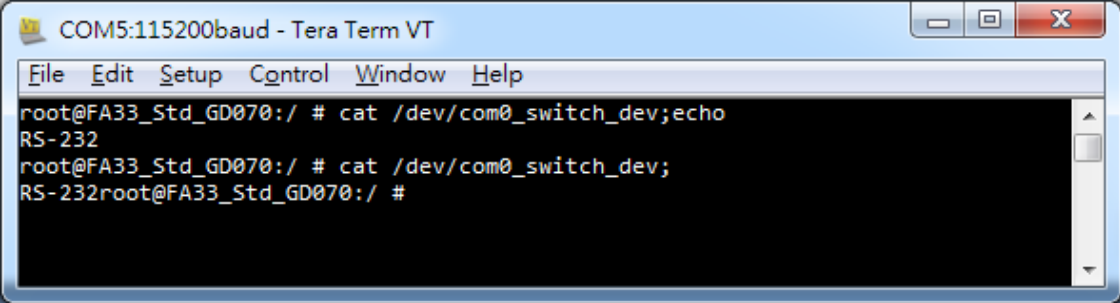
9. Tap **Save button**  to save settings and exit the menu.

Changing Serial Port Settings

Serial port can be configured for RS-232, RS-422 or RS-485. Please [click here](#) to download Winmate® SDK for Ubuntu 16.04.

Get Mode

Use the Linux command `cat` to read the value in console.



```

COM5:115200baud - Tera Term VT
File Edit Setup Control Window Help
root@FA33_Std_GD070:/ # cat /dev/com0_switch_dev;echo
RS-232
root@FA33_Std_GD070:/ # cat /dev/com0_switch_dev;
RS-232root@FA33_Std_GD070:/ #
  
```

There is no "new line" character after the string "RS-232", so we append `;"echo"` to show you the real string.

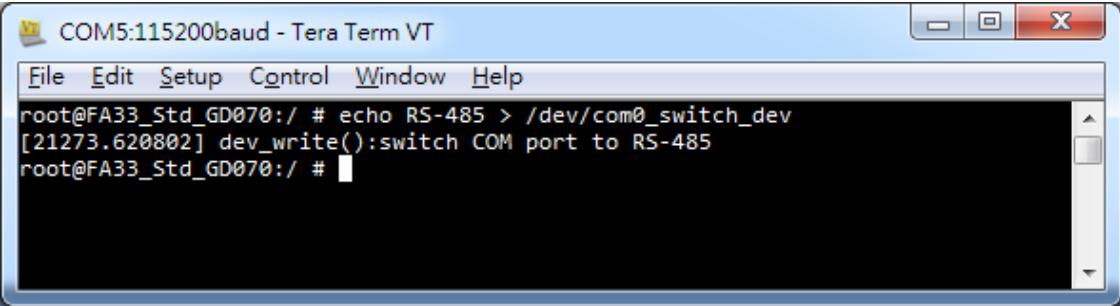
Set Mode

Use the Linux command `echo` and `>` to write/read the value in console.

For example:

```

echo RS-232 > /dev/com0_switch_dev
echo RS-422 > /dev/com0_switch_dev
echo RS-485 > /dev/com0_switch_dev
  
```



```

COM5:115200baud - Tera Term VT
File Edit Setup Control Window Help
root@FA33_Std_GD070:/ # echo RS-485 > /dev/com0_switch_dev
[21273.620802] dev_write():switch COM port to RS-485
root@FA33_Std_GD070:/ #
  
```

RS-232/422/485 Switch

To configure serial port settings follow the instructions below:

1. Open **Linux Terminal**, enter command code to change serial port settings.

To find Serial Port command code, please refer to [Appendix C](#) of this manual.

Exit the System

Click the lower right Logout button  on the desktop to logout Linux session.



For a more detailed Ubuntu 16.04 user guide, follow the download path below:
http://files.ubuntu-manual.org/manuals/getting-started-with-ubuntu/16.04/en_US/screen/Getting%20Started%20with%20Ubuntu%2016.04.pdf

MOUNTING

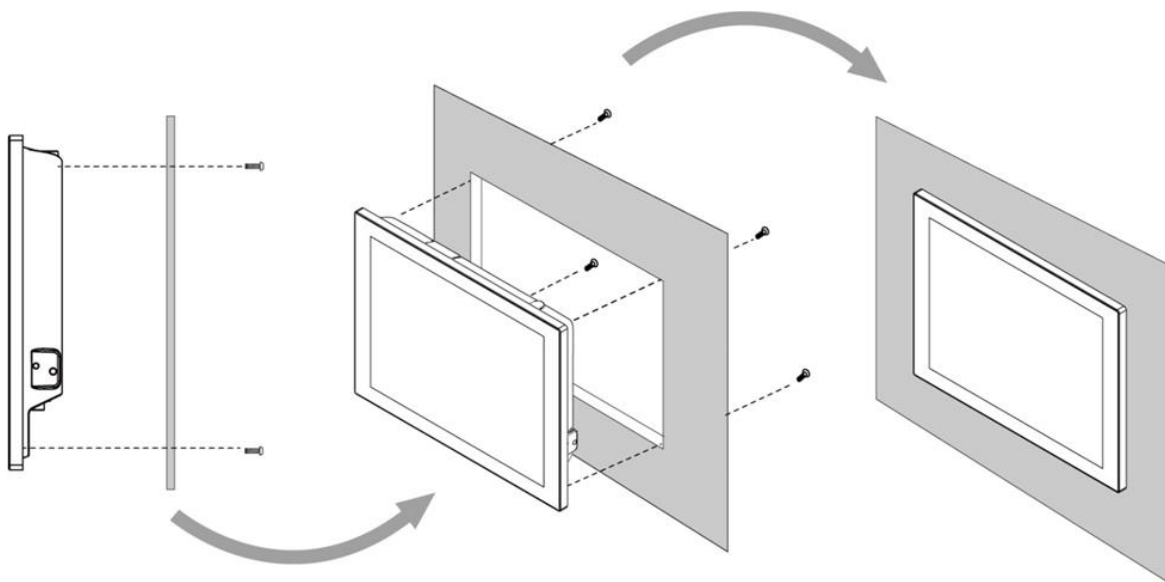
S-series HMI devices come with different mounting options suitable for most of the industrial and commercial applications.

S-series HMI devices come with different mounting options suitable for most of the industrial and commercial applications.

Panel Mounting

Panel Mount mounting solutions is suitable for many applications where HMI should be embedded in the machine. With this mounting solution flat surface leave no bezel in the front.

Wall cutout	Screw hole diameter
360 x 292 mm	M3x5 mm



Mounting Instruction:

1. Prepare a fixture for the specific dimensions of the device.
2. Cut a hole on a sub frame or panel according to the cutout dimensions.
3. Install the device properly onto the cutout area of the sub frame or panel with the sides of the front bezel.
4. Fix the device to fixture with eight Philips M3x5 screws.

VESA Mounting

VESA Desk Stand LA-100

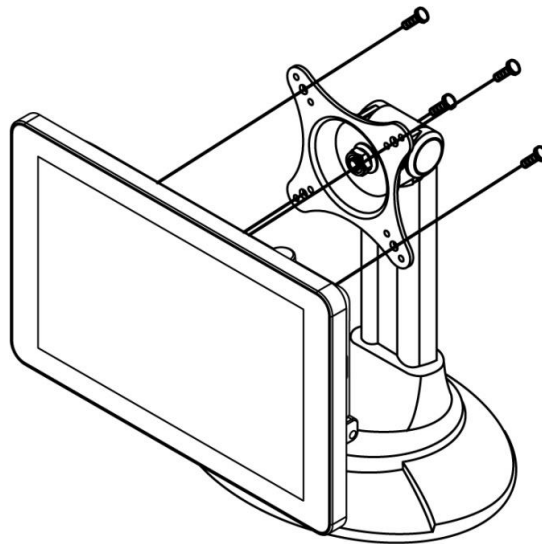
The HMI device can be installed on a desk with the stand. You can purchase desk stand as an optional accessory.

Model Name: LA-100

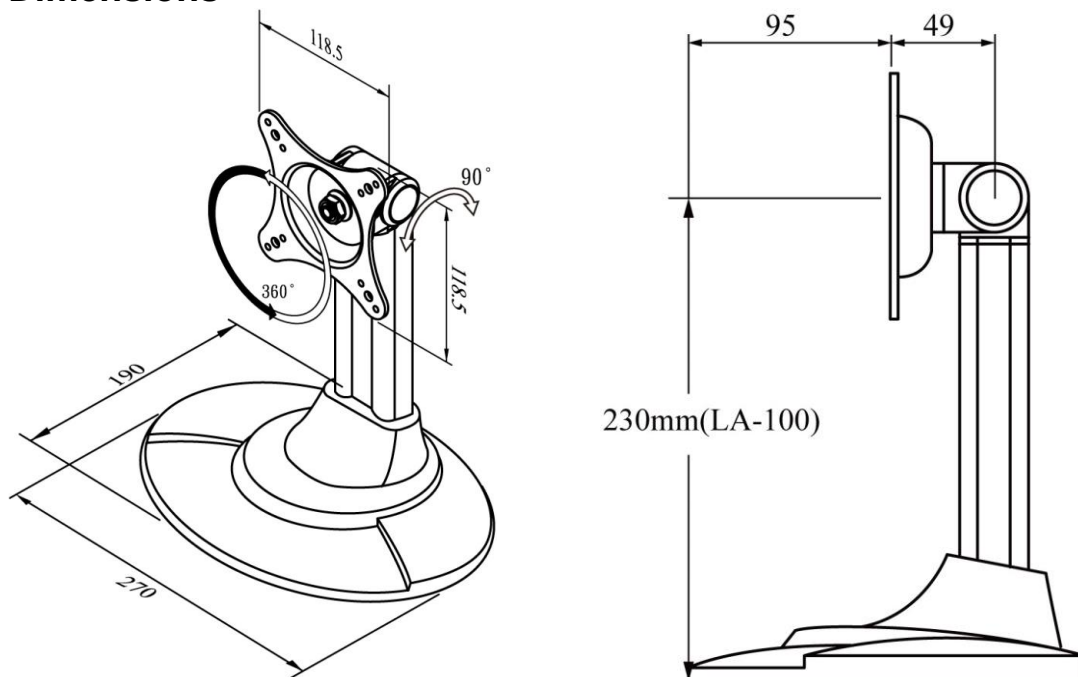
Part Number: 9B0000000128

Mounting Instruction

- Use provided Philips M4x5 screws to fix the desk stand to VESA holes on the back cover of the device.



Dimensions



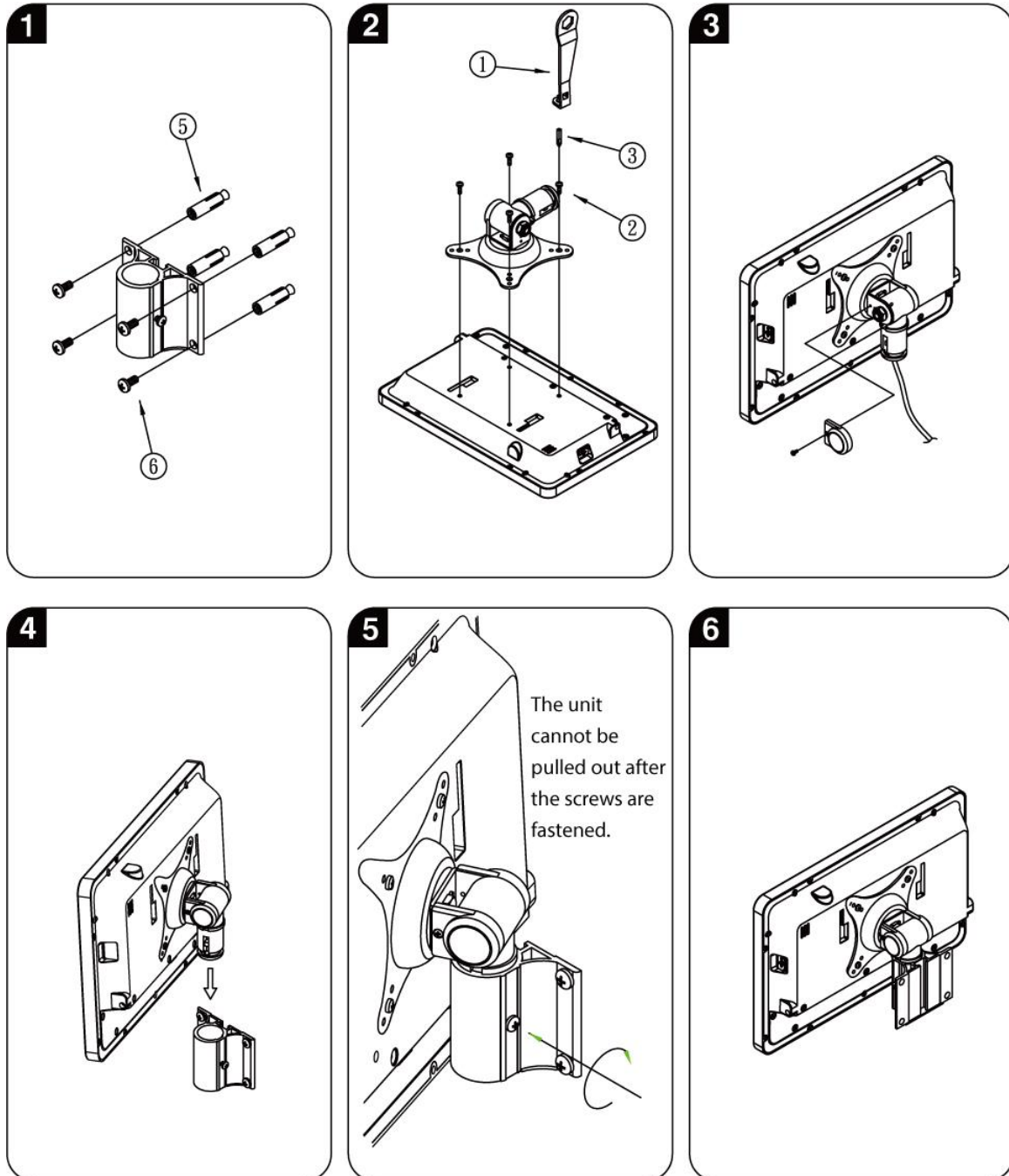
VESA Wall Mount Bracket LA-106

The HMI device can be installed on a desk with the stand. You can purchase desk stand as an optional accessory.

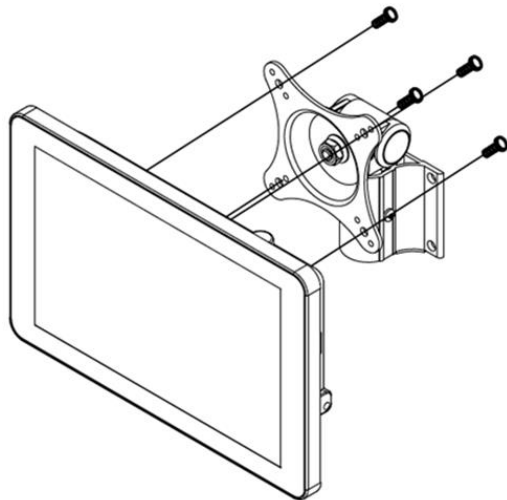
Model Name: LA-106

Part Number: 9B0000000412


Mounting Instruction





Accessories





①  =1

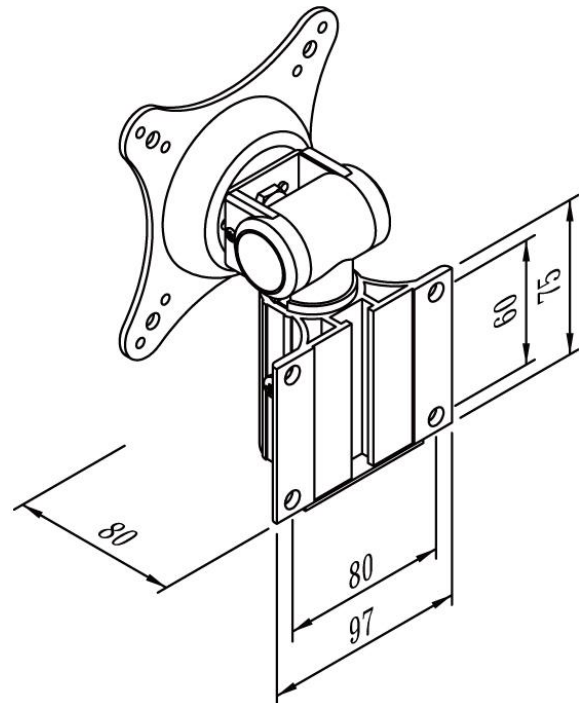
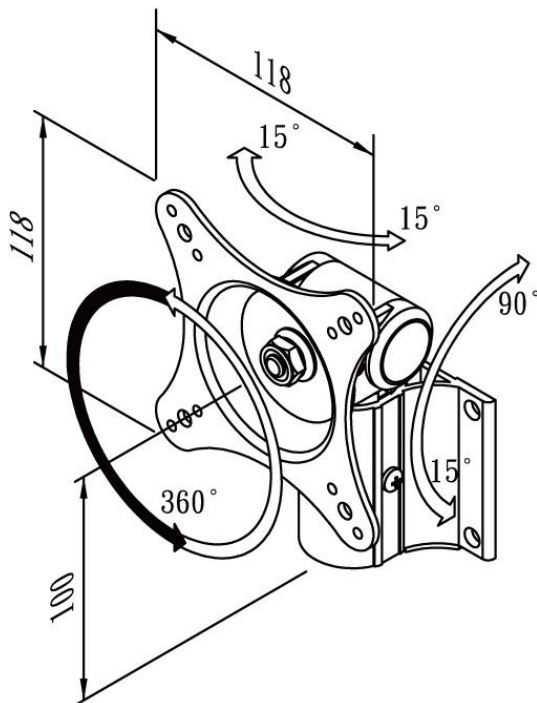
 4X18=4

②  4X10=4

⑤  11X35=4 (expansion bolt) ③  =1

⑥  1/4X16=4 (screw for wall) ④  5X20=4 (screw for wood board)

Dimensions



SPECIFICATIONS

HMI Device Specifications

		Model Name
		R15FA3S-PCC3-PoE
Display	Size	15" TFT (Widescreen)
	Resolution	1024 x 768
	Brightness	250 nits
	Max Colors	262K (6 bit)
	Touch	PCAP Multi-Touch (Supports 5 points)
System	CPU	Freescale® Cortex® A9 i.MX6 Dual Core 1GHz (optional Quad Core)
	System Chipset	Freescale® i.MX6
	Memory	1GB LPDDR3 (Optional 2GB LPDDR3)
	Storage	8 GB eMMC (Default), Micro SD Card
	Ethernet	Dual Broadcom BCM57780 GbE Controller
	OS	Ubuntu 16.04 (Optional)
I/O Connectors	Serial Port	1 x RS-232/422/485
	USB Port	1 x USB 2.0 host, 1 x USB OTG
	Ethernet Port	1 x RJ 45-10/100/1000 Mbps LAN (Supports PoE function)
	SD Card Slot	1 x Micro SD Card Slot
Peripheral	Audio Output	1 Watt Speaker
	LED Status Light Bar	Built-in RGB LED Light Bar (only for W10FA3S-PCH2AC-PoE)
	HF RFID	HF RFID Reader 13.56 MHz (Optional)

Power Management	Power Input	12V DC
	Power Consumption	19W
	Power over Ethernet	Power Device (PD): follows IEEE 802.3at (25 Watt)
Mechanical Specifications	Dimensions (W x L x H)	363.40 x 277.86 x 44.50 mm
	Mounting	VESA Mount (100 x 100 mm), Panel Mount
	Cooling System	Fanless design
Environmental Considerations	Operating Temp.	-20°C ~ +60°C
	Humidity	10% ~ 90% (non-condensing, RH)
	IP Rating	Front: IP65 water and dust proof Rear: IP22

Supported HF RFID Tag

The HF RFID Reader of this device supports the following card type.

HF RFID Standard	Purpose
ISO-14443 A	Standard for MIFARE technology, which used in smart cards and proximity cards
ISO-15693	Standard for tracking items

APPENDIX

Appendix A: Cleaning the Monitor

Before cleaning:

- Make sure the device is turned off.
- Disconnect the power cable from any AC outlet.

When cleaning:

- Never spray or pour any liquid directly on the screen or case.
- Wipe the screen with a clean, soft, lint-free cloth. This removes dust and other particles.
- The display area is highly prone to scratching. Do not use ketene type material (ex. Acetone), Ethyl alcohol, toluene, ethyl acid or Methyl chloride to clear the panel. It may permanently damage the panel and void the warranty.
- If it is still not clean enough, apply a small amount of non-ammonia, non-alcohol based glass cleaner onto a clean, soft, lint-free cloth, and wipe the screen.
- Don not use water or oil directly on the display screen. If droplets are allowed to drop on the screen, permanent staining or discoloration may occur.

Appendix B: Winmate Software Development Kit

Winmate® provides Software Development Kit (SDK). The table below lists SDK provided by Winmate for E-Series HMI with Freescale® Cortex® A9 i.MX6 Dual Core processor:

Item	Driver	Description
1	Ubuntu SDK	Ubuntu SDK

To find the Drivers and SDK, please refer to the Driver CD that comes in the package or contact us. Also, you can download drivers from Download Center.

[Click here](#) to download Ubuntu SDK from Winmate Download Center.

Appendix C: Ubuntu Command Code

This section contains the code for main commands for Ubuntu.

Brightness

The source code is located in

/sys/class/backlight/backlight.25/brightness

We use “**sudo sh -c "echo 3 >**

/sys/class/backlight/backlight.25/brightness” to set the brightness.

The range is between 0 to 7.

Use the command “**cat /sys/class/backlight/backlight.25/brightness”** to get the brightness information.

System information

Execute **uname -a**

Linux arm 3.14.52-1.1.1_ga+gb93b878 #15 SMP PREEMPT Mon
Aug 8 19:13:40 CST 2016 armv7l armv7l armv7l GNU/Linux

Execute **lsb_release -a**

No LSB modules are available.

Distributor ID: Ubuntu

Description: Ubuntu 16.04 LTS

Release:16.04

Codename: xenial

Serial Port

a. Open COM Port

```

// *****
//      Parameter:
// static char *portname = "/dev/ttyUSB0";
// static int COMPort_fd;
// Baud rate: 115200
// bits per second: 8
// parity: none
// stop bits: 1
//
// *****
static void cmd_open(void)
{
  COMPort_fd = open (portname, O_RDWR | O_NOCTTY | O_SYNC);
  if (COMPort_fd < 0)
  {
    printf("error %d opening %s: %s\n", errno, portname, strerror (errno));
    return;
  }
  else
  {
    printf("Open success\n");
  }

  set_interface_attribs (COMPort_fd, B115200, 0); // set baudrate 8n1 (no parity)
  set_blocking (COMPort_fd, 0);                 // set no blocking
  printf("COM initial ok\n");
}

```

b. Close COM Port

```

// *****
// Close COM port node
// *****

static void cmd_close(void)
{
  if(close(COMPort_fd) == 0)
    printf("COM close\n");
}

```

c. Read/ Write Command

```
// *****  
  
// Parameter:  
  
// write_data    static char write_data[] = "Hello World!!";  
  
//  
// *****  
  
static void cmd_write(void)  
  
{  
  
    write(COMPort_fd, &write_data[0], sizeof(write_data)); // send character greeting  
  
    usleep((sizeof(write_data) + 25) * 100);  
  
    char buf[200];  
  
    int n = read(COMPort_fd, buf, sizeof(buf)); // read up to 100 characters if ready to read  
  
    printf("Read Data = %s\n", buf);  
  
}
```




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