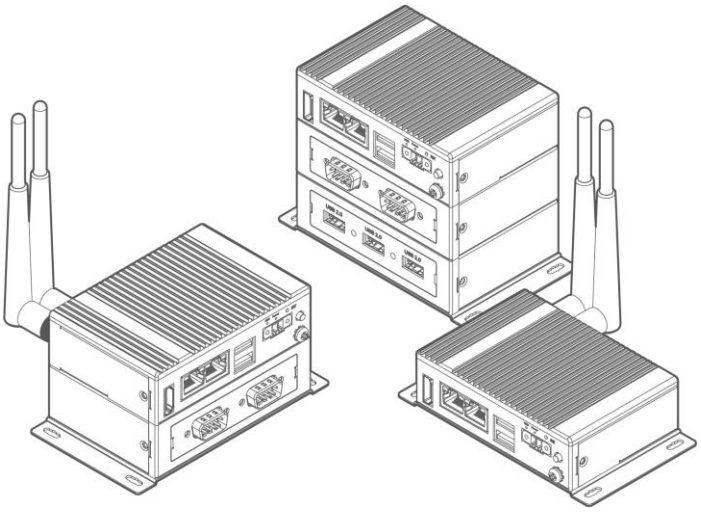
IoT Gateway
EAC Mini

EACIL20



Quick Start Guide

V1.0

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

Document Part Number: 915211101025

Please read these instructions carefully before using this product, and save this manual for future use.

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PREFACE

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 him 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
- EN 55032: 2015+AC: 2016
- 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.

Copyright Notice

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Disclaimer

Winmate Inc. reserve the right to make changes, without notice, to any product, including circuits and/or software described or contained in this manual in order to improve design and/or performance. We assume no responsibility or liability for the use of the described product(s) conveys no license or title under any patent, copyright, or masks work rights to these products, and make no representations or warranties that these products are free from patent, copyright, or mask work right infringement, unless otherwise specified. Applications that are described in this manual are for illustration purposes only. We make no representation or guarantee that such application will be suitable for the specified use without further testing or modification.

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 1W17Axxxxxxxx means October of year 2017.

Customer Service

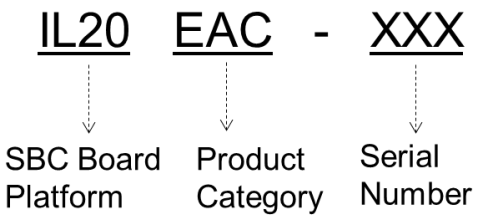
We provide a service guide for any problem by the following steps: First, visit the website of our distributor to find the update information about the product. Second, contact with your distributor, sales representative, or our customer service center for technical support if you need additional assistance.

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.

Naming Rule



Safety Information

WARNING!
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.

WARNING!
During heavy loading in 50°C environment, the top side of the EAC Mini may be over 70°C. Please do not touch these parts with your bare hands.

CAUTION
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.

Advisory Conventions

Four types of advisories are used throughout the user manual to provide helpful information or to alert you to the potential for hardware damage or personal injury. These are Notes, Important, Cautions, and Warnings. The following is an example of each type of advisory.

NOTE:
A note is used to emphasize helpful information

IMPORTANT:
An important note indicates information that is important for you to know.

CAUTION
A Caution alert indicates potential damage to hardware and explains how to avoid the potential problem.

WARNING!
An Electrical Shock Warning indicates the potential harm from electrical hazards and how to avoid the potential problem.

ALTERNATING CURRENT
The Protective Conductor Terminal (Earth Ground) symbol indicates the potential risk of serious electrical shock due to improper grounding.

1 INTRODUCTION

Congratulations on purchasing Winmate® EAC Mini EACIL20 IoT Gateway.

The EAC Mini EACIL20 is a compact industrial IoT Gateway with low power consuming Intel® Apollo Lake N3350 1.1 GHz processor. The EAC Mini EACIL20 provides great expansion including one Mini-PCIe and SIM card support. Expansion module offers great options from additional USB ports to Bluetooth 4.0, Wi-Fi and 4G. Wireless connectivity and all necessary input and output ports allow the EAC Mini EACIL20 to send data from manufacturing facilities directly to cloud server.

Abundant I/O ports and expansion module with more than thirty different combinations make EAC Mini suitable for smart factory and machine automation applications.

1.1 Features

Winmate® EAC Mini IoT Gateway offers the following features:

- Intel® Apollo Lake N3350 1.1 GHz
- Fanless cooling system
- Compact size 100 x 70 x 31 mm (w/o mounting bracket)
- Expansion module with 30+ combinations, including 4G/3G/Wi-Fi/ Bluetooth
- Various mounting options: desk, wall, VESA, din-rail, pole
- Suitable for smart factory applications

1.2 Expansion Module

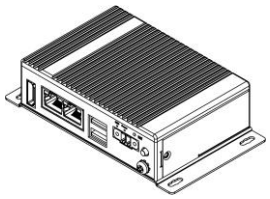
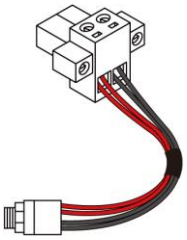
30+ combinations:

- 4G
- 3G
- 3-port RS232/422/485 w/ isolation
- 24-Channel Digital I/O w/ isolation
- 2-port CANBUS w/ isolation
- 4-port USB 2.0
- 2-port RS232/422/485 w/ isolation

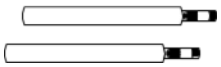
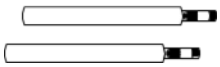
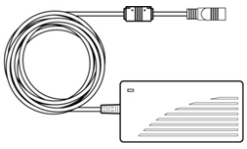
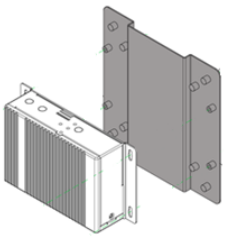
1.3 Package Contents

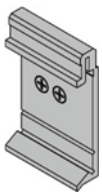
Carefully remove the box and unpack your device. Please check if all the items listed below are inside your package. If any of these items are missing or damaged contact us immediately.

Standard factory shipment list:

			
EAC Mini IoT Gateway	**Quick Start Guide (Hardcopy)**	**Driver CD**	**Terminal Block 2 pin to 2.5Ø Female Adapter Cable**
Varies by product specifications	915211101025	91711110100O	94J602G020K2

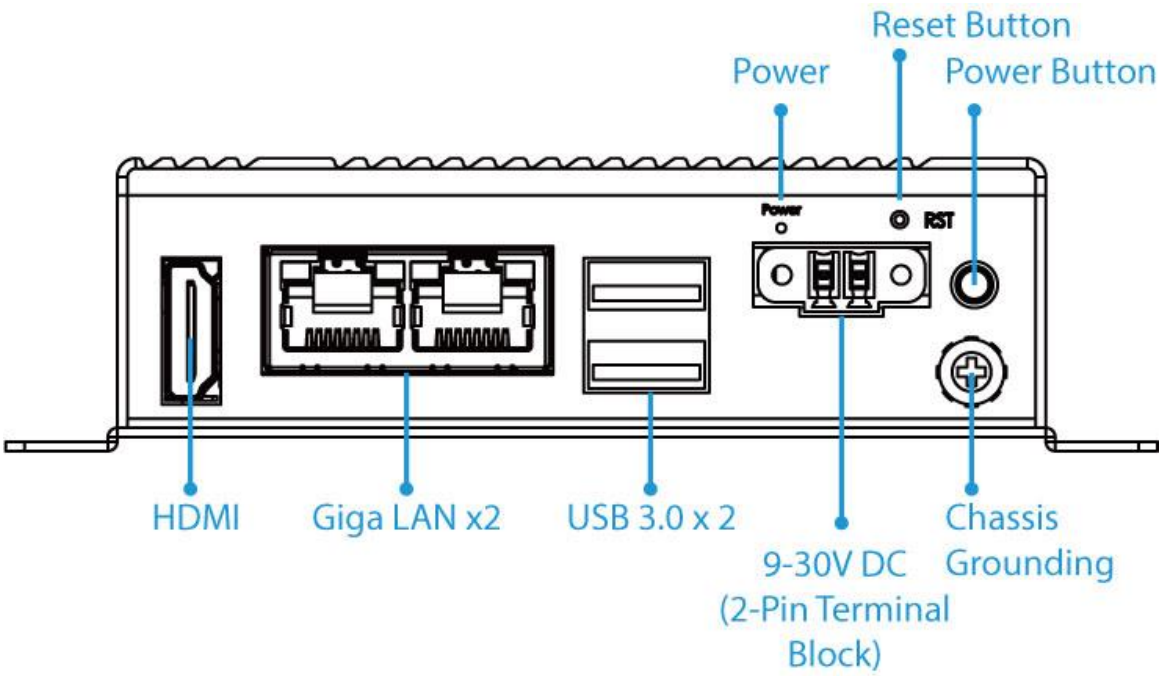
Your package may include optional accessories based on your order:

			
WLAN External Antenna	**WWAN External Antenna**	**AC Adapter 12V/ 40W**	**VESA Mounting Kit**
397SM0000002	39700000000H	9220123C6000	821118561001

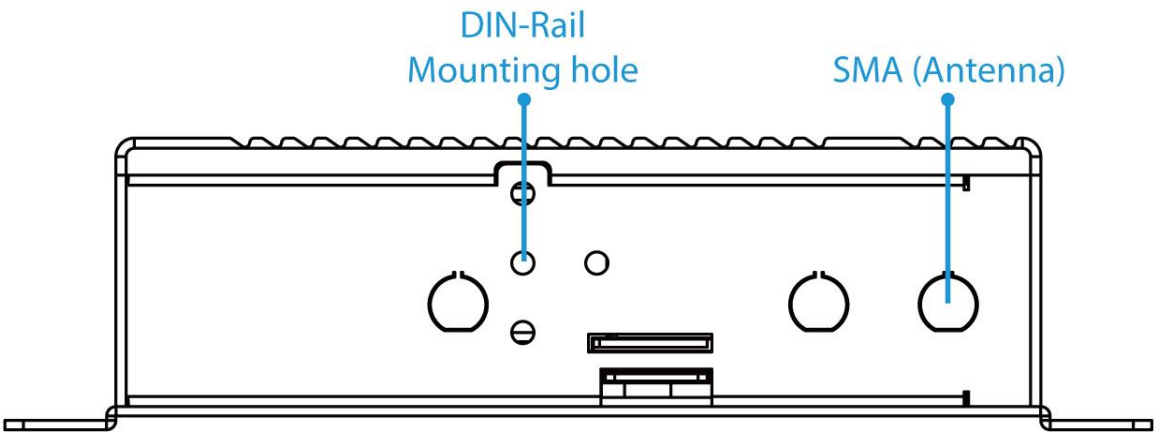

DIN Rail Mounting Kit
821118551400

1.4 Product Overview

Front Side



Rear Side



1.5 LED Indicators

The EAC Mini IoT Gateway provides one HDD and one Power LED indicators located on the front for status monitoring.

LED Type	Status	Description
Power	On	Power is on
	Off	Power is off

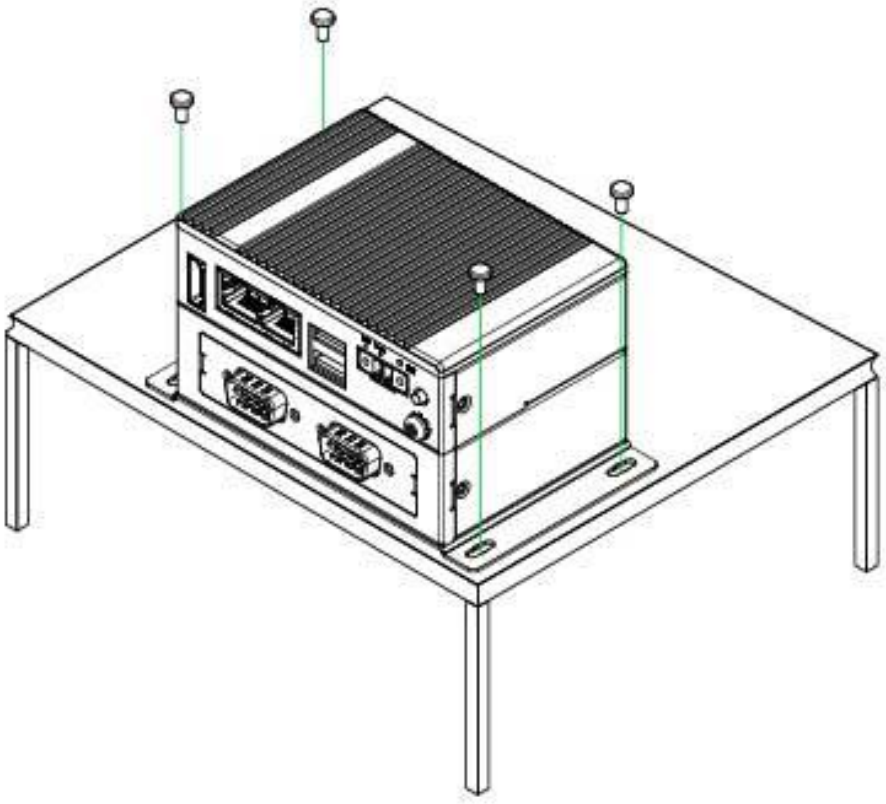
2 MOUNTING

The EAC Mini supports five types of mounting: wall and desk mounting by default, and optional VESA, DIN-rail, Pole mounting solutions. You can purchase mounting kit from Winmate as an optional accessory.

2.1 Wall/ Desk Mount

Mounting Instruction:

1. Fasten screws to secure L-shape mounting brackets to the EAC Mini.
2. Place the EAC Mini on the fixture (ex. table) and fasten screws to secure the unit to the fixture.



2.2 DIN-Rail Mount

You can purchase DIN-Rail mounting kit from Winmate as an optional accessory.

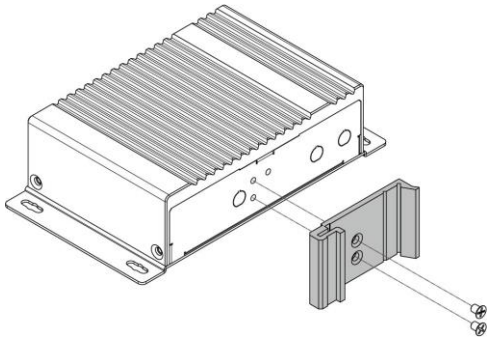
DIN-Rail Mounting Kit
Part Number: 821118551400

Mounting Instruction:

1. Fasten screws to secure DIN-rail mounting bracket to the EAC Mini.
2. Place the EAC Mini with the DIN-Rail bracket on the DIN-Rail.

❶

Rear Side



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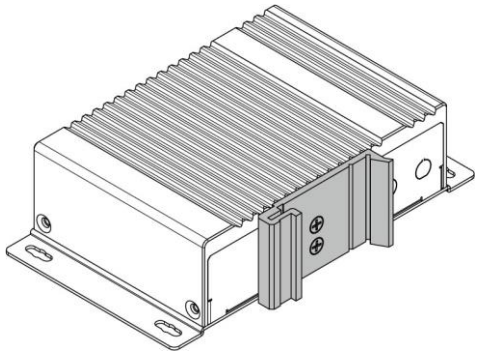
Rear Side



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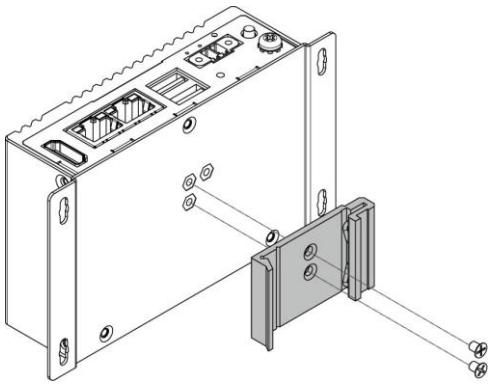
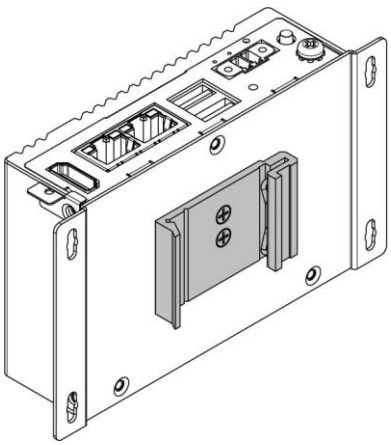
Bottom Side



❷

Bottom Side



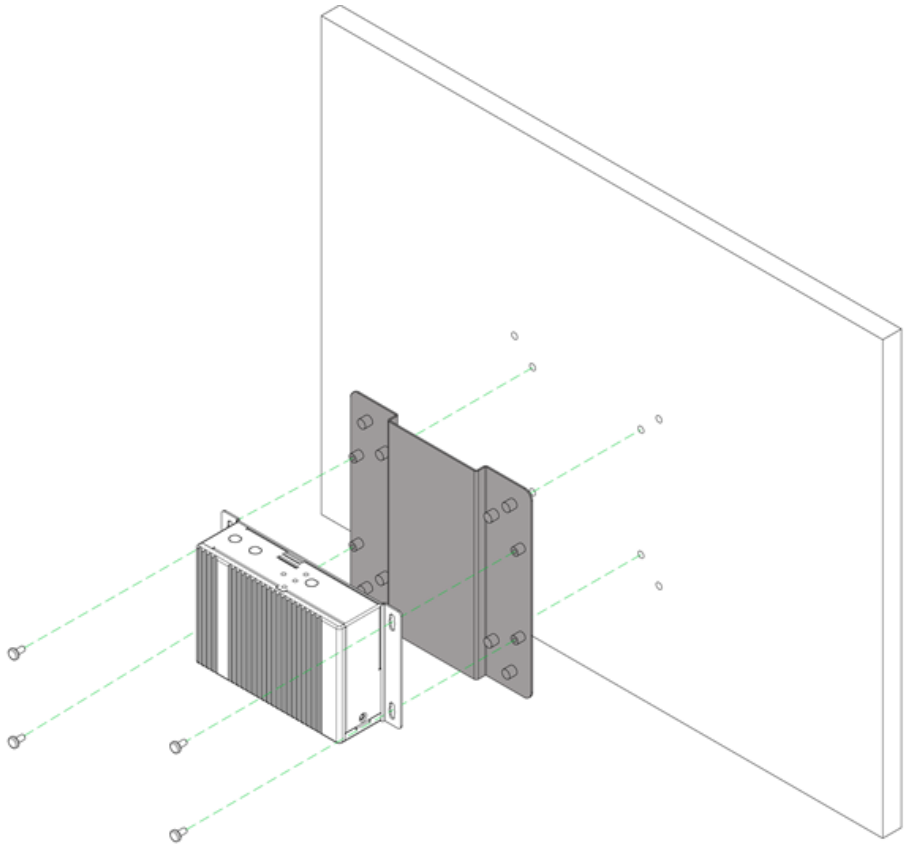
2.3 VESA Mount

You can purchase VESA mounting kit from Winmate as an optional accessory.

VESA Mounting Kit
Part Number: 821118561001

Mounting Instruction:

1. Mark the location of the screw holes on the fixture (ex. wall).
2. Align the VESA mounting bracket with the screw location.
3. Place the EAC Mini on the VESA mounting bracket and fasten screws to secure and the EAC Mini to the fixture.



3 INSTALLATION

This section explains how to install hardware on the EAC Mini EACIL20.

CAUTION
Always remove the power cord before installing the hardware.

3.1 mSATA Installation

To insert mSATA:

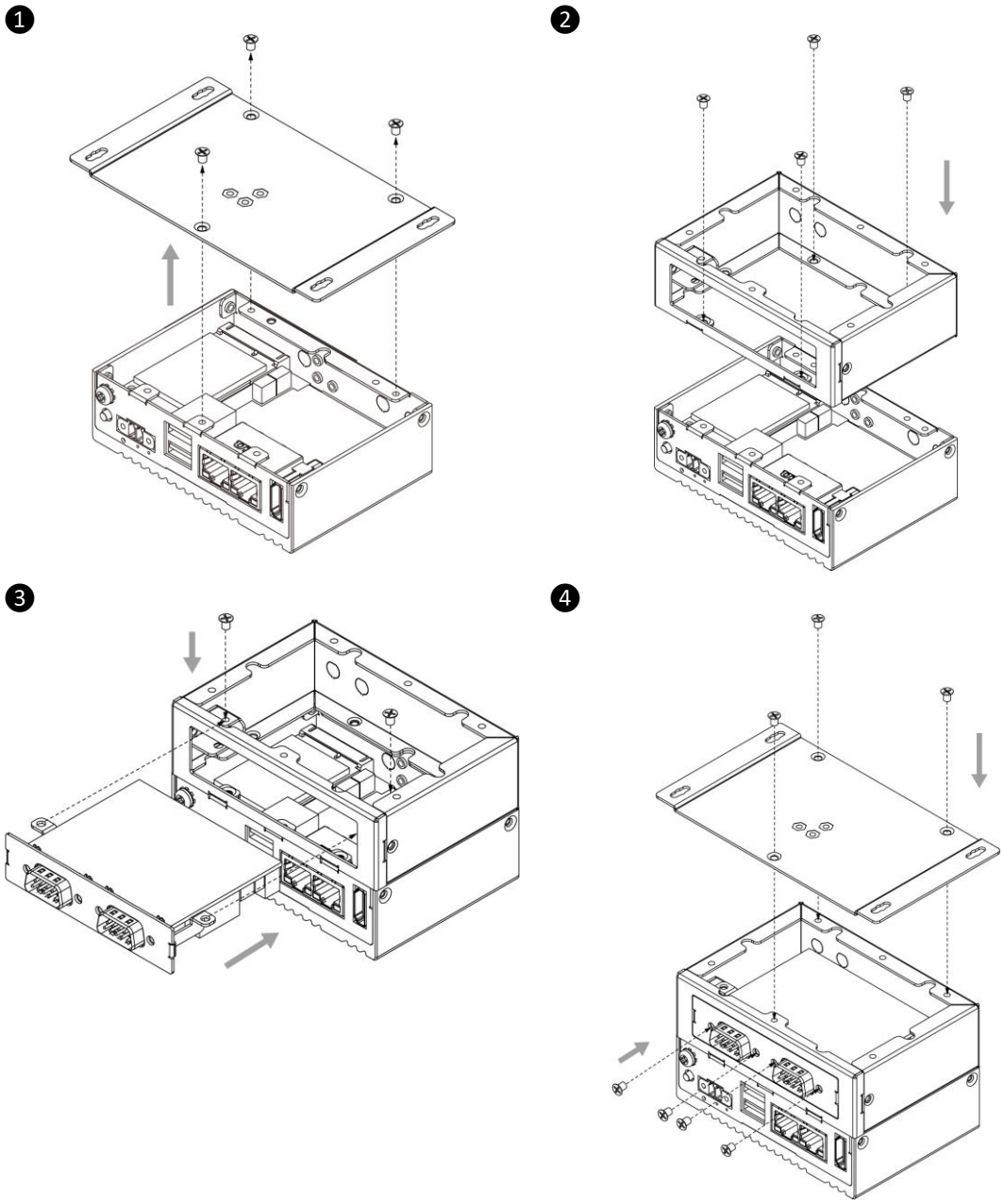
1. Unscrew the four screws on the bottom cover.
2. Plug in mSATA card with into the mPCIe slot.
3. Screw the two screws on board to fix mSATA.
4. Screw back the bottom cover.

3.2 Expansion Module Installation

Notice that expansion module is an optional feature of the EAC Mini EACIL20.

To install expansion module:

1. Unscrew the three screws on the bottom cover.
2. Remove the I/O module from the 2nd layer. Attach module to the 1st layer and fasten five screws inside.
3. Insert the I/O module and fasten two screws inside.
4. Screw back the bottom cover and fasten screws in front to secure I/O module.

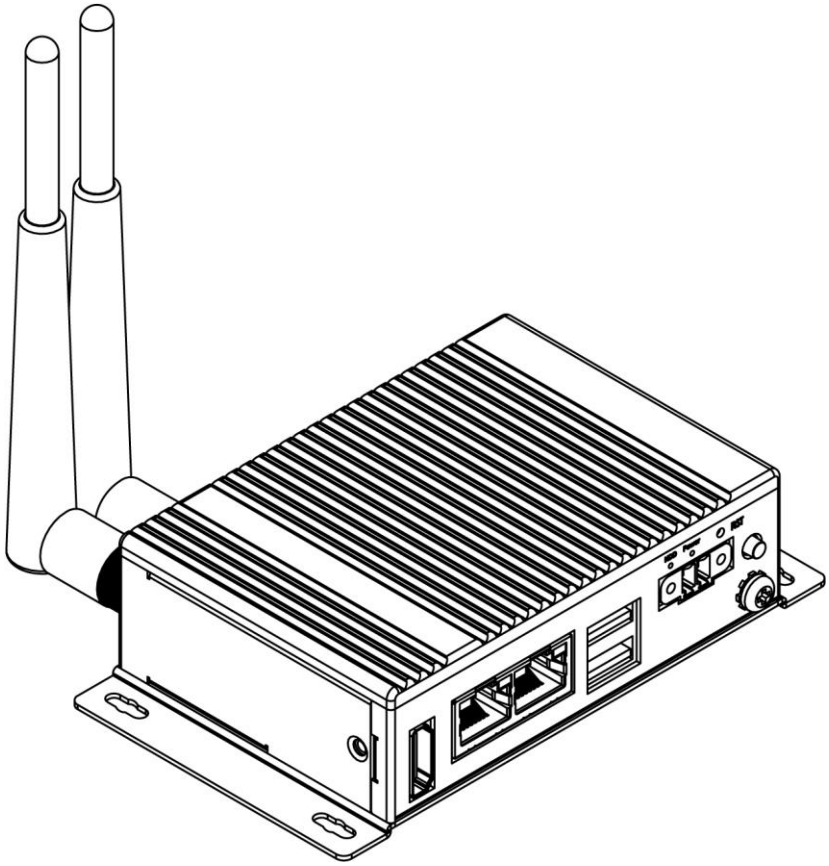


3.3 External Antenna Installation

Notice that external antenna is an optional feature of the EAC Mini IL20EAC-N.

To install external SMA antenna:

1. Remove the rubber cap on the SMA connector before installing the antenna.
2. Align the antenna with the SMA connector located on the rear side of the EAC Mini and fasten it as shown on the picture.
3. Adjust the position of external antenna for better signal.



3.4 Connecting the Power

The DC power supply connector of the EAC Mini IoT Gateway is on the front panel. The DC power input for the EAC Mini allows a voltage input range from 9 V DC to 30 V DC.

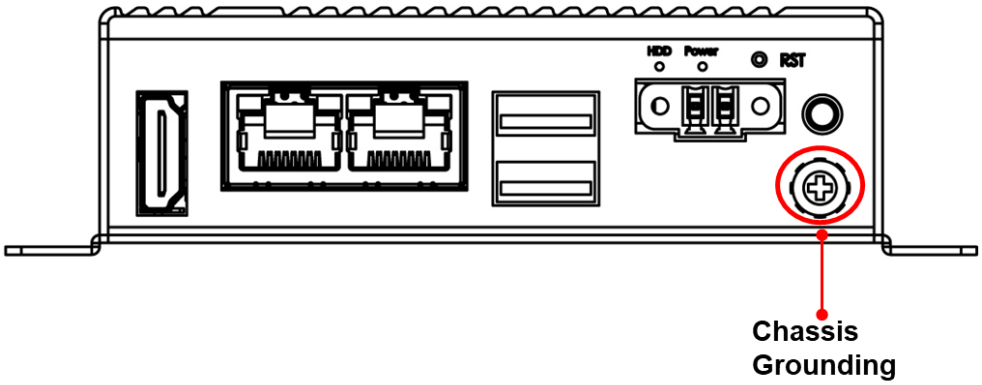
WARNING!
Ensure voltage and polarity is compliant with the DC input.
Improper input voltage or polarity can cause system damage.

3.4.1 Connecting the Power

Connect EAC Mini to 9-36V DC. The power source can either be from a power adapter or an in-house power source.

3.4.2 Chassis Grounding

EAC Mini provides EMI protection and a stable grounding base. Use chassis grounding point located on the front.



3.5 External Connectors

The following sections give you information about EAC Mini EACIL20standard connectors and pin assignments.

3.5.1 HDMI Connector

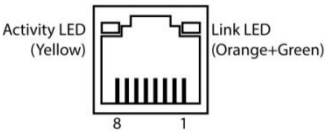
Plug HDMI signal cable to the HDMI connector of the EAC Mini EACIL20, and plug the other end to the monitor.

Pin Assignment and signal names for HDMI connector

Pin №	Signal Name	Pin №	Signal Name
1	HDMI_RX2+	2	GND
3	HDMI_RX2-	4	HDMI_RX1+
5	GND	6	HDMI_RX1-
7	HDMI_RX0+	8	GND
9	HDMI_RX0-	10	HDMI_RXC+
11	GND	12	HDMI_RXC-
13	HDMI_CON_CEC	14	NC
15	HDMI_CON_SCL	16	HDMI_CON_SDA
17	HDMI_CON_CABLE	18	+5V_HDMI
19	HDMI_CON_HP		

3.5.2 Ethernet Connector

The EAC Mini EACIL20 has two Ethernet connectors located on the front. Ethernet ports provide a standard RJ45 10/100/1000 Mbps jack connector with LED indicators on the front side to show its Active/ Link status and Speed status.

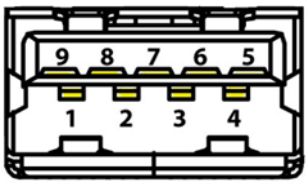


10/100 Mbps- Green
1G Mbps – Orange

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

3.5.3 USB Connector

The EAC Mini EACIL20 provides two USB 3.0 connectors. Use USB 3.0 connector to connect external devices such as mouse or keyboard to the box computer.



Pin №	Signal Name	Pin №	Signal Name
1	+5V	2	USB_D-
3	USB_D+	4	GND
5	STDA_SSRX-	6	STDA_SSRX+
7	GND	8	STDA_SSTX-
9	STDA_SSTX+		

3.5.4 Power Connector

DC power source input is a 2 pin terminal block connector. Power Input is 9V to 36V DC in.

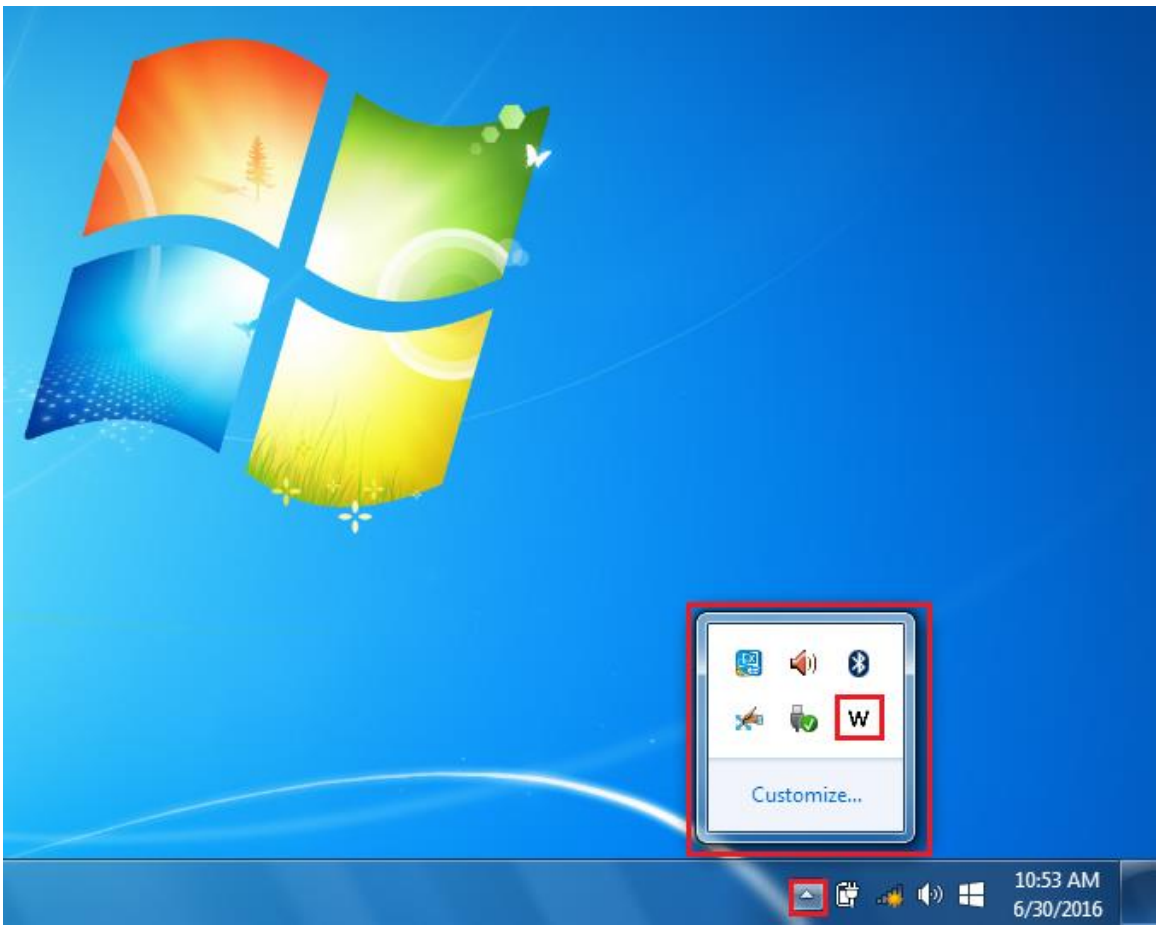
4 GETTING STARTED

4.1 How to Enable Watchdog

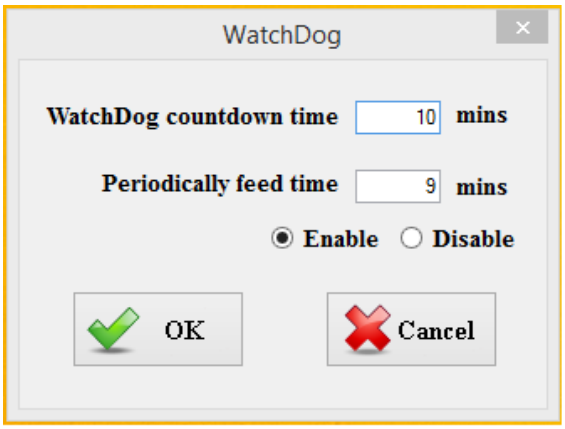
To enable Watchdog, you need to download Winmate Watchdog utility. Find more information on Watchdog in “Watchdog Guide” that you can download from Winmate Download Center. Refer to the User Manual for more details.

To enable watchdog in Watchdog AP follow the instructions below:

1. On the right bottom side of the desktop screen, click **triangle button** to show hidden icons.
2. Click W icon to open Watchdog utility.



3. In Watchdog utility window set countdown time and periodically feed time, or disable watchdog.



Example:

Every 10 min watchdog will monitor the system, in case any error occurs the system will restart automatically when the countdown time reaches 0.

Every 9 min watchdog timer will be reset to 10 min.

Settings	Description
Watchdog Countdown Time	The system automaticity restarts when this countdown time reaches zero. *Default: 10 min*
Periodically Feed Time	To set a cycle time to automatically reset watchdog timer. *Default: 9 min*
Enable / Disable	Enable or disable watchdog. *Default: Enable*

4.2 Using Recovery Wizard to Restore Computer

Note:
Before starting the recovery process, make sure to backup all user data. The data will be lost after the recovery process.

Important:
Before starting the recovery process, remove the PCI/ PCIe card and CFast card.

To enable quick one-key recovery procedure:

1. Connect the computer to the power source. Make sure the computer stays plugged in to power source during the recovery process.
2. Turn on the computer, and when the boot screen shows up, press **Tab+ F6** to initiate the Recovery Wizard.
3. The following screen shows the Recovery Wizard. Click **Recovery** button to continue.

4. A warning message about data loss will show up. Make sure the data is backed up before recovery, and click **Yes** to continue.

Wait the recovery process to complete. During the recovery process, a command prompt will show up to indicate the percent of recovery process complete. The system will restart automatically after recovery completed.

5 SPECIFICATIONS

		Model Name
		EACIL20
System Specification	CPU	Intel® Apollo Lake N3350 1.1 GHz
	Graphics Engine	Intel® HD Graphics
	BIOS	Insyde UEFI
	Watchdog Timer	Programmable 256 levels, timer interval 1 to 255 sec.
	Technology	4GB LPDDR3 1866MHz
Storage	eMMC	Onboard 32 GB
	mSATA	Optional
Expansion	mPCIe	1 x Full-size mPCIe slot
	USB Wafer	2 x USB Wafer
External I/O	USB	2 x USB3.0
	Ethernet	2 x Giga LAN RJ45 Connector
	HDMI	1 x HDMI, supports 1920 x 1080@60 Hz
Power Management	Power Supply	9V to 36V DC, 2-Pin Terminal Block
	Grounding Protection	Chassis Grounding
Buttons and LED Indicators	LED Indicator	1 x Power
	Button	1 x Power Button 1 x Reset Button

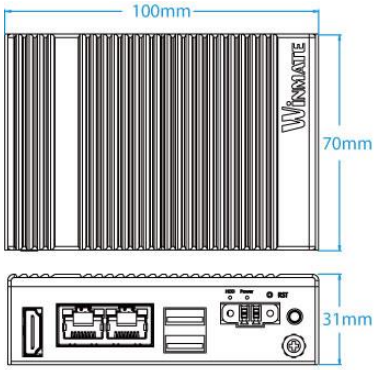
Mechanical Specification	Dimensions	100 (W) x 70 (H) x 31(D) mm (One layer) 100 (W) x 70 (H) x 61(D) mm (Double layer)
	Weight	0.6 kg (One layer), 0.7 kg (double layer)
	Mounting	Desk Mounting (Default), Wall Mounting (Default), VESA Mounting (Optional), DIN-Rail Mounting (Optional), Pole Mounting (Optional)
	Cooling System	Fanless
	Enclosure	Metal Housing
Environment	Operating Temp.	0~50° C (32~122° F)
	Storage Temp.	0~70° C (32~158° F)
	Operating Humidity	10~95% RH @ 40°C (non-condensing)
	Shock	Operating, IEC 60068-2-27
	Vibration	Operating, IEC 60068-2-64
	IP Rating	IP30
Certificate	EMC & Safety	CE, FCC
Operating System (Optional)	OS	Windows® 10 IoT Core Windows® 10 IoT Enterprise Linux Ubuntu

APPENDIX

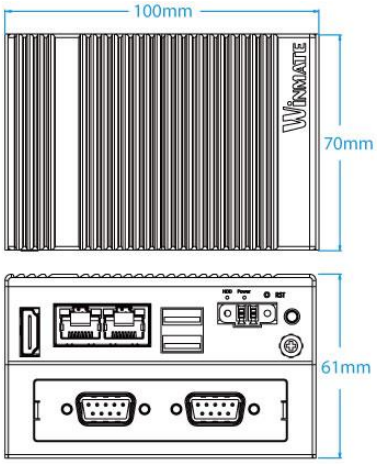
Appendix A: System Dimensions

Unit without mounting bracket

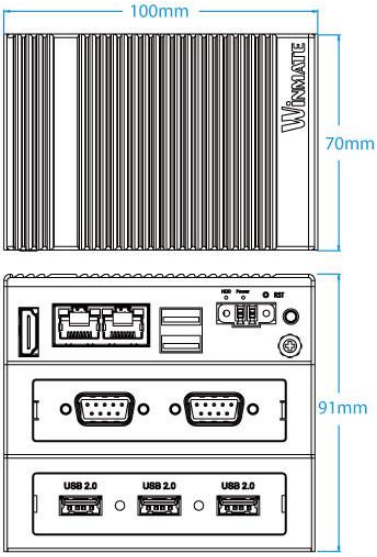
Standard



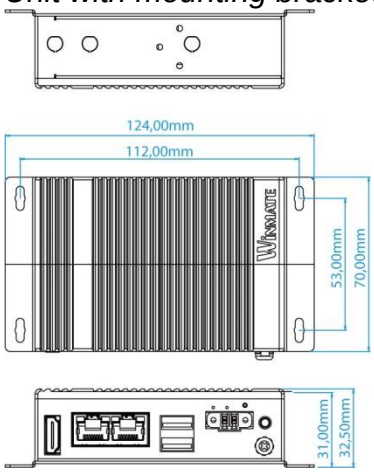
With Expansion Module



With 2 Expansion Modules



Unit with mounting bracket



Appendix B: Software Developer Support

You can download drivers and Software Development Kit (SDK) and Drivers from Winmate Download Center.

Winmate Download Center

http://www.winmate.com/>Support > Download Center > Embedded Computing > EAC Mini EACIL20

Appendix C: Ordering Information

EAC Mini EACIL20 IoT Gateway available in the following configurations:

Model Name	Configuration
EACIL20-100-A432	Intel N3350, 4G RAM, 32GB eMMC, 2 x USB 3.0, 2 x GbE LAN, 1 x HDMI
EACIL20-100-A432W10	Intel N3350, 4G RAM, 32GB eMMC, 2 x USB 3.0, 2 x GbE LAN, 1 x HDMI, Windows 10
EACIL20-101-A432	Intel N3350, 4G RAM, 32GB eMMC, 2 x USB 3.0, 2 x GbE LAN, 1 x HDMI, Wi-Fi(Client)
EACIL20-102-A432	Intel N3350, 4G RAM, 32GB eMMC, 2 x USB 3.0, 2 x GbE LAN, 1 x HDMI, 4G
EACIL20-103-A432	Intel N3350, 4G RAM, 32GB eMMC, 2 x USB 3.0, 2 x GbE LAN, 1 x HDMI, 3G
EACIL20-104-A432	Intel N3350, 4G RAM, 32GB eMMC, 2 x USB 3.0, 2 x GbE LAN, 1 x HDMI, Access Point
EACIL20-100-A464	Intel N3350, 4G RAM, 64GB eMMC, 2 x USB 3.0, 2 x GbE LAN, 1 x HDMI,
EACIL20-100-A464W10	Intel N3350, 4G RAM, 64GB eMMC, 2 x USB 3.0, 2 x GbE LAN, 1 x HDMI, Windows 10

Additional ordering options:

Item	Specifications
Storage	Option : 32GB mSATA
AC Adapter	AC Adapter 12V/40W (P/N 9220123C6000)
Mounting	VESA Mounting Kit (P/N 821118561001) DIN-Rail Mounting Kit (P/N 821118551400)
External Antenna	WLAN External Antenna (P/N 397SM0000002) WWAN External Antenna (P/N 39700000000H)
Expansion Module	EACWSLT-222 4G EACWSLT-223 3G EACWSLT-231 3-port RS232/422/485 w/ isolation EACWSLT-232 24-Channel Digital I/O w/ isolation EACWSLT-233 2-port CANBUS w/ isolation EACWLST-234 4-port USB 2.0 EACWLST-235 2-port RS232/422/485 w/ isolation

Winmate Inc.
9F, No.111-6, Shing-De Rd., San-Chung District,
New Taipei City 24158, Taiwan, R.O.C

Tel: 886-2-8511-0288
Fax: 886-2-8511-0211
Email: sales@winmate.com.tw
Official website: www.winmate.com