USER MANUAL

Version 1.0 January 2019

Orion Ultra





Copyright 2019 All Rights Reserved Manual Version 1.0

The information contained in this document is subject to change without notice. We make no warranty of any kind with regard to this material, including, but not limited to, the implied warranties of merchantability and fitness for a particular purpose. We shall not be liable for errors contained herein or for incidental or consequential damages in connection with the furnishing, performance, or use of this material.

This document contains proprietary information that is protected by copyright. All rights are reserved. No part of this document may be photocopied, reproduced or translated to another language without the prior written consent of the manufacturer.

TRADEMARK

Intel®, Pentium® and MMX are registered trademarks of Intel® Corporation. Microsoft® and Windows® are registered trademarks of Microsoft Corporation. Other trademarks mentioned herein are the property of their respective owners.

Safety IMPORTANT SAFETY INSTRUCTIONS

- 1. To disconnect the machine from the electrical Power Supply, turn off the power switch and remove the power cord plug from the wall socket. The wall socket must be easily accessible and in close proximity to the machine.
- 2. Read these instructions carefully. Save these instructions for future reference.
- 3. Follow all warnings and instructions marked on the product.
- 4. Do not use this product near water.
- 5. Do not place this product on an unstable cart, stand, or table. The product may fall, causing serious damage to the product.
- 6. Slots and openings in the cabinet and the back or bottom are provided for ventilation; to ensure reliable operation of the product and to protect it from overheating. These openings must not be blocked or covered. The openings should never be blocked by placing the product on a bed, sofa, rug, or other similar surface. This product should never be placed near or over a radiator or heat register, or in a built-in installation unless proper ventilation is provided.
- 7. This product should be operated from the type of power indicated on the marking label. If you are not sure of the type of power available, consult your dealer or local power company.
- 8. Do not allow anything to rest on the power cord. Do not locate this product where persons will walk on the cord.
- 9. Never push objects of any kind into this product through cabinet slots as they may touch dangerous voltage points or short out parts that could result in a fire or electric shock. Never spill liquid of any kind on the product.

This device complies with the requirements of the EEC directive 2014/30/EU with regard to "Electromagnetic compatibility" and 2014/35/EU "Low Voltage Directive"

FC

FCC

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.

(2) This device must accept any interference received, including interference that may cause undesired operation

CAUTION ON LITHIUM BATTERIES

There is a danger of explosion if the battery is replaced incorrectly. Replace only with the same or equivalent type recommended by the manufacturer. Discard used batteries according to the manufacturer's instructions.



Battery Caution

Risk of explosion if battery is replaced by an incorrectly type. Dispose of used battery according to the local disposal instructions.

Safety Caution

Note: To comply with IEC60950-1 Clause 2.5 (limited power sources, L.P.S) related legislation, peripherals shall be 4.7.3.2 "Materials for fire enclosure" compliant.

4.7.3.2 Materials for fire enclosures

For MOVABLE EQUIPMENT having a total mass not exceeding 18kg.the material of a FIRE ENCLOSURE, in the thinnest significant wall thickness used, shall be of V-1 CLASS MATERIAL or shall pass the test of Clause A.2.

For MOVABLE EQUIPMENT having a total mass exceeding 18kg and for all STATIONARY EQUIPMENT, the material of a FIRE ENCLOSURE, in the thinnest significant wall thickness used, shall be of 5VB CLASS MATERIAL or shall pass the test of Clause A.1

LEGISLATION AND WEEE SYMBOL

2012/19/EU Waste Electrical and Electronic Equipment Directive on the treatment, collection, recycling and disposal of electric and electronic devices and their components.



The crossed dustbin symbol on the device means that it should not be disposed of with other household wastes at the end of its working life. Instead, the device should be taken to the waste collection centers for activation of the treatment, collection, recycling and disposal procedure.

To prevent possible harm to the environment or human health from uncontrolled waste disposal, please separate this from other types of wastes and recycle it responsibly to promote the sustainable reuse of material resources.

Household users should contact either the retailer where they purchased this product, or their local government office, for details of where and how they can take this item for environmentally safe recycling.

Business users should contact their supplier and check the terms and conditions of the purchase contract.

This product should not be mixed with other commercial wastes for disposal.

Revision History

Changes to the original user manual are listed below:

Revision	Date	Description
V1.0	January, 2019	 Initial release

Table of Contents

1 Item C	hecklist2
1-1	Standard Items
2 System	n View3
2-1	Front View
2-2	Rear View
3 System	n Assembly & Disassembly5
3-1	Removing the Front Cover
3-2	Removing the Top Cover
3-3	Replacing the HDD
3-4	Replacing the RAM
3-5	Replacing the Power Supply
3-6	Replacing the I/O & PCI Extension Module
4 Periph	eral Installation8
4-1	Wireless LAN Installation
4-2	Cash Drawer Installation
5 Specif	ication 11
6 Config	juration 13
6-1	D89S Motherboard Layout13
6-2	Connectors & Functions14
6-3	Jumper Setting19

1 Item Checklist

Take the unit out of the carton. Remove the unit from the carton by holding it by the foam inserts. The following contents should be found in the carton:

1-1 Standard Items



System View

2-1 Front View



No.	Description
а	Key lock
b	USB3.0
С	HDD LED
d	Power LED
е	Power button

2-2 Rear View



Number	Description
а	Kensington lock
b	Antenna (option)
С	Cash drawer
d	Line out
е	Mic in
f	24V powered USB (x1)
g	12V powered USB (x2)
h	Display port (x2)
i	USB type C
j	LAN
k	USB 3.0/2.0 (x2)
I	VGA
m	COM (x3)
n	USB 2.0 (x2)
0	12V DC out
р	12V powered USB (x6)
q	Power connector
r	PS/2 (option, blind hole)
S	Printer (option, blind hole)
t	COM (x2)

3 System Assembly & Disassembly

3-1 Removing the Front Cover

1. Use the key to unlock the front cover.



2. Lift the front cover as shown in the picture.

3-2 Removing the Top Cover

To remove the top cover, please open the front cover first as described in chapter 3-1.

1. The Top cover is fixed by a clip, please push the clip aside as the picture shown.

2. Pull the top cover outwards.



3-3 Replacing the HDD

To replace the HDD, please open the front and top cover first as described in chapter 3-1 and 3-2.





- 1. Pull the HDD holder outwards.
- 2. Unclip the HDD cover from the drive as shown in the picture.

3-4 Replacing the RAM

To replace the RAM, lease open the front and top cover first as described in chapter 3-1 and 3-2.





Removing the RAM module Flip the ejector clips outwards to remove the memory module from the memory slot.



1. Find the RAM location on the motherboard (refer to Chapter 6-1).

Installing a RAM module

Slide the memory module into the memory slot and press down until the ejector clips snaps in place.

3-5 Replacing the Power Supply

To replace the power supply, please open the front and top cover fist as described in chapter 3-1 and 3-2.



1. Disconnect the cable of the power supply.



2. Remove the screws (3) to separate the power supply from the holder.

3-6 Replacing the I/O & PCI Extension Module

To replace the I/O and PCI extension module, please open the front and top cover first as described in chapter 3-1 and 3-2.

- 1. Remove the screw(x1) that secured the extension module to the system.
- 2. Remove the extension module by gently pulling it upwards taking care not to damage the connector.



4 Peripheral Installation

4-1 Wireless LAN Installation

To Install the wireless LAN, please open the front and top cover first (see chapter 3-1 and 3-2). Then remove the power supply (see chapter 3-5).



- 1. Connect the WLAN cable to the "Main Connector" of the Mini PEIC WLAN card.
- 2. Slide the Mini PCIE WLAN card into the slot.
- 3. Press down the Mini PCIE WLAN card and fasten the screw (x1) to fix the WLAN card to the motherboard.



- 4. Open the blind hole on the IO bracket.
- 5. Thread the other end of the WLAN cable through the blind hole.
- 6. Rotate the washer to fix the cable to bracket.
- 7. Screw the external antenna.

4-2 Cash Drawer Installation

You can install a cash drawer through the cash drawer port. Please verify the pin assignment before installation.

Cash Drawer Pin Assignment



Pin	Signal
1	GND
2	DOUT bit0
3	DIN bit0
4	12V/19V
5	DOUT bit1
6	GND

The Cash Drawer Controller use one I/O addresses to control the Cash Drawer.

Register Location: 48Ch Attribute: Read / Write Size: 8bit



Bit 7: Reserved

Bit 6: Cash Drawer "DIN bit0" pin input status.

= 1: the Cash Drawer closed or no Cash Drawer

- = 0: the Cash Drawer opened
- Bit 5: Reserved
- Bit 4: Reserved
- Bit 3: Cash Drawer "DOUT bit1" pin output control.
 - = 1: Opening the Cash Drawer
 - = 0: Allow close the Cash Drawer
- Bit 2: Cash Drawer "DOUT bit0" pin output control.
 - = 1: Opening the Cash Drawer
 - = 0: Allow close the Cash Drawer

Bit 1: Reserved Bit 0: Reserved

Note: Please follow the Cash Drawer control signal design to control the Cash Drawer.

Cash Drawer Control Command Example

Use Debug.EXE program under DOS or Windows98

Command	Cash Drawer	
0 48C 04	Opening	
0 48C 00	Allow to close	
Set the I/O address 48	3Ch bit2 =1 for opening Cash Drawer by "DOUT bit0"	
pin control.		

> Set the I/O address 48Ch bit2 = 0 for allow close Cash Drawer.

Con	nmand	Cash Drawer
I 48	С	Check status
\triangleright	The I/O address 48Ch	bit6 =1 mean the Cash Drawer is opened or not exist.
\triangleright	The I/O address 48Ch	bit6 =0 mean the Cash Drawer is closed.

Specification

Model Name	Orion Ultra
Motherboard	D89S
CPU	i7-6700 3.4G L3 8MB, 65W i5-6500 3.2G L3 6M, 65W i3-6100 3.7G L3 3M, 65W Pentium-G4400 3.3G L3 3M, 65W Celeron G3900 2.8G L3 2M, 65W Kabylakei7-7700 3.4G, 8MB, 65W Kabylakel5-7500 3.4G, 6MB, 65W Kabylakel3-7101E 3.9G, 3MB, 54W Celeron G3930E 2.9G, 2MB, 54W
Chipset	Q170
System memory	S.O.DIMM 2 x DDR4 2133MHz (32GB Max) (dual channel)
Graphic memory	Intel Graphic (Gen 9) DX12, define on CPU
LAN controller (Giga LAN)	Intel WG I219 LM
Storage	
HDD	2 x 2.5" SATA HDD bays
Flash memory	2.5" SSD / PSSD flash bay (Option)
Expansion	
PCI-E x16 socket	Riser card x 1 (1 x PCl x1 slot & 1 x PCl-E x16 slot) PCI-E x 1 slot is dedicated to Flytech powered USB hub board. Incorrect insertion of the other cards would cause damage to the cards.
External I/O Ports	
Front I/O	
USB 3.0	1
USB type C	1 (USB2.0/USB3.0)
Rear I/0	
USB 2.0	2
USB 2.0/3.0	2
Serial / COM	3 x DB9 (COM1/COM2/ without power by default or with power enable /disable 5V/12V by BIOS selecting) COM3 supports serial RS232/422/485 by BIOS setting
GigaLAN(10/100/1000)	1 x RJ-45
VGA	1 (DB-15-Female), supports 12V power by BIOS setting
Cash drawer	1 x RJ-11(12V/24V, default setting 24V)
DP	2
USB type C	1 (USB2.0/USB3.0/DP/PD-5V/12V/20V @ 5A as source)
Line-out	1

Model Name	Orion Ultra	
Motherboard	D89S	
Mic-in	1	
12V powered USB	2	
24V powered USB	1	
Kensington lock	1	
Option IO board-Riser Card		
12V powered USB	6 (connector type: PCle x1)	
12V DC out/COM x2	1 (for LAN card or COM card, connector type: PCIe x1)	
PCIe x16 socket	1 (connector type: PCle x1)	
Option IO	·	
Antenna	2	
Parallel	1	
PS/2	1	
Option wireless connector		
m.2	1 (E key) M.2 2230	
Power		
Power	250W ATX FT-8250 (default w/o powered USB card) 350W ATX(option with powered USB card)	
Control / Indicator		
Power button	1	
PWR Indicator LED (Blue)	1	
HDD Indicator LED (Blue)	1	
Communication		
Wireless LAN	half-size miniCARD type (PCI-E), 802.11 a/b/g wireless LAN card & antenna (option)	
Environment		
EMC & Safety	FCC Class B, CE, LVD	
ESD	contact 6KV ; air 10KV-criteriaA/B contact 8KV ; air 15KV-criteriaC	
Operating Temperature	0°C ~ 45°C (32°F ~ +113°F)	
Storage Temperature	-20°C ~ 60°C (-4°F ~ 140°F)	
Humidity	5% ~ 95% RH non-condensing	
Dimension (W x D x H)	270 x 300 x 120 mm (10.6" x 11.8" x 4.7")	
Weight (N.W./G.W.)	8Kg / 9Kg	
OS Support	SkylakeS: Windows 7 pro (64bit), POS Ready 7 (64bit), Windows 8.1 (64bit), Windows Embedded industry 8.1(64bit), Windows 10 (64bit), IOT 10 (64bit) Linux: Ubuntu After version 15.10,Fedora After version 23 SUSE (openSUSE):The latest version of openSUSE(42.1) uses kernel v4.1, which do not support Kabylake S: Windows 10 (64bit), IOT 10 (64bit) Linux: Kernel V4.7	

* This specification is subject to change without prior notice.

6 Configuration

6-1 D89S Motherboard Layout



6-2 Connectors & Functions

Connector	Function
CN1	EC Debug
CN2	PS/2 connector
CN3	LPT connector
CN5	SDR connector
CN6	SDV connector
CN7	COM2 & COM3
CN8	VGA & COM1
CN9	Audio jack
CN10/11	SATA power
CN12	M.2 socket
BAT1	Battery connector
DIMM_A1/DIMM_B1	DDR3 240pin DIMM
PCIE_SLOT1	PCIE socket
DP1	Dual display port connector
FAN1	CPU FAN
FAN2	System FAN
PRW1	ATX power
RJ11_1	Cash drawer
RJ45_1	LAN & dual USB3.0
SATA0/1/2/3	SATA connector
U2	USB3.0 connector
USB2	Dual USB2.0
USB3	+24V powered USB
USB4/5	+12V powered USB
USB6/7	Type C connector
JP1	+24V OCP setting
JP2	+24V current limit setting
JP5	Cash drawer power setting
JP6	Power supply watt detect

6-3 Jumper Setting

+24V OCP Setting

Function	JP1 (1-2) (3-4)
350W	1 3 2 4
▲250W	1 3 2 4

+24V Current Limit Setting

Function	JP2 (1-2) (3-4)
350W	1 3 2 4
▲250W	1 3 2 4

Cash Drawer Power Setting

Function	JP5 (1-2) (3-4)
▲+24V	1 3 2 4
+12V	1 3 2 4

Power Supply Detect

Function	JP6 (1-2)
▲ 350W	1 2
250W	1 2

COM1/COM2/COM3 Power Setting

COM1, COM2 and COM3 can be set to provide power to your serial device. By default, the power option is **disabled** in the BIOS.

Phoenix SecureCore Technology Setup										
Advanced										
	ι	JGA/COM	Pow	er Confi	gurat	ion				Item Specific Help
UGA Power COM1 Power COM2 Power COM3 Power Board Information COM3 RS232 Mode	[None] [None] [None] [None] [Rose] [RS232]				guidt					Main board ID: 154-00.99 155-00.98 156-00.90 16-01.0 17-01.1 32-02.0
	F1 Esc	Help Exit	1↓ ↔	Select	Item Menu	+/- Enter	Change Select	Values ▶ Sub-Menu	F9 F1A	Setup Defaults Saue and Exit

- 1. Power on the system, and press the key when the system is booting up to enter the BIOS Setup utility.
- 2. Select the Advanced tab.
- 3. Select VGA/COM Power and LCD Brightness Configuration Ports and press <Enter> to go to display the available options.
- 4. To enable the power, select COM1, COM2 or COM3 Power setting and press <Enter>. Select Power and press <Enter>. Save the change by pressing F10.