

ETR1500



EN50155 Certified

Railway Panel computer

- INTEL[®] Apollo Lake Series (N4200, N3350)
- 1x LAN (M12),1X USB w/ protect cover
- DC-in Voltage: 110Vcc (70-144Vcc)
 66-160Vcc for 0.1sec without malfunction and failure
- Highly sensitive P-CAP Touch w/ glove usage
- Auto-dimming adjustment
- Super contrast ratio 1500:1
- Support Slackware and Porteus

654,520 8,078,511 901,705 4,346,501 805,210 6,688,570

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User's Manual Revision Date: June. 15. 2020



Safety Information

Electrical safety

- To prevent electrical shock hazard, disconnect the power cable from the electrical outlet before relocating the system.
- When adding or removing devices to or from the system, ensure that the power cables for the devices are unplugged before the signal cables are connected. If possible, disconnect all power cables from the existing system before you add a device.
- Before connecting or removing signal cables from the motherboard, ensure that all power cables are unplugged.
- Seek professional assistance before using an adapter or extension cord. These devices could interrupt the grounding circuit.
- Make sure that your power supply is set to the correct voltage in your area.
- If you are not sure about the voltage of the electrical outlet you are using, contact your local power company.
- If the power supply is broken, do not try to fix it by yourself. Contact a qualified service technician or your local distributor.

Operation safety

- Before installing the motherboard and adding devices on it, carefully read all the manuals that came with the package.
- Before using the product, make sure all cables are correctly connected and the power cables are not damaged. If you detect any damage, contact your dealer immediately.
- To avoid short circuits, keep paper clips, screws, and staples away from connectors, slots, sockets and circuitry.
- Avoid dust, humidity, and temperature extremes. Do not place the product in any area where it may become wet.
- Place the product on a stable surface.
- If you encounter any technical problems with the product, contact your local distributor

Statement

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- All product specifications are subject to change without prior notice

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Chapter 1: Product Introduction

1.1 Specifications

System

CPU	INTEL® Apollo Series (N4200, N3350)
Memory type	Up to 8 GB
Storage	mSATA Up to 1TB
Display	
Size	15.6
Resolution	1920 *1080
Contrast Ratio	1500:1
Aspect Ratio	16:9

AUTO DIMMING

	Min 20 nits~400 nits w/ modulated automatically or be controlled by SW		
	Surrounding	Light Sensor Value	LCD Dimming Level
	Environment		
	Tunnel (o~26 Lux)	0~50	23%~37%
Light Sensor	Indoor (200~300 Lux)	200~300	72%~80%
	Outdoor cloudy	1000	88%~100%
	(1000 Lux)		
	Outdoor sunny	1200 UP	100%
	(2000 Lux up)		

audio

SPK	1 (>75dbA @30cm)
front I/O	
USB	USB 2.0 x1 (w/ Waterproof Cover)
Rear I/O	
DC	2W2C female (A1 pos, A2 neg), 4-40 UNC threaded insert
Ethernet	M12 D-coded connector
Environment	
Certification	EN50155T3 class (-25 °C+70°C),



Shock and Vibration according to EN 61373 class B category 1 IEC 60605, EN50121-3-2

Applications, Operating System		
Applications	Train journey, entertainment contents and commercial advertisements.	
	Windows 10 64 Bit, Ubuntu13.04, Ubuntu13.10, Ubuntu14.04, Fedora20	
Operating System	Full compatible to Slackware and Porteus Linux distribution 4.14.29	

1.2 Front IO Placement



1.3 Rear IO Placement



1 x DC-in Voltage (70-144Vcc) 1 x Ethernet 2W2C female (A1 pos, A2 neg) M12 D-coded connector



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1.4 Mechanical dimension

Mechanical Dimensions











Chapter 2: IO INTRODUCTION AND PIN ASSIGEMENT

2.1 USB 2.0 x1 (w/ Waterproof Cover)



2.2 2W2C female (A1 pos, A2 neg), 4-40 UNC threaded insert



2.3 M12 D-coded connector







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Chapter 3: Auto Dimming

Because the human eye perceiving brightness is nonlinear, PWM duty must be set percentage at

each stage of opening and closing

LCD Backlight:

- Level 10 = 100%
- Level 9 = 91%
- Level 8 = 82%
- Level 7 = 73%
- Level 6 = 64%
- Level 5 = 55%
- Level 4 = 46%
- Level 3 = 37%
- Level 2 = 28%
- Level 1 = 19%

Level o =10%

Auto dimming level

Surrounding environment	Light Sensor value	LCD dimming level
Tunnel (0~26 Lux)	0~50	23%~37%
Indoor (200~300 Lux)	200~300	72%~80%
Outdoor cloudy	1000	88%~100%
(1000 Lux)		
Outdoor sunny	1200 UP	100%
(2000 Lux up)		

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Chapter 4: WALL MOUNT

The ETR1500 can be panel mounted using 10 countersunk M4 screws and Nut. Make sure there is adequate space behind the panel for ventilation and I/O connectors, and that the panel material and thickness can support the weight of the device.







Chapter 5: BIOS Setup

Once you enter the Aptio Setup Utility, the Main Menu will appear on the screen. The Main Menu allows you to select from several setup functions and exit choices. Use the arrow keys to select among the items and press <Enter> to accept and enter the sub-menu.

5.1 Main Page

This section allows you to record some basic hardware configurations in your computer and set the system clock.



5.2 Advance Menu

Aptio Se Main	tup Utility – Copyright (C) 2016 Ameri	ican Megatrends, Inc.
Intel RC Version Platform firmware Info BXT SOC MRC Version PUNIT FW PMC FW TXF FW	rmation B1 0.56 1C 03.24 3.0.11.1131	
ISH FW GOP CPU Flavor Board ID Fab ID	N/A 10.0.1029 BXT Notebook/Desktop Oxbow Hill CRB (06) FAB A	 ++: Select Screen 14: Select Item
Memory Information Total Memory Memory Speed	4096 MB 1600 MHz	Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Version	2.18.1263. Copyright (C) 2016 America	an Megatrends, Inc.

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This section allows you to configure your CPU and other system devices for basic operation through the following sub-menus.

Aptio Setup Utility – Copyright (C) 2016 American Main <mark>Advanced</mark> Chipset Security Boot Save & Exit	Megatrends, Inc.
 Trusted Computing ACPI Settings IT8528 Super IO Configuration EC 8528 HW monitor SS RTC Wake Settings Serial Port Console Redirection CPU Configuration Network Stack Configuration CSM Configuration USB Configuration Security Configuration 	Trusted Computing Settings
	<pre>++: Select Screen f1: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>
Version 2.18.1263. Copyright (C) 2016 American Mo	egatrends, Inc.

5.3 Chipset





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5.3.1North Bridge

Aptio Setup Utility - Chipset	Copyright (C) 2017 American	Megatrends, Inc.
Memory Information		Maximum Value of TOLUD.
Total Memory	4096 MB (LPDDR3)	
Memory Slot0 Memory Slot1	4096 MB (LPDDR3) Not Present	
Max TOLUD		
		<pre>++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>
Version 2.18.1263. Co	opyright (C) 2017 American M	legatrends, Inc.

ltem	Option	Description
	2 GB[Default]	
	2.25 GB	
Max TOLUD	2.5 GB	Maximum Value of TOLUD.
	2.75 GB	

5.3.1SOUTH Bridge

ltem	Option	Description
Serial IRQ Mode	Quiet	Configure Serial IRQ Mode.
	Continuous[Default]	
	Windows[Default]	
OS Selection	Android	Select the target OS.
	Intel Linux	



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Ap	tio Setup Utility – Copyright (C) 2017 <mark>Chipset</mark>	American Megatrends, Inc.
Serial IRQ Mode OS Selection	[Cont inuous] [Windows]	Select the target OS.
	OS Selection - Windows Android Intel Linux	++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
	ersion 2.18.1263. Copyright (C) 2017 Am	merican Megatrends, Inc.

	Windows[Default]	
OS Selection	Android	Select the target OS.
	Intel Linux	

5.4 Uncore configuration





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ltem	Option	Description	
GOP Driver	Enable[Default]	Enable GOP Driver will unload VBIOS;	
	Disable	Disabled it will load VBIOS.	
Cd Clock Frequency	144 MHz		
	288 MHz		
	384 MHz	Select the highest Cd Clock frequency	
	576 MHz	supported by the platform.	
	624 MHz[Default]		
Active LVDS (Ch7511)	Disabled[Default]	Active Internal	
	Enabled	LVDS(eDP->Ch7511-to-LVDS).	
	1024x768 24/1[Default]		
	800x600 18/1		
	1024x768 18/1		
	1366x768 18/1		
	1024x600 18/1	Port1-EDP to LVDS(Chrotel 7511) Panel	
CH7511 EDID Panel Option	1280x800 18/1	EDID Option.	
	1920X1200 24/2		
	1920x1080 18/2		
	1280x1024 24/2		
	1440x900 18/2		
	1600x1200 24/2		
	1366x768 24/1		
	1920x1080 24/2		
	1680x1050 24/2		
	BIOS[Default] BR	LVDS Brightness Control Method. 1.BIOS	
	Button	2.Brightness Button 3.Variable Resistor	
Brightness Control Method	VR	4.OS Driver.	
	OS Driver		
	00%		
	25%		
LVDS Back Light PWM	50%	Select LVDS back light PWM duty.	
	75%		
	100%[Default]		

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5.5 South cluster configuration

Aptio Setup Chipset	Utility – Copyright (C) 2017 Amer	rican Megatrends, Inc.
 HD-Audio Configuration PCI Express Configuration SATA Drives SCC Configuration USB Configuration 		HD-Audio Configuration Settings
		++: Select Screen 11: Select Item Enter: Select +/-: Change Oct. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Version 2.1	8.1263. Copyright (C) 2017 Americ	can Megatrends, Inc.

5.6 SCC configuration

Aptio Setup Chipset	Utility – Copyright (C) 2017 Amer:	ican Megatrends, Inc.
SCC eMMC Support (D28:F0)	[Disable]	Enable/Disable SCC eMMC Support
		<pre>+: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>
Version 2.	18.1263. Copyright (C) 2017 America	an Megatrends, Inc.

ltem	Option	Description
SCC eMMC Support (D28:Fo)	Disable[Default],	Enable/Disable SCC eMMC Support.
	Enable	

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5.7 usb configuration

	Aptio Setup Utility Chipset	– Copyright ((C) 2017 American	Megatrends, Inc.
XHCI Pre-Boot XHCI Mode	Driver	(Disable) [Enable]		Enable∕Disable XHCI Pre-Boot Driver support.
				<pre>++: Select Screen fl: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>
	Version 2.18.1263.	Copyright (C)	2017 American Me	egatrends, Inc.

ltem	Option	Description
XHCI Pre-Boot Driver	Enable,	Enable/Disable XHCI Pre-Boot Driver support.
	Disable[Default]	
		Once disabled, XHCI controller would be
	Enable[Default]	function disabled, none of the USB devices ae
XHCI Mode	Disable	detectable and usable during boot and in OS.
		Do not disable it
		unless for debug purpose.

