



TITAN-300 User Manual

APLEX Palm-size System Intel ATOM (Apollo Lake) Platform

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Aug	2023		

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Revision v1.2

Revision History

Reversion	Date	Description
1.0	2020/12/21	Official Release
1.1	2021/06/01	1. To renew Chapter 2.
		2. To add TB-591 pin definition
1.2	2023/08/14	Ch1 Specification modify

Warning!

This equipment will generate, use and radiate radio frequency energy and if not installed and used in accordance with the instructions manual, it may cause interference to radio communications. It has been tested and found to comply with the limits for a Class A computing device pursuant to FCC Rules, which is designed to provide reasonable protection against such interference when operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference in which case the user with its own expense will be required to take whatever measures may be required to correct the interference.

Electric Shock Hazard – Do not operate the machine with its back cover removed. There are dangerous high voltages inside.

Packing List

Accessories (as ticked) included in this package are:

Adaptor

Driver & manual CD disc

Other._____(As specified)

Safety Precautions

Follow the messages below to prevent your systems from damage:

- Avoid your system from static electricity on all occasions.
- Prevent electric shock. Don't touch any components of this card when the card is power-on. Always disconnect power when the system is not in use.
- Disconnect power when you change any hardware devices. For instance, when you connect a jumper or install any cards, a surge of power may damage the electronic components or the whole system.

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Chapter 1

Getting Started

1.1 Features

- Intel Celeron N3350 Processor
- 1 x DDR3L SO-DIMM, up to 8GB
- 1 x Display Port 1.2 support
- 1 x USB Type-C ALT-mode support
- 2 x LAN, 2 x USB3.1, 1 x USB2.0
- 2 x RS-232/422/485 DB9 (COM1/2)
- 1 x mSATA for SSD storage, 1 x Micro SD socket for Storage
- Mounting kit design for both DIN-rail and Wall-mount
- DC 9~36V Wide-voltage Input

1.2 Specifications

	Titan-300
System	
CPU	Intel Celeron N3350 Processor
	*N4200 for option
Graphic	Intel [®] HD Graphic 500
Memory	1 x DDR3L SO-DIMM slot, up to 8GB
Outside IO Port	
Default I/O Ports	2 x USB 3.1 Gen.1 Type A
	1 x USB2.0 Type A
	2 x GbE LAN RJ-45 (Intel i210/i211)
	1 x DP 1.2 port
	1 x USB Type-C ALT mode
Storage Space	
Storage	1 x mSATA (SATA3) slot for SSD storage
	1 x Micro SD Card slot
Expansion	
Expansion Slot	1 x full-size mPCIe (PCIe x 1+USB2.0) with 1x micro-SIM socket, and 1 x
	SMA connector for Wi-Fi/LTE/BT/GPS options via TB-591
	2x COMs (DB9, RS-232/422/485, COM1 w/o power, COM2 with power
	1A) via TB-591
Power	
Power Input	9~36V DC (3-pin Terminal Block)
	1 x Power Button with LED light

Power Consumption	33W	
Switch		
SMA	Optional for Wi-Fi/LTE/GPS/BT Antenna	
Misc		
Misc	1 x TPM2.0	
	1 x Watchdog Timer (256 steps)	
Mechanical		
Construction	Aluminum Alloy heat sink and plastic chassis	
Mounting	Compound with DIN-rail and Wall-mount	
Dimensions	140 x 120 x 42 mm (HxWxD)	
Net Weight	1.5Kg	
Environmental		
Operating	0~50°C/ WT1 -20~60°C for option	
Temperature		
Storage Temperature	-40~85°C	
Relative Humidity	10 to 90%, non-condensing	
Storage Humidity	10 to 90% @ 40°C, non-condensing	
Vibration	1Grms/5~500Hz operating	
	3Grms/5~500Hz non-operating	
Shock	Half-Sine 30G 2ms operating	
	Half-Sine 40G 10ms non-operating	
Drop	90cm (1 corner, 3edges, 6 surfaces, Full packing)	
Certification	CE / FCC	
Operating System	Microsoft [®] Win10 IoT, Linux 4.20.2	

1.3 Dimensions



Figure 1.1: Dimension of TITAN-300

1.4 Brief Description of TITAN-300

TITAN-300 is designed with Fan-less CPU, the powerful Intel Celeron N3350 processor, and it supports 1 x 204-pin DDR3L SO-DIMM up to 8GB memory. It comes with 2 x USB 3.1 Type A, 1 x USB 2.0 Type A, 2 x LAN, 1 x DP, 1 x SD Card socket, 1 x mSATA socket, 1 x USB Type C, 1 and 1 x mPCIE with 1 x micro SIM socket for expansion. TITAN-300 can also supports (1.) 2 x COM ports, (2.) 2 x USB 2.0, (3.) 2 x CAN, (4.) 8 x GPIO, (5.) 2 x LAN, or (6.) 3 x RS-232 as options. It is plating titanium metal aluminum heat-sink design, and can be DIN-rail and Wall-mount fitted. TITAN-300 works well with our product family and can provide an easy way of maintenance.



Figure 1.2: Appearance of TITAN-300

2.1 Motherboard Introduction

Titan-300 motherboard, the CMI-AI103 is developed based on Intel Apollo Lake platform, which provides good performance to meet the needs of different customers. Also, it features dual GbE ports, 1 x DP interface, 1x mPCIe expansion to satisfy the special needs of some customers; the Apollo Lake platform is widely used in various sectors of industrial control.

2.2 Specifications

Specifications	
Board Size	100mm x 122mm
CPU Type	Intel Celeron N3350(Dual-core/1.1GHz/6W TDP)
	Intel Pentium N4200(Quad-core/1.1GHz/6W TDP) Option
Chipset	Onboard SOC
Memory Support	1 x DDR3L SO-DIMM socket, up to 8GB 1866MHz
Graphics	Intel [®] HD Graphics 505 (N4200)/ 500 (N3350)
Display Mode	1 x DP 1.2
	1 x USB Type-C ALT-mode Interface
Storage	1 x mSATA slot
	1 x Micro SD Slot
Ethernet	2 x PCIe GbE LAN, RJ45 via Intel I210AT
USB	2 x USB 3.1/1.0 stack ports for external
	1 x USB 2.0
Battery	Support CR2477 Li battery
Power Input	DC 9~36V in via 3-pin Connector (input)
Expansions	2 x1.27mm Pitch 2X10 Female Header
	Provide 2xUART,PCIex1,USB2.0,SMBus,5V,3.3V,1.5V,GND
Temperature	Operating: -20 $^{\circ}$ C to 70 $^{\circ}$ C
	Storage: -40 $^{\circ}$ C to 85 $^{\circ}$ C
Humidity	10% - 90%, non-condensing, operating

2.3 Jumpers and Connectors Location



Figure 2.1: CMI-AI103 Jumpers and Connectors Location- Board Top and Bottom

2.4 Jumpers Setting and Connectors

2.4-1 CMI-AI103

1. U1:

(FCBGA1090), Onboard Pentium N4200/Celeron N3350 processors

2. DIMM Socket:

Signal channel DDR3L memory

Model	Memory
CMI-AI103	8GB Maximum

3. BAT1:

(1.25mm Pitch 1x2 Wafer Pin Header, SMD) 3.0V Li Battery is embedded to provide power for CMOS. CMOS clear operation will permanently reset old BIOS settings to factory defaults.

Pin#	Signal Name
Pin1	Battery 3V
Pin2	Battery OV



Procedures of CMOS clear:

a) Turn off the system and unplug the power cord from the power outlet.

b) Remove the lithium battery connection from BAT1 for 10 seconds, and then connect it.

c) Power on the system again.

d) When entering the POST screen, press the <ESC> or key to enter CMOS Setup Utility to load optimal defaults.

e) After the above operations, save changes and exit BIOS Setup.

3. SD1:

Micro SD socket

4. MPCIE1 (miniPCI express/mini SATA):

(50.95mm x 30mm Socket 52Pin), Mini PCI express socket. Support mini-PCIe (full size) devices with PCIex1, USB2.0, LPC and SMbus.

Function	Support
Mini SATA(Signal share with SATA2)	○(Option, S_1 setting)
Mini PCle	(Default, S_1 setting)
SM bus	•
USB2.0	

5. DC_IN1:

(5.08mm Pitch 1x3 Pin Connector), DC 9V~36V System power input connector.

Pin#	Power Input
Pin1	DC_IN+(DC+9V~36V)
Pin2	GND
Pin3	FG

6. SW1:

Power on/off button: Use to connect external power switch button. The two pins are disconnected under normal condition. You may short them temporarily to realize system startup & shutdown or awaken the system from sleep state. P_SW1 or BT1 need to be selected before manufacturing.

(2.0mm Pitch 1x2 Wafer Pin Header), Power on/off button, used to connect power switch button

P_BT	Function
Bottom	(Default)

7. DP4:

Display port 20P Connector, support DP 1.2.



8. USB2:

USB3-1/USB3-2: (Double stack USB type A), Rear USB connector, it provides up to two USB3.0 ports, High-speed USB 2.0 allows data transfers up to 480 Mb/s, USB 3.0 allows data transfers up to 5.0Gb/s, support USB full-speed and low-speed signaling.



Each USB Type A Receptacle (2 Ports) Current limited value is 2.0A.

If the external USB device current exceeds 1.5A, please separate connectors into different Receptacle.

9. USB3:

Standard USB 2.0 type A connector.

10. LAN1/LAN2:

LAN1/LAN2: (RJ45 Connector), Rear LAN port, Two standard 10/100/1000M RJ-45 Ethernet ports are provided. Use Intel 82574L chipset, LINK LED (green) and ACTIVE LED (green or orange) respectively located at the left-hand and right-hand side of the Ethernet port indicate the activity and transmission state of LAN.



11. CN1:



CN1

Female BOX Header 2x10

Pin#	Pin definition	Pin#	Pin definition
Pin1	5V+	Pin2	PCIE0 CLK-
Pin3	USB0 D-	Pin4	PCIE0 CLK+
Pin5	USB0 D+	Pin6	PCIE0 TX+
Pin7	GND	Pin8	PCIE0 TX-
Pin9	GND	Pin10	PCIE0 RX+
Pin11	GND	Pin12	PCIE0 RX-
Pin13	3.3V+	Pin14	PCIE0 WAKE
Pin15	3.3V+	Pin16	PCIE0 SMCLK
Pin17	USB2 D-	Pin18	PCIE0 SMDAT
Pin19	USB2 D+	Pin20	PCIE0 PERST

12. CN2:

USB Type-C connector.



Pin#	A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	A11	A12
Pin def.	GND1	SSTXp1	SSTXn1	VBUS_A1	CC1	Dp1_A	Dn1_A	SBU1	VBUS_A2	SSTXn2	SSTXp2	GND2
Pin#	B12	B11	B10	B9	B8	B7	B6	B5	B4	B3	B2	B1
Pin def.	GND4	SSTXp1	SSTXn1	VBUS_B1	SBU2	Dn1_A	Dp1_A	CC2	VBUS_B2	SSTXn2	SSTXp2	GND3

13. CN3:



Pin#	Pin definition	Pin#	Pin definition
Pin1	COM2_CDC	Pin2	COM1_DCD
Pin3	COM2_TXD	Pin4	COM1_TXD
Pin5	COM2_RXD	Pin6	COM2_RXD
Pin7	COM2_DTR	Pin8	COM1_DTR
Pin9	GND	Pin10	GND
Pin11	COM2_DSR	Pin12	COM1_DSR
Pin13	COM2_RTS	Pin14	COM1_RTS
Pin15	COM2_CTS	Pin16	COM1_CTS
Pin17	COM2_RI	Pin18	COM1_RI
Pin19	N/A	Pin20	N/A
Pin21	GPIO	Pin22	GPIO
Pin23	GPIO	Pin24	GPIO
Pin25	GPIO	Pin26	GPIO
Pin27	GPIO	Pin28	GPIO



1. COM1/2 (TB-591):

(Type DB9), Rear serial port, standard DB9 Male serial port is provided to make a direct connection to serial devices. COM1/2 ports are controlled by pins No.1~6 of JP1 and JP2, select output Signal RI or 5V or 12V, for details, please refer to description of JP1/2 setting.

Pin#	Signal	Signal	Signal
	(RS-232)	(RS-422)	(RS-485)
1	DCD	TX-	Data-
2	RXD	TX+	Data+
3	TXD	RX+	
4	DTR	RX-	
5		GND	
6	DSR		
7	RTS		
8	CTS		
9	5V/Ring		

2. JP1/2 (TB-591) :

Jumper	COM1/2 Pin9 Function
1-2(Default)	Ring
3-4	5V

3.1 Operations after POST Screen

After CMOS discharge or BIOS flashing operation, press [Delete] key to enter CMOS Setup.



After optimizing and exiting CMOS Setup

3.2 BIOS Setup Utility

Press [Delete] key to enter BIOS Setup utility during POST, and then a main menu containing system summary information will appear.

3.3 Main Settings



BIOS Information		Set the Time. Use Tab to
BIOS Vendor	American Megatrends	Switch between Time
Core Version	5.12	elements.
Compliancy	UEFI 2.4; PI 1.3	
Project Version	7118v 0.16 x64	
Build Date and Time	06/19/2017 13:51:32	
Access Level	Administrator	
Platform firmware Inform	nation	
BXT SOC	B1	
MRC Version	Intel [®] Core [™]	
PUNIT FW	0.56	
PMC FW	28	
TXE FW	03.28	
ISH FW	N/A	→←: Select Screen
GOP	0.0.0036	↑↓ : Select Item
CPU Flavor	BXT Notebook/Desktop	Enter: Select
Board ID	Oxbow Hill CRB (06)	+/- : Charge Opt.
Fab ID	FAB1	F1 : General Help
		F2: Previous Values
Memory Information		F3:Optimized Defaults
Total Memory	4096 MB	F4:Save and Exit
System Language	[English]	ESC Exit
System Date	[Sun 01/01/2009]	
System Time	[00:00:00]	
Version 2.1	8.1263. Copyright (C) 2017 American N	Aegatrends . Inc.

System Time:

Set the system time, the time format is:

Hour :	0 to 23
Minute :	0 to 59
Second :	0 to 59

System Date:

Set the system date, the date format is:

Day: Note that the 'Day' automatically changes when you set the date.

Month: 01 to 12

Date: 01 to 31

Year: 1998 to 2099

3.4 Advanced Settings

Aptio Setup Utility – Copyright (C) 2017 American Megatrends, Inc.					
Main	Advanced	Chipset	Security	Boot	Save & Exit
					Trusted Computing Settings
► Trusted	Computing				
ACPI Se	ettings				
►NCT610	06D Super IO Co	onfiguration			
►NCT610	06D HW Monito	or			
CPU Co	onfiguration				
Networ	rk Stack Configu	iration			
CSM Configuration				→←: Select Screen	
► Therma	al				↑↓ : Select Item
					Enter: Select
					+/- : Charge Opt.
					F1 : General Help
					F2: Previous Values
					F3:Optimized Defaults
					F4:Save and Exit
					ESC Exit
Version 2.18.1263. Copyright (C) 2017 American Megatrends , Inc.					

3.4.1 Trusted Computing

Security device Support	[Enabled]
SHA-1 PCR Bank	[Enabled]
SHA256 PCR Bank	[Enabled]
Pending operation	[None]
	[TPM Clare]
Platform Hierarchy	[Enabled]
Storage Hierarchy	[Enabled]
Endorsement Hierarchy	[Enabled]
Tpm2.0 UEFI Spec Version	[TCG_2]
	[TCG_1_2]
Physical Presence Spec Version	[1.3]
	[1.2]
TPM 20 Interface type	[TIS]
Device Select	[Auto]
	[TPM1.2]
	[TPM2.0]

3.4.2 ACPI Settings

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Enable ACPI Auto Configuration: [Disabled] [Enabled] Enable Hibernation: [Enabled] [Disabled] ACPI Sleep State: [S3 (Suspend to RAM)] [Suspend Disabled] Lock Legacy Resources: [Disabled] [Enabled] 3.4.3 NCT6106D Super IO Configuration Super IO Chip NCT6106D Serial Port 1 Configuration [Enabled] Serial port [Disabled] IO=3F8h; IRQ=4; **Device Settings** Change Settings [Auto] F75111 COM1 Config [RS-232 Mode] [RS-485 Mode] [RS-422 Mode] Serial Port 2 Configuration [Enabled] Serial port [Disabled] IO=2F8h; IRQ=3; **Device Settings** Change Settings [Auto] Serial Port 3 Configuration Serial port [Enabled] [Disabled] **Device Settings** IO=3E8h; IRQ=7; Change Settings [Auto] Serial Port 4 Configuration Serial port [Enabled] [Disabled] IO=2E8h; IRQ=7; **Device Settings**

[Auto]

Serial Port 5 Configuration

Change Settings

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Serial port	[Enabled]
	[Disabled]
Device Settings	IO=2F0h; IRQ=7;
Change Settings	[Auto]
COM5 Config	[RS-485 Mode]
	[RS-422 Mode]
Serial Port 6 Configuration	
Serial port	[Enabled]
	[Disabled]
Device Settings	IO=2E0h; IRQ=7;
Change Settings	[Auto]
COM6 Config	[RS-485 Mode]
	[RS-422 Mode]

3.4.4 NCT6106D HW Monitor

Pc Health Status

System temperature1	: +380 ℃
System temperature2	: +460 ℃
System temperature3	:+80 ℃
System temperature4	: N/A
System temperature5	: NA
System temperature6	: +380 ℃
Fan1 speed	: NA
Fan2 speed	: NA
Fan3 speed	: NA
VCORE	:+0.760 V
VINO	:+6.441V
VIN1	:+6.864V
VIN2	:+8.870V
AVCC	:+3.456V
VSB3	:+3.440V
VCC3V	:+3.472V
VBAT	:+3.376V

3.4.5 CPU Configuration

CPU Configuration
Socket 0 cpu Information
Intel® Pentium® CPU N4200 @1.10GHz
CPU Signature 506C9
Microcode Patch 28

Max CPU Speed	1100 MHz
Mix CPU Speed	800 MHz
Processor Cores	4
Intel HT Technology	Not Supported
Intel VT-X Technology	Supported
L1 Date Cache	24KB x 4
L1 Code Cache	32KB x 4
L2 Cache	1024 KB x 2
L3 Cache	Not Present
Speed	1100 MHZ
64-bit	Supported
CPU Power Management	
EIST	[Enabled]
Turbo Mode	[Enabled]
Boot performance mode	[Max Performance]
Power Limit 1 Enable	[Disabled]
Active Processor Cores	[Disabled]
Intel Virtualization Technology	[Enabled]
VT-d	[Disabled]
Bi-directional PROCHOT	[Enabled]
Thermal Monitor	[Enabled]
Monitor Mwait	[Disabled]
P-STATE Coordination	[HW_ALL]
	[SW_ALL]
	[SW_ANY]
-	• · · · •

DTS

Network Stack Configuration Network Stack

ANY] [Disabled] [Disabled]

3.4.6 **CSM Configuration**

- **CSM Support** CSM16 Module Version GateA20 Active **Option ROM Messages INT19** Trap Response Boot option filter Option ROM execution Network Storage Video
- [Enabled] 07.79 [Upon Request] [Force BIOS] [Immediate] [UEFI and Legacy]

[Do not launch] [Do not launch] [Legacy]

3.4.7 Thermal

Automatic Thermal Reporting	[Enabled]
DPTF	[Enabled]
DPTF Configuration	[0]
DPTF Processor	[Enabled]
Active Thermal Trip Point	90
Passive Thermal Trip point	100
S3/CS Thermal Trip Point	110
HOT Thermal Trip point	110
Critical Thermal Trip Point	105
Thermal Sampling Period	0
Display participant	[Enabled]
FAN Device	[Enabled]
Sensor Device 1	
Charger Participant	[Enabled]
Power participant	[Enabled]
Polling Rate	0
Generic Device 1	[Enabled]
Active Thermal Trip Point	60
Passive Thermal Trip point	65
S3/CS Thermal Trip Point	70
HOT Thermal Trip point	75
Critical Thermal Trip Point	80
Thermal Sampling Period	50
Generic Device 2	[Enabled]
Active Thermal Trip Point	60
Passive Thermal Trip point	65
S3/CS Thermal Trip Point	70
HOT Thermal Trip point	75
Critical Thermal Trip Point	80
Thermal Sampling Period	50
Generic Device 3	[Enabled]
Active Thermal Trip Point	60
Passive Thermal Trip point	65
S3/CS Thermal Trip Point	70
HOT Thermal Trip point	75
Critical Thermal Trip Point	80
Thermal Sampling Period	50

	Generic Device 4	[Enabled]
	Active Thermal Trip Point	60
	Passive Thermal Trip point	65
	S3/CS Thermal Trip Point	70
	HOT Thermal Trip point	75
	Critical Thermal Trip Point	80
	Thermal Sampling Period	50
	Design Variable 0	0
	Design Variable 1	0
	Design Variable 2	0
	Design Variable 3	0
	Design Variable 4	0
	Design Variable 5	0
	Virtual Sensor participant 1	[Disabled]
	Virtual Sensor participant 2	[Disabled]
	Virtual Sensor participant 3	[Disabled]
DPTF Policies		
	Active Policy	[Enabled]
	Passive Policy	[Passive Policy 2.0]
	TRT Revision	[Priority]
	Critical Policy	[Enabled]
	Power Boss	[Enabled]
	Virtual Sensor	[Disabled]

3.5 Chipset Settings

Aptio Setup Utility – Copyright (C) 2017 American Megatrends, Inc.					
Main	Advanced	Chipset	Security	Boot	Save & Exit
► North Bridge				North Bridge Parameters	
South Bridge					
South Cluster Configuration					

	$\rightarrow \leftarrow$: Select Screen
	↑↓ : Select Item
	Enter: Select
	+/- : Charge Opt.
	F1 : General Help
	F2: Previous Values
	F3:Optimized Defaults
	F4:Save and Exit
	ESC Exit
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3.5.1 North Bridge

LCD Control	
Primary IGFX Boot Display	[Auto]
IGD Flat Panel	[Auto]
Active LFP	[eDP Port-A]
GMCH BLC Control	[PWM-Normal
Panel Color	[8bit VESA]
Panel link	[Single link]
Memory Information	
Total Memory	8192 MB (LPDDR3)
Memory Slot0	2048 MB (LPDDR3)
Memory Slot1	2048 MB (LPDDR3)
Max TOLUD	[2 GB]
Above 4GB MMIO BIOS assignment	[Disabled]
Max TOLUD	[Disabled]
South Bridge	
Serial IRQ Mode	[Continuous]
SMBus Support	[Enabled]
OS Selection	[Windows]
PCI CLOCK RUN	[Enabled]
State After G3	[SO State]
South Cluster Configuration	
PCI Express Configuration	
PCI Express Clock Gating	[Enabled]
PCIE Port assigned to LAN	5
Port8xh Decode	[Disabled]
Peer Memory Write Enable	[Disabled]
Compliance Mode	

PCI Express	Root Port 1		
PCI Express	Root Port 2		
PCI Express	Root Port 3		
PCI Express	Root Port 4		
PCI Express	Root Port 5		
PCI Express I	Root Port 6		
SATA Drives			
Chipset-SATA	Controller Configuration		
Chipset SATA		[Disabled]	
SATA Mode S	election	[AHCI]	
SATA Test Mo	ode	[Disabled]	
Aggressive L	PM Support	[Enabled]	
SATA Port 0		16GB SATA Flags (16.0GB)	
Software Pre	eserve	Unknown	
Port 0		[Enabled]	
SATA Port 0	Hot Plug Capability	[Disabled]	
Configured a	as eSATA	Hot Plug supported	
Mechanical	Presence Switch	[Enabled]	
Spin Up Dev	ice	[Disabled]	
SATA Device	Туре	[Hard Disk Drive]	
SATA Port 0	DevSlp	[Disabled]	
DITO Config	uration	[Disabled]	
DITO Value		625	
DM Value		15	
SATA Port 0		[Not Installed]	
Software Pre	eserve	Unknown	
Port 0		[Enabled]	
SATA Port 0	Hot Plug Capability	[Disabled]	
Configured a	as eSATA	Hot Plug supported	
Mechanical	Presence Switch	[Enabled]	
Spin Up Dev	ice	[Disabled]	
SATA Device	Туре	[Hard Disk Drive]	
SATA Port 0	DevSlp	[Disabled]	
DITO Configuration		[Disabled]	
DITO Value		625	
DM Value		15	
SCC Configu	ration		
SCC SD Card	Support (D27:F0)	[Disabled]	
SCC eMMC	Support (D28:F0)	[Disabled]	
SCC UFS	Support (D29:F0)	[Disabled]	

SCC SDIO	Support (D30:F0)	[Disabled]		
USB Configu	iration			
XHCI Pre-Bo	ot Driver	[Disabled]		
XHCI Mode		[Disabled]		
USB VBUS	Support	[ON]		
USB HSIC1	Support	[Disabled]		
USB SSIC1	Support	[Disabled]		
USB Port Disable Override		[Disabled]		
XDCI	Support	[Disabled]		
XHCI Disab	le Compliance Mode	[FALSE]		
Miscellaneous Configuration				
BIOS LOCK		[Enabled]		

3.6 Security Settings

Aptio S	n Megatrends, Inc.				
Main Advanced	Chipset	Security	Boot	Save & Exit	
Password Descrip	tion			Set Administrator Password	
If ONLY the Admin Then this only lim Only asked for wh If ONLY the User's	→←: Select Screen				
Is a power on password and must be entered to Is a power on password and must be entered to Boot or enter Setup. In Setup the User will Have Administrator rights. The password length must be In the following range: Minimum length 1 Maximum length 20			 ↑↓ : Select Item Enter: Select +/-: Charge Opt. F1 : General Help F2: Previous Values F3:Optimized Defaults F4:Save and Exit ESC Exit 		
Administrator Pas User Password Secure Boot me	ssword enu				
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3.6.2 User Password

Create New Password -

Type the password with up to 20 characters and then press \blacktriangleleft Enter \triangleright key. This will clear all previously typed CMOS passwords. You will be requested to confirm the password. Type the password again and press \blacktriangleleft Enter \triangleright key. You may press \blacktriangleleft Esc \triangleright key to abandon password entry operation.

To clear the password, just press \lt Enter \succ key when password input window pops up. A confirmation message will be shown on the screen as to whether the password will be disabled. You will have direct access to BIOS setup without typing any password after system reboot once the password is disabled.

Once the password feature is used, you will be requested to type the password each time you enter BIOS setup. This will prevent unauthorized persons from changing your system configurations.

Also, the feature is capable of requesting users to enter the password prior to system boot to control unauthorized access to your computer. Users may enable the feature in Security Option of Advanced BIOS Features. If Security Option is set to System, you will be requested to enter the password before system boot and when entering BIOS setup; if Security Option is set to Setup, you will be requested for password for entering BIOS setup.

3.7 Boot Settings

Aptio Setup Utility – Copyright (C) 2017 American Megatrends, Inc.							
Main	Advanced	Chipset	Security	Boot		Save & Exit	
Boot C	onfiguratior	า				Controls the placement of newly	
Setup	Prompt Tin	neout	1			detected UEFI boot options	
Bootup Numlock State		[On]					
Quiet Boot		[Disabled]					
Вос	ot Option Pr	iorities					

Boot Option #1		→←: Select Screen		
Fast Boot	[Enabled]	$\uparrow \downarrow$: Select Item		
		Enter: Select		
		+/- : Charge Opt.		
Driver Option Priorities		F1 : General Help		
New Boot Option Policy	[Default]	F2: Previous Values		
		F3:Optimized Defaults		
		F4:Save and Exit		
		ESC Exit		
Version 2.18.1263. Copyright (C) 2017 American Megatrends , Inc.				

Setup Prompt Timeout Bootup Numlock State Quiet Boot Boot Option Priorities Fast Boot Driver Option Priorities New Boot Option Policy 1 [On] [Disabled] [Disabled] [Default]

3.8 Save & Exit Settings

Aptio Setup Utility – Copyright (C) 2017 American Megatrends, Inc.							
Main	Advanced	Chipset	Boot	Security		Save & Exit	
Save	Options					Exit system setup a	after
Save	Changes an	d Exit				Saving the changes	5.
Discard	d Changes a	nd Exit					
Save C	hanges and	Reset					
Discard	d Changes a	nd Reset					
Save	Changes						
Disc	ard Changes	;					

	$\rightarrow \leftarrow$: Select Screen
Default Options	↑↓ : Select Item
Restore Defaults	Enter: Select
Save as user Defaults	+/- : Charge Opt.
Restore user Defaults	F1 : General Help
	F2: Previous Values
Boot Override	F3:Optimized Defaults
Launch EFI Shell from filesystem device	F4:Save and Exit
	ESC Exit
Version 2.18.1263. Copyright (C) 2017 American Meg	atrends , Inc.
Save Changes and Exit	
Save & Exit Setup save Configuration and exit ?	
	[Yes]
	[No]
Discard Changes and Ext	
Exit Without Saving Quit without saving?	
	[Yes]
	[No]
Save Changes and Reset	
Reset the system affer Saving The changes?	
	[Yes]
	[No]
Discard Changes and Reset	[]
Reset system setup without Saving any changes?	
	[Yes]
	[No]
Save Changes	[]
Save Setup done so far to any of the setup options?	
	[Yes]
	[No]
Discard Changes	[]
Discard Changes done so far to any of the setup opt	ions?
Distant changes done so far to any of the setup opt	[Yes]
	[No]
Restore Defaults	
Restore /load Defaults values for all the setur ontio	ns?
Restore / Load Deraults values for an the setup optio	
	[No]
Save as user Defaults	
Save the changes done so far as User Defaults?	
save the changes done so far as osci Defaults:	

Chapter 4 Installation of Drivers

This chapter describes the installation procedures for software and drivers under Windows 10. The software and drivers are included with the motherboard. The contents include Intel® Apollo Lake SoC Chipset, Intel® VGA chipset, Intel® I210 LAN Driver, Intel ® TXE, and DPTF Driver Installation instructions are given below.

Important Note:

After installing your Windows operating system, you must install first the Intel Chipset Software Installation Utility before proceeding with the installation of drivers.

4.1 Intel[®] Apollo Lake SoC Chipset

To install Intel[®] Apollo Lake SoC Chipset driver, please follow the steps below.

Step 1. Select Intel® Apollo Lake SoC Chipset from the list

Step 2. Here is welcome page. Please make sure you save and exit all programs before install. Click Next.



Step 3. Read the license agreement. Click **Accept** to accept all of the terms of the license agreement. **TiTAN-300 User Manual**

Intel(R) Chipset Device Software	intel
INTEL SOFTWARE LICENSE AGREEMENT (OEM / IHV / ISV Distribu User)	ution & Single
IMPORTANT - READ BEFORE COPYING, INSTALLING OR USING. Do not use or load this software and any associated materials (co "Software") until you have carefully read the following terms and loading or using the Software, you agree to the terms of this Agre not wish to so agree, do not install or use the Software.	ellectively, the conditions. By eement. If you do
Please Also Note: * If you are an Original Equipment Manufacturer (OEM), Independent Vendor (IHV), or Independent Software Vendor (ISV), this complet AGREEMENT applies; * If you are an End-User, then only Exhibit A, the INTEL SOFTWAR AGREEMENT, applies.	dent Hardware te LICENSE RE LICENSE
	\sim
Back Accept	Cancel

Step 4. Click Install to begin the installation.

Intel(R) Chipset Device Software Readme File Information	
<pre>* Product: Intel(R) Chipset Device Software * Version: 10.1.1 * Target PCH/Chipset: Client Platforms * Date: 2015-06-03 NOTE:</pre>	/
For the list of supported chipsets, please refer to the Release Notes * CONTENTS OF THIS DOCUMENT This document contains the following sections:	
<pre>1. Overview 2. System Requirements 3. Contents of the Distribution Package 3A. Public and NDA Configurations 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4</pre>	1
Back Install Cancel	

Step 5. Select **Restart Now** to reboot your computer for the changes to take effect.

Intel(R) Chipset Device Software Completion	(intel)
You have successfully installed the following product:	
Intel(R) Chipset Device Software	
You must restart this computer for the changes to take effect.	
<u>View Log Files</u> Restart Now	Restart Later

4.2 Intel[®] HD Graphics Chipset

To install the Intel[®] VGA Chipset, please follow the steps below.

- Step 1. Select Intel[®] VGA Chipset from the list.
- Step 2. Choose automatically run function and Click Next to setup program.



Step 3. Read the license agreement. Click Yes to accept all of the terms of the license agreement.

Intel® Installation Framework —		Х
Intel® Graphics Driver		
License Agreement	(int	el
You must accept all of the terms of the license agreement in order to continue the program. Do you accept the terms?	setup	
INTEL SOFTWARE LICENSE AGREEMENT (OEM / IHV / ISV Distribution & Single Use IMPORTANT - READ BEFORE COPYING, INSTALLING OR USING. Do not use or load this software and any associated materials (collectively, the "Su until you have carefully read the following terms and conditions. By loading or usin Software, you agree to the terms of this Agreement. If you do not wish to so agre install or use the Software.	er) oftware") ig the ee, do not	^
Please Also Note: * If you are an Original Equipment Manufacturer (OEM), Independent Hardware V (IHV), or Independent Software Vendor (ISV), this complete LICENSE AGREEMENT * If you are an End-User, then only Exhibit A, the INTEL SOFTWARE LICENSE AGR	endor applies; REEMENT,	v
Intel® Insta	No Illation Fran	nework

Step 4. Click Next to continue.

Intel® Installation Framework	—		Х
Intel® Graphics Driver			
Readme File Information		(int	el
Refer to the Readme file below to view the system requirements and insta	llation i	nformation.	
Driver Version: 21.20.16.4528			^
Release Version: Production Version			
Platforms/ Operating System(s):			
7th Gen Intel(R) Core(TM) processor family (Codename Kaby Lake) Microsoft Windows* 10-64			
6th Gen Intel(R) Core(TM) processor family (codename Skylake) Microsoft Windows* 7-64 Microsoft Windows* 8. 1-64			~
< Back Next	:>	Cance	I
Inte	l® Inst	allation Fran	nework

Step 5. Click Next to continue.

Intel® Installation Framework	
Intel® Graphics Driver	
Setup Progress	(intel)
Please wait while the following setup operations are performed:	
Deleting File: C: \ProgramData \Microsoft\Windows\Start Menu\Prog Deleting File: C: \Users\Public\Desktop\Intel(R) HD Graphics Control Deleting File: C: \Users\Public\Desktop\Intel(R) Graphics and Media Deleting File: C: \Users\Public\Desktop\Intel(R) Iris(TM) Graphics Control Deleting File: C: \Users\Public\Desktop\Intel(R) Iris(TM) Graphics Co Deleting File: C: \Users\Public\Desktop\Intel(R) Iris(TM) Graphics Co Deleting Registry Key: HKLM\SOFTWARE\Intel\GFX\Internal\AudioF Deleting Registry Key: HKLM\SOFTWARE\Intel\GFX\Internal\AudioF	rams\Intel\Intel(R) HD Grar rams\Intel(R) HD Graphics (rams\Intel(R) Graphics and rams\Intel\Intel(R) Graphic Panel.lnk Control Panel.lnk rams\Intel\Intel(R) Iris(TM) ntrol Panel.lnk ëix
Click Next to continue.	¥
	,
	Next >
L	– Intel® Installation Framework

Step 6. Select Yes, I want to restart this computer now. Click Finish to complete installation.



4.3 Intel[®] I210 LAN Driver

To install Intel[®] I210 LAN Driver Driver, please follow the steps below.

- Step 1. Select Intel® I210 LAN Driver from the list
- Step 2. Intel® Network Connections appear. Click Install Drivers and Software.
- Step 3. Enter into Install Wizard welcome page. Click Next to continue.



Step 4. Enter into Intel® Network Connections License Agreement welcome page. Click Next to continue.

📅 Intel(R) Network Connections Install Wizard	×	
License Agreement Please read the following license agreement carefully.	(intel)	
INTEL SOFTWARE LICENSE AGREEMENT IMPORTANT - READ BEFORE COPYING, INSTALLING OR USING. Do not copy, install, or use this software and any associated materials (collectively, the "Software") provided under this license agreement ("Agreement") until you have carefully read the following terms and conditions. By copying, installing, or otherwise using the Software, you agree to be bound by the terms of this Agreement. If you do not agree to the terms of this Agreement, do not copy install or use the Software		
 I accept the terms in the license agreement I do not accept the terms in the license agreement 	Print	
< Back Next >	Cancel	

Step 5. Enter into **Intel® Network Connections Setup Options** page and choose as example. Click **Next** to continue.

Intel(R) Network Connections	
Setup Options Select the program features you want installed.	(intel)
Install:	
Feature Description Drivers for all wired Intel Network Connections < Back	Next > Cancel

Step 6. Enter into Intel® Network Connections Install Wizard page. Click Install to start installation.

📅 Intel(R) Network Connections Install Wizard	—
Ready to Install the Program	(intal)
The wizard is ready to begin installation.	Inter
Click Install to begin the installation.	
If you want to review or change any of your installation settings, click Back. Clic exit the wizard.	k Cancel to
< Back Install	Cancel

Step 7. Click Finish to end your installation.



4.4 Intel[®] TXE Driver

To install Intel[®] TXE, please follow the steps below.

Step 1. Select Intel® TXE from the list

Step 2. Enter into Intel® Trusted Execution Engine welcome page. Click Next to continue.



Step 3. Enter into Intel® Trusted Execution Engine License Agreement page. Click Next to continue.



Step 4. Click Next to continue.



Step 5. Choose Yes, I want to restart this computer now to finish the installation.



4.5 Intel DPTF Driver

To install DPTF Driver, please follow the steps below.

Step 1. Select DPTF Driver from the list

Step 2. Click Next to continue.



Step 3. Read the license agreement. Choose **Accept** and click **Next** to accept all of the terms of the license agreement.

😽 Setup - Intel DPTF Driver for Windows —		\times
License Agreement Please read the following important information before continuing.		
Please read the following License Agreement. You must accept the terms of this agreement before continuing with the installation.		_
Lenovo License Agreement	^	
L505-0009-01 04/2007		
This Lenovo License Agreement (the "Agreement") applies to each Lenovo Software Product that You acquire, whether it is preinstalled on or included with a Lenovo hardware product, acquired separately, or downloaded by You from a Lenovo Web site or a third-party Web site approved by Lenovo. It also applies to any updates or patches to these Software Products.	*	
 I accept the agreement I do not accept the agreement 		
< Back Next >	Can	cel

Step 4. Select destination location by your option and click **Next** to continue.

ß	Setup - Intel DPTF Driver for Windows	_		×
	Select Destination Location Where should Intel DPTF Driver for Windows be installed?			
	Setup will install Intel DPTF Driver for Windows into the follow	ving fo	older.	
	To continue, click Next. If you would like to select a different folder, cl	ick Br	owse.	
	C:\DRIVERS\WIN\DPTF		Browse.	
	At least 41.4 MB of free disk space is required.			
	< Back Next	t>	(Cancel

Step 5. Click Install to continue the installing.

😸 Setup - Intel DPTF Driver for Windows —		×
Ready to Install Setup is now ready to begin installing Intel DPTF Driver for Windows on your computer.	¢	
Click Install to continue with the installation, or click Back if you want to review o change any settings.	r	
Destination location: C:\DRIVERS\WIN\DPTF	^	
<	>	
< Back Install	Can	icel

Step 6. Click Finish to complete the installation and start install Intel DPTF driver for Windows.



Step 7. Click Next to start the installation.

Intel® Installation Framework		- 🗆 X
Intel(R) Dynamic Platform and Framework Welcome to the Setup Program	Thermal	(intel)
This setup program will install the following compon • Intel(R) Dynamic Platform and Thermal Framewor	ents: k Installer	
It is strongly recommended that you exit all progra	ms before continu	uing. Click Next to continue.
8.1.10604.207	< Back	Next > Cancel — Intel® Installation Framework

Step 8. Read the license agreement. Click **Yes** to accept all of the terms of the license agreement. **TiTAN-300 User Manual**

Intel® Installation Framework -	×
Intel(R) Dynamic Platform and Thermal Framework License Agreement	
You must accept all of the terms of the license agreement in order to continue the setup program. Do you accept the terms?	
INTEL SOFTWARE LICENSE AGREEMENT (OEM / IHV / ISV Distribution & Single User) IMPORTANT - READ BEFORE COPYING, INSTALLING OR USING. Do not use or load this software and any associated materials (collectively, the "Software") until you have carefully read the following terms and conditions. By loading or using the Software, you agree to the terms of this Agreement. If you do not wish to so agree, do not install or use the Software. Please Also Note:	^
* If you are an Original Equipment Manufacturer (OEM), Independent Hardware Vendor (IHV), or Independent Software Vendor (ISV), this complete LICENSE AGREEMENT applies; * If you are an End-User, then only Exhibit A, the INTEL SOFTWARE LICENSE AGREEMENT,	~
A Back Yes No Intel® Installation Frame	work

Step 9. Click Next to continues.

Intel® Installation Framework	
Intel(R) Dynamic Platform and Thermal Framework Setup Progress	(intel)
Please wait while the following setup operations are performed: Copying File: C:\Program Files (x86)\Intel\Intel(R) Dynamic Platform Copying File: C:\Prog	and Thermal Framework \\ and Thermal Framework \\
Copying File: C: (Vindows\system32\difxapi.dll Click Next to continue.	
	Next > Intel® Installation Framework

Step 10. Click Finish to complete the installation.



Chapter 5 Mounting Suggestions

5.1 DIN-rail Mount + Wall Mount

TITAN-300 is compound mounting design with Din-Rail kit and wall mount kit as picture below.



Figure 5.1 Din Rail Mount and Wall Mount of TITAN-300