MITAC Desktop Board PH12SI
Product Guide

Desktop Board Features

This chapter briefly describes the features of Desktop Board PH12SI. Table 1 summarizes the major features of the Desktop Board.

Feature Summary

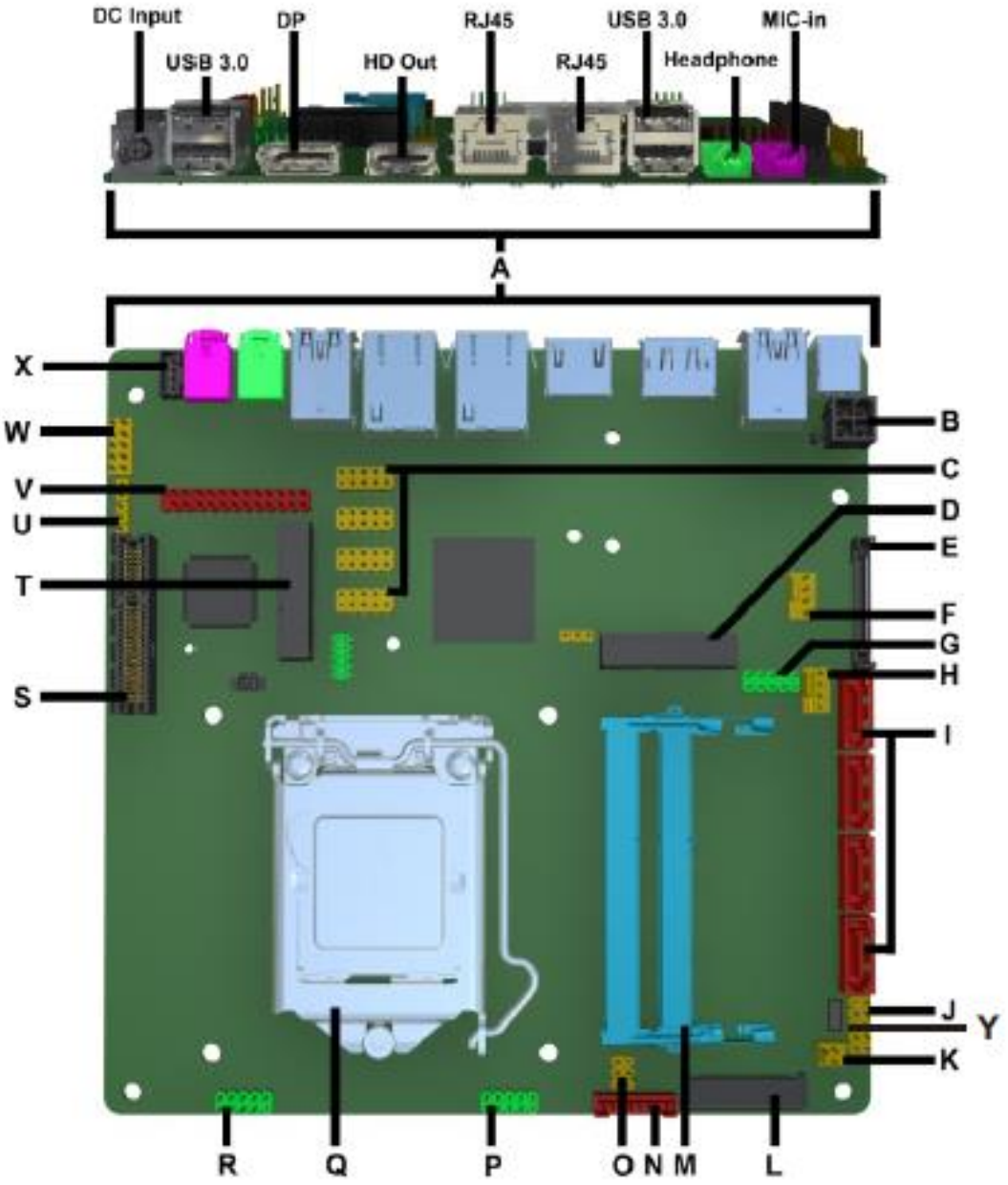
Form Factor	Low-profile Mini-ITX (20 millimeters [0.79 inches] x 170.18 millimeters [6.7 inches] x 170.18 millimeters [6.7 inches])	
Processor	CPU Type : Intel 6th,7th Desktop platform CPU Core : Dual Core / Quad Core Socket : Socket LGA1151 TDP : Support up to 65W CPU types	
Chipset	Chipset Series : Intel Q170 Chipset (Sku-D/I) Chipset Series : Intel H110 Chipset (Sku-B)	
Memory	Memory Type: DDR4 @ 1.2V, 2133MHz (Unbuffered Non-ECC) Memory Channel: Dual Channel Memory Capacity : Support total up to 32 GB ECC Support : No	
	Memory Socket: 260-pin So-DIMM socket	2
Display	DP & HDMI connector 40P Embedded LVDS/eDP connector	
Audio	Codec: HD audio codec, Realtek ALC662 1 x front audio Header (Mic/HP) 1 x standard header for DMIC 1 x audio header to support system stereo speaker	
Expansion Capability	PCIe 3.0 x 4 slot	1
	PCI Express Full-/Half-Mini Card slot (PCIe, mSATA, USB)	1
	PCI Express Half-Mini Card slot (PCIe, USB)	1
Peripheral Interfaces	USB 2.0 2x5 header	3 (Sku-D/I) 2 (Sku-B)
	Serial port header	4
	SATA 3 6Gb/s	4 (Sku-D/I) 3 (Sku-B)
Legacy I/O	Nuvoton NCT6104D	
LAN Support	Intel® I219 Gigabit (10/100/1000 Mb/s) LAN Intel® I210 Gigabit (10/100/1000 Mb/s) LAN	
BIOS	Support for Advanced Configuration and Power Interface (ACPI) setting	
Instantly Available PC Technology	Suspend to RAM support Wake on PCI Express, LAN, front panel, serial, and USB ports	
Hardware Monitor Subsystem	Hardware monitoring through the Nuvoton6104D legacy I/O controller, including: Remote thermal sensor Speed control for 4-pin system fan header and 4-	

	pin CPU fan header
Power Requirement	DC-in 19V(5.1mm/ ID, 7.4mm/ OD)/ ATX 2pin 19V (Sku-D/B) DC-in 12V (2.5mm/ ID, 5.5mm/ OD)/ ATX 4pin 12V (Sku-I)
Environment	Operating Temperature: 0 °C to +60 °C Storage Temperature: -20°C to +70°C
Safety	CE FCC

TABLE 1. MITAC DESKTOP BOARD PH12SI FEATURES

Desktop Board Components

Figure 1 shows the approximate location of the major components on the top side of MITAC Desktop Board PH12SI.



A	Back Panel Connectors
B	ATX 4-PIN DC-in
C	Serial Port Header
D	Mini_PCIE slot (Full Length)
E	SATA 15-pin power connector
F	CPU Fan
G	USB 2.0 Header
H	System FAN
I	SATA connector
J	Front Panel Connector
K	Backlight enable on/off control
L	LVDS/eDP
M	DIMM sockets
N	Backlight Connector
O	Panel power select (J20)
P	USB 2.0 Header
Q	CPU socket
R	USB 2.0 Header
S	PCI Express X4 Connector
T	Mini_PCIE slot(Half Length)
U	DMIC Header
V	Parallel port Header
W	Front Panel Audio Header
X	Internal Speaker
Y	Inverter power voltage selection header (MB location J7)

TABLE 2. MITAC DESKTOP BOARD PH12SI COMPONENTS (SHOWN IN FIGURE 1)

Processor

The board supports 6th, 7th generation Intel Core processors. Other processors may be supported in the future. This board supports processors with a maximum wattage of 65 W Thermal Design Power (TDP).

NOTE

This board has specific requirements for providing power to the processor. Additional power required will depend on configurations chosen by the integrator.

System Memory

NOTE

To be fully compliant with all applicable DDR SDRAM memory specifications, the board should be populated with DIMMs that support the Serial Presence Detect (SPD) data structure. This allows the BIOS to read the SPD data and program the chipset to accurately configure memory settings for optimum performance. If non-SPD memory is installed, the BIOS will attempt to correctly configure the memory settings, but performance and reliability may be impacted or the DIMMs may not function under the determined frequency.

The Desktop Board has two 260-pin DDR4 SO-DIMM sockets with gold-plated contacts.

Connecting to the Internal Headers and Connectors

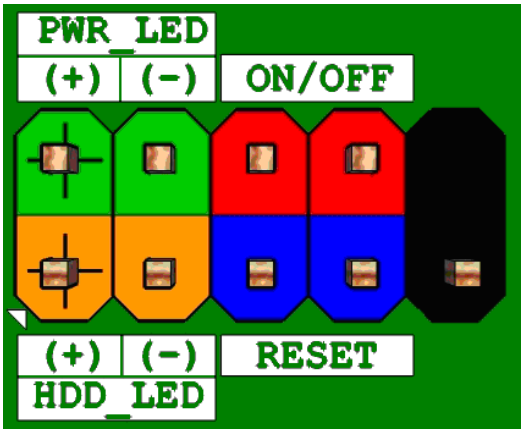


Figure 2 : Front Panel Connector

Pin	Signal Name	Description	Pin	Signal Name	Description
1	VCC	Pull-up resistor (330) to +5V	2	GRN_BLNK_HRD1	Indicator light (Green)
3	SATA_LED-	Hard disk activity LED	4	YLW_BLNK_HRD1	Indicator light (Yellow)
5	GROUND	Ground	6	PWRBT_N	Power button
7	FP_RST_DBR_N	Reset switch	8	GROUND	Ground
9	VCC	Power	10	KEY	No pin

Table 3: Front Panel Connector

Pins 1&2: jumper position for 12V (MB Location J7)

Pins 2&3: jumper position for 19V

Figure 3 : Inverter power voltage selection header signals (MB Location J7)

Pin	Signal Name
1	12VDUAL_HDMI
2	BKLT_PWR
3	+19V_A(default)

Table 4: Inverter power voltage selection header signals

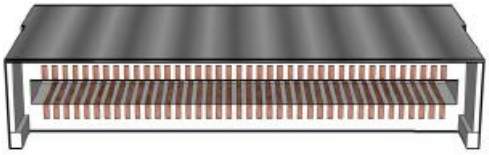


Figure 4: LVDS Connector

Pin	Signal	Description
1	TD0P	LVDS Channel A diff data output - positive
2	TD0N	LVDS Channel A diff data output - negative
3	TC0P	LVDS Channel A diff data output - positive
4	TC0N	LVDS Channel A diff data output - negative
5	TB0P	LVDS Channel A diff data output - positive
6	TB0N	LVDS Channel A diff data output - negative
7	TA0P	LVDS Channel A diff data output - positive
8	TA0N	LVDS Channel A diff data output - negative
9	TD1P	LVDS Channel B diff data output-positive

10	TD1N	LVDS Channel B diff data output-negative
11	TC1P	LVDS Channel B diff data output-positive
12	TC1N	LVDS Channel B diff data output-negative
13	TB1P	LVDS Channel B diff data output-positive
14	TB1N	LVDS Channel B diff data output-negative
15	TA1P	LVDS Channel B diff data output-positive
16	TA1N	LVDS Channel B diff data output-negative
17	GND	Ground
18	3.3V/5V/12V	Selectable LCD power output
19	3.3V/5V/12V	Selectable LCD power output
20	3.3V/5V/12V	Selectable LCD power output
21	NC	NC
22	EDID_3.3V	VCC3
23	GND	Ground
24	GND	Ground
25	GND	Ground
26	TCK0P	LVDS Channel A diff data output - positive
27	TCK0N	LVDS Channel A diff data output - negative
28	GND	Ground
29	GND	Ground
30	GND	Ground
31	NC	NC
32	BKLT_EN	
33	LVDS_PWM	
34	TCK1P	LVDS Channel B diff data output - positive
35	TCK1N	LVDS Channel B diff data output - negative
36	BKLT_PWR	Selectable BKLT power output
37	BKLT_PWR	Selectable BKLT power output
38	BKLT_PWR	Selectable BKLT power output
39	NC	NC
40	NC	NC

Table 5: 40-pin LVDS data header pin-out reference

Figure 5: LVDS inverter power header pin-out

Pin	Signal Name	Description
1	LVDS_BKTEN_R	Backlight enable
2	LVDS_PWM	Backlight PWM control
3	12V/19V	Inverter power
4	12V/19V	Inverter power
5	GND	Ground
6	GND	Ground
7	BRIGHT_UP-	BRIGHTNESS UP
8	BRIGHT_DOWN-	BRIGHTNESS DOWN

Table 6: 8-pin LVDS inverter power header signals

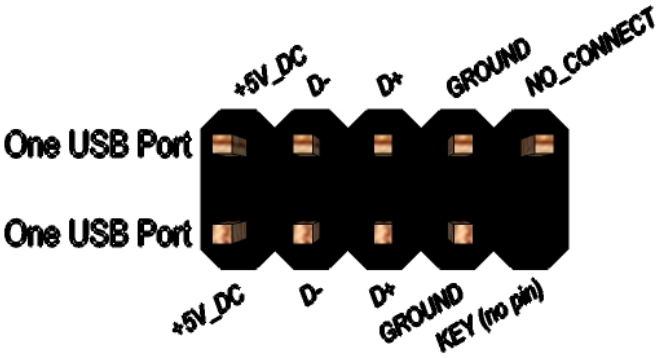


Figure 6: Dual USB2.0 pin-out

Pin	Signal	Pin	Signal
1	5V_USB	2	5V_USB

Pin	Signal	Pin	Signal
3	Data (negative)	4	Data (negative)
5	Data (positive)	6	Data (positive)
7	Ground	8	Ground
9	Key (no pin)	10	No Connect

Table 7 Dual USB 2.0 Header

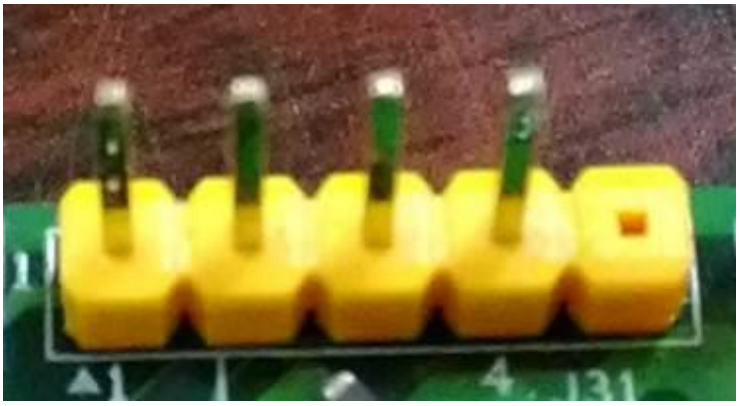


Figure 7: DMIC Cable pin-out

Pin	Signal Name	Description
1	VCC	Power
2	DMIC_DATA_R	DMIC DATA
3	Ground	Ground
4	DMIC_CLK_R	DMIC CLOCK
5	KEY	NO pin

Table 8: DMIC Cable signals

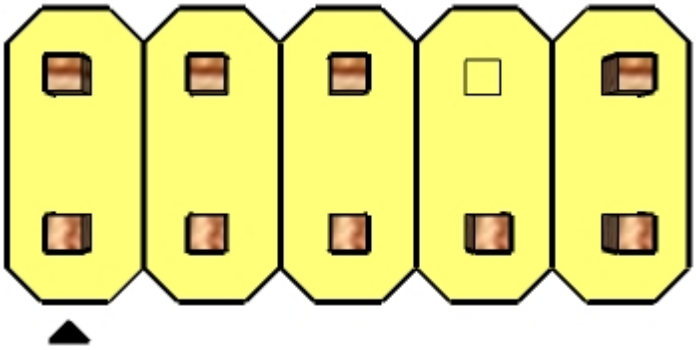


Figure 8: FP Audio pin-out

Pin	Signal Name	Description
1	FP_MIC_L	MIC Left channel
2	AGND	GND
3	FP_MIC_R	MIC Right channel
4	F_AUDIO_DET_N	Audio insertion detection
5	FP_HPOUT_R	HP out Right channel

6	AUD_SENSE_MIC_FP	MIC insertion detection
7	FIO_SENSE	FIO detection
8	Key	No pin
9	FP_HPOUT_L	HPOUT left channel
10	AUD_SENSE_HP	HP detection

Table 9: FP Audio Header

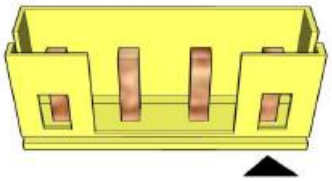


Figure 9: Internal speaker pin-out

Pin	Signal Name
1	Front_L-
2	Front_L+
3	Front_R+
4	Front_R-

Table 10: Internal header signals

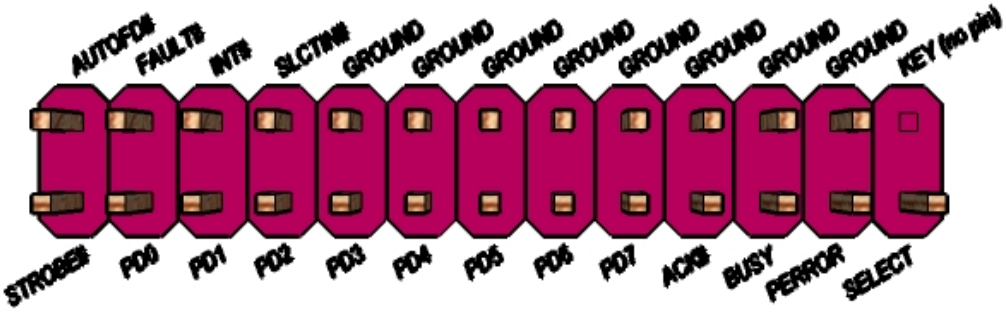


Figure 10: Parallel port Header pin-out

Pin	Standard Signal Name	ECP Signal Name	EPP Signal Name
1	STROBE#	STROBE#	WRITE#

Pin	Standard Signal Name	ECP Signal Name	EPP Signal Name
2	AUTOFD#	AUTOFD#, HOSACK	DATASTB#
3	PD0	PD0	PD0
4	FAULT#	FAULT#, PERIPHREQST#	FAULT#
5	PD1	PD1	PD1
6	INT#	INT#, REVERSERQST#	RESET#
7	PD2	PD2	PD2
8	SLCTIN#	SLCTIN#	ADDRSTB#
9	PD3	PD3	PD3
10	GROUND	GROUND	GROUND
11	PD4	PD4	PD4
12	GROUND	GROUND	GROUND
13	PD5	PD5	PD5
14	GROUND	GROUND	GROUND
15	PD6	PD6	PD6
16	GROUND	GROUND	GROUND
17	PD7	PD7	PD7
18	GROUND	GROUND	GROUND
19	ACK#	ACK#	INTR
20	GROUND	GROUND	GROUND
21	BUSY	BUSY#, PERIPHACK	WAIT#
22	GROUND	GROUND	GROUND
23	PERROR	PE, ACKREVERSE#	PE
24	GROUND	GROUND	GROUND
25	SELECT	SELECT	SELECT
26	KEY (no pin)	KEY (no pin)	KEY (no pin)

Table 11: Parallel port Header header signals

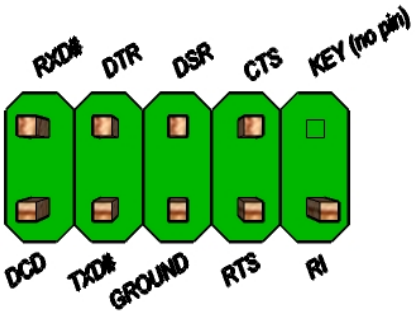


Figure 11: Serial port header pin-out

Pin	Signal Name
1	DCD
2	RXD#
3	TXD#
4	DTR
5	GND
6	DSR
7	RTS
8	CTS
9	RI
10	Key

Table 12 Serial port header pin-out

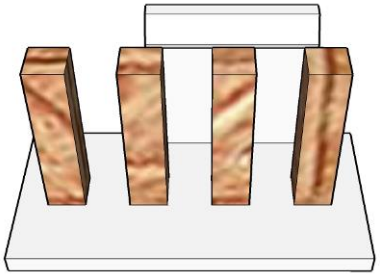


Figure 12 Processor fan header pin-out

Pin	Signal
1	Ground
2	+12V

Pin	Signal
3	CPU_FAN_TACH
4	CPU_FAN_CTRL

Table 13 fan header signals

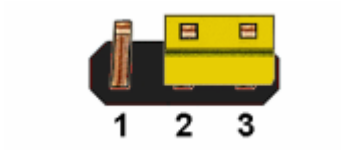


Figure 13: CMOS Clear Header

CMOS Clear

1-2	Clear CMOS
2-3	Normal

Table 14: CMOS Clear behavior

Table 15: BIOS recovery Header Behavior

Figure 15: MiniPCIe slot For WLAN pin-out

Pin	Signal Name	Description
1	WAKE-	Wake up
2	3VSB	Power
3	NC	NC
4	Ground	Ground
5	NC	NC
6	V_1P5	Power
7	CLKREQ_WLAN-	CLKREQ
8	NC	NC
9	Ground	Ground
10	NC	NC
11	PCH_100M_WIRELESS-	CLOCK(negative)
12	NC	NC
13	PCH_100M_WIRELESS	CLOCK(positive)
14	NC	NC
15	Ground	Ground
16	NC	NC
17	NC	NC
18	Ground	Ground
19	NC	NC
20	WLAN_DISABLE-	DAC output

21	Ground	Ground
22	PCIE_RST-	Reset
23	PCIe_WIRELESS_RX-	Receive(negative)
24	3VSB	Power
25	PCIe_WIRELESS_RX+	Receive(positive)
26	Ground	Ground
27	Ground	Ground
28	V_1P5	Power
29	Ground	Ground
30	SMB_CLK_RESUME	SMbus CLOCK
31	PCIe_WIRELESS_TX-	Transmit(negative)
32	SMB_DATA_RESUME	SMbus DATA
33	PCIe_WIRELESS_TX+	Transmit(positive)
34	Ground	Ground
35	Ground	Ground
36	USB_PCH_DN10	DATA(negative)
37	Ground	Ground
38	USB_PCH_DP10	DATA(Positive)
39	3VSB	Power
40	Ground	Ground
41	3VSB	Power
42	NC	NC
43	Ground	Ground
44	3VSB	Power
45	NC	NC
46	NC	NC
47	NC	NC
48	V_1P5	Power
49	NC	NC
50	Ground	Ground
51	NC	NC
52	3VSB	Power
GND1	Ground	Ground
GND2	Ground	Ground

Table 16: MiniPCIe slot For WLAN signals

Figure 16: MiniPCIe slot For SSD/TV card pin-out

Pin	Signal Name	Description
1	NC	NC
2	3VSB	Power
3	NC	NC
4	Ground	Ground
5	NC	NC
6	V_1P5	Power
7	CLKREQ_TV-	CLKREQ
8	NC	NC
9	Ground	Ground
10	NC	NC
11	PCH_100M_TVBD-	CLOCK(negative)
12	NC	NC
13	PCH_100M_TVBD	CLOCK(positive)
14	NC	NC
15	Ground	Ground
16	NC	NC
17	NC	NC
18	Ground	Ground
19	NC	NC
20	NC	NC
21	Ground	Ground

22	PCIE_RST-	Reset
23	PCIe_TVBD_RX-_R	Receive(negative)
24	3VSB	Power
25	PCIe_TVBD_RX+_R	Receive(positive)
26	Ground	Ground
27	Ground	Ground
28	V_1P5	Power
29	Ground	Ground
30	SMB_CLK_MAIN	SMbus CLOCK
31	PCIe_TVBD_TX-_R	Transmit(negative)
32	SMB_DATA_MAIN	SMbus DATA
33	PCIe_TVBD_TX+_R	Transmit(positive)
34	Ground	Ground
35	Ground	Ground
36	USB_PCH_DN9	DATA(negative)
37	Ground	Ground
38	USB_PCH_DP9	DATA(Positive)
39	3VSB	Power
40	Ground	Ground
41	3VSB	Power
42	NC	NC
43	Ground	Ground
44	3VSB	Power
45	NC	NC
46	NC	NC
47	NC	NC
48	V_1P5	Power
49	NC	NC
50	Ground	Ground
51	NC	NC
52	3VSB	Power
GND1	Ground	Ground
GND2	Ground	Ground

Table 17: MiniPCIe slot For SSD/TV card signals

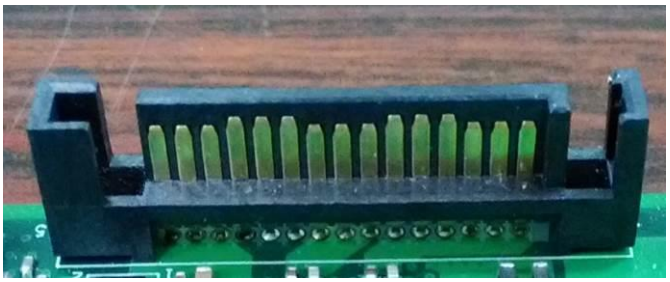


Figure 17: SATA Power Cable pin-out

Pin	Signal Name	Description
1	VCC3	Power
2	VCC3	Power
3	VCC3	Power
4	GND	Ground
5	GND	Ground
6	GND	Ground
7	VCC	Power
8	VCC	Power
9	VCC	Power
10	GND	Ground
11	RES	NC
12	GND	Ground
13	+12V	Power
14	+12V	Power
15	+12V	Power

Table 18: SATA Power Cable signals

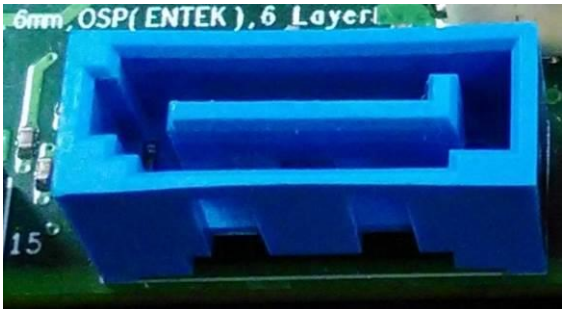


Figure 18: SATA Header pin-out

Pin	Signal Name	Description
1	GND	Ground
2	SATAHDR_TXP0_C	SATA DATA Transmit(positive)
3	SATAHDR_TXN0_C	SATA DATA Transmit(negative)
4	GND	Ground
5	SATAHDR_RXN0_C	SATA DATA Receive(negative)
6	SATAHDR_RXP0_C	SATA DATA Receive(positive)
7	GND	Ground
8	G1	NC
9	G2	NC

Table 19: SATA Header signals

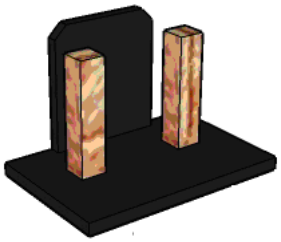


Figure 19: Backlight enable on/off control (MB Location J37)

Pin	Signal Name
1	GND
2	PANEL_OFF

Table 20: Backlight enable on/off control (MB Location J37)

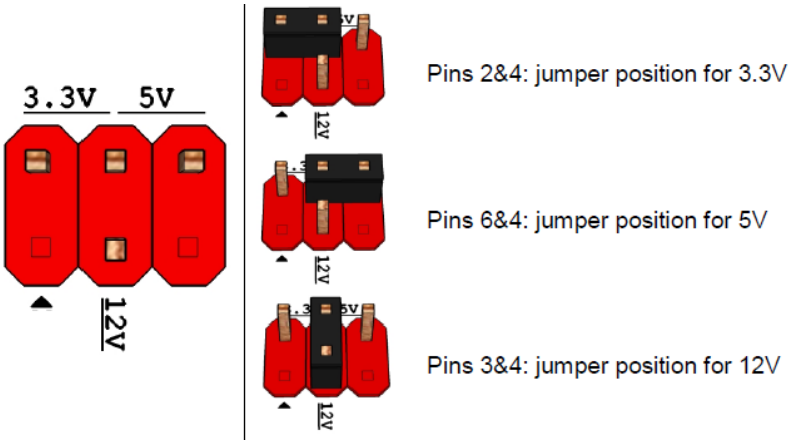


Figure 20: Panel power Header pin-out (MB Location J20)

Pin	Signal Name	Description
1	Key	No pin
2	3.3V	3.3V option
3	12V	12V option
4	LCD_VCC	Send voltage to connector
5	Key	No pin
6	5V	5V option (default)

Table 21: Panel power Header signal (MB Location J20)

Figure 22: Alternate Power LED Header pin-out

Pin	Signal Name
1	Main Color LED
2	Key
3	Alternative color LED

Table 23: Alternate Power LED Header signal

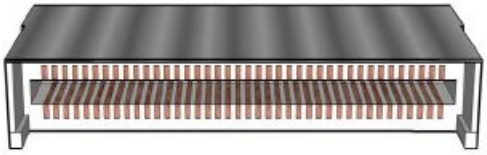


Figure 24: eDP Connector(BOM option)

Pin	Signal	Description
1	NC	NC
2	GND	Ground
3	DRX3N	MAIN LINK
4	DRX3P	MAIN LINK
5	GND	Ground
6	DRX2N	MAIN LINK
7	DRX2P	MAIN LINK
8	GND	Ground
9	DRX1N	MAIN LINK
10	DRX1P	MAIN LINK
11	GND	Ground
12	DRX0N	MAIN LINK
13	DRX0P	MAIN LINK
14	GND	Ground
15	DAUXP	Aux channel
16	DAUXN	Aux channel
17	GND	Ground
18	3.3V/5V/12V	Selectable LCD power output
19	3.3V/5V/12V	Selectable LCD power output
20	3.3V/5V/12V	Selectable LCD power output
21	3.3V/5V/12V	Selectable LCD power output
22	NC	NC
23	GND	Ground
24	GND	Ground
25	GND	Ground
26	GND	Ground

27	HPD	Hot plug detection
28	GND	Ground
29	GND	Ground
30	GND	Ground
31	GND	Ground
32	BKLT_EN	
33	BKLT_CTRL	
34	NC	NC
35	NC	NC
36	BKLT_PWR	Selectable BKLT power output
37	BKLT_PWR	Selectable BKLT power output
38	BKLT_PWR	Selectable BKLT power output
39	BKLT_PWR	Selectable BKLT power output
40	NC	NC

Table 24: 40-pin eDP Connector pin-out reference

MITAC Desktop Board PH12SI

BIOS Specification

1. MAIN PAGE

Main	Advanced	Chipset	Security	Boot	Save & Exit

BIOS Information		Item help
BIOS Vendor	American Megatrends	
Core Version	5.12	
Compliancy	UEFI 2.4 ; PI 1.4	
BIOS Version	D7580X01	
Build Date	10/21/2016	
		→←: Select Screen
Processor Information		↑↓: Select Item
Intel(R) CORE(TM) [CPU NAME] @ [CPU Freq.] GHZ		Enter: Select
		+/- : Change Opt.
Total Memory	8192 MB	F1: General Help
Memory Frequency	2133 MHz	F2: Previous Values
		F3: Optimized Defaults
		F4: Save & Reset
System Date	[Mon mm/dd/yyyy]	ESC: Exit
System Time	[hh:mm:ss]	

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Field Name	**BIOS Vendor**
Default Value	American Megatrends
Comment	This field is not selectable. There is no help text associated with it.

Field Name	**Core Version**
Default Value	5.12
Comment	This field is not selectable. There is no help text associated with it.

Field Name	**Compliancy**
Default Value	UEFI 2.4 ; PI 1.3
Comment	This field is not selectable. There is no help text associated with it.

Field Name	**BIOS Version**
Default Value	Display the version of the BIOS
Comment	This field is not selectable. There is no help text associated with it.

Field Name	**Build Date**
Default Value	Display build date of the BIOS
Comment	This field is not selectable. There is no help text associated with it.

Field Name	**Processor Information**
Value	Display the installed CPU brand.

Comment	This field is not selectable. There is no help text associated with it.

Field Name	**Total Memory**
Value	Display the installed memory size.
Comment	This field is not selectable. There is no help text associated with it.

Field Name	**Memory Frequency**
Value	Display the installed memory frequency.
Comment	This field is not selectable. There is no help text associated with it.

Field Name	**System Date**
Default Value	[xxx, mm dd yyyy]
Possible Value	[xxx, xx:xx:xxxx]
Help	Set the Date. Use Tab to switch between Date elements.

Field Name	**System Time**
Default Value	[hh :mm :ss]
Possible Value	[xx :xx :xx]
Help	Set the Time. Use Tab to switch between Time elements.

2. ADVANCED PAGE

Main	Advanced	Chipset	Security	Boot	Save & Exit

►CPU Configuration	**Item help**
►Power & Performance	
►PCH-FW Configuration	
►Trusted Computing	**→←: Select Screen**
►ACPI Settings	**↑↓: Select Item**
►SMART Settings	**Enter:Select**
►SIO Configuration	**+/- : Change Opt**
►S5 RTC Wake Settings	**F1: General Help**
►AMI Graphic Output Protocol Policy	**F2: Previous Values**
►Network Stack Configuration	**F3: Optimized Defaults**
►CSM Configuration	**F4: Save & Reset**
►USB Configuration	**ESC: Exit**

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Field Name	**CPU Configuration**
Help	CPU Configuration Parameters
Comment	Press Enter when selected to go into the associated Sub-Menu.

Field Name	**Power & Performance**
Help	Power & Performance Options
Comment	Press Enter when selected to go into the associated Sub-Menu.

Field Name	**PCH-FW Configuration**
Help	Configure Management Engine Technology Parameters
Comment	Press Enter when selected to go into the associated Sub-Menu.

Field Name	**Trusted Computing**
Help	Trusted Computing Settings
Comment	Press Enter when selected to go into the associated Sub-Menu.

Field Name	**ACPI Settings**
Help	System ACPI Parameters.
Comment	Press Enter when selected to go into the associated Sub-Menu.

Field Name	**SMART Settings**
Help	System SMART Settings.
Comment	Press Enter when selected to go into the associated Sub-Menu.

Field Name	**SIO Configuration**

Help	System Super IO Chip Parameters.
Comment	Press Enter when selected to go into the associated Sub-Menu.

Field Name	**S5 RTC Wake Settings**
Help	Enable system to wake from S5 using RTC alarm
Comment	Press Enter when selected to go into the associated Sub-Menu.

Field Name	**AMI Graphic Output Protocol Policy**
Help	User Select Monitor Output by Graphic Output Protocol
Comment	Press Enter when selected to go into the associated Sub-Menu.

Field Name	**Network Stack Configuration**
Help	Network Stack Settings.
Comment	Press Enter when selected to go into the associated Sub-Menu.

Field Name	**CSM Configuration**
Help	CSM configuration: Enable/Disable, Option Rom execution setting, etc.
Comment	Press Enter when selected to go into the associated Sub-Menu.

Field Name	**USB Configuration**
Help	USB Configuration Parameters.
Comment	Press Enter when selected to go into the associated Sub-Menu.

2.1 CPU CONFIGURATION

Main	Advanced	Chipset	Security	Boot	Save & Exit

CPU Configuration		Item help
Type	Intel(R) Core(TM) CPU [CPU NAME] @ [CPU Freq.] GHz	
ID	0x906E9	
Speed	2800 MHz	
L1 Data Cache	32 KB x 4	
L1 Instruction Cache	32 KB x 4	
L2 Cache	256 KB x 4	
L3 Cache	6MB	
L4 Cache	N/A	
VMX	Supported	→←: Select Screen
SMX/TXT	Supported	↑↓: Select Item
		Enter: Select
Hardware Prefetcher	[Enabled]	+/- : Change Opt
Adjacent Cache Line Prefetch	[Enabled]	F1: General Help
Intel (VMX) Virtualization Technology	[Enabled]	F2: Previous Values
Active Processor Cores	[All]	F3: Optimized Defaults
Hyper-threading	[Enabled]	F4: Save & Reset
Intel Trusted Execution Technology	[Disabled]	ESC: Exit

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Field Name	**Type**
Default Value	Displays the Processor Type.
Comment	This field is not selectable. There is no help text associated with it.

Field Name	**ID**
Default Value	Displays the Processor ID.
Comment	This field is not selectable. There is no help text associated with it.

Field Name	**Speed**
Default Value	Displays the Processor Speed.
Comment	This field is not selectable. There is no help text associated with it.

Field Name	**L1 Data Cache**
Default Value	Displays the Processor L1 Data Cache size.
Comment	This field is not selectable. There is no help text associated with it.

Field Name	**L1 Instruction Cache**
Default Value	Displays the Processor L1 Instruction Cache size.
Comment	This field is not selectable. There is no help text associated with it.

Field Name	**L2 Cache**
Default Value	Displays the Processor L2 Cache size.
Comment	This field is not selectable. There is no help text associated with it.

Field Name	**L3 Cache**
Default Value	Displays the Processor L3 Cache size.
Comment	This field is not selectable. There is no help text associated with it.

Field Name	**L4 Cache**
Default Value	Displays the Processor L4 eDRAM size.
Comment	This field is not selectable. There is no help text associated with it.

Field Name	**VMX**
Default Value	VMX Supported or Not
Comment	This field is not selectable. There is no help text associated with it.

Field Name	**SMX/TXT**
Default Value	SMX/TXT Supported or Not
Comment	This field is not selectable. There is no help text associated with it.

Field Name	**Hardware Prefetcher**
Default Value	[Enabled]
Possible Value	Enabled Disabled
Help	To turn on/off the MLC streamer prefetcher.

Field Name	**Adjacent Cache Line Prefetch**
Default Value	[Enabled]
Possible Value	Enabled Disabled
Help	To turn on/off prefetching of adjacent cache lines.

Field Name	**Intel (VMX) Virtualization Technology**
Default Value	[Enabled]
Possible Value	Enabled Disabled
Help	When enabled, a VMM can utilize the additional hardware capabilities provided by Vanderpool Technology.

Field Name	**Active Processor Cores**
Default Value	[All]
Possible Value	All

	1/2/3
Help	Number of cores to enable in each processor package.

Field Name	**Hyper-threading**
Default Value	[Enabled]
Possible Value	Enabled Disabled
Help	Enabled for Windows XP and Linux (OS optimized for Hyper-Threading Technology) and Disabled for other OS (OS not optimized for Hyper-Threading Technology).

Field Name	**Intel Trusted Execution Technology**
Default Value	[Disabled]
Possible Value	Disabled Enabled
Help	Enables utilization of additional hardware capabilities provided by Intel (R) Trusted Execution Technology.\n\nChanges require a full power cycle to take effect.

2.2 POWER & PERFORMANCE

Main	Advanced	Chipset	Boot	Security	Save & Exit

Power & Performance	Item help
►CPU – Power Management Control	→←: Select Screen ↑↓: Select Item Enter: Select +/- : Change Opt F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Reset ESC: Exit

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Field Name	**CPU – Power Management Control**
Help	CPU – Power Management Control Options
Comment	Press Enter when selected to go into the associated Sub-Menu.

2.2.1 CPU- Power Management Control

Main	Advanced	Chipset	Boot	Security	Save & Exit

CPU- Power Management Control		Item help
Intel(R) SpeedStep(tm)	[Enabled]	→←: Select Screen
Intel(R) Speed Shift Technology	[Enabled]	↑↓: Select Item
Turbo Mode	[Enabled]	Enter: Select
C states	[Enabled]	+/- : Change Opt
Enhanced C-states	[Enabled]	F1: General Help
Package C State Limit	[Auto]	F2: Previous Values
		F3: Optimized Defaults
		F4: Save & Reset
		ESC: Exit

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Field Name	**Intel(R) SpeedStep(tm)**
Default Value	[Enabled]
Possible Value	Enabled Disabled
Help	Allows more than two frequency ranges to be supported.

Field Name	**Intel(R) Speed Shift Technology**
Default Value	[Enabled]
Possible Value	Enabled Disabled
Help	Enable/Disable Intel(R) Speed Shift Technology support. Enabling will expose the CPPC v2 interface to allow for hardware controlled P-states.

Field Name	**Turbo Mode**
Default Value	[Enabled]
Possible Value	Enabled Disabled
Help	Enable/Disable processor Turbo Mode (requires EMTTM enabled too). AUTO means enabled, unless max turbo ratio is bigger than 16 - SKL A0 W/A

Field Name	**CPU C states**
Default Value	[Enabled]
Possible Value	Enabled Disabled
Help	Enable/Disable CPU Power Management. Allows CPU to go to C states when it's not 100% utilized.

Field Name	**Enhanced C-states**
Default Value	[Enabled]
Possible Value	Enabled Disabled
Help	Enable/Disable C1E. When enabled, CPU will switch to minimum speed when all cores enter C-State.

Field Name	**Package C state limit**
Default Value	[Auto]
Possible Value	Auto Cpu Default C7S C7 C6 C3 C2 C0/C1
Help	Maximum Package C State Limit Setting. Cpu Default: Leaves to Factory default value.Auto: Initializes to deepest available Package C State Limit.

2.3 PCH-FW CONFIGURATION

Main	Advanced	Chipset	Boot	Security	Save & Exit

►AMT Configuration	**Item help**
	→←: Select Screen
	↑↓: Select Item
	Enter: Select
	+/- : Change Opt
	F1: General Help
	F2: Previous Values
	F3: Optimized Defaults
	F4: Save & Reset
	ESC: Exit

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Field Name	**AMT Configuration**
Help	Configure Intel(R) Active Management Technology Parameters
Comment	Press Enter when selected to go into the associated Sub-Menu.

2.3.1 AMT Configuration

Main	Advanced	Chipset	Boot	Security	Save & Exit

		Item help
ASF support	[Enabled]	
USB Provisioning of AMT	[Disabled]	→←: Select Screen
►CIRA Configuration		↑↓: Select Item
►ASF Configuration		Enter: Select
►Secure Erase Configuration		+/- : Change Opt
		F1: General Help
		F2: Previous Values
		F3: Optimized Defaults
		F4: Save & Reset
		ESC: Exit

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Field Name	**ASF support**
Default Value	[Enabled]
Possible Value	Enabled Disabled
Help	Enable/Disable Alert Standard Format support.

Field Name	**USB Provisioning of AMT**
Default Value	[Disabled]
Possible Value	Enabled Disabled
Help	Enable/Disable of AMT USB Provisioning.

Field Name	**CIRA Configuration**
Help	Configure Remote Assistance Process parameters.
Comment	Press Enter when selected to go into the associated Sub-Menu.

Field Name	**ASF Configuration**
Help	Configure Alert Standard Format parameters.
Comment	Press Enter when selected to go into the associated Sub-Menu.

Field Name	**Secure Erase Configuration**
Help	Secure Erase configuration menu
Comment	Press Enter when selected to go into the associated Sub-Menu.

2.3.1.1 CIRA Configuration

Main	Advanced	Chipset	Boot	Security	Save & Exit

		Item help
Activate Remote Assistance Process	[Enabled]	
CIRA Timeout	0	
		→←: Select Screen ↑↓: Select Item Enter: Select +/- : Change Opt F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Reset ESC: Exit

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Field Name	**Activate Remote Assistance Process**
Default Value	[Disabled]
Possible Value	Enabled Disabled
Help	Trigger CIRA boot Note: Network Access must be activated first from MEBx Setup.

Field Name	**CIRA Timeout**
Default Value	[0]
Possible Value	0~255
Help	OEM defined timeout for MPS connection to be established. 0 - use the default timeout value of 60 seconds. 255 - MEBx waits until the connection succeeds

2.3.1.2 ASF Configuration

Main	Advanced	Chipset	Boot	Security	Save & Exit

		Item help
PET Progress	[Enabled]	
WatchDog	[Disabled]	
OS Timer	0	→←: Select Screen
BIOS Timer	0	↑↓: Select Item
		Enter: Select
		+/- : Change Opt
		F1: General Help
		F2: Previous Values
		F3: Optimized Defaults
		F4: Save & Reset
		ESC: Exit

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Field Name	**PET Progress**
Default Value	[Enabled]
Possible Value	Enabled Disabled
Help	Enable/Disable PET Events Progress to receive PET Events.

Field Name	**Activate Remote Assistance Process**
Default Value	[Disabled]
Possible Value	Enabled Disabled
Help	Enable/Disable WatchDog Timer

Field Name	**OS Timer**
Default Value	[0]
Possible Value	0~65535
Help	Set OS watchdog timer

Field Name	**BIOS Timer**
Default Value	[0]
Possible Value	0~65535
Help	Set BIOS watchdog timer

2.3.1.3 Secure Erase Configuration

Main	Advanced	Chipset	Boot	Security	Save & Exit

		Item help
Secure Erase mode	[Simulated]	
Force Secure Erase	[Disabled]	
		→←: Select Screen
		↑↓: Select Item
		Enter: Select
		+/- : Change Opt
		F1: General Help
		F2: Previous Values
		F3: Optimized Defaults
		F4: Save & Reset
		ESC: Exit

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Field Name	**Secure Erase mode**
Default Value	[Simulated]
Possible Value	Simulated Real
Help	Change Secure Erase module behavior: Simulated: Performs SE flow without erasing SSD Real: Erase SSD.

Field Name	**Force Secure Erase**
Default Value	[Disabled]
Possible Value	Enabled Disabled
Help	Force Secure Erase on next boot

2.4 TRUSTED COMPUTING

Main	Advanced	Chipset	Boot	Security	Save & Exit

TPM20 Device Found		Item help
Security Device Support	[Enable]	→←: Select Screen
		↑↓: Select Item
Pending operation	[None]	Enter: Select
TPM2.0 UEFI Spec Version	[TCG_2]	+/- : Change Opt
		F1: General Help
		F2: Previous Values
		F3: Optimized Defaults
		F4: Save & Reset
		ESC: Exit

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Field Name	**Security Device SUPPORT**
Default Value	[Enable]
Possible Value	Enable Disable
Help	Enables or Disables BIOS support for security device. O.S. will not show Security Device. TCG EFI protocol and INT1A interface will not be available.

Field Name	**Pending operation**
Default Value	[None]
Possible Value	None TPM Clear
Help	Schedule an Operation for the Security Device. NOTE: Your Computer will reboot during restart in order to change State of Security Device.

Field Name	**Security Device SUPPORT**
Default Value	[TCG_2]
Possible Value	TCG_1_2 TCG_2
Help	Select the TCG2 Spec Version Support, TCG_1_2: the Compatible mode for Win8/Win10, TCG_2: Support new TCG2 protocol and event format for Win10 or later

2.5 ACPI SETTINGS

Main	Advanced	Chipset	Boot	Security	Save & Exit

ACPI Settings		Item help
Enable ACPI Auto Configuration	[Disabled]	→←: Select Screen
		↑↓: Select Item
Enable Hibernation	[Enabled]	Enter: Select
ACPI Sleep State	[S3 (Suspend to RAM)]	+/- : Change Opt
		F1: General Help
		F2: Previous Values
		F3: Optimized Defaults
		F4: Save & Reset
		ESC: Exit

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Field Name	**Enable ACPI Auto Configuration**
Default Value	[Disabled]
Possible Value	Enabled Disabled
Help	Enables or Disables BIOS ACPI Auto Configuration.

Field Name	**Enable Hibernation**
Default Value	[Enabled]
Possible Value	Enabled Disabled
Help	Enables or Disables System ability to Hibernate (OS/S4 Sleep State). This option may not be effective with some operating systems.

Field Name	**ACPI Sleep State**
Default Value	[S3 (Suspend to RAM)]
Possible Value	Suspend Disabled S3 (Suspend to RAM)
Help	Select the highest ACPI sleep state the system will enter when the SUSPEND button is pressed.

2.6 SMART SETTINGS

Main	Advanced	Chipset	Security	Boot	Save & Exit

SMART Settings

SMART Self Test [Disabled]

Item help

→←: Select Screen
↑↓: Select Item
Enter: Select
+/- : Change Opt
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Reset
ESC: Exit

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Field Name	**SMART Self Test**
Default Value	[Disabled]
Possible Value	Disabled Enabled
Help	Run SMART Self Test on all HDDs during POST.

2.7 SUPER IO CONFIGURATION

Main	Advanced	Chipset	Security	Boot	Save & Exit

SIO Configuration		Item help
Super IO Chip	NCT6104D	→←: Select Screen
►Serial Port 1 Configuration		↑↓: Select Item
►Serial Port 2 Configuration		Enter: Select
►Serial Port 3 Configuration		+/- : Change Opt
►Serial Port 4 Configuration		F1: General Help
►Parallel Port Configuration		F2: Previous Values
		F3: Optimized Defaults
		F4: Save & Reset
		ESC: Exit

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Field Name	**Serial Port 1 Configuration**
Help	Set Parameters of Serial Port 1 (COMC)
Comment	Press Enter when selected to go into the associated Sub-Menu.

Field Name	**Serial Port 2 Configuration**
Help	Set Parameters of Serial Port 2 (COMD)
Comment	Press Enter when selected to go into the associated Sub-Menu.

Field Name	**Serial Port 3 Configuration**
Help	Set Parameters of Serial Port 3 (COME)
Comment	Press Enter when selected to go into the associated Sub-Menu.

Field Name	**Serial Port 4 Configuration**
Help	Set Parameters of Serial Port 4 (COMA)
Comment	Press Enter when selected to go into the associated Sub-Menu.

Field Name	**Parallel Port Configuration**
Help	Set Parameters of Parallel Port (LPT/LPTE)
Comment	Press Enter when selected to go into the associated Sub-Menu.

2.7.1 Serial Port 1 Configuration

Main	Advanced	Chipset	Security	Boot	Save & Exit

Serial Port 1 Configuration		Item help
Serial Port	[Enabled]	→←: Select Screen
Device Settings	IO=2F8h; IRQ=3;	↑ ↓ : Select Item
		Enter: Select
Change Settings	[Auto]	+/- : Change Opt
		F1: General Help
		F2: Previous Values
		F3: Optimized Defaults
		F4: Save & Reset
		ESC: Exit

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Field Name	**Serial Port**
Default Value	[Enabled]
Possible Value	Disabled Enabled
Help	Enable or Disable Serial Port(COM)

Field Name	**Device Settings**
Default Value	Device Super IO COM1 Address and IRQ.
Comment	This field is not selectable. There is no help text associated with it.

Field Name	**Change Settings**
Default Value	[Auto]
Possible Value	Auto IO=2F8h; IRQ=3; IO=3F8h; IRQ=3,4,5,6,7,9,10,11,12; IO=2F8h; IRQ=3,4,5,6,7,9,10,11,12; IO=3E8h; IRQ=3,4,5,6,7,9,10,11,12; IO=2E8h; IRQ=3,4,5,6,7,9,10,11,12;
Help	Select an optimal settings for Super IO Device

2.7.2 Serial Port 2 Configuration

Main	Advanced	Chipset	Security	Boot	Save & Exit

Serial Port 2 Configuration		Item help
Serial Port	[Enabled]	→←: Select Screen
Device Settings	IO=3E8h; IRQ=7;	↑ ↓ : Select Item
		Enter: Select
Change Settings	[Auto]	+/- : Change Opt
		F1: General Help
		F2: Previous Values
		F3: Optimized Defaults
		F4: Save & Reset
		ESC: Exit

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Field Name	**Serial Port**
Default Value	[Enabled]
Possible Value	Disabled Enabled
Help	Enable or Disable Serial Port(COM)

Field Name	**Device Settings**
Default Value	Device Super IO COM2 Address and IRQ.
Comment	This field is not selectable. There is no help text associated with it.

Field Name	**Change Settings**
Default Value	[Auto]
Possible Value	Auto IO=3E8h; IRQ=7; IO=3E8h; IRQ=3,4,5,6,7,9,10,11,12; IO=2E8h; IRQ=3,4,5,6,7,9,10,11,12; IO=2F0h; IRQ=3,4,5,6,7,9,10,11,12; IO=2E0h; IRQ=3,4,5,6,7,9,10,11,12;
Help	Select an optimal settings for Super IO Device

2.7.3 Serial Port 3 Configuration

Main	Advanced	Chipset	Security	Boot	Save & Exit

Serial Port 3 Configuration		Item help
Serial Port	[Enabled]	→←: Select Screen
Device Settings	IO=2E8; IRQ=7;	↑ ↓ : Select Item
		Enter: Select
Change Settings	[Auto]	+/- : Change Opt
		F1: General Help
		F2: Previous Values
		F3: Optimized Defaults
		F4: Save & Reset
		ESC: Exit

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Field Name	**Serial Port**
Default Value	[Enabled]
Possible Value	Disabled Enabled
Help	Enable or Disable Serial Port(COM)

Field Name	**Device Settings**
Default Value	Device Super IO COM3 Address and IRQ.
Comment	This field is not selectable. There is no help text associated with it.

Field Name	**Change Settings**
Default Value	[Auto]
Possible Value	Auto IO=2E8h; IRQ=7; IO=2E8h; IRQ=3,4,5,6,7,9,10,11,12; IO=3E8h; IRQ=3,4,5,6,7,9,10,11,12; IO=2F0h; IRQ=3,4,5,6,7,9,10,11,12; IO=3F0h; IRQ=3,4,5,6,7,9,10,11,12;
Help	Select an optimal settings for Super IO Device

2.7.4 Serial Port 4 Configuration

Main	Advanced	Chipset	Security	Boot	Save & Exit

Serial Port 4 Configuration		Item help
Serial Port	[Enabled]	→←: Select Screen
Device Settings	IO=3F8; IRQ=4;	↑ ↓ : Select Item
		Enter: Select
Change Settings	[Auto]	+/- : Change Opt
		F1: General Help
		F2: Previous Values
		F3: Optimized Defaults
		F4: Save & Reset
		ESC: Exit

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Field Name	**Serial Port**
Default Value	[Enabled]
Possible Value	Disabled Enabled
Help	Enable or Disable Serial Port(COM)

Field Name	**Device Settings**
Default Value	Device Super IO COM4 Address and IRQ.
Comment	This field is not selectable. There is no help text associated with it.

Field Name	**Change Settings**
Default Value	[Auto]
Possible Value	Auto IO=3F8h; IRQ=4; IO=3F8h; IRQ=3,4,5,6,7,9,10,11,12; IO=2F8h; IRQ=3,4,5,6,7,9,10,11,12; IO=3E8h; IRQ=3,4,5,6,7,9,10,11,12; IO=2E8h; IRQ=3,4,5,6,7,9,10,11,12;
Help	Select an optimal settings for Super IO Device

2.7.5 Parallel Port Configuration

Main	Advanced	Chipset	Security	Boot	Save & Exit

Parallel Port Configuration		Item help
Parallel Port	[Enabled]	→←: Select Screen
Device Settings	IO=378h; IRQ=5	↑ ↓ : Select Item
		Enter: Select
Change Settings	[Auto]	+/- : Change Opt
Device Mode	[STD Printer Mode]	F1: General Help
		F2: Previous Values
		F3: Optimized Defaults
		F4: Save & Reset
		ESC: Exit

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Field Name	**Parallel Port**
Default Value	[Enabled]
Possible Value	Disabled Enabled
Help	Enable or Disable Parallel Port(LPT/LPTE)

Field Name	**Device Settings**
Default Value	Device Super IO Parallel Port Address/IRQ.
Comment	This field is not selectable. There is no help text associated with it.

Field Name	**Change Settings**
Default Value	[Auto]
Possible Value	Auto IO=378h; IRQ=5; IO=378h; IRQ=5,6,7,9,10,11,12; IO=278h; IRQ=5,6,7,9,10,11,12; IO=3BCh; IRQ=5,6,7,9,10,11,12;
Help	Select an optimal settings for Super IO Device

Field Name	**Device Mode**
Default Value	[STD Printer Mode]
Possible Value	STD Printer Mode SPP Mode EPP-1.9 and SPP Mode
Help	Change the Printer Port mode

2.8 S5 RTC WAKE SETTINGS

Main	Advanced	Chipset	Boot	Security	Save & Exit

		Item help
Wake system with Fixed Time	[Disable]	
Wake up hour	0	
Wake up minute	0	→←: Select Screen
Wake up second	0	↑↓: Select Item
Wake up minute increase	1	Enter: Select
		+/- : Change Opt
		F1: General Help
		F2: Previous Values
		F3: Optimized Defaults
		F4: Save & Reset
		ESC: Exit

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Field Name	**Wake system from S5**
Default Value	[Disabled]
Possible Value	Disabled Fixed Time Dynamic Time
Help	Enable or disable System wake on alarm event. Select FixedTime, system will wake on the hr::min::sec specified. Select DynamicTime , System will wake on the current time + Increase minute(s)

Field Name	**Wake up hour**
Default Value	[0]
Possible Value	0-23
Help	Select 0-23 For example enter 3 for 3am and 15 for 3pm

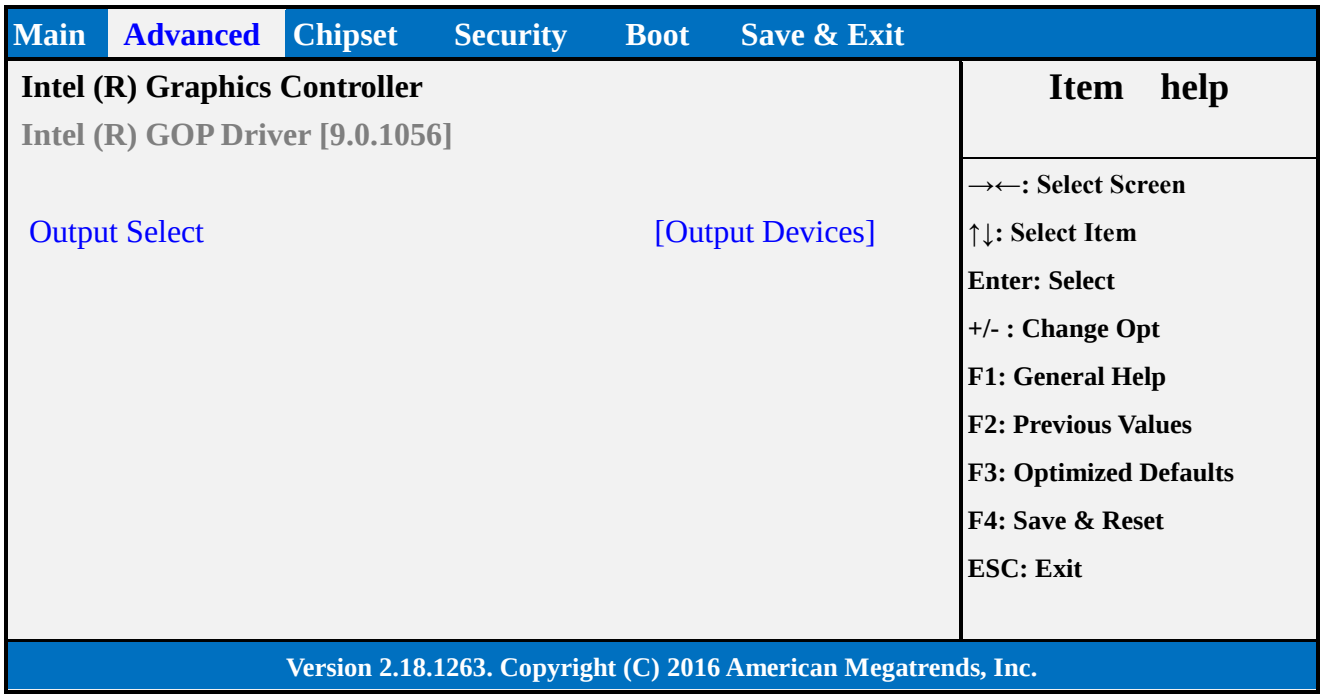
Field Name	**Wake up minute**
Default Value	[0]
Possible Value	0-59
Help	Select 0 – 59 for Minute

Field Name	**Wake up second**
Default Value	[0]
Possible Value	0 - 59
Help	Select 0 – 59 for Second

Field Name	**Wake up minute increase**
Default Value	[0]

Possible Value	0 - 59
Help	1 – 5

2.9 AMI GRAPHIC OUTPUT PROTOCOL POLICY



Field Name	**Display Device Driver Version Information**
Default Value	By Graphic card
Possible Value	By Graphic card
Help	NA

Field Name	**Output Select**
Default Value	EDP1
Possible Value	EDP1 DP1 HDMI3
Help	Output Interface

2.10 NETWORK STACK CONFIGURATION

Main	Advanced	Chipset	Security	Boot	Save & Exit

		Item help
Network stack	[Enabled]	
Ipv4 PXE Support	[Enabled]	
Ipv6 PXE Support	[Enabled]	
		→←: Select Screen ↑↓: Select Item Enter: Select +/- : Change Opt F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Reset ESC: Exit

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Field Name	**Network stack**
Default Value	[Disabled]
Possible Value	Disabled Enabled
Help	Enable/Disable UEFI Network stack.

Field Name	**Ipv4 PXE Support**
Default Value	[Disabled]
Possible Value	Disabled Enabled
Help	Enable Ipv4 PXE Boot Support. If disabled IPV4 PXE boot option will not be created.

Field Name	**Ipv4 HTTP Support**
Default Value	[Disabled]
Possible Value	Disabled Enabled
Help	Enable Ipv4 HTTP Boot Support. If disabled IPV4 HTTP boot option will not be created.

Field Name	**Ipv6 PXE Support**
Default Value	[Disabled]
Possible Value	Disabled

	Enabled
Help	Enable Ipv6 PXE Boot Support. If disabled IPV6 PXE boot option will not be created.

Field Name	**Ipv6 HTTP Support**
Default Value	[Disabled]
Possible Value	Disabled Enabled
Help	Enable Ipv6 HTTP Boot Support. If disabled IPV6 HTTP boot option will not be created.

2.11 CSM CONFIGURATION

Main	Advanced	Chipset	Security	Boot	Save & Exit

Compatibility Support Module Configuration		Item help
CSM Support	[Disabled]	
CSM16 Module Version	00.20	
Option Rom execution		→←: Select Screen
		↑↓: Select Item
Network	[Do not launch]	Enter: Select
Storage	[UEFI]	+/- : Change Opt
Video	[UEFI]	F1: General Help
Other PCI devices	[UEFI]	F2: Previous Values
		F3: Optimized Defaults
		F4: Save & Reset
		ESC: Exit

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Field Name	**CSM support**
Default Value	[Disabled]
Possible Value	Disabled Enabled
Help	Enable/Disable CSM Support.

Field Name	**CSM16 Module Version**
Default Value	00.20
Comment	This field is not selectable. There is no help text associated with it.

Field Name	**Network**
Default Value	[DO not launch]
Possible Value	DO not launch UEFI Legacy
Help	Controls the execution of UEFI and Legacy PXE OpROM.

Field Name	**Storage**
Default Value	[UEFI]
Possible Value	DO not launch UEFI Legacy

Help	Controls the execution of UEFI and Legacy Storage OpROM.

Field Name	**Video**
Default Value	[UEFI]
Possible Value	UEFI Legacy
Help	Controls the execution of UEFI and Legacy Video OpROM.

Field Name	**Other PCI devices**
Default Value	[UEFI]
Possible Value	DO not launch UEFI Legacy
Help	Determines OpROM execution policy for devices other than Network, Storage, or Video.

2.12 USB CONFIGURATION

Main	Advanced	Chipset	Security	Boot	Save & Exit

USB Configuration		Item help
USB Devices:		
1 Keyboard, 1 Mouse		
Legacy USB Support	[Enabled]	→←: Select Screen
XHCI Hand-off	[Enabled]	↑↓: Select Item
USB Mass Storage Driver Support	[Enabled]	Enter: Select
Port 60/64 Emulation	[Disabled]	+/- : Change Opt
		F1: General Help
		F2: Previous Values
		F3: Optimized Defaults
		F4: Save & Reset
		ESC: Exit

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Field Name	**USB Devices:**
Default Value	Connected USB devices
Comment	This field is not selectable. There is no help text associated with it.

Field Name	**Legacy USB Support**
Default Value	[Enabled]
Possible Value	Disabled Enabled Auto
Help	Enables Legacy USB support. AUTO option disables legacy support if no USB devices are connected. DISABLE option will keep USB device available only for EFI applications.

Field Name	**XHCI Hand-off**
Default Value	[Enabled]
Possible Value	Disabled Enabled
Help	This is a workaround for OSes without XHCI hand-off support. The XHCI ownership change should be claimed by XHCI driver.

Field Name	**USB Mass Storage Driver Support**
Default Value	[Enabled]
Possible Value	Disabled Enabled
Help	Enable/Disable USB Mass Storage Driver Support.

Field Name	**Port 60/64 Emulation**
Default Value	[Disabled]
Possible Value	Disabled Enabled
Help	Enables I/O port 60h/64h emulation support. This should be enabled for the complete USB keyboard legacy support for non-USB aware OSes.

3. CHIPSET PAGE

Main	Advanced	Chipset	Security	Boot	Save & Exit

►System Agent (SA) Configuration ►PCH-IO Configuration	**Item help** **→←: Select Screen** **↑↓: Select Item** **Enter: Select** **+/- : Change Opt** **F1: General Help** **F2: Previous Values** **F3: Optimized Defaults** **F4: Save & Reset** **ESC: Exit**

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Field Name	**System Agent (SA) Configuration**
Help	System Agent (SA) Parameters
Comment	Press Enter when selected to go into the associated Sub-Menu.

Field Name	**PCH-IO Configuration**
Help	PCH Parameters
Comment	Press Enter when selected to go into the associated Sub-Menu.

3.1 SYSTEM AGENT (SA) CONFIGURATION

Main	Advanced	Chipset	Security	Boot	Save & Exit

► Memory Configuration
► Graphics Configuration

Item help

→←: Select Screen
↑↓: Select Item
Enter: Select
+/- : Change Opt
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Reset
ESC: Exit

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Field Name	**Memory Configuration**
Help	Memory Configuration Parameters
Comment	Press Enter when selected to go into the associated Sub-Menu.

Field Name	**Graphics Configuration**
Help	Graphics Configuration
Comment	Press Enter when selected to go into the associated Sub-Menu.

3.1.1 Memory Configuration

Main	Advanced	Chipset	Boot	Security	Save & Exit	
Channel 0 Slot 0				Populated & Enabled		**Item help**
Size				8192 (DDR4)		
Channel 0 Slot 1				Populated & Enabled		→←: Select Screen
Size				8192 (DDR4)		↑↓: Select Item
						Enter: Select
						+/- : Change Opt
						F1: General Help
						F2: Previous Values
						F3: Optimized Defaults
						F4: Save & Reset
						ESC: Exit
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Field Name	**Channel [0:1] Slot 0**
Help	Channel Slot status.
Comment	This field is not selectable. There is no help text associated with it.

Field Name	**Size**
Help	Memory Size in the Slot.
Comment	This field is not selectable. There is no help text associated with it.

Field Name	**Max TOLUD**
Default Value	[Dynamic]
Possible Value	Dynamic 2.5 GB 2.75 GB 3 GB 3.25 GB 3 GB
Help	Maximum Value of TOLUD. Dynamic assignment would adjust TOLUD automatically based on largest MMIO length of installed graphic controller

3.1.2 Graphics Configuration

Main	Advanced	Chipset	Security	Boot	Save & Exit

Graphics Configuration		Item help
Primary Display	[Auto]	→←: Select Screen
Internal Graphics	[Auto]	↑↓: Select Item
GTT Size	[8MB]	Enter: Select
Aperture Size	[256MB]	+/- : Change Opt
DVMT Pre-Allocated	[32M]	F1: General Help
DVMT Total Gfx Mem	[256M]	F2: Previous Values
►LCD Control		F3: Optimized Defaults
		F4: Save & Reset
		ESC: Exit

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Field Name	**Primary Display**
Default Value	[Auto]
Possible Value	AUTO/IGFX/PEG/PCI/SG
Help	Select which of IGFX/PEG/PCI Graphics device should be Primary Display Or select SG for Switchable Gfx.

Field Name	**Internal Graphics**
Default Value	[AUTO]
Possible Value	AUTO/Disabled/Enabled
Help	Keep IGFX enabled based on the setup options.

Field Name	**GTT Size**
Default Value	[8MB]
Possible Value	2MB/4MB/8MB
Help	Select the GTT Size

Field Name	**Aperture Size**
Default Value	[256M]
Possible Value	128MB/256MB/512MB/1024MB/2048MB
Help	Select the Aperture Size Note : Above 4GB MMIO BIOS assignment is automatically enabled when selecting 2048MB aperture. To use this feature, please disable CSM Support.

Field Name	**DVMT Pre-Allocated**
Default Value	[32M]

Possible Value	32M / 64M / 16M / 20M / 24M / 28M / (32M/F7) / 36M / 40M / 44M / 48M / 52M / 56M / 60M
Help	Select DVMT 5.0 Pre-Allocated (Fixed) Graphics Memory size used by the Internal Graphics Device.

Field Name	**DVMT Total Gfx Mem**
Default Value	[256M]
Possible Value	128MB / 256MB / MAX
Help	Select DVMT5.0 Total Graphic Memory size used by the Internal Graphics Device.

Field Name	**LCD Control**
Help	LCD Control
Comment	Press Enter when selected to go into the associated Sub-Menu.

3.1.2.1 LCD Control

Main	Advanced	Chipset	Security	Boot	Save & Exit

LCD Control		Item help
Primary IGFX Boot Display	[VBIOS Default]	→←: Select Screen
Secondary IGFX Boot Display	[Disabled]	↑↓: Select Item
Active LFP	[Disable LFP]	Enter: Select
		+/- : Change Opt
		F1: General Help
		F2: Previous Values
		F3: Optimized Defaults
		F4: Save & Reset
		ESC: Exit

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Field Name	**Primary IGFX Boot Display**
Default Value	[VBIOS Default]
Possible Value	VBIOS Default/DP /LFP /HDMI
Help	Select the Video Device which will be activated during POST. This has no effect if external graphics present. Secondary boot display selection will appear based on your selection. VGA modes will be supported only on primary display

Field Name	**Secondary IGFX Boot Display**
Default Value	[Disabled]
Possible Value	Disabled /DP/ HDMI
Help	Select Secondary Display Device.

Field Name	**Active LFP**
Default Value	[Disabled]
Possible Value	Enabled Disabled
Help	Select the Active LFP Configuration.

3.2 PCH-IO CONFIGURATION

Main	Advanced	Chipset	Security	Boot	Save & Exit

PCH-IO Configuration		Item help
►SATA And RST Configuration		→←: Select Screen
►HD Audio Configuration		↑↓: Select Item
DeepSx Power Policies	[Disabled]	Enter: Select
Wake on LAN Enable	[Enabled]	+/- : Change Opt
State After G3	[S5 State]	F1: General Help
		F2: Previous Values
		F3: Optimized Defaults
		F4: Save & Reset
		ESC: Exit

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Field Name	**SATA And RST Configuration**
Help	SATA Device Option Settings
Comment	Press Enter when selected to go into the associated Sub-Menu.

Field Name	**HD Audio Configuration**
Help	HD Audio Subsystem Configuration Settings
Comment	Press Enter when selected to go into the associated Sub-Menu.

Field Name	**DeepSx Power Policies**
Default Value	[Disabled]
Possible Value	Disabled Enabled in S4-S5
Help	Configure the DeepSx Mode configuration.

Field Name	**Wake on LAN Enable**
Default Value	[Enabled]
Possible Value	Enabled Disabled
Help	Enable/Disable integrated LAN to wake the system.

Field Name	**State After G3**
Default Value	[S5 State]
Possible Value	S0 State S5 State
Help	Specify what state to go to when power is re-applied after a power failure (G3 state).

3.2.1 SATA And RST Configuration

Main	Advanced	Chipset	Security	Boot	Save & Exit

SATA And RST Configuration		Item help
SATA Mode Selection	[AHCI]	→←: Select Screen
		↑↓: Select Item
Serial ATA Port 0	Empty	Enter: Select
Mini Serial ATA Port 1	Empty	+/- : Change Opt
Serial ATA Port 2	Empty	F1: General Help
Serial ATA Port 3	Empty	F2: Previous Values
Serial ATA Port 4	Empty	F3: Optimized Defaults
		F4: Save & Reset
		ESC: Exit

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Field Name	**SATA Mode Selection**
Default Value	[AHCI]
Possible Value	AHCI Intel RST Premium
Help	Determines how SATA controller(s) operate.

Field Name	**Serial ATA Port [0:4]**
Help	Serial ATA Port status
Comment	This field is not selectable. There is no help text associated with it.

3.2.2 HD Audio Configuration

Main	Advanced	Chipset	Boot	Security	Save & Exit

HD Audio Configuration		Item help
HD Audio	[Auto]	→←: Select Screen ↑↓: Select Item Enter: Select +/- : Change Opt F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Reset ESC: Exit

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Field Name	**HD Audio**
Value	[Auto]
Possible Value	Auto / Enabled / Disabled
Help	Control Detection of the HD-Audio device. Disabled = HDA will be unconditionally disabled Enabled = HDA will be unconditionally enabled Auto = HDA will be enabled if present, disabled otherwise.

4. SECURITY PAGE

Main	Advanced	Chipset	Security	Boot	Save & Exit

Password Description

If Only the Administrator's password is set, then this only limits access to Setup and is only asked for when entering Setup.
If ONLY the User's password is set, then this 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	3
Maximum Length	20

Administrator Password
User Password

HDD Security Configuration:
HDD Security drive

►Secure Boot menu

Item help

→←: Select Screen
↑↓: Select Item
Enter: Select
+/- : Change Opt
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Reset
ESC: Exit

Field Name	**Administrator Password**
Help	Set Administrator Password
Comment	Press Enter when selected to go into the associated Sub-Menu.

Field Name	**User Password**
Help	Set User Password.
Comment	Press Enter when selected to go into the associated Sub-Menu.

Field Name	**HDD Security drive**
Help	HDD Security Configuration for selected drive
Comment	Press Enter when selected to go into the associated Sub-Menu.

Field Name	**Secure Boot menu**
Help	Customizable Secure Boot settings
Comment	Press Enter when selected to go into the associated Sub-Menu.

4.1 HDD SECURITY

Main	Advanced	Chipset	Security	Boot	Save & Exit

HDD Password Description :

Allows Access to Set, Modify and Clear
HardDisk User and Master Passwords.
User Password need to be installed for
Enabling Security. Master Password can
be Modified only when successfully unlocked
with Master Password in POST.
If the 'Set HDD Password' option is grayed out,
do power cycle to enable the option again.

HDD PASSWORD CONFIGURATION:

Security Supported	:	Yes
Security Enabled	:	No
Security Locked	:	No
Security Frozen	:	No
HDD User Pwd Status	:	NOT INSTALLED

Set User Password
Set Master Password

Item help

→←: Select Screen
↑↓: Select Item
Enter: Select
+/- : Change Opt
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Reset
ESC: Exit

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Field Name	**Set User Password**
Help	Set HDD User Password. *** Advisable to Power Cycle System after Setting Hard Disk Passwords ***. Discard or Save changes option in setup does not have any impact on HDD when password is set or removed. If the 'Set HDD User Password' option is grayed out, do power cycle to enable the option again
Comment	

Field Name	**Set Master Password**
Help	Set HDD Master Password. \n*** Advisable to Power Cycle System after Setting Hard Disk Passwords ***\nDiscard or Save changes option in setup does not have any impact on HDD when password is set or removed. If the 'Set HDD Master option' is grayed out, user might have entered setup with user HDD Security privilege(expected)

	or else do power cycle to enable the option again
Comment	

4.2 SECURE BOOT MODE

Main	Advanced	Chipset	Security	Boot	Save & Exit

		Item help
System Mode	Setup	
Secure Boot	Not Active	→←: Select Screen
Vendor Keys	Not Active	↑↓: Select Item
		Enter: Select
Attempt Secure Boot	[Enabled]	+/- : Change Opt
Secure Boot Mode	[Standard]	F1: General Help
► Key Management		F2: Previous Values
		F3: Optimized Defaults
		F4: Save & Reset
		ESC: Exit

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Field Name	**Attempt Secure Boot**
Default Value	[Enabled]
Possible Value	Enabled Disabled
Help	Secure Boot activated when Platform Key(PK) is enrolled, System mode is User/Deployed,and CSM function is disabled

Field Name	**Secure Boot Mode**
Default Value	[Standard]
Possible Value	Standard Custom
Help	Secure Boot mode selector:Standard/Custom. In Custom mode Secure Boot Variables can be configured without authentication

Field Name	**Key Management**
Help	Enables expert users to modify Secure Boot Policy variables without full authentication
Comment	Press Enter when selected to go into the associated Sub-Menu.

4.3 KEY MANAGEMENT

Main	Advanced	Chipset	Security	Boot	Save & Exit

Provision Factory Defaults			[Disabled]	
► Reset to Setup Mode				
► Enroll Efi Image				
► Save all Secure Boot variables				
Secure Boot variable	Size	Key#	Key source	
► Platform Key(PK)	0	0		
► Key Exchange Key	0	0		
► Authorized Signatures	0	0		
► Forbidden Signatures	0	0		
► Authorized TimeStamps	0	0		
► OsRecovery Signatures	0	0		

Item help

→←: Select Screen
↑↓: Select Item
Enter: Select
+/- : Change Opt
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Reset
ESC: Exit

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Field Name	**Provision Factory Defaults**
Default Value	[Disabled]
Possible Value	Enabled Disabled
Help	Allow to provision factory default Secure Boot keys when System is in Setup Mode

Field Name	**Reset to Setup Mode**
Help	Force System to Setup Mode - clear all Secure Boot Variables
Comment	

Field Name	**Save All Secure Boot Variables**
Help	Allow the image to run in Secure Boot mode. Enroll SHA256 hash of the binary into Authorized Signature Database (db)
Comment	

Field Name	**Save all Secure Boot variables**
Help	Save NVRAM content of Secure Boot policy variables to the files (EFI_SIGNATURE_LIST data format) in root folder on a target file system device
Comment	

Field Name	**Platform Key (PK)**
Default Value	Size:0, Key#:0, Key source: *

Help	Enroll Factory Defaults or load certificates from a file: 1.Public Key Certificate in: a)EFI_SIGNATURE_LIST b)EFI_CERT_X509 (DER encoded) c)EFI_CERT_RSA2048 (bin) d)EFI_CERT_SHA256,384,512 2.Authenticated UEFI Variable 3.EFI PE/COFF Image(SHA256) Key Source: Default,External,Mixed,Test
comment	Press Enter when selected to go into the associated Sub-Menu “Key Management”.

Field Name	**Key Exchange Key**
Default Value	Size:0, Key#:0, Key source: *
Help	Enroll Factory Defaults or load certificates from a file: 1.Public Key Certificate in: a)EFI_SIGNATURE_LIST b)EFI_CERT_X509 (DER encoded) c)EFI_CERT_RSA2048 (bin) d)EFI_CERT_SHA256,384,512 2.Authenticated UEFI Variable 3.EFI PE/COFF Image(SHA256) Key Source: Default,External,Mixed,Test
comment	Press Enter when selected to go into the associated Sub-Menu.

Field Name	**Authorized Signature**
Default Value	Size:0, Key#:0, Key source: *
Help	Enroll Factory Defaults or load certificates from a file: 1.Public Key Certificate in: a)EFI_SIGNATURE_LIST b)EFI_CERT_X509 (DER encoded) c)EFI_CERT_RSA2048 (bin) d)EFI_CERT_SHA256,384,512 2.Authenticated UEFI Variable 3.EFI PE/COFF Image(SHA256) Key Source: Default,External,Mixed,Test
comment	Press Enter when selected to go into the associated Sub-Menu.

Field Name	**Forbidden Signature**
Default Value	Size:0, Key#:0, Key source: *
Help	Enroll Factory Defaults or load certificates from a file: 1.Public Key Certificate in: a)EFI_SIGNATURE_LIST b)EFI_CERT_X509 (DER encoded) c)EFI_CERT_RSA2048 (bin) d)EFI_CERT_SHA256,384,512 2.Authenticated UEFI Variable 3.EFI PE/COFF Image(SHA256) Key Source:

	Default,External,Mixed,Test
comment	Press Enter when selected to go into the associated Sub-Menu.

Field Name	**Authorized TimeStamps**
Default Value	Size:0, Key#:0, Key source: *
Help	Enroll Factory Defaults or load certificates from a file: 1.Public Key Certificate in: a)EFI_SIGNATURE_LIST b)EFI_CERT_X509 (DER encoded) c)EFI_CERT_RSA2048 (bin) d)EFI_CERT_SHA256,384,512 2.Authenticated UEFI Variable 3.EFI PE/COFF Image(SHA256) Key Source: Default,External,Mixed,Test
comment	Press Enter when selected to go into the associated Sub-Menu.

Field Name	**OsRecovery Signatures**
Default Value	Size:0, Key#:0, Key source: *
Help	Enroll Factory Defaults or load certificates from a file: 1.Public Key Certificate in: a)EFI_SIGNATURE_LIST b)EFI_CERT_X509 (DER encoded) c)EFI_CERT_RSA2048 (bin) d)EFI_CERT_SHA256,384,512 2.Authenticated UEFI Variable 3.EFI PE/COFF Image(SHA256) Key Source: Default,External,Mixed,Test
comment	Press Enter when selected to go into the associated Sub-Menu.

5. BOOT PAGE

Main	Advanced	Chipset	Security	Boot	Save & Exit

Boot Configuration		**Item help**
Setup Prompt Timeout	1	
Bootup NumLock State	[On]	
Quiet Boot	[Enabled]	
Boot mode select	[UEFI]	
FIXED BOOT ORDER Priorities		
Boot Option #1	[Hard Disk]	→←: Select Screen
Boot Option #2	[CD/DVD]	↑↓: Select Item
Boot Option #3	[USB Hard Disk]	Enter: Select
Boot Option #4	[USB CD/DVD]	+/- : Change Opt
Boot Option #5	[USB Key]	F1: General Help
Boot Option #6	[USB Floppy]	F2: Previous Values
Boot Option #7	[USB Lan]	F3: Optimized Defaults
Boot Option #8	[Network]	F4: Save & Reset
		ESC: Exit
▶CD/DVD ROM Drive BBS Priorities		
▶Hard Disk Drive BBS Priorities		
▶NETWORK Drive BBS Priorities		
▶USB CD/DVD ROM Drive BBS Priorities		
▶USB Hard Disk Drive BBS Priorities		
▶USB KEY Drive BBS Priorities		

Field Name	**Setup Prompt Timeout**
Default Value	1
Possible Value	1~65535
Help	Number of seconds to wait for setup activation key. 65535(0xFFFF) means indefinite waiting.

Field Name	**Boot NumLock State**
Default Value	[On]
Possible Value	On

	Off
Help	Select the keyboard NumLock state

Field Name	**Quiet Boot**
Default Value	[Enabled]
Possible Value	Enabled Disabled
Help	Enables or Disables Quiet Boot option

Field Name	**Boot mode select**
Default Value	[UEFI]
Possible Value	LEGACY UEFI
Help	Select boot mode LEGACY/UEFI.

Field Name	**Boot Option #1**
Default Value	[Hard Disk]
Possible Value	Hard Disk, CD/DVD, USB Hard Disk, USB CD/DVD, USB Key, USB Floppy , USB Lan, Network, Disabled
Help	Sets the system boot order

Field Name	**Boot Option #2**
Default Value	[CD/DVD]
Possible Value	Hard Disk, CD/DVD, USB Hard Disk, USB CD/DVD, USB Key, USB Floppy , USB Lan, Network, Disabled
Help	Sets the system boot order

Field Name	**Boot Option #3**
Default Value	[USB Hard Disk]
Possible Value	Hard Disk, CD/DVD, USB Hard Disk, USB CD/DVD, USB Key, USB Floppy , USB Lan, Network, Disabled
Help	Sets the system boot order

Field Name	**Boot Option #4**
Default Value	[USB CD/DVD]
Possible Value	Hard Disk, CD/DVD, USB Hard Disk, USB CD/DVD, USB Key, USB Floppy , USB Lan, Network, Disabled
Help	Sets the system boot order

Field Name	**Boot Option #5**
Default Value	[USB Key]
Possible Value	Hard Disk, CD/DVD, USB Hard Disk, USB CD/DVD, USB Key, USB Floppy , USB Lan, Network, Disabled
Help	Sets the system boot order

Field Name	**Boot Option #6**
Default Value	[USB Floppy]
Possible Value	Hard Disk, CD/DVD, USB Hard Disk, USB CD/DVD, USB Key, USB Floppy , USB Lan, Network, Disabled

Help	Sets the system boot order

Field Name	**Boot Option #7**
Default Value	[USB Lan]
Possible Value	Hard Disk, CD/DVD, USB Hard Disk, USB CD/DVD, USB Key, USB Floppy , USB Lan, Network, Disabled
Help	Sets the system boot order

Field Name	**Boot Option #8**
Default Value	[Network]
Possible Value	Hard Disk, CD/DVD, USB Hard Disk, USB CD/DVD, USB Key, USB Floppy , USB Lan, Network, Disabled
Help	Sets the system boot order

Field Name	**(UEFI) CD/DVD ROM Drive BBS Priorities**
Help	Specifies the Boot Device Priority sequence from available CDROM/DVD Drives.
Comment	Press Enter when selected to go into the associated Sub-Menu.

Field Name	**(UEFI) Hard Disk Drive BBS Priorities**
Help	Specifies the Boot Device Priority sequence from available Hard Disk Drives.
Comment	Press Enter when selected to go into the associated Sub-Menu.

Field Name	**(UEFI) NETWORK Drive BBS Priorities**
Help	Specifies the Boot Device Priority sequence from available NETWORK Drives.
Comment	Press Enter when selected to go into the associated Sub-Menu.

Field Name	**(UEFI) USB CD/DVD ROM Drive BBS Priorities**
Help	Specifies the Boot Device Priority sequence from available USB CDROM/DVD Drives.
Comment	Press Enter when selected to go into the associated Sub-Menu.

Field Name	**(UEFI) USB Hard Disk Drive BBS Priorities**
Help	Specifies the Boot Device Priority sequence from available USB Hard Disk Drives.
Comment	Press Enter when selected to go into the associated Sub-Menu.

Field Name	**(UEFI) USB KEY Drive BBS Priorities**
Help	Specifies the Boot Device Priority sequence from available USB Key Drives.
Comment	Press Enter when selected to go into the associated Sub-Menu.

Field Name	**USB Floppy Drive BBS Priorities** **(UEFI Boot Mode Not Support)**
Help	Specifies the Boot Device Priority sequence from available USB Floppy Drives.

Comment	Press Enter when selected to go into the associated Sub-Menu.

5.1 (LIST BOOT DEVICE TYPE) DRIVE BBS PRIORITIES

Main	Advanced	Chipset	Security	Boot	Save & Exit	
Boot Option #1			[Boot Device Name 1]			**Item help**
Boot Option #2			[Boot Device Name 2]			**→←: Select Screen**
						↑↓: Select Item
						Enter: Select
						+/- : Change Opt
						F1: General Help
						F2: Previous Values
						F3: Optimized Defaults
						F4: Save & Reset
						ESC: Exit
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Field Name	**Boot Option #1**
Default Value	
Possible Value	Boot Device Name 1 of this type
Help	Sets the system boot order

Field Name	**Boot Option #2**
Default Value	
Possible Value	Boot Device Name 2 of this type
Help	Sets the system boot order

6. SAVE & EXIT PAGE

Main	Advanced	Chipset	Security	Boot	Save & Exit	
Save Options						**Item help**
Discard Changes and Exit						
Save Changes and Reset						**→←: Select Screen**
Discard Changes and Reset						**↑↓: Select Item**
						Enter: Select
Default Options						**+/- : Change Opt**
Restore Defaults						**F1: General Help**
Save as user Defaults						**F2: Previous Values**
Restore user Defaults						**F3: Optimized Defaults**
						F4: Save & Reset
Boot Override						**ESC: Exit**
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Field Name	**Discard Changes and Exit**
Help	Exit system setup without saving any changes.
Comment	

Field Name	**Save Changes and Reset**
Help	Reset the system after saving the changes.
Comment	

Field Name	**Discard Changes and Reset**
Help	Reset system setup without saving any changes.
Comment	

Field Name	**Restore Defaults**
Help	Restore/Load Default values for all the setup options.
Comment	

Field Name	**Save as User Defaults**
Help	Save the changes done so far as User Defaults.
Comment	

Field Name	**Restore User Defaults**
Help	Restore the User Defaults to all the setup options.
Comment	