

FWS-8600

Network Appliance

User's Manual 1st Ed

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Packing List

Network Appliance

Before setting up your product, please make sure the following items have been shipped:

ltem		Quantity
•	FWS-8600	1
•	Gift Box (Including Console Cable x 1, SATA Cable x 1, SATA Power Cable x 1, and Ear Bracket Kit x 1)	1
•	CPU cooler	2

If any of these items are missing or damaged, please contact your distributor or sales representative immediately.

About this Document

This User's Manual contains all the essential information, such as detailed descriptions and explanations on the product's hardware and software features (if any), its specifications, dimensions, jumper/connector settings/definitions, and driver installation instructions (if any), to facilitate users in setting up their product.

Users may refer to the product page at AAEON.com for the latest version of this document.

Safety Precautions

Please read the following safety instructions carefully. It is advised that you keep this manual for future references

- 1. All cautions and warnings on the device should be noted.
- All cables and adapters supplied by AAEON are certified and in accordance with the material safety laws and regulations of the country of sale. Do not use any cables or adapters not supplied by AAEON to prevent system malfunction or fires.
- 3. Make sure the power source matches the power rating of the device.
- 4. Position the power cord so that people cannot step on it. Do not place anything over the power cord.
- Always completely disconnect the power before working on the system's hardware.
- No connections should be made when the system is powered as a sudden rush of power may damage sensitive electronic components.
- If the device is not to be used for a long time, disconnect it from the power supply to avoid damage by transient over-voltage.
- 8. Always disconnect this device from any AC supply before cleaning.
- 9. While cleaning, use a damp cloth instead of liquid or spray detergents.
- 10. Make sure the device is installed near a power outlet and is easily accessible.
- 11. Keep this device away from humidity.
- 12. Place the device on a solid surface during installation to prevent falls
- 13. Do not cover the openings on the device to ensure optimal heat dissipation.
- 14. Watch out for high temperatures when the system is running.
- 15. Do not touch the heat sink or heat spreader when the system is running
- 16. Never pour any liquid into the openings. This could cause fire or electric shock.

- As most electronic components are sensitive to static electrical charge, be sure to ground yourself to prevent static charge when installing the internal components. Use a grounding wrist strap and contain all electronic components in any static-shielded containers.
- 18. If any of the following situations arises, please the contact our service personnel:
 - i. Damaged power cord or plug
 - ii. Liquid intrusion to the device
 - iii. Exposure to moisture
 - Device is not working as expected or in a manner as described in this manual
 - v. The device is dropped or damaged
 - vi. Any obvious signs of damage displayed on the device

19. DO NOT LEAVE THIS DEVICE IN AN UNCONTROLLED ENVIRONMENT WITH TEMPERATURES BEYOND THE DEVICE'S PERMITTED STORAGE TEMPERATURES (SEE CHAPTER 1) TO PREVENT DAMAGE.

FCC Statement



This device complies with Part 15 FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received including interference that may cause undesired operation.

Caution:

There is a danger of explosion if the battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions and your local government's recycling or disposal directives.

Attention:

Il y a un risque d'explosion si la batterie est remplacée de façon incorrecte. Ne la remplacer qu'avec le même modèle ou équivalent recommandé par le constructeur. Recycler les batteries usées en accord avec les instructions du fabricant et les directives gouvernementales de recyclage.

China RoHS Requirements (CN)

产品中有毒有害物质或元素名称及含量 AAEON System QO4-381 Rev.AO						
			有	毒有害物质₅	或元素	
部件名称	铅	汞	镉	六价铬	多溴联苯	多溴二苯醚
	(Pb)	(Hg)	(Cd)	(Cr(VI))	(PBB)	(PBDE)
印刷电路板	×	0	\bigcirc	0	\bigcirc	0
及其电子组件	^	\bigcirc	<u> </u>	0	0	0
外部信号	×	\cap	\cap	\cap	\bigcirc	\bigcirc
连接器及线材	^	\bigcirc	\bigcirc	0	0	0
外壳	0	0	0	0	0	0
中央处理器	×	0	0	0	0	0
与内仔						
硬盘	×	0	0	0	0	0
液晶模块	×	×	0	0	0	0
光驱	×	0	0	0	0	0
触控模块	×	0	0	0	0	0
电源	×	0	0	0	0	0
电池	×	0	0	0	0	0

本表格依据 SJ/T 11364 的规定编制。

○:表示该有毒有害物质在该部件所有均质材料中的含量均在

GB/T 26572标准规定的限量要求以下。

×:表示该有害物质的某一均质材料超出了GB/T 26572的限量要求,然而该部件 仍符合欧盟指令2011/65/EU 的规范。

备注:

一、此产品所标示之环保使用期限,系指在一般正常使用状况下。

二、上述部件物质中央处理器、内存、硬盘、光驱、电源为选购品。

三、上述部件物质液晶模块、触控模块仅一体机产品适用。

China RoHS Requirement (EN)

Hazardous and Toxic Materials List

AAEON System

QO4-381 Rev.A0

Component Name		Hazardous or Toxic Materials or Elements					
		Mercury (Hg)	Cadmium (Cd)	Hexavalent Chromium (Cr(VI))	Polybrominated biphenyls (PBBs)	Polybrominated diphenyl ethers (PBDEs)	
PCB and Components	Х	0	0	0	0	0	
Wires & Connectors for Ext. Connections	Х	0	0	0	0	0	
Chassis	0	0	0	0	0	0	
CPU & RAM	Х	0	0	0	0	0	
HDD Drive	Х	0	0	0	0	0	
LCD Module	Х	Х	0	0	0	0	
Optical Drive	Х	0	0	0	0	0	
Touch Control Module		0	0	0	0	0	
PSU		0	0	0	0	0	
Battery		0	0	0	0	0	

This form is prepared in compliance with the provisions of SJ/T 11364.

O: The level of toxic or hazardous materials present in this component and its parts is below the limit specified by GB/T 26572.

X: The level of toxic of hazardous materials present in the component exceed the limits specified by GB/T 26572, but is still in compliance with EU Directive 2011/65/EU (RoHS 2).

Notes:

1. The Environment Friendly Use Period indicated by labelling on this product is applicable only to use under normal conditions.

2. Individual components including the CPU, RAM/memory, HDD, optical drive, and PSU are optional.

3. LCD Module and Touch Control Module only applies to certain products which feature these components.

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Chapter 1

1.1 Specifications

Platform	
Form Factor	2U Rackmount Network Platform
Processor	Dual Intel® Xeon® Processor Skylake-SP &
	Cascade Lake-SP processor
Chipset	Intel®C621
System Memory	DDR4 2133/2400/2666 R-DIMM, Up to 512 GB

Network	
Ethernet	Intel® i211 Gigabit Ethernet x 2
Bypass	Depends on NIM module
NIM Slot	NIM x 4 (up to NIM x 8)

Display	
Graphic Controller	_
Connector	VGA Option

Storage	
HDDs	Internal 2.5" HDD x 2 or 3.5" HDD x 1 Option,
	M.2 x 1
CF/CFast/mSATA	(mSATAx1 Optional ,cannot use with Mini-Card)

Internal/Expansion Interface				
PCIe slot	PCle [x16] slots x 2 (Optional)			
	M.2 Slot (2260 M Key) x 1			
Mini-Card slot	Mini Card x 1			

IP
Ke
US

Internal/Expansion Interface	
IPMI	_
Keyboard and Mouse	
USB	USB 3.0 x 2 (USB 3.0 x 2 ,Box Header 2.0mm

optional)

Miscellaneous	
RTC	Internal RTC
Watchdog Timer	1~255 steps by software programmable
Software Button	GPIO Programmable push button x 1
TPM	TPM 2.0 9665 (TPM v1.2 9660 optional)
GPIO	4 bits input, 4 bits output (optional)
FAN	5
MTBF (Hours)	TBD
Color	Black

Environmental Parameters and Dimension		
Power Requirement	550 ~ 600W Redundant Power	
Operating Temperature	32°F ~ 104°F (0°C ~ 40°C)	
Storage Temperature	-4°F ~ 140°F (-20°C ~ 60°C)	
Operating Humidity	10% ~ 80% relative humidity, non-condensing	
Storage Humidity	10% ~ 80% @40°C; non-condensing	
Vibration	0.5 Grms/ 5 ~ 500Hz / operation (2.5" Hard Disk	
	Drive)	
	1.5 Grms/ 5 ~ 500Hz / non operation	
Shock	10 G peak acceleration (11 m sec. duration), operation	
	20 G peak acceleration (11 m sec. duration), non-operation	

Environmental Parameters and Dimension		
Dimension (W X D X H)	17.48" x 22.83" x3.46" (444mm x 580mm x	
	88mm)	
I/O Interfaces		
Front Panel	Power LED x 1	
	Status LED x 1	
	HDD Active LED x 1	
	USB 3.0 Ports x 2	
	RJ-45 Console x 1	
	Parallel LCM display and 4 keypad x 1	
	Software Programmable Button x1	
	RJ-45 LAN x 2	
Rear Panel	AC Power Input x 2	
	Power Switch x 1	
	VGA port (Optional)	
	Rear Expansion Slot x 2 (PCIe [x16] Optional)	

Chapter 2

Hardware Information

2.1 Dimensions

2.1.1 System



2.1.2 Board





Bottom and Side



2.1.3 PER-T488 Expansion Riser









2.2 Jumpers and Connectors

2.2.1 Board

Top and Front



Bottom and Side



2.2.2 PER-T488 Expansion Riser



etwork Appliance



2.3 List of Jumpers

Please refer to the table below for all of the board's jumpers that you can configure for your application

Label	Function
CMOS1	RTC Reset
JP2	Auto Power Button

2.3.1 RTC Reset (CMOS1)



Normal (Default)



Clear CMOS

2.3.2 Auto Power Button (PWRBTN) Selection (JP2)



Disabled (Default)



Enabled

List of Connectors 2.4

Please refer to the table below for all of the board's connectors that you can configure for your application

Label	Function
ATX1	24-pin ATX Power Connector
ATX_CPU1~2	8-pin 12V Power Connector
CN3	20-pin smart fan
CN5	Mini PCIe socket
CN6	LCM Connector
CN11~16	HDD Power Connector
CN18	M.2 M-Key Socket
CN21	State LED
CN22	Power Switch
CN24	Keypad Connector
DIO1	Digital I/O
FP1	Front Panel Connector 1
FP2	Front Panel Connector 2
SATA1~6	SATA Port Connector
SYS_FAN2, 4, 8	SYS FAN 1, 2, 3
SYS_FAN7	CPU FAN2
SYS_FAN10	CPU FAN1
USB1	USB 3.0 Port

2.4.1 Digital I/O (DIO1)

Pin	Signal	Signal Type
1	DIOO	Input/ Output
2	DIO1	Input/ Output
3	DIO2	Input/ Output
4	DIO3	Input/ Output
5	DIO4	Input/ Output
6	DIO5	Input/ Output
7	DIO6	Input/ Output
8	DIO7	Input/ Output
9	+3.3V	PWR
10	GND	GND

2.4.2 LCM Connector (CN6)

Pin	Signal	Signal Type
1	LCMGND	GND
2	LCMVCC	PWR
3	VEE	PWR
4	SLIN-	Output
5	INIT	Output
6	AFD-	Output
7	PTD0	Input/ Output
8	PTD1	Input/ Output
9	PTD2	Input/ Output
10	PTD3	Input/ Output
11	PTD4	Input/ Output
12	PTD5	Input/ Output
13	PTD6	Input/ Output
14	PTD7	Input/ Output
15	+5V	PWR
16	LCD-	Output

2.4.3 Keypad Connector (CN24)

Pin	Signal	Signal Type
1	KEY PAD Down	Input
2	KEY PAD Up	Input
3	KEY PAD Right	Input
4	KEY PAD Left	Input

2.4.4 HDD Power Connector (CN11~CN16)

Pin	Signal	Signal Type
1	+12V	PWR
2	GND	GND
3	GND	GND
4	+5V	PWR

2.4.5 USB 3.0 Port (USB1)

Pin	Signal	Signal Type	Pin	Signal	Signal Type
1	+5V_USB	PWR	9	USBP_OP	DIFF
2	USB3_RX1_DN	DIFF	10	NC	
3	USB3_RX1_DP	DIFF	11	USBP_1P	DIFF
4	GND	GND	12	USBP_1N	DIFF
5	USB3_TX1_DN	DIFF	13	GND	GND
6	USB3_TX1_DP	DIFF	14	USB3_TX2_DP	DIFF
7	GND	GND	15	USB3_TX2_DN	DIFF
8	USBP_ON	DIFF	16	GND	GND

2.4.7 Front Panel Connector 2 (FP2)

Pin	Signal	Signal Type
1	Power On Button(+)	Input
2	Power On Button(-)	GND
3	Reset Switch (+)	Input
4	Reset Switch (-)	GND
5	HDD LED (+)	Output
6	HDD LED (-)	Output
7	Power LED(+)	POWER
8	Power LED(-)	GND

2.4.8 Front Panel Connector 1 (FP1)

Pin	Signal	Signal Type
1		
2		
3		
4	GND	GND
5		
6	PMBUS_SML1_SCL	I/O
7		
8	PMBUS_SML1_SDA	1/0

2.5 Installing Chassis Mounted Hard Drive

This section details how to install the system chassis mounted hard drive assembly using either two 2.5" HDDs or one 3.5" HDD.

1. Remove the highlighted screws.



2. Slide lid towards back, then lift to remove.



3. Remove the five highlighted screws securing the HDD tray. Note, you must remove the leftmost HDD bay to access the screw located there.





4. Shift the HDD tray back, then lift to remove from the system.



(Step 4 Continued)



5. Attach cushions onto the hard disk drive brackets as shown.



 Attach the brackets to the hard drive(s) according to the following diagrams: Two 2.5" Hard Drives: Use eight screws to attach the brackets as shown.



One 3.5" Hard Drive: Use four screws to attach the brackets as shown.


7. Secure the hard drive assembly onto the chassis with four screws.



8. Connect the SATA and power cables to the hard drive(s).



Note: Remember to attach SATA and power cables to both hard drives when installing two 2.5" HDD assembly.



9. Follow steps in reverse order to reinstall hard drive tray and replace system lid cover.

2.6 Installing CPU and Heat Sink

- 1. Remove the lid cover as per steps 1 and 2 in the previous section.
- 2. Loosen the four screws shown and remove the fan duct.



3. Remove the CPU lock cover.



4. Place CPU onto socket. Ensure the CPU is oriented correctly by using the triangle marked on the CPU and board as highlighted in the picture. Note: Make sure a correct amount of thermal paste has been applied to the CPU before installing.



5. Install heat sinks. Follow the order of installation according to the instructions printed on your heat sink to avoid damaging the processor or the board.



6. Replace the fan ducts and fasten the screws as shown.



2.7 Installing Expansion Card

- 1. Remove the lid cover according to steps 1 and 2 in Chapter 2.5.
- 2. Remove the highlighted screw and I/O bracket.



3. Push expansion card into expansion slot. Secure to chassis using screw as shown.



1. Remove the securing screws from the bottom and front of the chassis as shown.





2. Remove the Null Module Cover or existing NIM module.



3. Insert the NIM module or Null Module Cover. Secure with screws on bottom and front of chassis.



Chapter 3

AMI BIOS Setup

3.1 System Test and Initialization

The system uses certain routines to perform testing and initialization during the boot up sequence. If an error, fatal or non-fatal, is encountered, the system will output a few short beeps or an error message. The board can usually continue the boot up sequence with non-fatal errors.

The system configuration verification routines check the current system configuration against the values stored in the CMOS memory. If they do not match, an error message will be output, and the BIOS setup program will need to be run to set the configuration information in memory.

There are three situations in which you will need to change the CMOS settings:

- Starting the system for the first time
- The system hardware has been changed
- The CMOS memory has lost power and the configuration information is erased

The system's CMOS memory uses a backup battery for data retention. The battery must be replaced when it runs down.

3.2 AMI BIOS Setup

The AMI BIOS ROM has a pre-installed Setup program that allows users to modify basic system configurations, which are stored in the battery-backed CMOS RAM and BIOS NVRAM so the information is retained when the power is turned off.

To enter BIOS Setup, press immediately while your computer is powering up.

The function for each interface can be found below.

Main – Date and time can be set here. Press <Tab> to switch between date elements

Advanced - Enable/ Disable boot option for legacy network devices

Security - The setup administrator password can be set here

Boot - Enable/ Disable quiet Boot Option

Save & Exit – Save your changes and exit the program

Platform Configuration – Displays and provides option to change the Platform System Settings

Socket Configuration - Displays and provides option to change the Socket Settings

3.3 Setup Submenu: Main

Aptio Setup Utility – Copyright (C) 2019 American Megatrends, Inc. Main Advanced Security Boot Save & Exit Platform Configuration Socket Configuration			
BIOS Information FWS-8600 R1.6 (K860BM1	6) (09/20/2019)	Set the Date. Use Tab to switch between Date elements.	
BIOS Vendor Compliancy	American Megatrends UEFI 2.7; PI 1.6	Verault manges. Year: 1998-9999 Months: 1-12 Days: Dependent on month	
System Date System Time	[Fri 09/20/2019] [11:38:07]	Range of Years may vary.	
Access Level	Administrator		
+: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit			
Version 2.20.1275. Copyright (C) 2019 American Megatrends, Inc.			

3.4 Setup Submenu: Advanced

Aptio Setup Utility – Copyright (C) 2019 American Megatrends, Inc. Main <mark>Advanced</mark> Security Boot Save & Exit Platform Configuration Socket Configuration I		
 Trusted Computing USB Configuration Hardware Monitor SIO Configuration Serial Port Console Redirection NVMe Configuration AAEON Features Power Management LAN Bypass Configuration Digital ID Port Configuration 	Trusted Computing Settings	
▶ Network Stack Configuration	++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit	
Version 2.20.1275. Copyright (C) 2019 Amer	rican Megatrends, Inc.	

3.4.1 Advanced: Trusted Computing

Aptio Setup Utility - Advanced	- Copyright (C) 2019 Americar	Megatrends, Inc.
TPM20 Device Found Firmware Version: Vendor: Security Device Support Active PCR banks Available PCR banks SHA-1 PCR Bank SHA256 PCR Bank	5.51 IFX [Enable] SHA-1,SHA256 SHA-1,SHA256 [Enabled] [Enabled]	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.
Pending operation Platform Hierarchy Storage Hierarchy Endorsement Hierarchy TPM2.0 UEFI Spec Version Physical Presence Spec Version TPM 20 InterfaceType Device Select	[None] [Enabled] [Enabled] [TCG_2] [1.3] [TIS] [Auto]	<pre>++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>

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Options Summary			
Security Device	Disabled		
Support	Enabled	Optimal Default, Failsafe Default	
Enables or Disables Bl	OS support for security dev	rice. OS will not show Security	
Device. TCG EFI protoc	col and INT1A interface will	not be available	
SHA-1 PCR Bank	Disabled		
	Enabled	Optimal Default, Failsafe Default	
Enables or Disables Dis	sable SHA-1 PCR Bank		
SHA256 PCR Bank	Disabled		
	Enabled	Optimal Default, Failsafe Default	
Enables or Disables Disable SHA256 PCR Bank			
Pending operation	None	Optimal Default, Failsafe Default	
	TPM Clear		
Schedule an Operation for the Security Device. NOTE: Your Computer will reboot during restart in order to change State of Security Device.			

Options Summary			
Platform Hierarchy	Disabled		
	Enabled	Optimal Default, Failsafe Default	
Enables or Disables Pl	atform Hierarchy		
Storage Hierarchy	Disabled		
	Enabled	Optimal Default, Failsafe Default	
Enables or Disables St	orage Hierarchy		
Endorsement	Disabled		
Hierarchy	Enabled	Optimal Default, Failsafe Default	
Enables or Disables Er	ndorsement Hierarchy		
TPM2.0 UEFI Spec	TCG_1_2		
Version	TCG_2	Optimal Default, Failsafe Default	
Select the TCG2 Spec Version Support,			
TCG_1_2: the Compati	ble mode for Win8/Win10,		
TCG_2: Support new T	CG2 protocol and event for	rmat for Win10 or later	
Physical Presence	1.2	-	
Spec Version	1.3	Optimal Default, Failsafe Default	
Select to Tell O.S. to support PPI Spec Version 1.2 or 1.3. Note some HCK tests might			
not support 1.3.			
Device Select	TPM 1.2		
	TPM 2.0		
	Auto	Optimal Default, Failsafe Default	
TPM 1.2 will restrict support to TPM 1.2 devices, TPM 2.0 will restrict support to TPM			
2.0 devices, Auto will support both with the default set to TPM 2.0 devices if not			
found, TPM 1.2 devices will be enumerated			

3.4.2 Advanced: USB Configuration

Aptio Setup Utility – Copyright (C) 2019 American Advanced	Megatrends, Inc.
USB Configuration	Enables Legacy USB support.
USB Controllers: 1 XHCI USB Devices: 1 Drive, 1 Keyboard, 1 Mouse	support if no USB devices are connected. DISABLE option will keep USB devices available only for EFI applications.
Legacy USB Support [Enabled]	
	the Colort Concer
	↑↓: Select Item Enter: Select
	+/−: Change Opt. F1: General Help
	F2: Previous Values F3: Optimized Defaults
	F4: Save & Exit ESC: Exit
Version 2.20.1275. Copyright (C) 2019 American M	egatrends, Inc.

Options Summary				
Legacy USB Support	Enabled	Optimal Default, Failsafe Default		
Disabled				
Auto				
Enables Legacy USB Support. AUTO option disables legacy support if no USB devices				
are connected. DISABLE option will keep USB devices available only for EEL applications				

3.4.3 Advanced: Hardware Monitor

Pc Health StatusFor En/Disable CPU Fan 1 ControlCPU Fan i Control[Enabled] FAN Control Temperature25 Start Control Temperature99 PHM SlopeCPU Fan 2 Control[Enabled] [Enabled] FAN Control Mode[Automatic Mode] Spin PMM40 40 40 40CPU Fan 2 Control[Enabled] [Full Speed Temperature99 PS PFMM Slope1CPU Fan 2 Control[Enabled] Full Speed Temperature99 PS PFM Slope1System Fan Control Temperature99 PFMM Slope1System Fan Control Temperature99 PFMM Slope1System Fan Control Temperature99 PFM Slope1CPU Fan 1 Speed Temperature25 Start Control Temperature25 PFWSystem Fan Control[Enabled] F1 Speed Temperature11: Select Screen PFW SlopeCPU Temperature25 Start Control Temperature25 PFW 40 PS PFW 40 PS12: Select Screen PS: Optimized Defaults PS: Optimized Defaults PS: Optimized Defaults PS: Start Control TemperatureCPU Temperature: +79 % System Temperature: 223 PFM PU Fan 1-1 SpeedCPU Fan 1-1 Speed: N/A PU Fan 2-1 Speed: N/A PU Fan 2-2 SpeedCPU Fan 1-2 Speed: N/A PU Fan 2-2 SpeedCPU Fan 1-2 Speed: N/A PU Fan 2-2 SpeedYMS System Fan
Off Control Temperature25F3: Optimized DefaultsStart Control Temperature80F4: Save & ExitFull Speed Temperature99ESC: ExitPNM Slope1ESC: ExitCPU Temperature: +79 %System Temperature: +36 %CPU Fan 1-1 Speed: 3229 RPMCPU Fan 1-2 Speed: 4166 RPMCPU Fan 2-1 Speed: N/ADPU Fan 2-2 Speed: N/ASystem Fan Speed: N/AVCORE: +1.764 VVMEM: +1.236 V+12V: +11.904 V+5VS: +5.019 VSVSB: +3.264 V

Options Summary on next Page

Options Summary				
CPU Fan 1 Control	Disabled			
	Enabled	Optimal Default, Failsafe Default		
Enable/ Disable CPU F	an 1 Control			
Enabled: FAN operates	s in accordance with user se	ettings		
Disabled: FAN always of	operates at full speed			
FAN Control Mode	Manual Mode			
	Automatic Mode	Optimal Default, Failsafe Default		
Manual Mode: Depen	ds on PWM Duty			
Automatic Mode: FAN	Speed depends on CPU Te	emperature		
Spin PWM	40			
The PWM Duty of FAN	Spin Range: [0 - 255]			
Off Control	25			
Temperature				
Temperature Limit Valu	ie of Fan Off			
NOTE: Some fans have	e a minimum speed even if	the PWM value is 0		
Start Control	85			
Temperature				
Temperature Limit Valu	ue of FAN Start Control			
Full Speed	99			
Temperature				
Temperature Limit Valu	ie of FAN Full Speed			
PWM Slope	1			
Slope PWM value/Degree C for FAN Speed Control. Range: [1-15]				
CPU Fan 2 Control	Disabled	-		
	Enabled	Optimal Default, Failsafe Default		
Enable/ Disable CPU Fan 2 Control				
Enabled: FAN operates in accordance with user settings				
Disabled: FAN always operates at full speed				
FAN Control Mode	Manual Mode	-		
	Automatic Mode	Optimal Default, Failsafe Default		
Manual Mode: Depends on PWM Duty				
Automatic Mode: FAN Speed depends on CPU Temperature				
Spin PWM	40			
The PWM Duty of FAN	l Spin Range: [0 - 255]			
Off Control	25			
Temperature				
Temperature Limit Value of Fan Off				
NOTE: Some fans have a minimum speed even if the PWM value is 0				

Options Summary		
Start Control	85	
Temperature		
Temperature Limit Valu	ue of FAN Start Control	
Full Speed	99	
Temperature		
Temperature Limit Valu	ue of FAN Full Speed	
PWM Slope	1	
Slope PWM value/Deg	gree C for FAN Speed Conti	rol Range: [1-15]
System Fan Control	Disabled	
	Enabled	Optimal Default, Failsafe Default
Enable/ Disable Syster	n Fan Control	
Enabled: FAN operates	s in accordance with user se	ettings
Disabled: FAN always of	operates at full speed	
FAN Control Mode	Manual Mode	
	Automatic Mode	Optimal Default, Failsafe Default
Manual Mode: Depend	ds on PWM Duty	
Automatic Mode: FAN	Speed depends on System	Temperature
Spin PWM	40	
The PWM Duty of FAN	Spin Range: [0 - 255]	
Off Control	25	
Temperature		
Temperature Limit Value of Fan Off		
NOTE: Some fans have a minimum speed even if the PWM value is 0		
Start Control	80	
Temperature		
Temperature Limit Value of FAN Start Control		
Full Speed	99	
Temperature		
Temperature Limit Value of FAN Full Speed		
PWM Slope	1	
Slope PWM value/Dec	gree C for FAN Speed Conti	ol Range: [1-15]

3.4.4 Advanced: SIO Configuration

Aptio Setup Utility – Copyright (C) 2019 American Megatrends, Inc. Advanced		
AMI SID Driver Version : A5.10.00 Super ID Chip Logical Device(s) Configuration • [*Active*] Serial Port 1 • [*Active*] Serial Port 2 • [*Active*] Parallel Port WARNING: Logical Devices state on the left side of the control, reflects the current Logical Device state. Changes made during Setup Session will be shown after you restart the system.	View and Set Basic properties of the SIO Logical device. Like IO Base, IRQ Range, DMA Channel and Device Mode.	
	++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit	
Version 2.20.1275. Copyright (C) 2019 American Ma	egatrends, Inc.	

3.4.4.1 Serial Port 1 Configuration

Aptio Setup Utility - Advanced	Copyright (C) 2019 American	Megatrends, Inc.
Serial Port 1 Configuration		Enable or Disable this Logical
Use This Device		
Logical Device Settings: Current : IO=3F8h; IRQ=4;		
Possible:	[Use Automatic Settings]	
Settings] WARNING: Disabling SID Logical Devices may have unwanted side effects. PROCEED WITH CAUTION. +t: Select Screen tl: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit		
Version 2.20.1275, Co	puright (C) 2019 American M	egatrends, Inc.

Options Summary			
Use This Device	Disabled		
	Enabled	Optimal Default, Failsafe Default	
Enabled or Disable this Logical Device			
Possible:	Use Automatic Settings	Optimal Default, Failsafe Default	
	IO=3F8h; IRQ=4;		
	IO=2F8h; IRQ=3;		
Allows the user to change the device resource settings. New settings will be reflected			
on this setup page after system restarts.			

3.4.4.2 Serial Port 2 Configuration

Aptio Setup Utility - Advanced	Copyright (C) 2019 American	Megatrends, Inc.
Serial Port 2 Configuration		Enable or Disable this Logical
Use This Device		DEVICE.
Logical Device Settings: Current : IO=2F8h; IRQ=3;		
Possible:	[Use Automatic Settings]	
WARNING: Disabling SIO Logical Devic side effects. PROCEED WITH CAUTION.	es may have unwanted	++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
		- Jaka - Par

Options Summary			
Use This Device	Disabled		
	Enabled	Optimal Default, Failsafe Default	
Enabled or Disable this Logical Device			
Possible:	Use Automatic Settings	Optimal Default, Failsafe Default	
	10=3F8h; IRQ=4;		
	10=2F8h; IRQ=3;		
Allows the user to change the device resource settings. New settings will be reflected			
on this setup page after system restarts.			

3.4.4.3 Parallel Port Configuration

Aptio Setup Utility - Advanced	Copyright (C) 2019 American	Megatrends, Inc.
Parallel Port Configuration		Enable or Disable this Logical
Use This Device		Device.
Logical Device Settings: Current : IO=378h; IRQ=5;		
Possible:	[Use Automatic Settings]	
Mode :	[Standard Parallel Port mode(SPP)]	
WARNING: Disabling SIO Logical Devi side effects. PROCEED WITH CAUTION.	ces may have unwanted	<pre>++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>

Options Summary			
Use This Device	Disabled		
	Enabled	Optimal Default, Failsafe Default	
Enabled or Disable thi	s Logical Device		
Possible:	Use Automatic Settings	Optimal Default, Failsafe Default	
	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;		
Allows the user to change the device resource settings. New settings will be reflected			
on this setup page aft	er system restarts.		

Options Summary		
Mode:	Standard Parallel Port mode (SPP)	Optimal Default, Failsafe Default
	EPP Mode	
	ECP Mode	
	EPP Mode & ECP mode	
Change Darallal Dort	mada Carpa of the Mades r	aquirad a DMA recourse. After Made

Change Parallel Port mode. Some of the Modes required a DMA resource. After Mode changing, Reset the System to reflect actual device settings.

3.4.5 Advanced: Serial Port Console Redirection

Aptio Set Advanced	up Utility – Copyright (C) 20	19 American Megatrends, Inc.	
COMO Console Redirection > Console Redirection Set Legacy Console Redirect > Legacy Console Redirect Secial Port for Out-of	[Enabled] tings tion tion Settings Band Management/	The settings specify how the host computer and the remote computer (which the user is using) will exchange data. Both computers should have the same or compatible settings.	
Windows Emergency Manag Console Redirection	gement Services (EMS) [Enabled]		
▶ Console Redirection Set	τings	++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit	
Version	2.20.1275. Copyright (C) 2019) American Megatrends, Inc.	
Options Summary	D: 11 1		
Console Redirection	Disabled		
Consola Padiraction F	enduleu	Optimal Default, Failsale Default	
Console Redirection S	ettinas		
The settings specify how the host computer (which the user is using) will exchange data. Both computers should have the same or compatible settings.			
Legacy Console Redire	ection Settings		
Legacy Console Redire	ection Settings		
Console Redirection	Disabled		
	Enabled	Optimal Default, Failsafe Default	
Console Redirection Enabled or Disabled.			
Lonsole realizection settings			
using) will exchange data. Both computer and remote computer (which the user is			
settings.	ata. Doth computers shou		

3.4.5.1 COM0 Console Redirection Settings

Aptio Setup Utility - Advanced	Copyright (C) 2019 (American Megatrends, Inc.
COMO Console Redirection Settings Terminal Type Bits per second Data Bits Parity Stop Bits Flow Control VT-UTF8 Combo Key Support Recorder Mode Resolution 100x31 Putty KeyPad	[VT100+] [115200] [8] [None] [1] [Nne] [Enabled] [Disabled] [Disabled] [VT100]	Emulation: ANSI: Extended ASCII char set. VT100: ASCII char set. VT100+: Extends VT100 to support color, function keys, etc. VT-UTFB: Uses UTF8 encoding to map Unicode chars onto 1 or more bytes. ++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Version 2 20 1275 6	Conunight (C) 2019 Ame	anican Medatnende. Inc

Options Summary					
Terminal Type	VT100				
	VT100+	Optimal Default, Failsafe Default			
	VT-UTF8				
	ANSI				
Emulation:					
ANSI: Extended ASCII	char set.				
VT100: ASCII char set.	VT100: ASCII char set.				
VT100+: Extends VT10	VT100+: Extends VT100 to support color, function keys, etc.				
VT-UTF8: Uses UTH8 encoding to map Unicode chars onto 1 or more bytes.					
Bits per second	9600				
	19200				
	38400				
	57600				
	115200	Optimal Default, Failsafe Default			
Selects serial port transmission speed. The speed must be matched on the other side.					
Long or noisy lines may require lower speeds.					

Options Summary				
Data Bits	7			
	8	Optimal Default, Failsafe Default		
Data Bits	•	•		
Parity	None	Optimal Default, Failsafe Default		
	Even			
	Odd			
	Mark			
	Space			
A parity bit can be ser	it with the data bits to dete	ct some transmission errors.		
Even: parity bit is 0 if t	he number of 1's in the data	a bits is even.		
Odd: parity bit is 0 if the	ne number of 1's in the data	a bits is odd.		
Mark: parity bit is alwa	ys 1.			
Space: Parity bit is alw	ays 0. Mark and Space Pari	ty do not allow for error detection.		
Stop Bits	1	Optimal Default, Failsafe Default		
	2			
Stop bits indicate the end of a serial data packet. (A start bit indicates the beginning). The				
standard setting is 1 st	standard setting is 1 stop bit. Communication with slow devices may require more than 1			
stop bit.	T	1		
Flow Control	None	Optimal Default, Failsafe Default		
	Hardware RTS/CTS			
Flow control can prevent data loss from buffer overflow. When sending data, if the				
receiving buffers are fu	ull, a 'stop' signal can be ser	nt to stop the data flow. Once the		
buffers are empty, a 's	tart' signal can be sent to re	e-start the flow. Hardware flow control		
uses two wires to send	start/stop signals.			
VT-UTF8 Combo Key	Disabled			
Support	Enabled	Optimal Default, Failsafe Default		
Enabled VT-UTF8 Combination key Support for ANSI/VT100 terminals				
Recorder Mode	Disabled	Optimal Default, Failsafe Default		
	Enabled			
With this mode enable	ed only text will be sent. Thi	s is to capture Terminal data.		
Resolution 100x31	Disabled	Optimal Default, Failsafe Default		
	Enabled			
Enables or disables ex	tended terminal resolution			

Table Continues on Next Page

Options Summary			
Putty KeyPad	VT100	Optimal Default, Failsafe Default	
	LINUX		
	XTERMR6		
	SCO		
	ESCN		
	VT400		
Select Functionke	y and keypad on Putty		

3.4.5.2 Legacy Console Redirection Settings

Aptio Setup Utility – Advanced	Copyright (C) 2019 American	Megatrends, Inc.
Legacy Console Redirection Settings		Select a COM port to display
Redirection COM Port Resolution Redirect After POST	[COMO] [80x24] [Always Enable]	Legacy OPROM Messages
		<pre>++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>
Version 2.20.1275. Co	puright (C) 2019 American M	egatrends. Inc.

Options Summary		
Redirection COM Port	COM0	Optimal Default, Failsafe Default
Select a COM port to o	display redirection of Legac	zy OS and Legacy OPROM Messages
Resolution	80x24	Optimal Default, Failsafe Default
	80x25	
On Legacy OS, the Nu	mber of Rows and Column	s supported redirection
Redirect After POST	Always Enable	Optimal Default, Failsafe Default
	BootLoader	
When Bootloader is selected, then Legacy Console Redirection is disabled before		
booting to legacy OS. When Always Enable is selected, then Legacy Console Redirection		
is enabled for legacy OS. Default setting for this option is set to Always Enable.		

3.4.5.3 Console Redirection Settings

Aptio Se Advanced	etup Utility – Copyright (C) 2019	American Megatrends, Inc.
Advanced Out-of-Band Mgmt Port Terminal Type Bits per second Flow Control Data Bits Parity Stop Bits	COM0 [VT-UTF8] [115200] [None] 8 None 1	<pre>VT-UTF8 is the preferred terminal type for out-of-band management. The next best choice is VT100+ and then VT100. See above, in Console Redirection Settings page, for more Help with Terminal Type/Emulation.</pre> ++: Select Screen 14: Select Screen 14: Select Item Enter: Select +/-: Change Opt, F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit

Options Summary		
Terminal Type	VT100	
	VT100+	
	VT-UTF8	Optimal Default, Failsafe Default
	ANSI	
VT-UTF8 is the preferr	ed terminal type for out-of	-band management. The next best
choice is VT100+ and t	then VT100. See above, in (Console Redirection Settings page, for
more Help with Terminal Type/Emulation.		
Bits per second	9600	
	19200	
	57600	
	115200	Optimal Default, Failsafe Default
Selects serial port transmission speed. The speed must be matched on the other side.		
Long or noisy lines may require lower speeds.		

Options Summary		
Flow Control	None	Optimal Default, Failsafe Default
	Hardware RTS/CTS	
	Software Xon/Xonff	

Flow control can prevent data loss from buffer overflow. When sending data, if the receiving buffers are full, a 'stop' signal can be sent to stop the data flow. Once the buffers are empty, a 'start' signal can be sent to re-start the flow. Hardware flow control uses two wires to send start/stop signals.

3.4.6 Advanced: NVMe Configuration

Aptio Setup Utility – Copyright (C) 2019 American Advanced	Megatrends, Inc.
NVMe Configuration	
No NVME Device Found	
	++: Select Screen
	†↓: Select Item Enter: Select
	+/−: Change Opt. F1: General Help
	F2: Previous Values F3: Optimized Defaults
	F4: Save & Exit ESC: Exit
Version 2.20.1275. Copyright (C) 2019 American Me	gatrends, Inc.

3.4.7 Advanced: Power Management

Aptio Setup L Advanced	Jtility – Copyright (C) 2019 Ameria	can Megatrends, Inc.
Power Management		Select system power mode.
Power Mode Restore AC Power Loss	[ATX Type] [Last State]	
Wake Events RTC wake system from SS	[Disabled]	
		 ti: Select Item Enter: Select +/-: Change Opt. F1: General Help
		F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Version 2.20).1275. Copyright (C) 2019 America	n Megatrends, Inc.

Options Summary		
Power Mode	АТХ Туре	Optimal Default, Failsafe Default
	АТ Туре	
Select system power m	node.	
Restore AC Power	Last State	Optimal Default, Failsafe Default
Loss	Always On	
	Always Off	
RTC wake system	Disabled	Optimal Default, Failsafe Default
from S5	Enabled	
Fixed Time: System will wake on the hr::min::sec specified.		
Dynamic Time: System will wake on the current time + Increase minute(s)		

3.4.8 Advanced: LAN Bypass Configuration

Aptio Setup Utility - Advanced	- Copyright (C) 2019 America	n Megatrends, Inc.
LAN Rupper Status LED	(ובה הבב)	Configure LAN Bypass Status
Enn Bypass status EED		CLD.
LAN Bypass Kit 1 Configuration		
Mode for Power-on	[PassTru]	
Mode for Power-off	[PassTru]	
LAN Bypass Kit 2 Configuration		
Mode for Power-on	[PassTru]	
Mode for Power-off	[PassTru]	
LAN Bypass Kit 3 Configuration		
Mode for Power-on	[PassTru]	
Mode for Power-off	[PassTru]	
LAN Bypass Kit 4 Configuration		
Mode for Power-on	[PassTru]	→+: Select Screen
Mode for Power-off	[PassTru]	↑↓: Select Item
LAN Bypass Kit 5 Configuration		Enter: Select
Mode for Power-on	[PassTru]	+/-: Change Opt.
Mode for Power-off	[PassTru]	F1: General Help
LAN Bypass Kit 6 Configuration		F2: Previous Values
Mode for Power-on	[PassTru]	F3: Optimized Defaults
Mode for Power-off	[PassTru]	F4: Save & Exit
LAN Bypass Kit 7 Configuration		ESC: Exit
Mode for Power-on	[PassTru]	
Mode for Power-off	[PassTru]	
LAN Bypass Kit 8 Configuration		 A second sec second second sec
Mode for Power-on	[PassTru]	
Mode for Power-off	[PassTru]	
WDT Configuration	[System Reset]	

Version 2.20.1275. Copyright (C) 2019 American Megatrends, Inc.

Options Summary		
LAN Bypass Status	LED OFF	Optimal Default, Failsafe Default
LED	RED LED ON	
	RED LED BLINK	
	RED LED FAST BLINK	
	GREEN LED ON	
	GREEN LED BLINK	
	GREEN LED FAST BLINK	
Configure LAN Bypass	Status LED.	
Mode for Power-on	PassTru	Optimal Default, Failsafe Default
	ByPass	
Configure LAN kit behavior when system in power-on state. (Bypass/Pass Through)		
Settings and Default a	oply for LAN Bypass Kit 1, 2	, 3, 4, 5, 6, 7, and 8

Options Summary		
Mode for Power-off	PassTru	Optimal Default, Failsafe Default
	ByPass	
Configure LAN kit behavior when system in power-off state. (Bypass/Pass Through)		
Settings and Default apply for LAN Bypass Kit 1, 2, 3, 4, 5, 6, 7, and 8		
WDT Configuration	Force ByPass	
System Reset Optimal Default, Failsafe Default		
Configure WDT behavior , System Reset Force ByPass		

3.4.9 Advanced: Digital IO Port Configuration



Options Summary			
DIO Port1	Input		
	Output	Optimal Default, Failsafe Default	
Set DIO as Input or Ou	ıtput		
Output Level	Low		
	High	Optimal Default, Failsafe Default	
Set output level when	Set output level when DIO pin is output		
DIO Port2	Input		
	Output	Optimal Default, Failsafe Default	
Set DIO as Input or Output			
Output Level	Low		
	High	Optimal Default, Failsafe Default	
Set output level when DIO pin is output			
Options Summary			
---	-------------------	-----------------------------------	--
DIO Port3	Input		
	Output	Optimal Default, Failsafe Default	
Set DIO as Input or O	utput		
Output Level	Low		
	High	Optimal Default, Failsafe Default	
Set output level when	DIO pin is output		
DIO Port4	Input	-	
	Output	Optimal Default, Failsafe Default	
Set DIO as Input or O	utput		
Output Level	Low		
	High	Optimal Default, Failsafe Default	
Set output level when DIO pin is output			
DIO Port5	Input	Optimal Default, Failsafe Default	
	Output		
Set DIO as Input or Output			
DIO Port6	Input	Optimal Default, Failsafe Default	
	Output		
Set DIO as Input or O	utput		
DIO Port7	Input	Optimal Default, Failsafe Default	
	Output		
Set DIO as Input or O	utput		
DIO Port8	Input	Optimal Default, Failsafe Default	
	Output		
Set DIO as Input or O	utput		

3.4.10 Advanced: Network Stack Configuration

Aptio Setup Advanced) Utility – Copyright (C) 2019 Ame	erican Megatrends, Inc.
Network Stack Iov4 PXE Support Ipv4 HTTP Support PXE boot wait time Media detect count	[Enabled] [Enabled] [Disabled] 0 1	Enable/Disable UEFI Network Stack
		<pre>++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>

Options Summary				
Network Stack	Disabled	Optimal Default, Failsafe Default		
	Enabled			
Set DIO as Input or Ou	ıtput			
Ipv4 PXE Support	Disabled			
	Enabled	Optimal Default, Failsafe Default		
Enable/Disable IPv4 PX	(E boot support. If disabled	l, IPv4 PXE boot support will not be		
available				
Ipv4 HTTP Support	Disabled			
	Enabled	Optimal Default, Failsafe Default		
Enable/Disable IPv4 HTTP boot support. If disabled, IPv4 HTTP boot support will not be				
available				
PXE boot wait time	0	Optimal Default, Failsafe Default		
Wait time in seconds to	o press ESC key to abort th	e PXE boot. Use either +/- or numeric		
keys to set the value.				

Options Summary

Media detect count

1

Optimal Default, Failsafe Default

Number of times the presence of media will be checked. Use either +/- or numeric keys to set the value.

3.5 Setup Submenu: Security

Aptio Setup Uti Main Advanced Security Bo	lity – Copyright (ot Save & Exit P	(C) 2019 American Megatrends, Inc. Platform Configuration Socket Configuration I	
Password Description If ONLY the Administrator's p then this only limits access only asked for when entering If ONLY the User's password in is a power on password and mu boot or enter Setup. In Setup have Administrator rights. The password length must be in the following range:	assword is set, to Setup and is Setup. s set, then this st be entered to the User will	Set Administrator Password	
Minimum length Maximum length Administrator Password User Password	3 20	++: Select Screen fl: Select Item Enter: Select +/-: Change Opt. El: Concel Hele	
▶ Secure Boot		F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit	
Version 2.20.1275. Copyright (C) 2019 American Megatrends, Inc.			

Change User/Administrator Password

You can set an Administrator Password or User Password. An Administrator Password must be set before you can set a User Password. The password will be required during boot up, or when the user enters the Setup utility. A User Password does not provide access to many of the features in the Setup utility.

Select the password you wish to set, and press Enter. In the dialog box, enter your password (must be between 3 and 20 letters or numbers). Press Enter and retype your password to confirm. Press Enter again to set the password.

Removing the Password

Select the password you want to remove and enter the current password. At the next dialog box press Enter to disable password protection.

3.5.1 Security: Secure Boot

Aptio Setup Main	Utility – Copyright (C) 2019 Ame	rican Megatrends, Inc.
System Mode	Setup	Secure Boot feature is Active
Secure Boot	[Disabled] Not Active	Platform Key(PK) is enrolled and the System is in User mode.
Secure Boot Mode ▶ Restore Factory Keys ▶ Pecet To Setur Mode	[Custom]	ne mode change requires platform reset
 Key Management 		
		↑↓: Select Item Enter: Select
		+/-: Change Opt. F1: General Help F2: Previous Values
		F3: Optimized Defaults F4: Save & Exit
		ESU: EXIT
Version 2.	20.1275. Copyright (C) 2019 Ameri	can Megatrends, Inc.

Options Summary				
Secure Boot	Disabled	Optimal Default, Failsafe Default		
	Enabled			
Secure Boot feature is	Active if Secure Boot is Ena	abled, Platform Key(PK) is enrolled and		
the System is in User n	node. The mode change re	quires platform reset		
Secure Boot Mode	Standard			
	Custom	Optimal Default, Failsafe Default		
Secure Boot mode options: Standard or Custom. In Custom mode, Secure Boot Policy				
variables can be configured by a physically present user without full authentication				
Restore Factory Keys	YES	Optimal Default, Failsafe Default		
	NO			
Force System to User N	Mode. Install factory defaul	t Secure Boot key databases		

3.5.1.1 Key Management

Aptio Se	etup Utility – Copyright (C) 20	19 American	Megatrends, Inc.
Vendor Keys	Valid		Install factory default Secure
Factory Key Provision Restore Factory Keys Reset To Setup Mode Export Secure Boot var Enroll Efi Image	[Disabled] Mables		Boot keys after the platform reset and while the System is in Setup mode
Device Guard Ready ▶ Remove 'UEFI CA' from ▶ Restore DB defaults	DB		
Secure Boot variable > Platform Key(PK) > Key Exchange Keys > Authorized Signatures > Forbidden Signatures > Authorized TimeStamps > OsRecovery Signatures	Size Keys Key Source 0 0 No Keys 0 0 No Keys 3724 77 Factory 0 0 No Keys 0 0 No Keys		<pre>++: Select Screen t4: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>
Version	n 2.20.1275. Copyright (C) 2019	American M	egatrends, Inc.
Options Summary			
Factory Keys Provision	Disabled Enabled	Optimal	Default, Failsafe Default
Install factory default 9	Secure Boot krys after the r	platform r	eset and while the System is i
Setup mode			
Export Secure Boot variables	ОК	Optimal	Default, Failsafe Default
Copy NVRAM content	of Secure Boot variables to	o files in a	root folder on a file system
acrice			
Enroll Efi Image	ОК	Optimal	Default, Failsafe Default
Enroll Efi Image	OK 1 in Secure Boot mode. En	Optimal	Default, Failsafe Default
Enroll Efi Image Allow the image to rul image into Authorized	OK n in Secure Boot mode. En I Signature Database (db)	Optimal roll SHA2	Default, Failsafe Default 56 Hash certificate of a PE
Enroll Efi Image Allow the image to run image into Authorized Restore DB defaults	OK n in Secure Boot mode. En Signature Database (db) YES	Optimal roll SHA25	Default, Failsafe Default 66 Hash certificate of a PE Default, Failsafe Default
Enroll Efi Image Allow the image to run image into Authorized Restore DB defaults	OK n in Secure Boot mode. End Signature Database (db) YES NO	Optimal foll SHA25	Default, Failsafe Default 66 Hash certificate of a PE Default, Failsafe Default

Options Summary			
Platform Key(PK)	Update	Optimal Default, Failsafe Default	
Enroll Factory Defaults	or load certificates from a	file:	
1.Public Key Certificate	:		
a)EFI_SIGNATURE_LIST			
b)EFI_CERT_X509 (DER	()		
b)EFI_CERT_RSA2048 (bin)		
b)EFI_CERT_SHAXXX			
2.Authenticated UEFI \	/ariable		
3.EFI PE/COFF Image(S	SHA256)		
Key Source			
Factory, External, Mix	ed Lucius		
Key Exchange Keys	Update	Optimal Default, Failsafe Default	
	Append		
Enroll Factory Defaults	or load certificates from a	file:	
1.Public Key Certificate			
a)EFI_SIGNATURE_LIST			
b)EFI_CERT_X509 (DER	()		
D)EFI_CERI_RSA2048 (,DIN)		
D)EFI_CERI_SHAXXX	(ariable		
2. AUTHENTICATED DEFIN			
) (AZJU)		
Factory External Mixe	ed		
Authorized Signatures	Undate	Optimal Default, Failsafe Default	
, lationized eignataree	Append		
Enroll Factory Defaults	or load certificates from a	file [.]	
1 Public Key Certificate			
a)FELSIGNATURE LIST			
b)EFL CERT X509 (DER)			
b)EFL CERT RSA2048 (bin)			
b)EFI CERT SHAXXX			
2.Authenticated UEFI Variable			
3.EFI PE/COFF Image(SHA256)			
Key Source			
Factory, External, Mix	ed		

Table Continues on Next Page

Options Summary			
Forbidden Signatures	Details	Optimal Default, Failsafe Default	
	Export		
	Update		
	Append		
	Delete		
Enroll Factory Defaults	or load certificates from a	file:	
1.Public Key Certificate	:		
a)EFI_SIGNATURE_LIST			
b)EFI_CERT_X509 (DEF	2)		
b)EFI_CERT_RSA2048 (bin)		
b)EFI_CERT_SHAXXX			
2.Authenticated UEFI \	/ariable		
3.EFI PE/COFF Image(S	SHA256)		
Key Source			
Factory, External, Mix	ed		
Authorized	Update	Optimal Default, Failsafe Default	
TimeStamps	Append		
Enroll Factory Defaults	or load certificates from a	file:	
1.Public Key Certificate	:		
a)EFI_SIGNATURE_LIST			
b)EFI_CERT_X509 (DEF	?)		
b)EFI_CERT_RSA2048 (bin)		
b)EFI_CERT_SHAXXX			
2.Authenticated UEFI	/ariable		
3.EFI PE/COFF Image(S	SHA256)		
Key Source			
Factory, External, Mix	ed		
OsRecovery	Update	Optimal Default, Failsafe Default	
Signatures	Append		
Enroll Factory Defaults	or load certificates from a	file:	
1.Public Key Certificate:			
a)EFI_SIGNATURE_LIST			
b)EFI_CERT_X509 (DER)			
b)EFI_CERT_RSA2048 (bin)		
b)EFI_CERT_SHAXXX			
2.Authenticated UEFI Variable			
3.EFI PE/COFF Image(SHA256)			
Key Source			
Factory ,External, Mix	ed		

3.6 Setup Submenu: Boot

Antio Se	etun Utilitu – C	nnuright (C)_20	19 American	Megatrends. Inc.
Main Advanced Secur	rity Boot Save	& Exit Platfo	rm Configur	ation Socket Configuration
Boot Configuration				Enables or disables Quiet Boot
Quiet Boot		[Enabled]		option
CSM Support		[Enabled]		
Launch PXE ROM		[Disabled]		
Boot mode select		[DUAL]		
FIXED BOOT ORDER Prior	rities			
Boot Option #1		[UEFI Hard Disk]]	
Boot Uption #2 Boot Option #3		[UEFI CD/DVD]	S-HEET.	
boot option wo		ADATA USB Flash	Drive	
		1.00, Partition	1]	
Boot Option #4		[UEFI Network]		++: Select Screen
Boot Uption #5 Boot Option #6		[Hard Disk] [CD/DVD]		I∔: Select item Enter: Select
Boot Option #7		[USB Device:ADA	TA USB	+/-: Change Opt.
Dept Option #0		Flash Drive 1.0	0]	F1: General Help
BOOL ODITOU #0		INBLWORKJ		E3: Ontimized Defaults
▶ UEFI USB Drive BBS Pr.	iorities			F4: Save & Exit
USB Drive BBS Priorit.	1es			ESC: Exit
Version	n 2.20.1275. Cop	yright (C) 2019	American M	egatrends, Inc.
Options Summary				
Quiet Boot	Disabled			
	Enabled		Ontimal	Default Failsafe Default
Enables or Disables ()	uiet Boot opti	on	Optimar	
CSM Support	Disabled	011	1	
	Enabled		Ontinal	Default Failante Default
Enable /Disable CCMC	Enabled		Optimal	Default, Fallsale Default
Enable/Disable CSIVES	Diastatast		Quiting	
Launch PXE ROM	Disabled		Optimal	Default, Fallsate Default
	Enabled			
Controls the executior Network.	n of Legacy Ne	etwork OpRO	M Note: l	JEFI PXE boot is controlled by
Boot mode select	LEGACY]	
	UEFI]	
	DUAL		Optimal	Default, Failsafe Default
Select boot mode LEG	GACY/UEFI			

3.7 Setup Submenu: Save & Exit

Aptio Setup Utility – Copyright (C) 2019 American Main Advanced Security Boot <mark>Save & Exit</mark> Platform Configure	Megatrends, Inc. ation Socket Configuration ▶
Save Options	Reset the system after saving the changes
Save Changes and Reset Discard Changes and Exit	
Default Options Restore Defaults	
	↔: Select Screen †↓: Select Item
	Enter: Select +/-: Change Opt.
	F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit
	ESC: Exit
Version 2.20.1275. Copyright (C) 2019 American Me	egatrends, Inc.

3.8 Setup Submenu: Platform Configuration

Aptio Setup Utility – Copyright (C) 2019 American Megatrends, Inc. Main Advanced Security Boot Save & Exit <mark>Platform Configuration</mark> Socket Configuration I			
 PCH Configuration Server ME Configuration 	Displays and provides option to change the PCH Settings		
Setup Warning: Setting items on this Screen to incorrect values may cause system to malfunction!			
	<pre>++: Select Screen 11: Select Item Enter: Select +/-: Change Opt, F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>		
Version 2.20.1275. Copyright (C) 2019 American M	egatrends, Inc.		

3.8.1 Platform Configuration: PCH Configuration

Aptio Setup Utility – Copyright (C) 2019 American Platform Configura	Megatrends, Inc. tion
PCH Configuration	SATA devices and settings
 PCH SATA Configuration PCH sSATA Configuration 	
	<pre>++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>
Version 2.20.1275. Copyright (C) 2019 American Me	gatrends, Inc.

3.8.1.1 PCH SATA Configuration

Aptio Setup Utility -	Copyright (C) 2019 American Platform Configur	Megatrends, Inc. ation
PCH SATA Configuration		Enable or Disable SATA Controller
SATA Controller Configure SATA as SATA Port 0 SATA Port 1 SATA Port 2 SATA Port 3 SATA Port 3 SATA Port 4 SATA Port 5 mSATA Port 5	[Enable] [AHCI] [Not Installed] [Not Installed] [Not Installed] [Not Installed] [Not Installed] [Not Installed] [Not Installed]	++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit

Options Summary		
SATA Controller	Disabled	
	Enabled	Optimal Default, Failsafe Default
Enables or Disables SATA Controller		
Configure SATA as	AHCI	Optimal Default, Failsafe Default
	RAID	
Identify the SATA port is connected to Solid State Drive or Hard Disk Drive		

3.8.1.2 PCH sSATA Configuration

Aptio Setup L	Htility — Copyright (C) 2019 Am Platform Co	merican Megatrends, Inc. Onfiguration
PCH sSATA Configuration		Enable or Disable SATA Controller
sSATA Controller		
M.2 Slot	[Not Installed]	
		<pre>++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>
Version 2.20	.1275. Copyright (C) 2019 Amer	rican Megatrends, Inc.

Options Summary		
sSATA Controller	Enabled	Optimal Default, Failsafe Default
	Disabled	
Enables or Disables SATA Controller		

3.8.2 Platform Configuration: Server ME Configuration

Aptio Setup Utility	– Copyright (C) 2019 Amer Platform Cont	rican Megatrends, Inc. figuration
General ME Configuration Oper. Firmware Version Backup Firmware Version Recovery Firmware Version ME Firmware Status #1 ME Firmware Status #2 Current State Error Code Recovery Cause PTT Support Suppress PTT Commands	0A:4.1.4.296 N/A 0A:4.1.4.296 0x000F0245 0x80110026 Operational No Error N/A [Disable] [Disable]	Enable/Disable sending HMRFPO_ENABLE message to ME
HMRFPO_ENABLE Message	[Disable]	++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit

Options Summary		
PTT Support	Disabled	Optimal Default, Failsafe Default
	Enabled	
Enable/ Disable Platform Trusted Technology (PTT) support		
HMRFPO_ENABLE	Disabled	Optimal Default, Failsafe Default
Message	Enabled	
Enable/ Disable sending HMRFPO_ENABLE message to ME		

3.9 Setup Submenu: Socket Configuration

Aptio Setup Main Advanced Security	Utility – Copyright (C) 2019 American Boot Save & Exit Platform Configur	Megatrends, Inc. ation Socket Configuration
 Processor Configuration Memory Configuration Advanced Power Management 	Configuration	Displays and provides option to change the Processor Settings ++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Version 2.	20.1275. Copyright (C) 2019 American M	egatrends, Inc.

3.9.1 Socket Configuration: Processor Configuration

Aptio Setup Utility	– Copyright (C) 2019 American	n Megatrends, Inc. Socket Configuration
Processor Configuration		Enables Hyper Threading (Software Method to
Processor BSP Revision	50655 - CLX AO	Enable/Disable Logical
Processor Socket	Socket 0 Socket 1	Processor threads.
Processor ID	00050655* 00050655	
Processor Frequency	2.200GHz 2.200GHz	
Processor Max Ratio	16H 16H	
Processor Min Ratio	OAH OAH	
Microcode Revision	03000010 03000010	
L1 Cache RAM	64KB 64KB	
L2 Cache RAM	1024KB 1024KB	
L3 Cache RAM	39424KB 39424KB	
Processor O Version	Intel(R) Xeon(R) Platin	
	um 8276 CPU @ 2.20GHz	++: Select Screen
Processor 1 Version	Intel(R) Xeon(R) Platin	↑↓: Select Item
	um 8276 CPU @ 2.20GHz	Enter: Select
		+/-: Change Opt.
Hyper-Threading [ALL]		F1: General Help
		F2: Previous Values
		F3: Optimized Defaults
		F4: Save & Exit
		ESC: Exit
Newsier 0.00.4075	Openminist (O) OO10 American I	le de transfer - Trans

Options SummaryHyper-ThreadingDisabled[ALL]EnabledOptimal Default, Failsafe DefaultEnables Hyper Threading (Software Method to Enable/Disable Logical Processor threads.

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3.9.2 Socket Configuration: Memory Configuration

Aptio Setup Utility – Copyright (C) 2019 America	an Megatrends, Inc. Socket Configuration
Integrated Memory Controller (iMC)	Displays memory topology with Dimm population information
► Memory Topology	
	++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Version 2.20.1275. Copyright (C) 2019 American	Megatrends, Inc.

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3.9.2.1 Memory Topology

Socket0.ChB.Dimm0: DIMM is Present. DIMM Status:Enabled DIMM Details: 2666MT/s Innodisk SRx4 166B RDIMM Socket1.ChB.Dimm0: DIMM is Present. DIMM Status:Enabled	Aptio Setup Utility -	Copyright (C) 2019 Americar	Megatrends, Inc. Socket Configuration
DIMM Details: 2666MT/s Innodisk SRx4 16GB RDIMM Empty	Socket0.Ch8.Dimm0: DIMM is Present DIMM Details: 2666MT/S Innodisk SRx- Socket1.Ch8.Dimm0: DIMM is Present DIMM Details: 2666MT/S Innodisk SRx- Empty	. DIMM Status:Enabled 4 16GB RDIMM . DIMM Status:Enabled 4 16GB RDIMM	<pre>+: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>

3.9.3 Socket Configuration: Advanced Power Management Configuration

Aptio Setup Utility – Copyright (C) 201	9 American Megatrends, Inc. Socket Configuration
Advanced Power Management Configuration	Hardware P-State setting
▶ Hardware PM State Control	
	++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Version 2.20.1275. Copyright (C) 2019	American Megatrends, Inc.

Chapter 3 – AMI BIOS Setup

3.9.3.1 Hardware PM State Control

Aptio Setup Util	ity – Copyright (C) 2019 A	merican Megatrends, Inc. Socket Configuration
Hardware PM State Control		Disable: Hardware chooses a P-state based on OS Request
Hardware P-States		 P-state based on US Request (Legacy P-States) Native Mode:Hardware chooses a P-state based on OS guidance Out of Band Mode:Hardware autonomously chooses a P-state (no OS guidance) +*: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Version 2.20.12	75. Copyright (C) 2019 Ame	rican Megatrends, Inc.

Options Summary					
Hardware Disabled		Optimal Default, Failsafe Default			
Native Mode					
Disabled: Hardware chooses a P-state based on OS Request (Legacy P-States)					
Native Mode: Hardware chooses a P-state based on OS guidance					
Out of Band Mode: Hardware autonomously chooses a P-state (no OS guidance)					

Chapter 4

Drivers Installation

4.1 Drivers Installation

The drivers can be found on the FWS-8600 product page at aaeon.com. Please follow the sequence below to install the drivers.

Step 1 – Install Chipset Drivers (Windows)

- 1. Open the folder Step 1 Chipset
- 2. Open SetupChipset.exe
- 3. Follow the instructions
- 4. Drivers will be installed automatically

Step 1 – Install LAN Drivers (Linux)

- 1. Open the folder Step 2 LAN
- 2. Open README
- 3. Follow the instructions to install LAN drivers

Appendix A

Watchdog Timer Initial Program A.1

Note

0x2E or 0x4E

0x2F or 0x4F

Table 1 : SuperIO relative register table Default Value

0x2E(Note1)

0x2F(Note2)

Index

Data

Table 2 : Watchdog relative register table					
	LDN	Register	BitNum	Value	Note
Timer Counter	0x07 (Note3)	0x73 (Note4)		(Note24)	Time of watchdog timer (0~255) This register is byte access
Counting Unit	0x07 (Note5)	0x72 (Note6)	7 (Note7)	1 (Note8)	Select time unit. 1: second 0: minute
Watchdog Enable (KRST)	0x07 (Note9)	0x72 (Note10)	4 (Note11)	1 (Note12)	0: Disable 1: Enable
Timeout Status	0x07 (Note13)	0x71 (Note14)	0 (Note15)	1	1: Clear timeout status

SIO MB PnP Mode Index Register

SIO MB PnP Mode Data Register

// SuperIO relative definition (Please reference to Table 1)

#define byte SIOIndex //This parameter is represented from Note1 SIOData //This parameter is represented from Note2 #define bvte #define void IOWriteByte(byte IOPort, byte Value); #define byte IOReadByte(byte IOPort); // Watch Dog relative definition (Please reference to Table 2) #define byte TimerLDN //This parameter is represented from Note3 #define byte TimerReg //This parameter is represented from Note4 #define byte TimerVal // This parameter is represented from Note24 UnitLDN //This parameter is represented from Note5 #define bvte #define byte UnitReg //This parameter is represented from **Note6** UnitBit //This parameter is represented from Note7 #define bvte UnitVal //This parameter is represented from Note8 #define byte #define byte EnableLDN //This parameter is represented from Note9 #define byte EnableReg //This parameter is represented from Note10 #define byte EnableBit //This parameter is represented from Note11 #define byte EnableVal //This parameter is represented from Note12 #define byte StatusLDN // This parameter is represented from Note13 #define byte StatusReg // This parameter is represented from Note14 #define byte StatusBit // This parameter is represented from Note15 **** ************

VOID Main(){

- // Procedure : AaeonWDTConfig
- // (byte)Timer : Time of WDT timer.(0x00~0xFF)
- // (boolean)Unit : Select time unit(0: second, 1: minute).

AaeonWDTConfig();

// Procedure : AaeonWDTEnable

// This procudure will enable the WDT counting.

AaeonWDTEnable();

}

}

// Procedure : AaeonWDTEnable
VOID AaeonWDTEnable (){

}

J	
// Pro	cedure : AaeonWDTConfig
VOID	AaeonWDTConfig (){ // Disable WDT counting WDTEnableDisable(EnableLDN, EnableReg, EnableBit, 0); // Clear Watchdog Timeout Status WDTClearTimeoutStatus(); // WDT relative parameter setting WDTParameterSetting();
VOID }	WDTEnableDisable(byte LDN, byte Register, byte BitNum, byte Value){ SIOBitSet(LDN, Register, BitNum, Value);
VOID	WDTParameterSetting(){ // Watchdog Timer counter setting SIOByteSet(TimerLDN, TimerReg, TimerVal); // WDT counting unit setting SIOBitSet(UnitLDN, UnitReg, UnitBit, UnitVal);
VOID	WDTClearTimeoutStatus(){

WDTEnableDisable(EnableLDN, EnableReg, EnableBit, 1);

SIOBitSet(StatusLDN, StatusReg, StatusBit, 1);

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VOID	SIOExitMBPnPMode(){
	IOWriteByte(SIOIndex, 0x02);

IOWriteByte(SIOData, 0x02);

SIOEnterMBPnPMode(){

Case 0x4E:

Break:

Break;

Switch(SIOIndex){ Case 0x2E:

VOID **SIOSelectLDN(byte LDN)**{ IOWriteByte(SIOIndex, 0x07); // SIO LDN Register Offset = 0x07 IOWriteByte(SIOData, LDN);

IOWriteByte(SIOIndex, 0x87); IOWriteByte(SIOIndex, 0x01); IOWriteByte(SIOIndex, 0x55); IOWriteByte(SIOIndex, 0x55);

IOWriteByte(SIOIndex, 0x87); IOWriteByte(SIOIndex, 0x01); IOWriteByte(SIOIndex, 0x55); IOWriteByte(SIOIndex, 0xAA);

}

}

1

}

VOID

VOID SIOBitSet(byte LDN, byte Register, byte BitNum, byte Value){

Byte TmpValue;

SIOEnterMBPnPMode(); SIOSelectLDN(byte LDN); IOWriteByte(SIOIndex, Register); TmpValue = IOReadByte(SIOData); TmpValue &= ~(1 << BitNum); TmpValue |= (Value << BitNum); IOWriteByte(SIOData, TmpValue); SIOExitMBPnPMode();

}

VOID SIOByteSet(byte LDN, byte Register, byte Value){

SIOEnterMBPnPMode(); SIOSelectLDN(LDN); IOWriteByte(SIOIndex, Register); IOWriteByte(SIOData, Value); SIOExitMBPnPMode();

}

Appendix B

B.1 Status LED

The FWS-8600 features a programmable LED status indicator. The LED can be programmed using the AAEON SDK.

B.1.1 Status LED Configuration

Table 1: Status LED Settings Table					
STA_LED2	STA_LED1	STA_LED0	LED States		
0	0	0	LED Off		
0	0	1	Red		
0	1	0	Red Blinking (Slowly)		
0	1	1	Red Blinking (Quickly)		
1	0	0	Reserved		
1	0	1	Green Blinking (Slowly)		
1	1	0	Green Blinking (Quickly)		
1	1	1	Green		

Table 2: Status LED Relative Register Mapping Table							
CPLD Slave Address 0x90 (Note1)							
	Attribute Offset(SMBUS) BitNum Value						
STA_LED2	R/W	0x00 (Note2)	2	(Table 1)			
STA_LED1	R/W	0x00 (Note2)	1	(Table 1)			
STA_LED0	R/W	0x00 (Note2)	0	(Table 1)			

B.1.2 Sample Code

```
#define Byte CPLD SLAVE ADDRESS
                             //This parameter is
represented from Note1
#define Byte OFFSET
                           //This parameter is represented
from Note2
bData = aaeonSmbusReadByte(CPLD SLAVE ADDRESS, OFFSET);
switch ( LED FLAG)
{
case 0:
{
   //LED Off
   //BIT2=0, BIT1=0, BIT0=0
   bData = bData & 0xF8;
   break;
}
case 1:
{
   //Red LED On
   //BIT2=0, BIT1=0, BIT0=1
   bData = (bData \& 0xF8) | 0x01;
   break;
}
case 2:
{
   //Red LED Blink
   //BIT2=0, BIT1=1, BIT0=0
   bData = (bData \& 0xF8) | 0x02;
   break;
}
case 3:
{
   //Red LED Fast Blink
   //BIT2=0, BIT1=1, BIT0=1
   bData = (bData \& 0xF8) | 0x03;
   break;
}
case 4:
```

```
Network Appliance
```

{

```
//Green LED On
    //BIT2=1, BIT1=1, BIT0=1
   bData = (bData \& 0xF8) | 0x07;
   break;
}
case 5:
{
    //Green LED Blink
    //BIT2=1, BIT1=0, BIT0=1
   bData = (bData \& 0xF8) | 0x05;
   break;
}
case 6:
{
    //Green LED Fast Blink
    //BIT2=1, BIT1=1, BIT0=0
   bData = (bData \& 0xF8) | 0x06;
   break;
}
default:
   break;
}
SmbusWriteByte(CPLD SLAVE ADDRESS, 0x00, bData);
```

B.2 LAN Bypass

The FWS-8600 features a LAN Bypass kit, allowing for uninterrupted network traffic even if a single in-line appliance is shut down or hangs.

B.2.1 LAN Bypass Configuration

Table 1 : ID Select table of LAN kit					
LAN_ID3	LAN_ID2	LAN_ID1	LAN_ID0	LAN kit selected	
0	0	0	0	LAN Kit 1 Selected	
0	0	0	1	LAN Kit 2 Selected	
0	0	1	0	LAN Kit 3 Selected	
1	1	1	1	LAN Kit 16 Selected	

Table 2 : LAN Bypass relative register table				
Function	Description			
LAN_ID3	Lies for colorting which LAN Lit will be configured refer to Table 1 ID			
LAN_ID2	Select table of LANLING			
LAN_ID1	They should be set before ACT EN			
LAN_ID0	They should be set before ACT_EN.			
PWR_ON	Use for configuring LAN Bypass function behavior to LAN kit, when system power on. 1: Bypass 0: Pass Through			
PWR_OFF	Use for configuring LAN Bypass function behavior to LAN kit, when system power off. 1: Bypass 0: Pass Through			
WDT_EN	Use for configuring WDT function behavior to LAN kit, when WDT triggered. 0: Normal WDT reset (Default) 1: Force Bypass			
ACT_EN	Use for activating programming of LAN kit. It is edge triggering (falling edge 1 to 0) and should be set to high(1) as its normal state.			

Table 3 : LAN Bypass relative register mapping table						
CPLD Slave Address 0x90 (Note1)						
Attribute Offset(SMBUS) BitNum Value						
LAN_ID3	R/W	0x01(Note2)	3	(Table 1)		
LAN_ID2	R/W	0x01(Note2)	2	(Table 1)		
LAN_ID1	R/W	0x01(Note2)	1	(Table 1)		
LAN_ID0	R/W	0x01(Note2)	0	(Table 1)		
PWR_ON	R/W	0x01(Note2)	6	(Table 2)		
PWR_OFF	R/W	0x01(Note2)	5	(Table 2)		
WDT_EN	R/W	0x01(Note2)	4	(Table 2)		
ACT_EN	R/W	0x01(Note2)	7	(Table 2)		

B.2.2 Sample Code

```
#define Byte CPLD SLAVE ADDRESS //This parameter is
represented from Note1
#define Byte OFFSET
                          //This parameter is represented
from Note2
// Select Lan Pair
BYTE bLanSel = LAN PAIR;
BYTE bData = SmbusReadByte(CPLD SLAVE ADDRESS, OFFSET);
// Set Reg01h bit3
if(bLanSel & 0x08)
   bData = bData | 0x08;
else
   bData = bData \& 0xF7;
// Set Reg01h bit2
if(bLanSel & 0x04)
   bData = bData | 0x04;
else
   bData = bData & 0xFB;
// Set Reg01h bit1
if(bLanSel & 0x02)
   bData = bData | 0x02;
else
   bData = bData & 0xFD;
// Set Reg01h bit0
```
```
Network Appliance
```

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```
if(bLanSel & 0x01)
    bData = bData | 0x01;
else
   bData = bData & 0xFE;
// Power On Action (Reg01h bit6)
if (SET PASS THROUGH) // Pass Through
    bData = bData & 0xBF;
else
                     // Bypass
    bData = bData | 0x40;
// Power Off Action (Reg01h bit5)
if (SET PASS THROUGH) // Pass Through
    bData = bData & 0xDF;
else
                     // Bypass
    bData = bData | 0x20;
// WDT Action (Reg01h bit4)
if (SET WDT RESET) // Reset
    bData = bData & 0xEF;
                 // Bypass
else
    bData = bData | 0x10;
SmbusWriteByte(CPLD SLAVE ADDRESS, OFFSET, bData);
// Apply Settings (Reg01h bit7)
bData = SmbusReadByte(CPLD SLAVE ADDRESS, OFFSET);
SmbusWriteByte(CPLD SLAVE ADDRESS, OFFSET, bData & 0x7F);
Sleep(500);
bData = SmbusReadByte(CPLD SLAVE ADDRESS, OFFSET);
SmbusWriteByte(CPLD SLAVE ADDRESS, OFFSET, bData | 0x80);
```

B.3 Software Button (General Purpose Input)

The FWS-8600 system features a general purpose input button which can be programmed with the AAEON SDK.

B.3.1 Software Button Configuration

Table 1 : Software Button register mapping table				
	Attribute	Register(I/O)	BitNum	Value
BTN_STS	R	0xA05(Note1)	4(Note2)	(Note3)

Table 2: Software Button register				
Function	Description			
BTN_STS	Reading this register returns the pin level status which is normal high active low. 0: Pin Level States Low. 1: Pin Level States High.			

B.3.2 Sample Code

```
#define Word BTN STS //This parameter is represented from
Note1
#define Byte BTN STS R
               //This parameter is represented
from Note2
Byte GET Value (Word IoAddr, Byte BitNum, Byte Value) {
  BYTE TmpValue;
  TmpValue = inportb (IoAddr);
return (TmpValue & (1 << BitNum))
}
VOID Main() {
  Byte RstBtn;
  RstBtn = GET_Value (BTN_STS, BTN_STS_R); // Active
Low
```