

AAEON IPC EC Command Set User Guide

Most Confidential	
Confidential	V
Internal	V
Public	

Revision History

Revision	Description	Date	Editor
0.1(draft)	Initial Release	2020/04/08	Ayers_Deng

Contents

Revision History	2
Contents	3
Chapter 1 Introduction	4
1.1 Principle	4
Chapter 2 AAEON IPC EC Command Set	5
2.1 I/O Command Set	5
2.2 CMD 8Eh/9Eh Index Table	11
2.3 CMD CCh/CDh Index Table	12

Chapter 1 Introduction

1.1 Principle

Text

Chapter 2 AAEON IPC EC Command Set

Host side OS utility/application can use IO port 0x584(DAT port) and 0x585(CMD port) to access/communicate with EC FW.

2.1 I/O Command Set

CMD	Function	Description/Usage												
0x85	Get Panel brightness	Send Byte0: Panel index (follow motherboard printing number) Received Byte0: Brightness percentage level 0 to 10(100%)												
0x86	Set Panel brightness	Byte0: Panel index (follow motherboard printing number) Byte1: Brightness percentage level 0 to 10(100%)												
0x8E	Read MISC function	Send Byte0: Index number (refer to “ CMD 8Eh/9Eh Index Table ”)												
0x8F	Read HW ID	Send Byte0: 0x00 - Board ID 0x01 - Panel ID Received Byte0: HW ID value												
0x97	Read FAN RPM	Send Byte0: <table border="1"><thead><tr><th>High nibble[7:4] - Type</th><th>Low nibble[3:0] - Number</th></tr></thead><tbody><tr><td>0 - CPU</td><td>0 - PECI (for Read Temperature only) x - refer Note</td></tr><tr><td>1 - System</td><td>x - refer Note</td></tr><tr><td>2 - Chassis</td><td>x - refer Note</td></tr><tr><td>3 - Power Supply</td><td>x - refer Note</td></tr><tr><td colspan="2">Note: Number follow motherboard printing number, or zero as default(if exist)</td></tr></tbody></table> Received Byte0: High Byte Byte1: Low Byte	High nibble[7:4] - Type	Low nibble[3:0] - Number	0 - CPU	0 - PECI (for Read Temperature only) x - refer Note	1 - System	x - refer Note	2 - Chassis	x - refer Note	3 - Power Supply	x - refer Note	Note: Number follow motherboard printing number, or zero as default(if exist)	
High nibble[7:4] - Type	Low nibble[3:0] - Number													
0 - CPU	0 - PECI (for Read Temperature only) x - refer Note													
1 - System	x - refer Note													
2 - Chassis	x - refer Note													
3 - Power Supply	x - refer Note													
Note: Number follow motherboard printing number, or zero as default(if exist)														
0x9E	Write MISC function	Byte0: Index number (refer to “ CMD 8Eh/9Eh Index Table ”) Byte1: Write Data												
0xAA	Read I2C/SMBus	Todo (ARStmp)												
0xAB	Write I2C/SMBus	Todo (ARStmp)												

0xBB	Read EC FW version	Received
		<div><div>Case 1 - Standard Platform EC</div><div>Byte0: 0x09 (return total bytes, included Byte0) Byte1: S - Standard platform EC Byte2: I/A - Intel/AMD chipset Byte3/4/5: Platform name Byte6: F/H/T - EC kernel version type (Formal/Hot Fix/Test) Byte7/8: version number Example: SICMLFxx = Standard Intel CometLake Formal EC kernel FW</div></div>
		<div><div>Case2 - for Project / Customize dedicated EC</div><div>Byte0: 0x13 (return total bytes, included Byte0) (part1) Byte1: P/C - Project/Customize dedicated EC Byte2: I/A - Intel/AMD chipset Byte3/4/5: Platform name Byte6: F/H/T - EC kernel version type (Formal/Hot Fix/Test) Byte7/8: version number Byte9: '.' - ASCII code 0x2E (part2) Byte 10 to 14: PROJECT_TAG Byte15: '.' - ASCII code 0x2E (part3) Byte16: F/T - FW version type (Formal/Test) Byte17/18: version number Example: PICMLT01.SMH41.T01 = part1 - Project Intel CML Test EC kernel FW part2 - for project SMS-H410 part3 - first Test version</div></div>

0xC6	Get Watchdog status	Type	Value
		WDT status	Send Byte0: 0x00 Received Byte0: 0 - Inactive/Stop 1 - Activating
		Second/Minute mode	Send Byte0: 0x01 Received Byte0: 0 - Second 1 - Minute
		Countdown value or Current remaining value	Send Byte0: 0x02 Byte1: 0 - Countdown value 1 - Current remaining value Received Byte0: second Byte1: minute (for Minute mode only) Note: EC base on Second/Minute mode to report the value
		WDT expired	Send Byte0: 0x03 Received Byte0: 0 - not expired 1 - expired (EC also set " WDT set(expired) LED " if the project supported the feature)

0xC7	Set Watchdog	Type	Value
		WDT Stop/Resume	Byte0: 0x00 Byte1: 0 - Stop WDT (EC will stop WDT counter and record remaining Countdown value. Turn off " WDT active LED ", if the project supported WDT LED feature) 1 - Resume WDT (EC will restore previous remaining Countdown value. Turn on " WDT active LED ", if the project supported WDT LED feature)
		Second/Minute mode	Byte0: 0x01 Byte1: 0 - Second (Default) 1 - Minute Note: must set " WDT Stop/Resume " or " Countdown value " value to 0 to Stop/Inactive WDT first
		Countdown value	Byte0: 0x02 Byte1: Value (Second mode: 1 ~ 255 sec., Minute mode: 1 ~ 30 min.) Note: 1. Set value as 0 - clear countdown value and inactive WDT function 2. Set valid value - active WDT function 3. Follow " WDT Stop/Resume " LED behavior
		Reload/Retrigger WDT countdown value	Byte0: 0x03 Note: 1. Reload previous Second/Minute mode and Countdown value 2. Start WDT function
0xCC	Read thermal related	Send Byte0: Index number (refer to " CMD CCh/CDh Index Table ")	
0xCD	Write thermal related	Byte0: Index number (refer to " CMD CCh/CDh Index Table ") Byte1: Write Data	

0xD0	Get DIO pin status	<div>Send Byte0: DIO pin index (follow motherboard printing number)</div> <div>Received Byte0:</div> <table><tr><th>High nibble[7:4] - Type</th><th>Low nibble[3:0] - Value</th></tr><tr><td>0 - Output</td><td>0 - Low 1 - High</td></tr><tr><td>1 - Input</td><td>0 - Low 1 - High</td></tr></table>	High nibble[7:4] - Type	Low nibble[3:0] - Value	0 - Output	0 - Low 1 - High	1 - Input	0 - Low 1 - High
High nibble[7:4] - Type	Low nibble[3:0] - Value							
0 - Output	0 - Low 1 - High							
1 - Input	0 - Low 1 - High							
0xD1	Set DIO pin	<div>Byte0: DIO pin index (follow motherboard printing number)</div> <div>Byte1:</div> <table><tr><th>High nibble[7:4] - Type</th><th>Low nibble[3:0] - Value</th></tr><tr><td>0 - Output</td><td>0 - Low 1 - High</td></tr><tr><td>1 - Input</td><td>0</td></tr></table>	High nibble[7:4] - Type	Low nibble[3:0] - Value	0 - Output	0 - Low 1 - High	1 - Input	0
High nibble[7:4] - Type	Low nibble[3:0] - Value							
0 - Output	0 - Low 1 - High							
1 - Input	0							

0xD2	Get LED status	Send Byte0:																						
		<table><tr><th>High nibble[7:4] - Type</th><th>Low nibble[3:0] - Number</th></tr><tr><td>0 - Power LED</td><td>0 - Power on LED (S0) 1 - AC IN LED 2 - Reserved 3 - Sleep LED (S3) 4 - Hibernate LED (S4) 5 - Soft off LED (S5)</td></tr><tr><td>1 - Battery LED</td><td>x - refer Note</td></tr><tr><td>2 - Watchdog LED</td><td>0 - WDT active LED 1 - WDT set(expired) LED</td></tr><tr><td>3 - Cap Lock LED</td><td>0</td></tr><tr><td>4 - Wireless LED</td><td>0</td></tr><tr><td>5 - Temperature Alert LED</td><td>x - refer Note</td></tr><tr><td>6 - FAN Alert LED</td><td>x - refer Note</td></tr><tr><td>7 - HDD Alarm LED</td><td>x - refer Note</td></tr><tr><td>8 - Debug LED</td><td>0</td></tr><tr><td colspan="2">Note: Number follow motherboard printing number, or zero as default(if exist)</td></tr></table>	High nibble[7:4] - Type	Low nibble[3:0] - Number	0 - Power LED	0 - Power on LED (S0) 1 - AC IN LED 2 - Reserved 3 - Sleep LED (S3) 4 - Hibernate LED (S4) 5 - Soft off LED (S5)	1 - Battery LED	x - refer Note	2 - Watchdog LED	0 - WDT active LED 1 - WDT set(expired) LED	3 - Cap Lock LED	0	4 - Wireless LED	0	5 - Temperature Alert LED	x - refer Note	6 - FAN Alert LED	x - refer Note	7 - HDD Alarm LED	x - refer Note	8 - Debug LED	0	Note: Number follow motherboard printing number, or zero as default(if exist)	
		High nibble[7:4] - Type	Low nibble[3:0] - Number																					
		0 - Power LED	0 - Power on LED (S0) 1 - AC IN LED 2 - Reserved 3 - Sleep LED (S3) 4 - Hibernate LED (S4) 5 - Soft off LED (S5)																					
		1 - Battery LED	x - refer Note																					
		2 - Watchdog LED	0 - WDT active LED 1 - WDT set(expired) LED																					
		3 - Cap Lock LED	0																					
		4 - Wireless LED	0																					
		5 - Temperature Alert LED	x - refer Note																					
		6 - FAN Alert LED	x - refer Note																					
		7 - HDD Alarm LED	x - refer Note																					
		8 - Debug LED	0																					
		Note: Number follow motherboard printing number, or zero as default(if exist)																						
		Received Byte0:																						
<table><tr><th>LED type</th><th>Value</th></tr><tr><td>General purpose LED</td><td>0 - LED off 1 - LED on 2 - Toggle LED On/Off status (only for CMD 0xD3 Set LED Byte1)</td></tr><tr><td>Debug LED status</td><td>HW Error: 0x11 - Power failure 0x12 - System unable to power on 0x13 - Processor not installed 0x14 - New Processor 0x15 - Memory not installed 0x16 - Memory error 0x17 - CPU temperature abnormal 0x18 - FAN speed fault 0x19 - Case open 0x1A - Storage not found SW Error: 0x40 - POST fail 0x41 - Pre-video memory error 0x42 - Pre-video graphics error 0x43 - Bootable volume not found 0x44 - ROM checksum not valid</td></tr></table>	LED type	Value	General purpose LED	0 - LED off 1 - LED on 2 - Toggle LED On/Off status (only for CMD 0xD3 Set LED Byte1)	Debug LED status	HW Error: 0x11 - Power failure 0x12 - System unable to power on 0x13 - Processor not installed 0x14 - New Processor 0x15 - Memory not installed 0x16 - Memory error 0x17 - CPU temperature abnormal 0x18 - FAN speed fault 0x19 - Case open 0x1A - Storage not found SW Error: 0x40 - POST fail 0x41 - Pre-video memory error 0x42 - Pre-video graphics error 0x43 - Bootable volume not found 0x44 - ROM checksum not valid																		
LED type	Value																							
General purpose LED	0 - LED off 1 - LED on 2 - Toggle LED On/Off status (only for CMD 0xD3 Set LED Byte1)																							
Debug LED status	HW Error: 0x11 - Power failure 0x12 - System unable to power on 0x13 - Processor not installed 0x14 - New Processor 0x15 - Memory not installed 0x16 - Memory error 0x17 - CPU temperature abnormal 0x18 - FAN speed fault 0x19 - Case open 0x1A - Storage not found SW Error: 0x40 - POST fail 0x41 - Pre-video memory error 0x42 - Pre-video graphics error 0x43 - Bootable volume not found 0x44 - ROM checksum not valid																							
0xD3	Set LED	Byte0: Definition the same as CMD 0xD2 “Send Byte0” Byte1: Definition the same as CMD 0xD2 “Received Byte0”																						

0xD4	Get Voltage	<p>Send Byte0:</p> <p>0x00 - VCORE 0x01 - VCOREREFIN 0x02 - +12V 0x03 - +5V 0x04 - 5VSB 0x05 - 5VDUAL 0x06 - +3.3V 0x07 - 3VSB 0x08 - +1.8V 0x09 - VMEM 0x0A - RTC 0x0B - VBAT</p> <p>Received</p> <p>Byte0: High Byte Byte1: Middle Byte Byte2: Low Byte</p>
------	-------------	-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

2.2 CMD 8Eh/9Eh Index Table

The index table intend for miscellaneous functions which access by CMD [0x8E](#), [0x9E](#).

Index	Function	Description/Usage
0x40	Get FAN mode	<p>Send Byte1:</p> <p>Definition the same as CMD 0x97 "Send Byte0"</p> <p>Received Byte0:</p> <p>0x00 - Auto (default) 0x01 - Silent 0x02 - Performance 0x03 - Full speed 0x10 - Manual (Get only. Through Index 0x43 "Set FAN duty" of the 8Eh/9Eh index table to set value will automatically change FAN mode to Manual mode) 0xFF - Disable</p>
0x41	Set FAN mode	<p>Byte1:</p> <p>Definition the same as CMD 0x97 "Send Byte0"</p> <p>Byte2:</p> <p>Definition the same as Index 0x40 - Get FAN mode "Received Byte0"</p>
0x42	Get FAN duty	<p>Send Byte1:</p> <p>Definition the same as CMD 0x97 "Send Byte0"</p> <p>Received Byte0:</p> <p>Duty cycle value 0 to 255</p>

0x43	Set FAN duty	Byte1: Definition the same as CMD 0x97 "Send Byte0" Byte2: Duty cycle value 0 to 255
------	--------------	---------------------------------------------------------------------------------------------------------------

2.3 CMD CCh/CDh Index Table

The index table functions intend for thermal related which access by CMD [0xCC](#), [0xCD](#).

Index	Function	Description/Usage
0x01	Read Temperature	Send Byte1: Definition the same as CMD 0x97 "Send Byte0" Received Byte0: Temperature value (degree C)