AAEON

AAEON IPC EC Command Set Calling Guide

Most Confidential	
Confidential	V
Internal	V
Public	

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Revision History

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

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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

<table>
<tr><th>CMD</th><th>Function</th><th>Description/Usage</th></tr>
<tr><td>0x85</td><td>Get Panel brightness</td><td>Send Byte0:
Panel index (follow motherboard printing number)

Received Byte0:
Brightness percentage level 0 to 10(100%)</td></tr>
<tr><td>0x86</td><td>Set Panel brightness</td><td>Byte0:
Panel index (follow motherboard printing number)
Byte1:
Brightness percentage level 0 to 10(100%)</td></tr>
<tr><td>0x8E</td><td>Read MISC function</td><td>Send Byte0:
Index number (refer to “CMD 8Eh/9Eh Index Table”)</td></tr>
<tr><td>0x8F</td><td>Read HW ID</td><td>Send Byte0:
0x00 - Board ID
0x01 - Panel ID

Received Byte0:
HW ID value</td></tr>
<tr><td>0x97</td><td>Read FAN RPM</td><td>Send Byte0:
<table><tr><th>High nibble[7:4] - Type</th><th>Low nibble[3:0] - Number</th></tr><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></table>
Received
Byte0: High Byte
Byte1: Low Byte</td></tr>
<tr><td>0x9E</td><td>Write MISC function</td><td>Byte0:
Index number (refer to “CMD 8Eh/9Eh Index Table”)
Byte1:
Write Data</td></tr>
<tr><td>0xAA</td><td>Read I2C/SMBus</td><td>Todo (ARStmp)</td></tr>
<tr><td>0xAB</td><td>Write I2C/SMBus</td><td>Todo (ARStmp)</td></tr>
</table>

<table>
<tr><td>0xBB</td><td>Read EC FW version</td><td>Received<table>
<tr><td>Case 1 - Standard Platform EC</td><td>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</td></tr>
<tr><td>Case2 - for Project / Customize dedicated EC</td><td>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</td></tr>
</table></td></tr>
</table>

<table>
<tr><td>0xC6</td><td>Get Watchdog status</td><td>Send Byte0:
0x00 - WDT status
0x01 - Second/Minute mode
0x02 - Countdown value of current remaining values
0x03 - WDT expired

Received
<table><tr><th>WDT type</th><th>Value</th></tr><tr><td>WDT status</td><td>Byte0:
0 - Stop
1 - Activating</td></tr><tr><td>Second/Minute mode</td><td>Byte0:
0 - Second
1 - Minute</td></tr><tr><td>Countdown value of current remaining values</td><td>Byte0: High Byte
Byte1: Low Byte</td></tr><tr><td>WDT expired</td><td>Byte0:
0 - not expired
1 - expired (EC also set “WDT set(expired) LED” if the project supported the feature)</td></tr></table></td></tr>
<tr><td>0xC7</td><td>Set Watchdog</td><td><table><tr><th>Type</th><th>Value</th></tr><tr><td>WDT active</td><td>Byte0:
0x00
Byte1:
0 - Stop WDT (EC will clear countdown value and “WDT active LED” if the project supported the feature)
1 - Active WDT (EC will set “WDT active LED” if the project supported the feature)</td></tr><tr><td>Second/Minute mode</td><td>Byte0:
0x01
Byte1:
0 - Second
1 - Minute
Note: must set “WDT active” value as 0 to Stop WDT first</td></tr><tr><td>Countdown value</td><td>Byte0: 0x02
Byte1: High Byte
Byte2: Low Byte
Note:
Set value 0 - the behavior the same as Stop WDT of “WDT active”</td></tr><tr><td>Reload/Retrigger WDT countdown value</td><td>Byte0:
0x03</td></tr></table></td></tr>
</table>

<table>
<tr><td>0xCC</td><td>Read thermal related</td><td>Send Byte0:
Index number (refer to “CMD CCh/CDh Index Table”)</td></tr>
<tr><td>0xCD</td><td>Write thermal related</td><td>Byte0:
Index number (refer to “CMD CCh/CDh Index Table”)
Byte1:
Write Data</td></tr>
<tr><td>0xD0</td><td>Get DIO pin status</td><td>Send Byte0:
DIO pin index (follow motherboard printing number)
Received Byte0:
<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></td></tr>
<tr><td>0xD1</td><td>Set DIO pin</td><td>Byte0:
DIO pin index (follow motherboard printing number)
Byte1:
<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></td></tr>
</table>

<table>
<tr>
<td>0xD2</td>
<td>Get LED status</td>
<td>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>
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>
</td>
</tr>
<tr>
<td>0xD3</td>
<td>Set LED</td>
<td>Byte0:
Definition the same as CMD 0xD2 “Send Byte0”
Byte1:
Definition the same as CMD 0xD2 “Received Byte0”</td>
</tr>
</table>

0xD4	Get Voltage	Send Byte0: 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 Received Byte0: High Byte Byte1: Middle Byte Byte2: Low Byte

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	Send Byte1: Definition the same as CMD 0x97 “Send Byte0” Received Byte0: 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
0x41	Set FAN mode	Byte1: Definition the same as CMD 0x97 “Send Byte0” Byte2: Definition the same as Index 0x40 - Get FAN mode “Received Byte0”
0x42	Get FAN duty	Send Byte1: Definition the same as CMD 0x97 “Send Byte0” Received Byte0: Duty cycle value 0 to 255

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)