

AMI210

User Manual

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IBASE Technology Inc.

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Safety Information

Your AMI210 is designed and tested to meet the latest standards of safety for information technology equipment. However, to ensure your safety, it is important that you read the following safety instructions

Setting up your system

- Read and follow all instructions in the documentation before you operate your system.
- Do not use this product near water.
- Set up the system on a stable surface. Do not secure the system on any unstable plane.
- Do not place this product on an unstable cart, stand, or table. The product may fall, causing serious damage to the product.
- Slots and openings on the chassis are for ventilation. Do not block or cover these openings. Make sure you leave plenty of space around the system for ventilation.
 Never insert objects of any kind into the ventilation openings.
- This system should be operated from the type of power indicated on the marking label. If you are not sure of the type of power available, consult your dealer or local power company.
- Use this product in environments with ambient temperatures between 0°C and 40°C.
- If you use an extension cord, make sure that the total ampere rating of the devices plugged into the extension cord does not exceed its ampere rating.
- DO NOT LEAVE THIS EQUIPMENT IN AN ENVIRONMENT WHERE THESTORAGE TEMPERATURE MAY GO BELOW -20° C (-4° F) OR ABOVE 80° C (176° F). THIS COULD DAMAGE THE EQUIPMENT. THE EQUIPMENT SHOULD BE IN A CONTROLLED ENVIRONMENT.



Care during use

- Do not walk on the power cord or allow anything to rest on it.
- Do not spill water or any other liquids on your system.
- When the system is turned off, a small amount of electrical current still flows. Always unplug all power, and network cables from the power outlets before cleaning the system.
- If you encounter the following technical problems with the product, unplug the power cord and contact a qualified service technician or your retailer.
 - > The power cord or plug is damaged.
 - Liquid has been spilled into the system.
 - The system does not function properly even if you follow the operating instructions.
 - > The system was dropped or the cabinet is damaged.

Lithium-Ion Battery Warning

CAUTION: Danger of explosion if 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.

NO DISASSEMBLY

The warranty does not apply to the products that have been disassembled by users

WARNING HAZARDOUS MOVING PARTS KEEP FINGERS AND OTHER BODY PARTS AWAY



Acknowledgments

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- Microsoft Windows is a registered trademark of Microsoft Corporation.
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CHAPTER 1 INTRODUCTION

1.1 General Description

The fanless AMI210 system comes with the ibase customized board MB210 and integrates the 4th Intel® Core[™] i7/i5/i3 pentium[™] and celeron[™] processor that featuring 14nm microarchitecture and 3-D Tri-Gate transistors. With unparalleled reliability, the 2.7GHz processor allows the AMI210 to operate in wide temperatures at -10°C to +50°C in harsh industrial environments for 24/7 operation. The AMI210 is ideal for IOT (Internet of Things), factory automation, In-vehicle and other rugged applications that could utilize its 12V to 24V DC wide-range power input.

AMI210 supports up to 16GB DDR3L-1600 SO-DIMM memory and provides SATAIII/ CFast interfaces for storage expansions. For network connectivity, AMI210 supports 2x Intel[®] I218LM/V and I211AT LAN ports onboard for dual network teaming functions. For power input range, AMI210 supports 12~24V DC Input and this is significant design improvement for allowing more voltage fluctuation of DC power source.

Measuring 210mm(W) by 265mm(D) by 71.6mm(H) for non-expansion slot version and 210mm(W) by 265mm(D) by 134mm(H) for expansion slot version, the AMI210 unit comes with a wall mount kit. We also provide the DC power adaptor for optional item if necessary. The model is currently available with either a 2.5-inch 64GB industrial grade SSD or CFAST slot installation. Expansion is provided by two Mini PCI-E slots. All units feature IBASE's iSMART green technology for power on/off scheduling and power resume functions.





1.2 System Specifications

1.2.1 Hardware Specifications

Engineer Specifications

Motherboard	iBASE Customized motherboard of MB210			
CPU type	Intel [®] 4 th Generation Desktop Core [™] i5/i3/Celeron DT Processor			
	- Intel [®] Core [™] i7-4770TE (2.3Ghz) TDP=45W			
	- Intel [®] Core [™] i5-4570TE (2.7Ghz) TDP=35W			
	- Intel [®] Core [™] i5-4590T (2.0Ghz) TDP=35W			
	- Intel [®] Core [™] i3-4350T (3.1Ghz) TDP=35W			
	- Intel [®] Core [™] i3-4330TE (2.4Ghz) TDP=35W			

	- Intel [®] Celeron [®] G1820TE (2.2Ghz) TDP=35W				
	Yellow = Haswell Refresh				
Chipset	Intel [®] Q87/H81Platform Controller Hub				
	- 23 x 22 mm package size, 0.65mm ball pitch				
Graphics	Core I processor Integrated Intel [®] HD Graphics 4000 Controller				
Memory	2 x DDR3-1600 SO-DIMM 2 GB, Max. 16GB (Non-ECC)				
	- TRANSCEND TS7W9SDSQ-I with Samsung chip RoHS				
	- P/N: C0373900200081520P				
	I/O Interface				
Rear Panel I/O	1 x RS422/485 port with isolation protection for COM#1				
	1 x RS232 port for COM#2				
	2 x RS232 port for COM#3/COM#4				
	1 x DisplayPort + HDMI connector				
	1 x RJ45 Gigabit Ethernet port + 2 x USB3.0 ports				
	1 x RJ45 Gigabit Ethernet port + 2 x USB2.0 ports				
	1 x 3 pins DC-in terminal block type for 12~24V *** Resistance				
	current to 15A per pin *				
Front Panel I/O	1 x DVI-D + 1 x VGA for video output				
	1 x Audio jack for MIC-in / Line-out				
	2 x USB2.0 ports ** co-lay with USB3.0 connector **				
	2 x Antenna hole [Reserved]				
	1 x red HDD LED				
	1 x power button with green PWR LED				
	1 x CFAST socket [push-push type] P/N: C1236220024110200P				
	1 x 2 pins terminal block [co-lay with power on] For external power				
	button				
	Storage Interface				
SATA	1 x SATAIII port for 2.5" SATA HDD or SSD				
mSATA	1 x internal mSATA socket				
CFAST	1 x CFAST socket				
Expai	nsion slots & I/O for optional combination				
IP212	- 1 x PCI-E(x16) slot				
IP211 [default]	- 1 x PCI-E(x8) slot				
thruPCI-E(x16) + PCI-E(x4)	- 1 x PCI-E(x1) slot				
	- 1 x SATAII connector				
	- 4-pins power connector x 1 (JST type, For SATA device)				
	- 2 x DF-11 10-pin box-header for 2 ports COM [for TX/RX signal				
	only]				
	iBASE				

	- 1 x DF-11 8-pin box-header for 2 ports USB		
	- 1 x FAN for 3 pins		
	- 1 x SMbus for 2 pins [TBD]		
	Power Supply		
DC-input	1x 3-pins pluggable terminal block for 12~24V DC input		
	(for bare wire)		
	Mechanical		
Dimension	210mm(W) x 265mm(D) x 71.6mm(H) (AMI210)		
	210mm(W) x 265mm(D) x 134mm(H) (AMI210-PE)		
Weight	3.6kg (AMI210), 4.3kg (AMI210-PE)		
Construction	Aluminum		
Chassis color	Silver + Gray		
Mounting type	Wall mount kit		
0 71			
	Environmental		
Operating Temperature	<i>Environmental</i> -10°C~50°C (-4°F~122°F) **for 35W CPU **		
Operating Temperature	Environmental -10°C~50°C (-4°F~122°F) **for 35W CPU ** -10°C~45°C (-4°F~113°F) **for 45W CPU **		
Operating Temperature Storage Temperature	Environmental -10°C~50°C (-4°F~122°F) **for 35W CPU ** -10°C~45°C (-4°F~113°F) **for 45W CPU ** -20°C~80°C (-4°F~176°F)		
Operating Temperature Storage Temperature Humidity	Environmental -10°C~50°C (-4°F~122°F) **for 35W CPU ** -10°C~45°C (-4°F~113°F) **for 45W CPU ** -20°C~80°C (-4°F~176°F) 5%~90%@45°C (non-condensing)		
Operating Temperature Storage Temperature Humidity Vibration	Environmental -10°C~50°C (-4°F~122°F) **for 35W CPU ** -10°C~45°C (-4°F~113°F) **for 45W CPU ** -20°C~80°C (-4°F~176°F) 5%~90%@45°C (non-condensing) Operating : 0.25Grms / 5~500Hz		
Operating Temperature Storage Temperature Humidity Vibration	Environmental -10°C~50°C (-4°F~122°F) **for 35W CPU ** -10°C~45°C (-4°F~113°F) **for 45W CPU ** -20°C~80°C (-4°F~176°F) 5%~90%@45°C (non-condensing) Operating : 0.25Grms / 5~500Hz Non-operating : 1Grms / 5~500Hz		
Operating Temperature Storage Temperature Humidity Vibration Shock	Environmental -10°C~50°C (-4°F~122°F) **for 35W CPU ** -10°C~45°C (-4°F~113°F) **for 45W CPU ** -20°C~80°C (-4°F~176°F) 5%~90%@45°C (non-condensing) Operating : 0.25Grms / 5~500Hz Non-operating : 1Grms / 5~500Hz Operating : 20G / 11ms		
Operating Temperature Storage Temperature Humidity Vibration Shock	Environmental -10°C~50°C (-4°F~122°F) **for 35W CPU ** -10°C~45°C (-4°F~113°F) **for 45W CPU ** -20°C~80°C (-4°F~176°F) 5%~90%@45°C (non-condensing) Operating : 0.25Grms / 5~500Hz Non-operating : 1Grms / 5~500Hz Operating : 20G / 11ms Non-operating : 40G / 11ms		
Operating Temperature Storage Temperature Humidity Vibration Shock Certification	Environmental -10°C~50°C (-4°F~122°F) **for 35W CPU ** -10°C~45°C (-4°F~113°F) **for 45W CPU ** -20°C~80°C (-4°F~176°F) 5%~90%@45°C (non-condensing) Operating : 0.25Grms / 5~500Hz Non-operating : 1Grms / 5~500Hz Operating : 20G / 11ms Non-operating : 40G / 11ms CE **follow EN55032**		
Operating Temperature Storage Temperature Humidity Vibration Shock Certification	Environmental -10°C~50°C (-4°F~122°F) **for 35W CPU ** -10°C~45°C (-4°F~113°F) **for 45W CPU ** -20°C~80°C (-4°F~176°F) 5%~90%@45°C (non-condensing) Operating : 0.25Grms / 5~500Hz Non-operating : 1Grms / 5~500Hz Operating : 20G / 11ms Non-operating : 40G / 11ms CE **follow EN55032** FCC ClassB / LVD		

•This specification is subject to change without prior notice.

1.2.2 Dimensions

AMI210 Drawing



Front View



AMI210-PE Drawing



Front View

1.2.3 I/O View



Line-out Mic-in	CFAST	USB3.0/Q87 USB2.0/H81	DVI-D VGA	Power on	Power switch HDD LED
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DC-in put 12~24V	1 x RS422/485 with isolation	3 x RS232	HDMI DP Port	2 x RJ45	2 x USB3.0 2 x USB2.0





Line-out Mic-in	CFAST	USB3.0/Q87 USB2.0/H81	DVI-D VGA	Power on	Power switch HDD LED
Whee his		0302.0/1101	VGA		



DC-in put	1 x RS422/485	3 x RS232	HDMI	2 x RJ45	2 x USB3.0
12~24V	with isolation		DP Port		2 x USB2.0

2x expansion	2 x RS232	2 x USB2.0
slots	(TX RX only)	

1.3 Exploded View of the AMI210/AMI210-PE Assembly

AMI210





AMI210-PE



1.3.1 Parts Description

AMI210

1	MB210_B1 board asm	1
2	AMI210-Cfast rubber	1
3	AMI210_Cfast-brk	1
4	AMI210_IO gasket-1	1
5	AMI210-IO gasket-2	1
6	AMI210_bracket	2
7	AMI210_base bracket asm	1
8	AMI210-hdd brk_asm	1
9	SC-47 H0323173342200000P	4
10	AMI210_front plate_1	1
11	AMI210_base hdd-1	1
12	AMI210_rear_plate_1	1
13	MHD-10I	2
14	ami210-hs-1_b2_asm-2016-01-11	1
15	AMI210-hdd rubber	1
16	EC350VM-02P	1
17	5esdvm-03p	1

AMI210-PE



1	MB210_B1 board asm	1
2	AMI210-Cfast rubber	1
3	AMI210_Cfast-brk	1
4	AMI210_IO gasket-1	1
5	AMI210-IO gasket-2	1
6	AMI210_bracket	2
- 7	AMI210-hdd brk_asm	1
8	SC-47 H0323173342200000P	4
9	AMI210-PE_IP211 brk	1
10	IP211_pci_e_riser card_asm	1
11	CC-08	1
12	CC-01	2
13	AMI210-1 hdd module	1
14	AMI210-PE_base	1
15	AMI210_rear_plate_2	1
16	AMI210-PE_pci brk_2	1
17	AMI210_front plate_2	1
18	AMI210-PE_base bracket	1
19	MHD-10I	2
20	ami210-hs-1_b2_asm-2016-01-11	1
21	P26_H06P026000000000	2

1.4 Packing List

Item No.	Description	Qty
1	Driver DVD	1
3	Wall mount kit	2

1.4.1 Optional Items

WiFi Solution	Description	
WiFi module	WIRELESS;PCI-E MINI CARD 802.11B/G/N [AW-NE238H] (A008WLAWNE238H000P)	
External Antenna	WiFi Antenna (A055RFA02C2M20800P)	
Internal cable-1/2	From Wifi module to Rear/Front panel (A055RFA0000021000P/A055RFA0000032000P)	
Bracket	MPCIE-EXT V-B1 Bracket, RoHS; Extend Half to Full size. (SC2MPCIEEXT0B1100P)	
3G Solution	Description	
ZU 202	Wireless; 3.75G UMTS/HSPA [ZU202] RoHS (A008WIRELESS00520P)	
ZU 202 ZU 200	Wireless; 3.75G UMTS/HSPA [ZU202] RoHS (A008WIRELESS00520P) Wireless; 3.75G UMTS/HSPA & GPS Module [ZU200] RoHS (A008WIRELESS00510P)	
ZU 202 ZU 200 Cable	Wireless; 3.75G UMTS/HSPA [ZU202] RoHS (A008WIRELESS00520P) Wireless; 3.75G UMTS/HSPA & GPS Module [ZU200] RoHS (A008WIRELESS00510P) Cable; Antenna-2 30CM P 2pcs (C501ANT0200300000P)	
ZU 202 ZU 200 Cable Antenna	Wireless; 3.75G UMTS/HSPA [ZU202] RoHS (A008WIRELESS00520P) Wireless; 3.75G UMTS/HSPA & GPS Module [ZU200] RoHS (A008WIRELESS00510P) Cable; Antenna-2 30CM P 2pcs (C501ANT020030000P) Antenna; 3G, P, 2pcs (A055ANT0921Q2P000P)	
ZU 202 ZU 200 Cable Antenna Power kit	Wireless; 3.75G UMTS/HSPA [ZU202] RoHS (A008WIRELESS00520P) Wireless; 3.75G UMTS/HSPA & GPS Module [ZU200] RoHS (A008WIRELESS00510P) Cable; Antenna-2 30CM P 2pcs (C501ANT020030000P) Antenna; 3G, P, 2pcs (A055ANT0921Q2P000P) Description	
ZU 202 ZU 200 Cable Antenna Power kit Power Adaptor	 Wireless; 3.75G UMTS/HSPA [ZU202] RoHS (A008WIRELESS00520P) Wireless; 3.75G UMTS/HSPA & GPS Module [ZU200] RoHS (A008WIRELESS00510P) Cable; Antenna-2 30CM P 2pcs (C501ANT020030000P) Antenna; 3G, P, 2pcs (A055ANT0921Q2P000P) Description P/S; ADAPTER 120W 12V 2 PIN bare wire type, FSP120-AHAN2] (A005PS120WF030100P) (For AMI210) P/S; ADAPTER 150W 12V 2 PIN bare wire type, FSP150-AHAN2] (A005PS150W0314000P) (For AMI210-PE) 	



CHAPTER 2 MOTHERBOARD INTRODUCTION

2.1 Introduction

The MB210 motherboard is based on the latest Intel[®] Q87/H81 chipset. The platform supports onboard 4th generation Intel[®] Core processor family features an integrated dual-channel DDR3 memory controller as well as a graphics core.

The latest Intel[®] processors provide advanced performance in both computing and graphics quality. This meets the requirement of customers in the gaming, POS, digital signage and server market segment.

The Q87/H81 platform is made with 22-nanometer technology that supports Intel's first processor architecture to unite the CPU and the graphics core on the transistor level. The MB210 board utilizes the dramatic increase in performance provided this Intel's latest cutting-edge technology. The MB210 offers fast 6Gbps SATA support, USB2.0/3.0 and interfaces for RGB, DVI-D, HDMI and DP displays.

Form Factor	Customized motherboard		
CPU type	- Intel [®] 4 th Generation Desktop Core [™] i7/i5/i3/Celeron DT		
	Processor on solder side		
	- Intel [®] Core [™] i7-4770TE (2.3Ghz) TDP=45W		
	- Intel [®] Core [™] i5-4570TE (2.7Ghz) TDP=35W		
	- Intel [®] Core [™] i5-4590T (2.0Ghz) TDP=35W		
	- Intel [®] Core [™] i3-4350T (3.1Ghz) TDP=35W		
	- Intel [®] Core [™] i3-4330TE (2.4Ghz) TDP=35W		
	- Intel [®] Celeron [®] G1820TE (2.2Ghz) TDP=35W		
	- **Yellow = Haswell Refresh**		
Chipset	Intel [®] Q87 PCH (MB210AF)		
	Intel [®] H81 PCH (MB210EF)		
	- 23 x 22 mm package size, 0.65mm ball pitch		
Memory	- 2 x DDR3-1600 SO-DIMM 8 GB, Max. 16GB (Non-ECC)		
	- 1x DIMM on solder side		
	- Dual channel DDR3-1600 MHz with 1.5V		

MB210 Specification:

	- SO-DIMM x 2, Max.=16GB (Non-ECC) [Horizontal type]	
VGA	Intel [®] 4 th Generation Core [™] DT processor integrated HD Gfx, Direct	
	X 11.1, OpenGL 3.2, Open CL 1.2	
	- DVI-D x 1 (Thru port B, with level shifter ASM1442K)	
	- DisplayPort x 1 (Thru port C)	
	- HDMI (Thru port D)	
	- VGA x 1 (Thru PCH)	
LAN	1 x Intel [®] I218LM GbE PHY (for MB210AF only)	
	1 x Intel [®] I218V GbE PHY (for MB210EF only)	
	1 x Intel [®] I211AT Gigabit LAN	
USB	For MB210AF Configuration	
	- 2 x USB 3.0 ports via the front panel I/O ** co-lay USB2.0 connector	
	** UB1112C-8HS6-4F	
	- 2 x USB 3.0 ports via the rear panel I/O	
	- 2 x USB2.0 ports via the rear panel I/O	
	- 2 x USB2.0 ports via MiniPCIe socket	
	- 2 x USB2.0 ports via PCI-E(x4) expansion slot	
	For MB210EF Configuration	
	- 2 x USB <mark>3.0</mark> ports via the rear panel I/O	
	- 2 x USB2.0 ports via the rear panel I/O	
	- 2 x USB2.0 ports via the front panel I/O ** co-lay USB3.0	
	connector **	
	- 2 x USB2.0 ports via MiniPCIe socket	
	- 2 x USB2.0 ports via PCI-E(x4) expansion slot	
Serial ATA	Intel [®] PCH built-in SATA controller, support 4 ports	
	- 1 x SATAII (3Gbps) thru CFAST and 1 x SATAIII (6Gbps) thru	
	mSATA	
	- 1 x SATAII (3Gbps) port thru PCI-E (4x) slot	
	- 1 x SATAIII (6Gbps) connector on board	
	- RAID is supported [MB210AF only]	
Audio	Intel [®] PCH built-in High Definition Audio controller + Realtek	
	ALC662-CG w/ 5.1 channels	
LPC I/O	Fintek F81866AD-I (128-pin LQFP[14mm x 14 mm])	
	- COM#1 (RS422/RS485) supporting isolation [ACPL-M60L-500E	
	OPTOCOUPLER] (pin9 with isolation 5V @ 150mA [TBD])	
	[C01Z601L00000000P]	

iBASE

	1 x DC to DC power converter @5V/2W [C0711020050053100P]		
	2 x RS422/485 transceiver SP485EEN-L		
	[C014485EEN0002000P]		
	- COM #2 (RS232 only) support ring-in with power @500 mA		
	(selectable for 5V or 12V)		
	- COM #3~COM #6 (RS232 only)		
	Hardware Monitor (2 thermal inputs,4 voltage monitor inputs & 2 Fan		
	headers)		
	- CPU FAN x1 (PWM Fan type, 4-pins connector)		
	- SYS FAN x1 (DC FAN type, 3-pins signal via PCI-E(x4) slot		
Digital IO	4 in & 4 out		
Edge Connector	1 x RS422/485 port with isolation protection for COM#1+ 1 x RS232		
[Rear Panel I/O]	port for COM#2		
	1 x DisplayPort + HDMI for video output [refer to MI987]		
	2 x RS232 port for COM#3/COM#4		
	1 x RJ45 Gigabit Ethernet port + 2 x USB3.0 ports		
	[C1217110307200100P]		
	1 x RJ45 Gigabit Ethernet port + 2 x USB2.0 ports		
	[C1217110307200100P]		
	1 x 3 pins terminal block for DC-input [5EHDRM-03P 90D 3 pins]		
	[P/N: C12165EHD03105100P]		
Edge Connectors	1 x DVI-D + 1 x VGA for video output [refer to MI981]		
[Front Panel I/O]	1 x Audio jack for MIC-in / Line-out [refer to MI987]		
	2 x USB3.0 ports ** co-lay USB2.0 connector **		
	1 x red HDD LED		
	1 x power button with green PWR LED		
	1 x 2 pins terminal block [co-lay with power on] For external power		
	button		
	[EC350RM-02P 90D 2 pins] [P/N: C1216ECH310203000P]		
	1 x CFAST socket **push-push type** P/N: C1236220024110200P		
Expansion Slots	- PCI-Express (16x PEG3.0) x1 + PCI-Express (4x) x1		
	- PCI-Express (4x) x1 [the customized pin definition] total 64 pins		
	- 1 x PCI-E (1x) signal for 36 pins		
	- 1 x SATA for 4 pins		
	- 2 x DB9 for 4 pins [for TX/RX only]		
	- 2 x USB for 8 pins		
	- 1 x FAN for 3 pins		
	- 1 x SMbus for 2 pins		

	- 2x Mini PCI-E sockets [Full-sized] , [both support USB 2.0] [refer to		
	MI808]		
	- Support mSATA thru either one Mini-PCI-E socket		
Onboard Header/Connector	2 x 5 pins DF11 box header x1 for Digital IO		
	1 x 4 pins [2 x 2]ATX power connector for DC-input		
	1 x 2 pins header for power reset button		
	1 x SATA III connector for SATA device (BLUE color)		
	1 x 4-pins power connector (JST type, For SATA device)		
Watchdog Timer	Yes (256 segments, 0, 1, 2255 sec/min)		
DC Input	+12V~24V power input		
Power protection	- OVP power protection (Overvoltage Protection to 60V)		
	- UVP power protection		
	- Reverse voltage protection (Reverse Supply Protection to -40V)		
	- Linear LTC4365HDDB Power Supply Protection Controller		
	- Extra power schematic **refer to IDP100**		
iSMART 3.2	1. EuP / ErP (thru Super I/O)		
	2. Auto-scheduler		
	3. Power fail detector		
	4. Low temperature Guardian		
Environment	Operation Temperature : -10~70 degree C		
	Relative humidity : 90% non-condensing @ 60 degree C		
Certification	CE **follow EN55032**		
	FCC Class B		
Operation System	Windows 7. Windows 8/8.1. Linux		
Board Size	170 x 170 mm (TBD)		
RoHS 2.0	YES		



2.2 Board Dimensions



2.3 Setting the Jumpers

Jumpers are used on MB210 to select various settings and features according to your needs and applications. Contact your supplier if you have doubts about the best configuration for your needs. The following lists the connectors on MB210 and their respective functions.

2.4 Jumper Locations on MB210





JBAT1: Clear CMOS Contents

JBAT1	Setting	Function
••• 1 2 3	Pin 1-2 Short/Closed	Normal (Default)
• • • 1 2 3	Pin 2-3 Short/Closed	Clear CMOS

JP1: Clear ME Contents

JP1	Setting	Function
••• 1 2 3	Pin 1-2 Short/Closed	Normal (Default)
• • • 1 2 3	Pin 2-3 Short/Closed	Clear CMOS

JP6: Flash Descriptor Security Override (Factory use only)

	Flash Descriptor
JP6	Security
	Override
Open	Disabled (Default)
Close	Enabled

JP8: COM2 RS232 RI/+5V/+12V Power Setting

JP8	Setting	Function
	Pin 1-3,	. 10\/
	Short/Closed	+12V
	Pin 3-4,	
5 0 0 6	Short/Closed	RI (Delault)
	Pin 3-5,	. 5) /
	Short/Closed	VC+

JP9: COM1Terminal Selection

JP9	Flash Descriptor Security Override
Terminal Disable	Open (Default)
Terminal Enable	Pin 1-2, Short/Closed Pin 3-4, Short/Closed

JP10: RS-422/RS-485 Selection

JP10	Flash Descriptor Security Override
RS-422	Pin 1-2, Short/Closed
RS-485	Pin 3-4, Short/Closed

JP11: AT/ATX Mode Selection

JP11	Setting	Function
••• 1 2 3	Pin 1-2 Short/Closed	ATX Mode (Default)
• • • 1 2 3	Pin 2-3 Short/Closed	AT Mode





Connector Locations on MB210

```
CN2: USB2.0 (UB1112C-8HS6-4F)
/USB3.0 Connector (UEA1112C-8HS6-4F)
```

```
CN3: CRT + DVI-D Connector (QH11121-DBGH-4F, BX4)
CN4: Audio Connector (JA23331-HA6Q-4F (E))
CN5: CFAST Connector (CY101-1100191 v1.2)
CN6: SATA Connector (WATM-07DBN4B2B8UW4)
CN7: RJ45 + USB3.0 Connector (JFM38U1B-B313-4F)
CN8: RJ45 + USB2.0 Connector (JFM38U1B-21U5-4F)
CN9: DP + HDMI Connector (3VD11203-HHJ0-4H)
CN10: COM3/4 Connector (40909AANSNAR)
Note: COM3 and COM4 support RS232 only.
```

CN1: Power Button and Power on LED Connector (DINKLE_ECH350RM-02P)

Pin #	Signal Name		
1	Power BTN		
2	Ground		

	Pin #	Signal Name			
COM1		RS-232	R2-422	RS-485	
0()0	1	DCD	TX-	DATA-	
	2	RX	TX+	DATA+	
	3	ТХ	RX+	NC	
COM2	4	DTR	RX-	NC	
	5	Ground	Ground	Ground	
	6	DSR	NC	NC	
	7	RTS	NC	NC	
	8	CTS	NC	NC	
	9	RI	NC	NC	
	10	NC	NC	NC	

CN11: COM1/2 Connector (40909AANSNAR)

Note: COM1 supports Isolated RS422/RS485 only. COM2 supports RS232 only.



J1: Reset Button Connector (Techbest 2001-WS-02-LF)



Pin #	Signal Name
1	Reset BTN
2	Ground



J2: SPI Flash Connector (Factory use only) (2mm)

Signal	Pin #	Pin #	Signal
Name			Name
Protect Pin	Х	2	NC
SPI_CS#	3	4	+3.3V
SPI_SO	5	6	SPI_HOLD#
SPI_WP#	7	8	SPI_CLK
Ground	9	10	SPI_SI

J3, J12: DDR3 SO-DIMM Socket



J4: SATA Power Connector (1600-4SD)



Pin #	Signal Name
1	+5V
2	Ground
3	Ground
4	+12V



4

1





J5: LPC Debug Connector (Factory use only) (2mm)

Signal Name	Pin #	Pin #	Signal Name
LPC_AD0	1	2	Reset#
LPC_AD1	3	4	LPC_FRAME#
LPC_AD2	5	6	+3.3V
LPC_AD3	7	8	Ground
CLK_33MHz	9	Х	Protect Pin

J6, J7: Mini PCIE Connector (Foxconn AS0B226-S99Q-7H)



J8: iSMART Debug Connector (Factory use only) (E-CALL 0110-161-040)





J9: Digital I/O Connector (豪國DF11-10S-PA66H)

Signal Name	Pin	Pin	Signal Name
	#	#	
Ground	1	2	VCC5
OUT3	3	4	OUT1
OUT2	5	6	OUT0
IN3	7	8	IN1
IN2	9	10	INO

J10: DC-in Connector (4M-ATX-S)



Pin #	Signal Name
1	Power Ground
2	Case Ground
3	+12V to +24V
4	+12V to +24V



J11: DC-inN Connector (DINKLE_5EHDRM-03P)



Pin #	Signal Name
1	+12V to +24V
2	Case Ground
3	Power Ground

CPU_FAN1: CPU Fan Power Connector (HF27040-M1)



Pin #	Signal Name
1	Ground
2	+12V
3	Rotation detection
4	Control

LED1: HDD Active LED

PCIE1: Include PCI-E x1, USB2.0, SYS_FAN, SATA, COM TX/RX Signal Connector



PCIE2: PCI-E x16 Connector

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CHAPTER 3 BIOS SETUP

This chapter describes the different settings available in the AMI BIOS that comes with the board. The topics covered in this chapter are as follows:

BIOS Introduction

The BIOS (Basic Input/Output System) installed in your computer system's ROM supports Intel processors. The BIOS provides critical low-level support for a standard device such as disk drives, serial ports and parallel ports. It also password protection as well as special support for detailed fine-tuning of the chipset controlling the entire system.

BIOS Setup

The BIOS provides a Setup utility program for specifying the system configurations and settings. The BIOS ROM of the system stores the Setup utility. When you turn on the computer, the BIOS is immediately activated. Pressing the key immediately allows you to enter the Setup utility. If you are a little bit late pressing the key, POST (Power On Self Test) will continue with its test routines, thus preventing you from invoking the Setup. If you still wish to enter Setup, restart the system by pressing the "Reset" button or simultaneously pressing the <Ctrl>, <Alt> and <Delete> keys. You can also restart by turning the system Off and back On again. The following message will appear on the screen:

Press or <F2> to Enter Setup

In general, you press the arrow keys to highlight items, <Enter> to select, the <PgUp> and <PgDn> keys to change entries, <F1> for help and <Esc> to quit.

When you enter the Setup utility, the Main Menu screen will appear on the screen. The Main Menu allows you to select from various setup functions and exit choices.

Warning: It is strongly recommended that you avoid making any changes to the chipset defaults. These defaults have been carefully chosen by both AMI and your system manufacturer to provide the absolute maximum performance and reliability. Changing the defaults could cause the system to become unstable and crash in some cases.

Main Settings

Main Advance	d Chipset	Boot	Securit	y Save & Exit
				Choose the system default
Total memory		8192 MB (DDR3)		language
Memory Frequency		1600 Mhz		
System Language		[English]		
System Date		[Mon 12/07/2015]		
System Time		[15:27:20]		\rightarrow \leftarrow Select Screen
				↑↓ Select Item
Access Level		Administrator		Enter: Select
				+- Change Field
				F1: General Help
				F2: Previous Values
				F3: Optimized Default
				F4: Save
				ESC: Exit

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System Language

Choose the system default language.

System Date

Set the Date. Use Tab to switch between Data elements.

System Time

Set the Time. Use Tab to switch between Time elements.



Advanced Settings

This section allows you to configure and improve your system and allows you to set up some system features according to your preference.

Main Advanced Cr	ipset Boot	Security	Save & Exit
 PCI Subsystem Settings 			
 ACPI Settings 			
► Wake up event setting			\rightarrow \leftarrow Select Screen
 CPU Configuration 			↑↓ Select Item
 SATA Configuration 			Enter: Select
 Shutdown Temperature Cont 	figuration		+- Change Field
► iSmart controller 3.0			F1: General Help
 AMT Configuration 			F2: Previous Values
 USB Configuration 			F3: Optimized Default
► F81866 Super IO Configurati	ion		F4: Save
► F81866 H/W Monitor		E	SC: Exit

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PCI Subsystem Settings

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Main Advanced Chipset	Boot Secur	ity Save & Exit
PCI Bus Driver Version	V 2.05.02	2
		\rightarrow \leftarrow Select Screen
PCI Common Settings		↑↓ Select Item
PCI Latency Timer	[32 PCI Bus Clocks]	Enter: Select
VGA Palette Snoop	[Disabled]	+- Change Field
PERR# Generation	[Disabled]	F1: General Help
CEDD# Concretion		F2: Previous Values
SERR# Generation	[Disabled]	F3: Optimized Default
		F4: Save
 PCI Express Settings 		ESC: Exit

PCI Latency Timer

Value to be programmed into PCI Latency Timer Register

VGA Palette Snoop

Enables or Disables VGA Palette Register Snooping.

PERR# Generation

Enables or Disables PCI Device to Generate PERR#.

SERR# Generation

Enables or Disables PCI Device to Generate SERR#.

PCI Express Settings

Change PCI Express Devices Settings.

ACPI Settings

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Main Adva	anced Chipset Boot	Security Save & Exit
ACPI Settings		
		\rightarrow \leftarrow Select Screen
ACPI Sleep State	[S3 only(Suspend to	o] ↑↓ Select Item
Lock Legacy Resou	rces [Disabled]	Enter: Select
S3 Video Repost	[Disabled]	+- Change Field
		F1: General Help
		F2: Previous Values
		F3: Optimized Default
		F4: Save
		ESC: Exit

ACPI Sleep State

Select ACPI sleep state the system will enter, when the SUSPEND button is pressed.

Lock Legacy Resources

Enables or Disables Lock of Legacy Resources.



S3 Video Repost

Enables or Disables S3 Video Repost.

Wake up event Settings

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Main	Advance	d Chipset	Boot	Security	/ Save & Exit
Wake on	PCI PME	[Enab	led]		\rightarrow \leftarrow Select Screen
					†↓ Select Item
					Enter: Select
					+- Change Field
					F1: General Help
					F2: Previous Values
					F3: Optimized Default
					F4: Save
					ESC: Exit

Wake on PCI PME

Enables or Disables Wake on PCI PME.

CPU Configuration

This section shows the CPU configuration parameters.

Main	Advanced Chipset	Boot	Security	y Save & Exit
CPU Con	figuration			
Intel(R)) Core(TM) i5-4590T CPU @ 2	.00GHz		
CPU Sign	ature	306c3		
Processo	r Family	6		
Microcode	e Patch	17		
FSB Spee	ed	100 MHz		
MAX CPL	J Speed	2000 MHz		
Min CPU	Speed	800 MHz		
Processo	r Cores	4		
Intel HT T	echnology	Not Supported		
Intel VT-X	(Technology	Supported		
Intel SMX	Technology	Supported		
64-bit		Supported		
EIST Tec	hnology	Supported		
L1 Data C	Cache	32 KB x 4		
L1 Code (Cache	32 KB x 4		
L2 Cache		256 KB x 4		\rightarrow \leftarrow Select Screen
L3 Cache		6144 KB		↑↓ Select Item
				Enter: Select
Active Pro	ocessor Cores	[AII]		+- Change Field
Overclock	king lock	[Disabled]		F1: General Help
Limit CPL	JID Maximum	[Disabled]		F2: Previous Values
Execute [Disable Bit	[Enabled]		F3: Optimized Default
Intel Virtu	alization Lechnology	[Enabled]		F4: Save
CPU AES		[Enabled]	201	ESC: Exit
BOOT perfo	ormance mode	[I UIDO Performano	'e]	
EIƏT	de	[Enabled]		
	uc	נבוומטופט]		
I				

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Active Processor Cores

Number of cores to enable in each processor package.

Overclocking lock

FLEX_RATIO(194) MSR.

Limit CPUID Maximum

Disabled for Windows XP.

Execute Disable Bit

XD can prevent certain classes of malicious buffer overflow attacks When combined with a supporting OS(Windows Server 2003 SP1, Windows XP SP2, SuSE Linux 9.2, RedHat Enterprise 3 update3.)

Intel Virtualization Technology

When enabled, a VMM can utilize the additional hardware capabilities Provided by Vanderpool Technology.

CPU AES

Enable/Disable CPU Advanced Encryption Standard instructions.

Boot performance mode

Select the performance state that the BIOS will set before OS handoff.

EIST Enable/Disable Intel SpeedStep

Turbo Mode Enable/Disable Turbo Mode.

SATA Configuration

Main	Advanced Chipset	Boot	Security	/ Save & Exit
SATA Co	ntroller(S)	[Enabled]		
SATA Mo	de Selection	[AHCI]		
 Software 	Feature Mask Configuration			
Serial AT	A Port 0	Empty		
Softv	vare Preserve	Unknown		
Serial AT	A Port 1	Empty		\rightarrow \leftarrow Select Screen
Softv	vare Preserve	Unknown		†↓ Select Item
Serial AT	A Port 2	Empty		Enter: Select
Softv	vare Preserve	Unknown		+- Change Field
Serial AT	A Port 3	Empty		F1: General Help
Softv	vare Preserve	Unknown		F2: Previous Values
Serial AT	A Port 4	Empty		F4. Save
Softv	vare Preserve	Unknown		ESC: Exit
Serial AT	A Port 5	Empty		
Softv	vare Preserve	Unknown		

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SATA Controller(S)

Enable or disable SATA Device.

SATA Mode Selection

Determines how SATA controller(s) operate.

Software Feature Mask Configuration

RAID OROM/RST driver will refer to the SWFM configuration to enable or disable the storage features.



Shutdown Temperature Configuration

Main	Advanced Chipset	Boot	Security	/ Save & Exit
ACPI Shuto	down Temperature	[Disabled]		
				\rightarrow \leftarrow Select Screen
				↑↓ Select Item
				Enter: Select
				+- Change Field
				F1: General Help
				F2: Previous Values
				F3: Optimized Default
				F4: Save
				ESC: Exit

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iSmart Controller 3.0

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Main Ac	Ivanced Chipset	Boot	Security	Save & Exit
iSmart Controlle	r 3.0			
Power-on after F	Power failure	[Disable]		\rightarrow \leftarrow Select Screen
Temperature Gu	ardian	[Disable]		↑ ↓ Select Item
				Enter: Select
Schedule Slot 1		[None]		+- Change Field
Schedule Slot 2		[None]		F1: General Help
				F2: Previous Values
				F3: Optimized Default
				F4: Save
				ESC: Exit

Power-on after Power Failure

Enable or Disable Power-on after Power failure.

Temperature Guardian

Enable or Disable Temperature Guardian.

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Schedule Slot

Setup the hour/minute for system power on.

AMT Configuration

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Main Advanced Chipse	t Boot	Security	/ Save & Exit
Intel AMT	[Enabled]		
BIOS Hotkey Pressed	[Disabled]		
MEBx Selection Screen	[Disabled]		
Hide Un-Configure ME Confirmation	[Disabled]		
Un-Configure ME	[Disabled]		\rightarrow \leftarrow Select Screen
Amt Wait Timer	0		↑↓ Select Item
Activate Remote Assistance Process	[Disabled]		Enter: Select
USB configure	[Enabled]		F1: General Help
PET Progress	[Enabled]		F2: Previous Values
AMT CIRA Timeout	0		F3: Optimized Default
Watchdog	[Disabled]		F4: Save
OS Timer	0		ESC: Exit
BIOS Timer	0		

AMT Configuration

This configuration is supported only with MB210AF(with iAMT function).

Intel AMT

Enable/Disable Intel (R) Active Management Technology BIOS Extension.

Note: iAMT H/W is always Enabled.

This option just controls the BIOS extension execution.

If enabled, this requires additional firmware in the SPI device.

BIOS Hotkey Pressed



OEMFLag Bit 1: Enable/Disable BIOS hotkey press.

MEBx Selection Screen

OEMFLag Bit 2: Enable/Disable MEBx Selection Screen.

Hide Un-Configure ME Confirmation

OEMFLag Bit 6: Hide Un-Configure ME without password Confirmation Prompt.

Un-Configure ME

OEMFLag Bit 15: Un-Configure ME without password.

Amt Wait Timer

Set timer to wait before sending ASF_GET_BOOT_OPTIONS.

Activate Remote Assistance Process

Trigger CIRA boot.

USB configure

Enable/Disable USB Configure function.

PET Progress

User can Enable/Disable PET Events progress to receive PET events or not.

Watchdog

Enable/Disable Watchdog Timer

USB Configuration

Main Advanced Chipset	Boot	Security	y Save & Exit
USB Configuration			
USB module Version	8.10.28		
USB Devices:			
1 Keyboard, 2Hubs			
Legacy USB Support	[Enabled]		
USB3.0 Support	[Enabled]		\rightarrow \leftarrow Select Screen
XHCI Hand-off	[Enabled]		†↓ Select Item
EHCI Hand-off	[Enabled]		Enter: Select
USB Mass Storage Driver Support	[Enabled]		+- Change Field F1: General Help
LISB bardware delays and time-outs:			F2: Previous Values
USB transfer time-out	[20 sec]		F3: Optimized Default
	[20 360]		F4: Save
Device reset tine-out	[∠∪ sec]		ESC: Exit
Device power-up delay	[Auto]		

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Legacy USB Support

Enables Legacy USB support.

AUTO option disables legacy support if no USB devices are connected.

DISABLE option will keep USB devices available only for EFI applications.

USB3.0 Support

Enable/Disable USB 3.0 (XHCI) Controller support.

XHCI Hand-off

This is a workaround for OSes without XHCI hand-off support. The XHCI ownership change should be claimed by XHCI driver.



EHCI Hand-off

This is a workaround for OSes without EHCI hand-off support. The EHCI ownership change should be claimed by EHCI driver.

USB MASS Storage Driver Support

Enable/Disable USB Mass Storage Driver Support.

USB Transfer time-out

The time-out value for Control, Bulk, and Interrupt transfers.

Device reset time-out

USB mass storage device start unit command time-out.

Device power-up delays

Maximum time the device will take before it properly

Reports itself to the host controller.

'Auto' uses default value: for a Root port it is 100 ms,

For a Hub port the delay is taken form Hub descriptor.

F81866 Super IO Configuration

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Advanced Chipset	Boot	Security	y Save & Exit
Super IO Configuration			
Super IO Chip Power on S5	F81866 [All Enable]		→ ←Select Screen ↑↓ Select Item
			Enter: Select
rt 1 Configuration			+- Change Field
rt 2 Configuration			F1: General Help
rt 3 Configuration			F2: Previous Values
rt 4 Configuration			F3: Optimized Default F4: Save
rt 5 Configuration			ESC: Exit
rt 6 Configuration			
	Advanced Chipset	Advanced chipset Boot Super IO Configuration F81866 Super IO Chip F81866 Power on S5 [All Enable] rt 1 Configuration F81866 rt 2 Configuration F81866 rt 3 Configuration F81866 rt 4 Configuration F81866 rt 5 Configuration F81866 rt 6 Configuration F81866	Advanced Chipset Boot Security Super IO Configuration 548866 568866 Super IO Chip F81866 56866 Power on S5 [All Enable] 568866 rt 1 Configuration 578866 568866 rt 2 Configuration 578866 568866 rt 3 Configuration 578866 56886 rt 4 Configuration 578866 56886 rt 5 Configuration 56886 56886 rt 6 Configuration 57886 56886

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Standby Power on S5

This function is supported only with MB210EF(with EuP/ErP function).

Serial Port 1 Configuration

Set parameters of Serial Port 0 (COMA)

Serial Port 2 Configuration

Set parameters of Serial Port 1 (COMB)

Serial Port 3 Configuration

Set parameters of Serial Port 1 (COMC)

Serial Port 4 Configuration

Set parameters of Serial Port 1 (COMD)

Serial Port 5 Configuration

Set parameters of Serial Port 1 (COME)

Serial Port 6 Configuration

Set parameters of Serial Port 1 (COMF)

F81866 H/W Monitor

Main	Advanced Chipset	Boot	Security	y Save & Exit
PC Health	Status			
Smart Fan	1 Function	[Disabled]		
Smart Fan	2 Function	[Disabled]		
CPU temp	erature	:+30 C		
System ter	mperature	:+35 C		
Fan1 Spee	ed	:N/A		
Fan2 Spee	ed	:N/A		\rightarrow \leftarrow Select Screen
VCORE		:+1.752 V		†↓ Select Item
Vcc5V		:+5.045V		Enter: Select
Vcc12V		:+12.056 V		+- Change Field

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+1.5V	:+1.504V	F1: General Help
VSB5V	:+4.992V	F2: Previous Values
VCC3V	:+3.312V	F3: Optimized Default
VSB3V	:+3.360V	F4: Save
VBAT	:+3.184V	ESC: Exit

Smart Fan Function

Smart Fan Mode Select.

Chipset Settings

This section allows you to configure and improve your system and allows you to set up some system features according to your preference.

Advanced	Chipset	Boot	Security	Save &
Configuration				
gent (SA) Configura	ation			
	Advanced	Advanced Chipset	Advanced Chipset Boot	Advanced Chipset Boot Security Configuration gent (SA) Configuration

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PCH-IO Configuration

Main	Advanced	Chipset	Boot	Security Save &
Exit				
Intel PCH	IRC Version		1.8.0.0	Options for SATA Configuration
Intel PCH	I SKU Name	Q87		
Intel PCH	l Rev ID	05/C2		
► PCI Express	ess Configuration			\rightarrow \leftarrow
► USB Con	figuration			Select Screen

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 PCH Azalia Configuration 		↑ ↓ Select Item
		Enter: Select
PCH LAN Controller	[Enabled]	+- Change Field
Wake on LAN	[Enabled]	F1: General Help
		F2: Previous Values
		F3: Optimized Default
		F4: Save
		ESC: Exit

PCI Express Configuration

PCI Express Configuration settings.

USB Configuration

USB Configuration settings.

PCH Azalia Configuration

PCH Azalia Configuration settings.

PCH LAN Controller

Enable of disable onboard NIC.

Wake on LAN

Enable of disable integrated LAN to wake the system.(The Wake on LAN cannot be disabled if ME is on at Sx state.)

System Agent (SA) Configuration

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Main	Advanced	Chipset	Boot	Security	Save &
Exit					
System A	gent Bridge Name	ŀ	laswell		
System A	gent RC Version	1.8.0.0			
VT-d Cap	ability	Supported			
				\rightarrow \leftarrow	
VT-d		[Enabled]		Select S	creen
CHAP De	vice(B0:D7:F0)	[Disabled]		†↓ Select I	tem
Thermal [Device (B0:D4:F0)	[Disabled]		Enter: Selec	t



CPU SA Audio Device (B0:D3:F0)	[Enabled]	+- Change Field
Enable NB CRID	[Disabled]	F1: General Help
		F2: Previous Values
 Graphics Configuration 		F3: Optimized Default
		F4: Save
		ESC: Exit

VT-d

Check to enable VT-d function on MCH.

CHAP Device (B0:D7:F0)

Enable or disable SA CHAP Device.

Thermal Device (B0:D4:F0)

Enable or disable SA Thermal Device.

CPU SA Audio Device (B0:D3:F0)

Enable or disable CPU SA Audio Device

Enable NB CRID

Enable or disable NB CRID WorkAround.

Graphics Configuration

Config Graphics Settings.

Boot Settings

This section allows you to configure the boot settings.

Main	Advanced	Chipset	Boot	Security	Save & Exit	
Boot Configur	ation					
Setup Prompt	Timeout	1				
Bootup NumL	ock State	[C	Dn]			

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Quiet Boot	[Disabled]	
Fast Boot	[Disabled]	
Boot mode select	[LEGACY]	
FIXED BOOT ORDER Priorities		
Boot option #1	[Hard Disk]	\rightarrow \leftarrow Select Screen
Boot option #2	[CD/DVD]	†↓ Select Item
Boot option #3	[USB Hard Disk]	Enter: Select
Boot option #4	[USB CD/DVD]	F1: General Help
Boot option #5	[USB KEY]	F2: Previous Values
Boot option #6	[USB Floppy]	F3: Optimized Default
Boot option #7	[Network]	F4: Save
		ESC: Exit
 CSM16 parameters 		
CSM parameters		

Setup Prompt Timeout

Number of seconds to wait for setup activation key. 65535(0xFFFF) means indefinite waiting.

Bootup NumLock State

Select the keyboard NumLock state.

Quiet Boot

Enables or Disables Quiet Boot option.

Fast Boot

Enables or Disables boot with initialization of a minimal set of devices required to launch active boot option. Has no effect for BBS boot options.

Boot mode select

Select boot mode LEGACY/UEFI

Boot Option Priorities

Sets the system boot order.



CSM16 parameters

CSM16 configuration Enable/Disable, Option ROM execution settings, etc.

Main	Advanced Chipset	Boot	Security Save & Exit
CSM16 conf	iguration		\rightarrow \leftarrow Select Screen
			↑↓ Select Item
CSM16 Mod	ule Version	07.71	Enter: Select
			+- Change Field
Cata A20 Aa	ti ve	Illeen Degu	F1: General Help
GaleA20 AC	uve	[Upon Requ	F2: Previous Values
Option ROM	Messages	[Force BIOS	F3: Optimized Default
INT19 Trap	Response	[Immediate]	F4: Save
			ESC: Exit

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GateA20 Active

UPON REQUEST – GA20 can be disabled using BIOS services. ALWAYS – do not allow disabling GA20; this option is useful when any RT code is executed above 1MB

Option ROM Messages

Set display mode for Option ROM

INT19 Trap Response

BIOS reaction on INT19 trapping by Option ROM: IMMEDIATE – execute the trap right away ; POSTPONED – execute the trap during legacy boot.

CSM parameters

OpROM execution, boot options filter, etc.

Main	Advanced Chipset	Boot	Security	y Save & Exit
Launch CSM		[Enabled]		\rightarrow \leftarrow Select Screen
Boot option filte	er	[UEFI and	Legacy]	†↓ Select Item
Launch PXE O	pROM policy	[Do not lau	nch]	Enter: Select
Launch Storage	e OpROM policy	[Legacy on	ly]	+- Change Field
Launch Video (OpROM policy	[Legacy on	ly]	F1: General Help
				F2: Previous Values
Other PCI dovi	a ROM priority		POMI	F3: Optimized Default
		[Legacy Of		F4: Save
				ESC: Exit

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Launch CSM

This option controls if CSM will be launched.

Boot option filter

This option controls what devices system can boot to.

Launch PXE OpROM policy

Controls the execution of UEFI and Legacy PXE OpROM.

Launch Storage OpROM policy

Controls the execution of UEFI and Legacy Storage OpROM.

Launch Video OpROM policy

Controls the execution of UEFI and Legacy Video OpROM.

Other PCI device ROM priority

For PCI devices other than Network, Mass storage or Video defines which OpROM to launch.



Security Settings

This section allows you to configure and improve your system and allows you to set up some system features according to your preference.

Main Advanced Chipset Bo	oot	Security Save & Exit
Password Description		
If ONLY the Administrator's password is set, the	en	
this only limit access to Setup and is only asked	I	
for when entering Setup.		
If ONLY the User's password is set, then this is	а	
power on password and must be entered to boo	ot	\rightarrow \leftarrow Select Screen
or enter Setup. In Setup the User will have		↑↓ Select Item
Administrator rights		Enter: Select
The password length must be		+- Change Field
in the following range:		F1: General Help
Minimum length	3	F2: Previous Values
Maximum length	20	F3: Optimized Default
		F4: Save
Administrator Password		ESC: Exit
User Password		

Aptio Setup Utility - Copyright © 2012 American Megatrends, Inc.

Administrator Password

Set Setup Administrator Password.

User Password

Set User Password.

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Save & Exit Settings

Main	Advanced Chipset	Boot	Security	/ Save & Exit
Save Char	nges and Exit			
Discard Ch	nanges and Exit			
Save Char	nges and Reset			
Discard Ch	nanges and Reset			
Save Optic	ons			
Save Char	nges			\rightarrow \leftarrow Select Screen
Discard Ch	nanges			†↓ Select Item
				Enter: Select
				+- Change Field
Restore De	efaults			F1: General Help
Save as U	ser Defaults			F2: Previous Values
Restore Us	ser Defaults			F3: Optimized Default
				F4: Save
Boot Over	ride			ESC: Exit

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Save Changes and Exit

Exit system setup after saving the changes.

Discard Changes and Exit

Exit system setup without saving any changes.

Save Changes and Reset

Reset the system after saving the changes.

Discard Changes and Reset

Reset system setup without saving any changes.

Save Changes

Save Changes done so far to any of the setup options.



Discard Changes

Discard Changes done so far to any of the setup options.

Restore Defaults

Restore/Load Defaults values for all the setup options.

Save as User Defaults

Save the changes done so far as User Defaults.

Restore User Defaults

Restore the User Defaults to all the setup options.

CHAPTER 4 DRIVERS INSTALLATION

This section describes the installation procedures for software and drivers. The software and drivers are included with the motherboard. If you find the items missing, please contact the vendor where you made the purchase.

IMPORTANT NOTE:

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



4.1 Intel Chipset Software Installation Utility

The Intel Chipset Drivers should be installed first before the software drivers to enable Plug & Play INF support for Intel chipset components. Follow the instructions below to complete the installation

1.Insert the DVD that comes with the board. Click Intel and then Intel(R) 8 Series Chipset Drivers.



2. Click Intel(R) Chipset Software Installation Utility

	side 1	his CD Version : 9.0.6i
 → →	Intel LAN Card Tools	Intel(R) Chipset Software Installation Utility Intel(R) HD Graphics Driver Realtek High Definition Audio Driver Intel(R) PRO LAN Network Drivers Intel(R) ME 9.0 Drivers Intel(R) USB 3.0 Drivers
	8	Update Windows OS with Plug and Play feature and allow the OS to correctly identify the Intel chipset components and properly configure the system.

3. When the Welcome screen to the Intel® Chipset Device Software appears, click *Next* to continue.

ntel® Chipset Device Software		[
Intel [®] Chipset Device Sof	tware	7	(intel)
Welcome to the Setup Program		All Anna	
This setup program will install the Intel® Chips strongly recommended that you exit all progra	et Device Softwa Ims before contin	re onto this com Jing.	puter. It is
	< Back	Next >	Cancel
		Intel® Instal	ation Framework

4. Click Yes to accept the software license agreement and proceed with the installation process.

icense Agreement	πware		(intel
and the second		Anther and	Sales - Har
You must accept all of the terms of the license	agreement in order to	continue the	setup
INTEL SOFTWARE LICENSE AGREEMENT (Alo	ha / Beta, Organizatio	nal Use)	
IMPORTANT - READ BEFORE COPYING, INST	ALLING OR USING.		
Do not use or load this software and any asso until you have carefully read the following ter Software, you are to the terms of this Agri	ociated materials (colle ms and conditions. By eement. If you do not	ectively, the " loading or us wish to so ag	Software") ing the jree, do not
install or use the Software.			a ges average
install or use the Software. The Software contains pre-release "alpha" or and which Intel Corporation ("Intel") may sub-	"beta" code, which m stantially modify in pro	ay not be fully oducing any "f	y functional final" ·

5. On the Readme File Information screen, click *Next* to continue the installation.





6. The Setup process is now complete. Click *Finish* to restart the computer and for changes to take effect.



4.2 VGA Drivers Installation

1.Insert the DVD that comes with the board. Click Intel and then Intel(R) 8 Series Chipset Drivers.



2. Click Intel(R) HD Graphics Driver.



3. When the Welcome screen appears, click *Next* to continue.





4. Click Yes to agree with the license agreement and continue the installation.



5. On the screen shown below, click Install to continue.



6. Setup complete. Click *Finish* to restart the computer and for changes to take effect.





4.3 Realtek HD Audio Driver Installation

1. Insert the DVD that comes with the board. Click Intel and then Intel(R) 8 Series Chipset Drivers.



2. Click Realtek High Definition Audio Driver.



3. On the Welcome to the InstallShield Wizard screen, click *Yes* to proceed with and complete the installation process.



4. The InstallShield Wizard Complete. Click *Finish* to restart the computer and for changes to take effect.



4.4 LAN Drivers Installation

1. Insert the DVD that comes with the board. Click *Intel* and then *Intel(R)* 8 Series Chipset Drivers.





2. Click Intel(R) PRO LAN Network Driver.



3. When the Welcome screen appears, click Next.



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4. Click *Next* to to agree with the license agreement.

License Agreement	de N	(intel)
Please read the tollo	wing license agreement carefully.	0
	INTEL SOFTWARE LICENSE AGREEMENT	
		and the second sec
IMPORTAN	IT - READ BEFORE COPYING, INSTALLING	OR USING.
IMPORTAN	IT - READ BEFORE COPYING, INSTALLING or use this software and any associated	<u>OR USING</u> . materials
IMPORTAN Do not copy, install, (collectively, the "So ("Agreement") until	IT - READ BEFORE COPYING, INSTALLING or use this software and any associated oftware") provided under this license agr	OR USING. materials eement ms and conditions
IMPORTAN Do not copy, install, (collectively, the "So ("Agreement") until	IT - READ BEFORE COPYING, INSTALLING or use this software and any associated ftware") provided under this license agr you have carefully read the following terr	<u>OR USING</u> . materials eement ms and conditions.
IMPORTAN Do not copy, install, (collectively, the "So ("Agreement") until By copying, installing the terms of this Agu	IT - READ BEFORE COPYING, INSTALLING or use this software and any associated oftware") provided under this license agr you have carefully read the following ter g, or otherwise using the Software, you a reement. If you do not agree to the terms	OR USING. materials eement ms and conditions. agree to be bound by of this Agreement.
IMPORTAN Do not copy, install, (collectively, the "So ("Agreement") until By copying, installing the terms of this Agi do not copy, install, d	IT - READ BEFORE COPYING, INSTALLING or use this software and any associated oftware") provided under this license agr you have carefully read the following tern g, or otherwise using the Software, you a reement. If you do not agree to the terms or use the Software.	OR USING. materials eement ms and conditions. agree to be bound by of this Agreement,
IMPORTAN Do not copy, install, (collectively, the "5c ("Agreement") until By copying, installing the terms of this Agi do not copy, install, o I accept the terms in	IT - READ BEFORE COPYING, INSTALLING or use this software and any associated oftware") provided under this license agr you have carefully read the following terr g, or otherwise using the Software, you a reement. If you do not agree to the terms or use the Software. the license agreement	OR USING. materials eement ms and conditions. agree to be bound by of this Agreement, Print

5. Click the checkbox for **Drivers** in the Setup Options screen to select it and click **Next** to continue.

Intel(R) Network Connections			×
Setup Options Select the program features you war	nt installed.		(intel)
Install: Install: Intel(R) PROSet for Windows* D Intel(R) Network Services Intel(R) Network Connections St	Device Manager		
Feature Description Drivers for all wired Intel Network Con	nections < Back	Next >	Cancel

6. The wizard is ready to begin installation. Click *Install* to begin the installation.





7. When Install Shield Wizard is complete, click *Finish*.

討 Intel(R) Netw	ork Connections Install Wizard	×
Install wiza	rd Completed	(intel)
	To access new features, open Device Manager, properties of the network adapters.	and view the

4.5 Intel Management Engine Interface

1.Insert the DVD that comes with the board. Click *Intel* and then *Intel(R) 8 Series Chipset Drivers* and then *Intel(R) ME 9.0 Drivers*.



2. When the Welcome screen to the InstallShield Wizard for Intel® Management Engine Components, click the checkbox for Install Intel® Control Center & click *Next*.

ntel® Installation Framework		
Intel® Management Engine Welcome to the Setup Program	Components m	(intel)
This setup program will install the Intel® Man It is strongly recommended that you exit all p	agement Engine Componen rograms before continuing.	ts. Click Next to continue.
Install Intel® Control Center Intel® Control Center provides a centraliz easier to find the programs that you need	ed starting point for Intel a	pplications making it
	< Back Ne	ext > Cancel

3. Click Yes to to agree with the license agreement.



4. When the Setup Progress screen appears, click *Next*. Then, click *Finish* when the setup progress has

been successfully installed.

Intel® Installation Framework	
Intel® Management Engine Components Setup Is Complete	intel
The setup program successfully installed the following components:	
- Intel® Management Engine Interface - Intel® Dynamic Application Loader - Intel® Identity Protection Technology (Intel® IPT) - Serial Over LAN - Intel® Management and Security Status - Local Management Service	
You must restart this computer for the changes to take effect. Would y computer now?	rou like to restart the
Yes, I want to restart this computer now.	
🔘 No, I will restart this computer later.	
Click Finish, then remove any installation media from the drives.	Finish
Ir	itel® Installation Framework



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4.6 USB 3.0 Drivers

1.Insert the DVD that comes with the board. Click *Intel* and then *Intel(R)* 8 Series Chipset Drivers.



2. Click Intel(R) USB 3.0 Drivers.

	side T	Version : 9.0.6i
🔶 📲 🔆	Intel LAN Card Tools	Intel(R) Chipset Software Installation Utility Intel(R) HD Graphics Driver Realtek High Definition Audio Driver Intel(R) PRO LAN Network Drivers Intel(R) ME 9.0 Drivers Intel(R) USB 3.0 Drivers
	8	Intel(R) USB 3.0 Drivers

3. When the Welcome screen to the Install Shield Wizard for Intel® USB 3.0 extensible Host Controller Driver, click *Next*.

Intel® Installation Framework			- • X
Intel® USB 3.0 eXtensible Hos Welcome to the Setup Program	t Controller	Driver (intel
This setup program will install the following compor • Intel® USB 3.0 eXtensible Host Controller Driver • Intel® USB 3.0 Hub Driver • Intel® USB 3.0 Host Controller Switch Driver • Intel® USB 3.0 Monitor Click Next to continue.	nents:		
	< Back	Next > — Intel® Inst	Cancel allation Framework

4. Click *Yes* to to agree with the license agreement and continue the installation.

tel® Installation Framework ntel® USB 3.0 eXtensible	e Host Controller	Driver	
icense Agreement		(inte	el)
You must accept all of the terms of the li program. Do you accept the terms?	cense agreement in order i	to continue the setup	
INTEL SOFTWARE LICENSE AGREEMENT	(Alpha / Beta, Organizatio	onal Use)	
IMPORTANT - READ BEFORE COPYING,	INSTALLING OR USING.		
Do not use or load this software and any until you have carefully read the followin Software, you agree to the terms of this install or use the Software.	y associated materials (coll ig terms and conditions. By s Agreement. If you do not	ectively, the "Software / loading or using the t wish to so agree, do n	י) iot
The Software contains pre-release "alph and which Intel Corporation ("Intel") mar of the Software. Intel can provide no as	a" or "beta" code, which m y substantially modify in pr ssurance that it will ever pr	ay not be fully function oducing any "final" vers roduce or make general	ial sion ly
	< Back	Yes	lo
		— Intel® Installation F	ramev



Appendix

Mounting AMI210 to the wall



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Mounting AMI210-PE to the wall



You can install AMI210 on plastic (LCD monitor), wood, drywall surface over studs, or a solid concrete or metal plane directly. Ensure the installer uses at least four M3 length 6mm screws to secure the system on wall. *Four M3 length 6mm screws are recommended to secure the system on wall.*

Fasteners are not included with the unit, and must be supplied by the installer. The types of fasteners required are dependent on the type of wall construction. Choose fasteners that are rated either "Medium Duty" or "Heavy Duty." To assure proper



fastener selection and installation, follow the fastener manufacturer's recommendations.

Wall Mounting Requirements

Note: Before mounting the system on wall, ensure that you are following all applicable building and electric codes.

When mounting, ensure that you have enough room for power and signal cable routing. And have good ventilation for power adapter. The method of mounting must be able to support weight of the CSB110-902 plus the suspend weight of all the cables to be attached to the system. Use the following methods for mounting your system:

Mounting to hollow walls

- Method 1: Wood surface A minimum wood thickness 38mm (1.5in.) by 25.4 cm (10in.) of high, construction grade wood is recommended.
 Note: This method provides the most reliable attachment of the unit with little risk that the unit will come loose or require ongoing maintenance.
- Method 2: Drywall walls Drywall over wood studs is acceptable.

Mounting to a solid concrete or brick wall - Mounts on a flat smooth surface.

Selecting the Location

Plan the mounting location thoroughly. Locations such as walkway areas, hallways, and crowded areas are not recommended. Mount the unit to a flat, sturdy, structurally sound column or wall surface.

The best mounting surface is a standard countertop, cabinet, table, or other structure that is minimally the width and length of the unit. This recommendation reduces the risk that someone may accidentally walk into and damage the device. Local laws governing the safety of individuals might require this type of consideration.

Watchdog Timer Configuration

The WDT is used to generate a variety of output signals after a user programmable count. The WDT is suitable for use in the prevention of system lock-up, such as when software becomes trapped in a deadlock. Under these sorts of circumstances, the timer will count to zero and the selected outputs will be driven. Under normal circumstance, the user will restart the WDT at regular intervals before the timer counts to zero.

SAMPLE CODE:

```
//-----
//
// THIS CODE AND INFORMATION IS PROVIDED "AS IS" WITHOUT
WARRANTY OF ANY
// KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMITED
TO THE
// IMPLIED WARRANTIES OF MERCHANTABILITY AND/OR FITNESS FOR
A PARTICULAR
// PURPOSE.
//
//-----
#include <dos.h>
#include <conio.h>
#include <stdio.h>
#include <stdlib.h>
#include "F81866.H"
//-----
int main (int argc, char *argv[]);
void EnableWDT(int);
void DisableWDT(void);
//-----
int main (int argc, char *argv[])
{
unsigned char bBuf;
unsigned char bTime;
char **endptr;
```



```
char SIO;
printf("Fintek 81866 watch dog program\n");
SIO = Init_F81866();
if (SIO == 0)
{
printf("Can not detect Fintek 81866, program abort.\n");
return(1);
}//if (SIO == 0)
if (argc != 2)
{
printf(" Parameter incorrect!!\n");
return (1);
}
bTime = strtol (argv[1], endptr, 10);
printf("System will reset after %d seconds\n", bTime);
if (bTime)
{ EnableWDT(bTime);
  }
else
{ DisableWDT();
  }
return 0;
}
//-----
                          _____
void EnableWDT(int interval)
{
unsigned char bBuf;
bBuf = Get_F81866_Reg(0x2B);
bBuf &= (\sim0x20);
Set_F81866_Reg(0x2B, bBuf);
```

//Enable WDTO

Set_F81866_LD(0x07);

//switch to logic device 7 Set_F81866_Reg(0x30, 0x01);

//enable timer

bBuf = Get_F81866_Reg(0xF5); bBuf &= (~0x0F); bBuf |= 0x52; Set_F81866_Reg(0xF5, bBuf);

//count mode is second

Set_F81866_Reg(0xF6, interval);

//set timer

bBuf = Get_F81866_Reg(0xFA); bBuf |= 0x01; Set_F81866_Reg(0xFA, bBuf);

//enable WDTO output



```
bBuf = Get_F81866_Reg(0xF5);
bBuf |= 0x20;
Set_F81866_Reg(0xF5, bBuf);
```

//start counting
}
//----void DisableWDT(void)
{
 unsigned char bBuf;
 Set_F81866_LD(0x07);
 //switch to logic device 7

```
bBuf = Get_F81866_Reg(0xFA);
bBuf &= ~0x01;
Set_F81866_Reg(0xFA, bBuf);
```

//disable WDTO output

```
bBuf = Get_F81866_Reg(0xF5);
bBuf &= ~0x20;
bBuf |= 0x40;
Set_F81866_Reg(0xF5, bBuf);
```

```
//disable WDT
}
//------
```

```
//-----
//
// THIS CODE AND INFORMATION IS PROVIDED "AS IS" WITHOUT
WARRANTY OF ANY
// KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMITED
TO THE
// IMPLIED WARRANTIES OF MERCHANTABILITY AND/OR FITNESS FOR
A PARTICULAR
// PURPOSE.
//
//-----
#include "F81866.H"
#include <dos.h>
//-----
unsigned int F81866_BASE;
void Unlock_F81866 (void);
void Lock_F81866 (void);
//-----
unsigned int Init_F81866(void)
{
unsigned int result;
unsigned char ucDid;
F81866_BASE = 0x4E;
result = F81866_BASE;
ucDid = Get_F81866_Reg(0x20);
if (ucDid == 0x07)
 //Fintek 81866
{ goto Init_Finish;
 }
F81866_BASE = 0x2E;
result = F81866_BASE;
```



```
ucDid = Get_F81866_Reg(0x20);
if (ucDid == 0x07)
 //Fintek 81866
{ goto Init_Finish;
 }
F81866 BASE = 0x00;
result = F81866_BASE;
Init_Finish:
return (result);
}
//-----
void Unlock_F81866 (void)
{
outportb(F81866_INDEX_PORT, F81866_UNLOCK);
outportb(F81866_INDEX_PORT, F81866_UNLOCK);
}
//-----
void Lock_F81866 (void)
{
outportb(F81866_INDEX_PORT, F81866_LOCK);
}
//-----
void Set_F81866_LD( unsigned char LD)
{
Unlock_F81866();
outportb(F81866_INDEX_PORT, F81866_REG_LD);
outportb(F81866_DATA_PORT, LD);
Lock_F81866();
}
//-----
```

void Set_F81866_Reg(unsigned char REG, unsigned char DATA)

```
{
Unlock_F81866();
outportb(F81866_INDEX_PORT, REG);
outportb(F81866_DATA_PORT, DATA);
Lock_F81866();
}
//-----
unsigned char Get_F81866_Reg(unsigned char REG)
{
unsigned char Result;
Unlock F81866();
outportb(F81866_INDEX_PORT, REG);
Result = inportb(F81866_DATA_PORT);
Lock_F81866();
return Result;
}
//-----
//-----
//
// THIS CODE AND INFORMATION IS PROVIDED "AS IS" WITHOUT
WARRANTY OF ANY
// KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMITED
TO THE
// IMPLIED WARRANTIES OF MERCHANTABILITY AND/OR FITNESS FOR
A PARTICULAR
// PURPOSE.
//
//-----
#ifndef ___F81866_H
#define ___F81866_H
 1
//-----
#define F81866_INDEX_PORT
```

(F81866_BASE)

iBASE

#define F81866_DATA_PORT

(F81866_BASE+1)

//-----

#define F81866_REG_LD

0x07

//-----

#define F81866_UNLOCK

0x87

#define F81866_LOCK

0xAA

//-----unsigned int Init_F81866(void); void Set_F81866_LD(unsigned char); void Set_F81866_Reg(unsigned char, unsigned char); unsigned char Get_F81866_Reg(unsigned char); //-------#endif //__F81866_H