MI958

AMD G-series APU+A55E FCH

Mini-ITX Motherboard

USER'S MANUAL

Version 1.0

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THE MI958 MINI ITX MOTHERBOARD

Introduction

Product Description

The AMD Embedded G-Series Processors with AMD RadeonTM HD 6000 Series Graphics combine the central processing unit (CPU) with the graphics processing unit (GPU) in a single-chip Accelerated Processing Unit (APU) package. The APU connects to the AMD A55E Fusion Controller Hub through the Unified Media Interface (UMI) to provide connections to the different system devices. Dimensions of the board are 170mm x 170mm.

AMD Embedded G-Series processor-based systems include the DDR3 memory interface, PCIe, UMI, DDI (Digital Display Interface), power delivery and miscellaneous test signals that connect to the processor.

The AMD A55E Fusion Controller Hub is designed to deliver the quality and performance needed for everyday computing, ultitasking, and multimedia functionality. It also provides expanded I/O connectivity for advanced usage models to take advantage of modern peripheral devices.

The main features of the board are:

- Supports Dual Core AMD Embedded G-Series Processors
- Supports up to DDR3-1066 MT/s
- Two DDR3 SDRAM DIMMs, Max.8GB memory
- Onboard Realtek Gigabit LAN
- 4x SATA-III, 8x USB 2.0, 4x COM, Watchdog timer,
- 1x PCI,1x PCI-E(x1) slots
- 1x VGA,1x DVI,1x LVDS

Checklist

Your AMD MI958 Development Board package should include the items listed below.

- The MI958 Mini-ITX motherboard
- This User's Manual
- 1 CD containing chipset drivers and flash memory utility
- 1 Serial ATA cable

MI958 Specifications

-	
Product Name	MI958F-10 (G-T40N APU onboard)
	MI958F-14 (G-T48N APU onboard)
	MI958F-16 (G-T56N APU onboard)
	MI958F-165 (G-T56N C0 version APU onboard)
Form Factor	Mini ITX
CPU Type	AMD G-series APU Processor, 40 nm
	FT1 413-BGA package (19mm x 19mm)
CPU	G-T56N C0 version DC @1.65GHz (TDP=18W)
Operating Frequency	G-T56N DC @1.6GHz (TDP=18W)
,	G-T48N DC @1.4GHz (TDP=18W)
	G-T40N DC @1.0GHz (TDP=9W)
Cache	1MB L2 cache
BIOS	AMI BIOS, supports ACPI Function
Chipset	AMD A55E FCH (TDP=4.7W)
•	BGA package 605balls (23 mm x 23 mm)
Memory	2 x DDR3 UDIMM, Single Channel, Max. 8GB
2	Up to DDR3-1333(G-T56N C0 version only) / DDR3-1066
Display	AMD G-series APU built-in GPU
	(G-T56N/G-T48N w/Radeon [™] HD6310; G-T40N w/Radeon [™] HD6250)
	Supports DirectX [®] 11, UVD3. Supports two simultaneous displays
	1 x CRT [From APU DAC]
	1 x DVI-D [From APU DP #1)
Expansion Slots	PCI slot x 1
	PCIe(1x) slot x1
	MiniPCle(1x) x 1
LAN	Realtek 8111E PCI-Express GbE x 2 [From APU]
	Only LAN #1 will support EuP
USB	A55E FCH built-in USB 2.0 host controller, support 8 ports
	(4 x rear I/O ports + 4 x internal pin headers)
Audio	A55E FCH built-in HD interface + Realtek ALC269QHD Codec
	w/class-D speaker amplifier(2.3vv per channel @ 5v power supply)
Oralal ATA	support 2-channel audio out + amp
	ASSE FOR Duilt-IN SATA III CONTOILET IOF 4
	FILLER F01000-1 COM1 (PS222/422/495) COM2/COM2/COM4 (PS222 only)
	Hardware Monitor (2 thermal inputs 4 voltage monitor inputs & 2 Ean
	headers) [CPI EAN controllable only: SYS EAN cannot]
	COM1/2 with pin-9 with power for 2 ports (500 mA for each port)
Clock Generator	Leverage A55E FCH internal Clock generator
Digital IO	4 in & 4 out
Edge Connector	Dual DB9 stack connector for COM #1, #2
	DVI-D+ DB15 stack connector x 1 for DVI & CRT
	RJ-45 GbE LAN + dual USB stack connector x2
	RCA Jack 3 x 1 for HD Audio
On Board Headers	DF13 LVDS x 1 for 18-bit single channel
	2 x 5 pins header x 2 for 4 ports USB
	2 x 5 pins header x 2 for COM3/COM4
	2 x 5 pins pin-header x1 for Digital IO
	1 x 4 pins box header x 1 for speaker
	1 x 4 pins box-header x 1 for LCD backlight control
	SATA connector x 4 (blue color)
Watchdog Timer	Yes (256 segments, 0, 1, 2255. sec/min)
Power Connector	ATX Power connector
RoHS	Yes
Others	CPU cooler onboard for T56N/T48N APU ; Heatsink for T40N APU
	EuP feature onboard (Fintek F75160)
Board Size	170mm x 170mm

Board Dimensions



Installations

This section provides information on how to use the jumpers and connectors on the motherboard in order to set up a workable system. The topics covered are:

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Installing the Memory

The motherboard supports two DDR3 memory socket for a maximum total memory of 8GB in DDR3 memory type.

Installing and Removing Memory Modules

To install the DDR3 modules, locate the memory slot on the board and perform the following steps:

- 1. Hold the DDR3 module so that the key of the DDR3 module align with those on the memory slot.
- 2. Gently push the DDR3 module in an upright position until the clips of the slot close to hold the DDR3 module in place when the DDR3 module touches the bottom of the slot.
- 3. To remove the DDR3 module, press the clips with both hands.



Setting the Jumpers

Jumpers are used on the motherboard 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 and their respective functions.

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JP6: LCD Panel Power Selection	9
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JP1, JP2, JP3: RS232/422/485 (COM1) Selection	9
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JP7 : USB1, USB2 (CN6) Power Setting	10
JP11: USB3, USB4 (CN9) Power Setting	10
JP8 : USB5, USB6 (CN13) Power Setting	11
JP9 : USB7, USB8 (CN14) Power Setting	11
J11: PCI/PCIE Riser Card Selection	11

Jumper Locations



JP6: LC	D Panel	Power	Selection
---------	---------	-------	-----------

JP6	LCD Panel Power
123	3.3V
123	5V

JP12: Clear CMOS Setting

JP13	Setting
123	Normal
123	Clear CMOS

JP1, JP2, JP3: RS232/422/485 (COM1) Selection COM2~COM4 are fixed for RS-232 use only.

COM1 is selectable for RS232, RS-422 and RS-485. The following table describes the jumper settings for COM1 selection.

COM1 Function	RS-232	RS-422	RS-485
	JP3:	JP3:	JP3:
	3-5 & 4-6	1-3 & 2-4	1-3 & 2-4
Jumper Setting (pin closed)	JP2: 3-5 & 4-6	JP2: 1-3 & 2-4	JP2: 1-3 & 2-4
	JP1: 1-2	JP1: 3-4	JP1: 5-6

JP4	Setting	Function
1	Pin 1-2 Short/Closed	+12V
	Pin 3-4	Normal
5 🗆 🗖 6	Short/Closed	Normai
	Pin 5-6	
	Short/Closed	+5V

JP4: COM1 RS232 +5V/+12V Power Setting

JP5: COM2 RS232 +5V/+12V Power Setting

JP5	Setting	Function
	Pin 1-2	
1 🗆 🗆 2	Short/Closed	+12V
	Pin 3-4	
5 🗆 🗖 6	Short/Closed	Normal
	Pin 5-6	
	Short/Closed	+5V

JP7: USB1, USB2 (CN6) Power Setting

JP7	Setting	Function
123	Pin 1-2 Short/Closed	+5VSB
123	Pin 2-3 Short/Closed	+5V

JP11: USB3, USB4 (CN9) Power Setting

JP11	Setting	Function
123	Pin 1-2 Short/Closed	+5VSB
123	Pin 2-3 Short/Closed	+5V

JP8: USB5, USB6 (CN13) Power Setting

JP8	Setting	Function
123	Pin 1-2 Short/Closed	+5VSB
123	Pin 2-3 Short/Closed	+5V

JP9: USB7, USB8 (CN14) Power Setting

JP9	Setting	Function
123	Pin 1-2 Short/Closed	+5VSB
123	Pin 2-3 Short/Closed	+5V

J11: PCI/PCIE Riser Card Selection

J11	Riser Card
123	IP390 Riser Card Install
• • • 1 2 3	IP151, IP240 Riser Card Install

Motherboard Connectors

The motherboard connectors allow you to connect external devices such as keyboard, floppy disk drives, hard disk drives, printers, etc. The following table lists the connectors and their respective functions.

CN1A, CN1B: COM1(UP) and COM2(DOWN) Connector	14
CN2A, CN2B: VGA(UP) and DVI(DOWN) Connector	14
CN6: GbE_1 RJ-45 and USB1/2 Ports	14
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CN12: Audio Connector	14
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CN3: LCD Backlight Connector	18
CN5: Output Voltage Connector	18
J9: Speaker Connector	18
PCIE1: PCI-E(x1) Slot	19
PCI1: PCI Slot (supports 2 Master)	19

Connector Locations





	Signal Name	Pin #	Pin #	Signal Name
1, ,5	DCD	1	6	DSR
	RXD	2	7	RTS
	TXD	3	8	CTS
6′``9	DTR	4	9	RI
	GND	5	10	Not Used

CN1A, CN1B: COM1(up) and COM2(down)Connector

CN2A, CN2B: VGA(UP) and DVI(DOWN) Connector

CN6: GbE_1 RJ-45 and USB1/2 Ports

CN9: GbE_2 RJ-45 and USB3/4 Ports

CN12: Audio Connector

The audio connector, from top to bottom, is composed of Line in, Line out and Microphone jacks.

CN7,CN8,CN10,CN11: Serial ATA Connectors

FAN1: System Fan Power Connector

FAN1 is a 3-pin header for system fan. The fan must be a 12V (500mA).

3	2	1	

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

FAN2: CPU Fan Power Connector

FAN2 is a 3-pin header for the CPU fan. The fan must be a 12V(500mA).

3	2	1

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

	Signal Name	Pin #	Pin #	Signal Name
	3.3V	13	1	3.3V
11 0 0 1	-12V	14	2	3.3V
	Ground	15	3	Ground
0 0	PS-ON	16	4	+5V
0 0	Ground	17	5	Ground
	Ground	18	6	+5V
0 0	Ground	19	7	Ground
0 0	-5V	20	8	Power good
	+5V	21	9	5VSB
24 0 0 12	+5V	22	10	+12V
	+5V	23	11	+12V
	Ground	24	12	+3.3V

J4: Digital I/O

	Signal Name	Pin	Pin	Signal Name
1 🗖 0 2	GND	1	2	VCC
00	OUT3	3	4	OUT1
00	OUT2	5	6	OUT0
90010	IN3	7	8	IN1
	IN2	9	10	IN0

J5: SMBUS Connector

Signal Name	Pin	Pin	Signal Name
CLK	1	2	DATA

J6: SPI Flash Connector(factory use only)

JP10: System Function Connector

JP10 provides connectors for system indicators that provide light indication of the computer activities and switches to change the computer status. JP10 is a 20-pin header that provides interfaces for the following functions.



Speaker: Pins 1 - 4

This connector provides an interface to a speaker for audio tone generation. An 8-ohm speaker is recommended.

1					10
11					20

Pin #	Signal Name
1	Speaker out
2	No connect
3	Ground
4	+5V

Power LED: Pins 11 - 15



Pin #	Signal Name
11	Power LED
12	No connect
13	Ground
14	No connect
15	Ground

ATX Power ON Switch: Pins 7 and 17

This 2-pin connector is an "ATX Power Supply On/Off Switch" on the system that connects to the power switch on the case. When pressed, the power switch will force the system to power on. When pressed again, it will force the system to power off.



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Reset Switch: Pins 9 and 19

The reset switch allows the user to reset the system without turning the main power switch off and then on again. Orientation is not required when making a connection to this header.



Hard Disk Drive LED Connector: Pins 10 and 20

This connector connects to the hard drive activity LED on control panel. This LED will flash when the HDD is being accessed.

1					10
11					20

1

Pin #	Signal Name
10	HDD Active
20	5V

CN13,CN14: USB5/6,USB7/8 Port Pin Header

	Signal Name	Pin	Pin	Signal Name
0 ŏ	Vcc	1	2	Vcc
00	D0-	3	4	D1-
010	D0+	5	6	D1+
	Ground	7	8	Ground
	Key Pin	9	10	NC

J7, J8: COM3, COM4 Serial Port



Signal Name	Pin #	Pin #	Signal Name
DCD, Data carrier detect	1	6	DSR, Data set ready
RXD, Receive data	2	7	RTS, Request to send
TXD, Transmit data	3	8	CTS, Clear to send
DTR, Data terminal ready	4	9	RI, Ring indicator
GND, ground	5	10	Not Used

CN4 : LVDS Connectors

The LVDS connectors on board supports 18-bit.

	Signal Name	Pin #	Pin #	Signal Name
	TX0-	2	1	TX0+
2 🗖 🗖 1	Ground	4	3	Ground
	TX1-	6	5	TX1+
	5V/3.3V	8	7	Ground
	DP0-HPD	10	9	Reset
0 0	TX2-	12	11	TX2+
	Ground	14	13	Ground
20 🗆 🗖 19	TXC-	16	15	TXC+
	5V/3.3V	18	17	ENABKL
	DDC_DATA	20	19	DDC_CLK

CN3: LCD Backlight Connector



Pin #	Signal Name
1	+12V
2	Backlight Enable
3	Brightness Control
4	Ground

CN5: Output Voltage Connector



Pin #	Signal Name
1	3.3V
2	Ground
3	5V

J9 Speaker Connector

The J9 connector supports 2Watt(RMS)/4 ohm stereo audio power amplifier.

	1	Pin #	Signal Name
10		1	Audio L+
		2	Audio L-
4 0		3	Audio R-
	J	4	Audio R+

PCIE1: PCI-E(x1) Slot

PCI1: PCI Slot (supports 2 Master)

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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:

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BIOS Setup	22
Main BIOS Setup	23
Advanced Settings	24
Chipset Settings	32
Boot Settings	38
Security Settings	39
Save & Exit Settings	39

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 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.

Main BIOS Setup

This setup allows you to record some basic hardware configurations in your computer system and set the system clock.

Main	Advanced	Chipset	Boot	Security	/ Save & Exit
BIOS INFO	ORMATION				
BIOS Vend Core Versi Complienc Project Ve Build Date	dor on y rsion and Time		American Megatrer 4.6.6.0 UEFI 2.1 0ABVQ 0.10 x64 04/12/2011 11:47:0	nds 16	
Memory In Total Mem	formation ory		1008 MB (DDR3)		→ ←Select Screen
System La	nguage		[English]		↑↓ Select Item Enter: Select
System Da System Tir	ne		[Tue 09/07/2010 [00:08:21]		F1: General Help F2: Previous Values
Access Le	vel		Administrator		F3: Optimized Default F4: Save ESC: Exit

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- *Note:* If the system cannot boot after making and saving system changes with Setup, the AMI BIOS supports an override to the CMOS settings that resets your system to its default.
- 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.

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 A	dvanced	Chipset	Boot	Security	y Save & Exit
Legacy Op	pROM Support				
Launch P>	XE OpROM			Disabled	
Launch St	torage OpROM			Enabled	
 PCI Sub ACPI Se CPU Cc Auto Pa IDE Cor USB Co Super IC H/W Mc 	osystem Settings ettings onfiguration ower On Schedule nfiguration onfiguration O Configuration onitor	3			 → ←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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Launch PXE OpROM

Enable or Disable Boot Option for Legacy Network Devices.

Launch Storage OpROM

Enable or Disable Boot Option for Legacy Mass Storage Devices with Option ROM.

PCI Subsystem Settings

This section allows you to configure the PCI, PCI-X and PCI Express settings.

Main Advanced	Chipset	Boot	Security	/ Save & Exit
PCI Bus Driver Version		V 2.03.00		
PCI ROM Priority		EFI Compatil	ble ROM	
PCI Common Settings				
PCI Latency Timer		32 PCI Bus C	Clocks	
VGA Palette Snoop		Disabled		
PERR# Generation		Disabled		
SERR# Generation		Disabled		
PCI Express Device Settir	ngs			
Relaxed Ordering		Disabled		\rightarrow \leftarrow Select Screen
Extended Tag		Disabled		↑↓ Select Item
No Snoop		Enabled		Enter: Select
Maximum Payload		Auto		+- Change Field
Maximum Read Request		Auto		F1: General Help
				F2: Previous Values
PCI Express Link Settings				F3: Optimized Default
ASPM Support		Disabled		F4: Save ESC: Exit
WARNING: Enabling ASF	M may cause			
Some PCI-E de	vices to fail			
Extended Synch		Disabled		

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PCI ROM Priority

In case of multiple Option ROMs (Legacy and EFI Compatible), specifies what PCI Option ROM to launch.

PCI Latency Timer

Value to be programmed into PCI Latency Timer Register.

VGA Palette Snoop

Enables or Disables VGA Palette Registers Snooping.

PERR# Generation

Enables or Disables PCI Device to Generate PERR#.

SERR# Generation

Enables or Disables PCI Device to Generate SERR#.

Relaxed Ordering

Enables or Disables PCI Express Device Relaxed Ordering.

Extended Tag

If ENABLED allows Device to use 8-bit Tag field as a requester.

No Snoop

Enables or Disables PCI Express Device No Snoop option.

Maximum Payload

Set Maximum Payload of PCI Express Device or allow System BIOS to select the value.

Maximum Read Request

Launches (Enabled/Disabled) the boot option for legacy network devices.

PCI Express Link Settings

Set Maximum Read Request Size of PCI Express Device or allow System BIOS to select the value.

ASPM Support

Set the ASPM Level: Force L0 – Force all links to L0 State AUTO – BIOS auto configure DISABLE – Disables ASPM

Extended Synch

If ENABLED allows generation of Extended Synchronization patterns.

ACPI Settings

This section configures the system ACPI parameters.

Main	Advanced	Chipset	Boot	Security	y Save & Exit
Enable	e ACPI Auto Config	uration	Disabled		
Enable ACPI Lock I S3 Vio	e Hibernation Sleep State .egacy Resources deo Report		Enabled S3 (Suspend Disabled Disabled	to RAM)	<pre>→ ←Select Screen ↑↓ Select Item Enter: Select +- Change Field F1: General Help F2: Previous Values F3: Optimized Default F4: Save ESC: Exit</pre>

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Enabled ACPI Auto Configuration

Enables or Disables BIOS ACPI Auto Configuration.

Enable Hibernation

Enables or Disables System ability to Hibernate (OS/S4 Sleep State). This option may be not effective with some OS.

ACPI Sleep State

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

Lock legacy Resources

Enabled or Disabled Lock of Legacy Resources

S3 Video Repost

Enabled or Disabled S3 Video Repost.

CPU Configuration

This section shows the CPU configuration parameters.

Main Advanced	Chipset	Boot	Securit	y Save & Exit
CPU Configuration				
Limit CPUID Maximum		Disabled		
PSS Support		Enabled		
PSTATE Adjustment		PState 0		
PPC Adjustment		PState 0		
SVM Mode		Enabled		
NX Mode		Enabled		
C6 Mode		Auto		
Node 0 Information				
				$\rightarrow \leftarrow \texttt{Select Screen}$
				↑↓ Select Item
				Enter: Select
				+- Change Field
				F1: General Help
				F2: Previous Values
				F3: Optimized Default
				F4: Save ESC: Exit

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Limit CPUID Maximum

Disabled for Windows XP.

PSS Support

Enabled /disabled the generation of ACPI_PPC, and _PCT objects.

PSTATE Adjustment

Provide to adjust startup P-state level.

PPC adjustment

Provide to adjust_PPC object.

NX Mode

Enabled/disabled NO-execute page protection Function.

SVM Mode

Enabled/disabled CPU Virtualization.

C6 Mode

Enabled/disabled C6.

Node 0 Information

View Memory Information related to Node 0.

Auto Power On Schedule

This section setups the power on time for the system.

Main	Advanced	Chipset	Boot	Security	/ Save & Exit
Auto I	Power on Schedule				
Firmw Scheo Scheo	vare Version Jule Slot 1 Jule Slot 2		T.B.D. None None		 → ←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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Schedule Slot 1

Setup the hou/minute for sytem power on.

Schedule Slot 2

Setup the hou/minute for sytem power on.

IDE Configuration

This section shows the IDE devices configuration.

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Main	Advanced	Chipset	Boot	Security	V Save & Exit
SATA	Configuration				
SATA SATA SATA SATA SATA SATA	Port0 Port1 Port2 Port3 Port4 Port5	E E E E	nabled nabled nabled nabled nabled		→ ←Select Screen ↓ Select Item Enter: Select +- Change Field F1: General Help F2: Previous Values F3: Optimized Default F4: Save ESC: Exit ESC: Exit

Serial-ATA Controller

Enable / Disable Serial ATA Controller.

USB Configuration

Main	Advanced	Chipset	Boot	Security	Save & Exit
USB (Configuration				
USB [Devices: 1 Keyboard, 1 Mous	e		-	→ ←Select Screen ↑ ↓ Select Item Enter: Select
Legac	y USB Support		Enabled	1	F1: General Help
LING			Disabled	1	F2: Previous Values F3: Optimized Default
USB	hardware delays and	time-outs:		1	F4: Save ESC: Exit
USB t	ransfer time-out		20 sec		
Devic	e reset time-out		20 sec		
Devic	e 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.

EHCI Hand-off

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

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 delay

Maximum time the device will take before it properly reports itself to the Host Controller. 'Auto' users default value: for a Root port it is 100ms, for a Hub port the delay is taken from Hub descriptor.

Super IO Configuration

Main	Advanced	Chipset	Boot	Security	Save & Exit
Super	IO Configuration				
Super -> Ser -> Ser Po	IO Chip ial Port 0 Configurat ial Port 2 Configurat wer Failure	tion tion	F81801 Always off		 → ←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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Serial Port 0/1 Configuration

Set Parameters of Serial Port 0/1 (COMA/COMB)

Power Failure

The options: Keep last state, By pass mode, Always on, and Always off.

H/W Monitor

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Main Advanced	Chipset	Boot	Security	Save & Exit
PC Health Status				
Smart Fan Function		[Disabled]		
CPU Temperature		+64 C		
System Temperature		+33 C		
Fan Speed		N/A		Soloat Saroon
VCC3V		3.376 V		→ ← Select Screen
Vcore		0.960 V		↑↓ Select Item
Memory Voltage		1.488 V		Enter: Select
VSB3V		3.392 V		+- Change Field
VBAT		3.040 V		FI: General Help
CPU Shutdown Tempera	ture	[Disabled]		F2: Previous Values F3: Optimized Default F4: Save ESC: Exit

Temperatures/Voltages

The values are read-only values as monitored by the system and show the PC health status.

CPU Shutdown Temperature

Aside from the Disabled options, this field allows the setting of shutdown temperature from 70C to 95C.

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.

Main	Advanced	Chipset	Boot	Security	Save & Exit
► Nor ► Nor ► Sou	th Bridge th Bridge LVDS th Bridge	Config Select		→ Er +- F1 F2 F3 F4	← Select Screen ↓ Select Item hter: Select - Change Field 1: General Help 2: Previous Values 3: Optimized Default 4: Save ESC: Exit

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North Bridge

This item shows the North Bridge Parameters.

North Bridge LVDS Config Select

This item shows the Specify INT15 options for LVDS

South Bridge

This item shows the South Bridge Parameters.

North Bridge

This section allows you to configure the North Bridge Chipset.

Main	Advanced	Chipset	Boot	Security	y Save & Exit
North	Bridge Configurati	on			
NB GI	P Core Config		[GPP_CORE_x4	x2x1x1]	
Port 4 Asp Hotp Port 5 Port 6	Control m Mode Control olug Mode Control Control Control		[Enabled] [Disabled] [Hotplug Basic] [Enabled] [Enabled]		
Port 7	Control		[Enabled]		delest demon
Port 8	Control		[Enabled]		$\rightarrow \leftarrow$ select screen
IOMM Memo	U Mode ry Clock		Disabled 200MHz		↑↓ Select Item Enter: Select +- Change Field F1: General Help
Memo Total ► GF2 ► Mer ► Noo	ry Information Memory: 4096 MB K Configuration mory Configuration le 0 Information	(DDR3)			F2: Previous Values F3: Optimized Default F4: Save ESC: Exit

IOMMU Mode

IOMMU is supported on LINUX based systems to convert 32bit I/O to 64bit MMIO.

Memory Clock

This option allows user to select different memory clock.

GFX Configuration

Main	Advanced	Chipset	Boot	Security	Save & Exit
GFX (Configuration				
PSPP	Policy		Disabled		→ ←Select Screen ↑↓ Select Item Enter: Select +- Change Field F1: General Welp
					F2: Previous Values F3: Optimized Default F4: Save ESC: Exit

Antio Setup Utility

PSPP Policy

PCIe speed power policy.

Memory Configuration

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Main	Advanced	Chipset	Boot	Security	/ Save & Exit
Memo	ory Configuration				
Integr Bank	ated Graphics Interleaving		Auto Disabled		→ ←Select Screen ↑↓ Select Item Enter: Select +- Change Field F1: General Help
					F2: Previous Values F3: Optimized Default F4: Save ESC: Exit

Integrated Graphics

Enable Integrate Graphics controller.

Node 0 Information

View memory information related to Node 0.

North Bridge LVDS Config Select Aptio Setup Utility

Main	Advanced	Chipset	Boot	Security	/ Save & Exit
Spec	ify INT15 options	for LVDS			
DP0 DP1 LVDS	Output Mode Output Mode S Panel Config Se	elect	Disabled Single Link DVI-D 800x600		 → ← Select Screen ↑ ↓ Select Item Enter: Select +- Change Field F1: General Help
					F2: Previous Values F3: Optimized Default F4: Save ESC: Exit

South Bridge

This section allows you to configure the South Bridge Chipset.

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Main	Advanced	Chipset	Boot	Security	Save & Exit
SB CI	M Version :		1.1.0.1		
► SB ► SB	SATA Configurat	tion on			\rightarrow \leftarrow Select Screen
► SB ► SB	 SB GPP Port Configuration SB HD Azalia Configuration 				↑↓ Select Item Enter: Select +- Change Field F1: General Help
					F2: Previous Values F3: Optimized Default F4: Save ESC: Exit

SB SATA Configuration

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Main Advanced Chips	et Boot S	Security Save & Exit
OnChip SATA Channel OnChip SATA Type OnChip IDE mode SATA IDE Combined Mode Combined Mode Option SATA ESP on PORT0 SATA ESP on PORT1 SATA ESP on PORT2 SATA ESP on PORT3 SATA ESP on PORT3 SATA ESP on PORT4 SATA Power on PORT0 SATA Power on PORT1 SATA Power on PORT2 SATA Power on PORT3 SATA Power on PORT3 SATA Power on PORT3 SATA Power on PORT3 SATA Power on PORT4 SATA Power on PORT4	Enabled Native IDE Legacy mode Enabled SATA as primary Disabled Disabled Disabled Disabled Enabled Enabled Enabled Enabled Enabled Enabled Enabled Enabled	 → ← Select Screen ↑ ↓ Select Item Enter: Select +- Change Field F1: General Help F2: Previous Values F3: Optimized Default F4: Save ESC: Exit

OnChip SATA Type

Native IDE / n RAID / n AHCI / n AHCI / n Legacy IDE / n IDE->AHCI / n HyperFlash

SB USB Configuration

Main	Advanced	Chipset	Boot	Security	Save & Exit
OHCI	HC (Bus 0 Dev ?	18 Fn 0)	Enabled		
OHCI	HC (Bus 0 Dev 1	19 Fn 0)	Enabled		
OHCI	HC (Bus 0 Dev 2	22 Fn 0)	Enabled		
OHCI	HC (Bus 0 Dev 2	20 Fn 5)	Enabled		$\rightarrow \leftarrow \texttt{Select Screen}$
USB F USB F USB F USB F USB F	PORT 0 PORT 1 PORT 2 PORT 3 PORT 4		Enabled Enabled Enabled Enabled Enabled		 ↑↓ Select Item Enter: Select +- Change Field F1: General Help F2: Previous Values F3: Optimized Default
USB F USB F USB F USB F USB F	PORT 5 PORT 6 PORT 7 PORT 8 PORT 9		Enabled Enabled Enabled Enabled Enabled		F4: Save ESC: Exit
USB F USB F USB F USB F USB F USB F	PORT 10 PORT 11 PORT 12 PORT 13 PORT FL0 PORT FL1 Device Wakeup F	From S3 or S4	Enabled Enabled Enabled Enabled Enabled Enabled		

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SB GPP Port Configuration

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Main	Advanced	Chipset	Boot	Security	Save & Exit
SB GI	PP Function		Enabled		
GPP	Port Link Configura	ation	1:1:1:1 mode		
hide u	nused GPP port		Enabled		→ ← Select Screen
GP	P Link ASPM		Disabled		
NB-SI	B PHY PLL Power	Down	Enabled		↑ ¥ Select Item
SB G	PP PHY PLL Powe	er Down	Enabled		+- Change Field
SB GI	PP LANE REVERS	SAL	Disabled		F1: General Help
					F2: Previous Values
					F3: Optimized Default
					F4: Save ESC: Exit

		Aptio Setup	Utility	
Main Advanced	Chipset	Boot	Securit	y Save & Exit
HD Audio Azalia Devic HD Onboard PIN Confi Azalia Front Panel SDIN0 Pin Config SDIN1 Pin Config SDIN2 Pin Config SDIN3 Pin Config Azalia Snoop	e g	Enabled Enabled Auto Azalia Azalia Azalia Azalia Disabled		 → ←Select Screen ↑ ↓ Select Item Enter: Select +- Change Field F1: General Help F2: Previous Values F3: Optimized Default F4: Save ESC: Exit

SB HD Azalia Configuration

Boot Settings

This section allows you to configure the boot settings according to your preference.

Main	Advanced	Chipset	Boot	Security	y Save & Exit
Boot C	onfiguration				
Setup	Prompt Timeout		1		
Bootup	NumLock State		On		
Quiet E	Boot		Disabled		
CSM16	6 Module Version		07.63		\rightarrow \leftarrow Select Screen
GateA	20 Active		Upon Reque	est	↑↓ Select Item
Option	ROM Messages		Force BIOS		Enter: Select
Interru	ot 19 Canture		Disabled		+- Change Field
UEFI E	loot		[Disabled		FI: General Help
Boot O	ption Priorities				F2: Previous Values F3: Optimized Default F4: Save ESC: Exit

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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/Disables Quiet Boot option.

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. Options are Force BIOS and Keep Current.

Interrupt 19 Canture

Enable: Allows Option ROMs to trap Int 19.

UEFI Option Priorities

Enables/Disables UEFI boot from disks.

Security Settings

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Main	Advanced	Chipset	Boot	Security	Save & Exit
Passw	ord Description				
If ONL this on for who If ONL power or ente Admin The pa	Y the Administrato ly limits accesss to en entering Setup. Y the User's passy on password and r er Setup. In Setup f istrator rights. assword must be 3	r's password is s Setup and is on vord is set, then must be entered the User will hav	et, then ly asked this is a to boot e		 → ←Select Screen ↑ ↓ Select Item Enter: Select +- Change Field F1: General Help
Admin User F	istrator Password Password				F2: Previous Values F3: Optimized Default F4: Save ESC: Exit

Administrator Password

Set Setup Administrator Password.

User Password

Set User Password.

Save & Exit Settings

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Main Ad	vanced	Chipset	Boot	Security	/ Save & Exit
Save Chan Disacard C Save Chan	ges and Exit hanges and Exit ges and Reset				
Discard Ch	anges and Rese	t			$\rightarrow \leftarrow$ Select Screen
Save Option	ns				V Select item
Save Chan	ges				Enter: Select
Discard Cha	anges				F1: General Help
Restore De	faults				F2: Previous Values F3: Optimized Default
Save as Us	er Defaults				F4: Save ESC: Exit
Restore Us	er Defaults				
Boot Overri	de				
Launch EFI	Shell from filesy	vstem device			

BIOS SETUP

Save Changes and Exit

Exit system setup after saving the changes.

Disacard 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.

Boot Override

Pressing ENTER causes the system to enter the OS.

Launch EFI Shell from filesystem device

Attempts to launch EFI Shell application (Shellx64.efi) from one of the available filesystem devices.

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. The contents of this section include the following:

AMD A55E Chipset Family Graphics Driver Installation	42
Realtek High Definition Audio Driver Installation	45
Realtek LAN Controller Drivers Installation	47

IMPORTANT NOTE:

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

AMD A55E Chipset Family Graphics Driver Installation

Follow the steps below to install the AMD A55E chipset family graphics drivers.

1. Insert the CD that comes with the board. Click *AMD*, then *AMD A55E Chipset Drivers*, and then *AMD A55E Series Graphics Drivers*.





2. When the welcome screen to the ATI – CatalystTM Install Manager appears, click *Next*. Now, click *Install* to allow the installation of the software components.

ATI - Catalyst [™] Install M	lanager - Version: 03.00.0794	×
Welcome		
Welcome	Welcome Catalyst™ Install Manager is used to install and update the software for your graphics products Language Support Which language would you like Catalyst™ Install Manager to display? English	
	http://ati.amd.com	n
	Next > Cancel	



3. Select *Express* and click *Next* to proceed with the installation. On the following screen, click *Finish* to complete the installation process.



MI958 User's Manual

Realtek High Definition Audio Driver Installation

Follow the steps below to install the Realtek HD audio drivers.

1. Insert the CD that comes with the board. Click *AMD*, and then *Realtek High Definition Audio Driver*.





2. When the welcome screen to the Audio Driver Setup appears, click *Next* to start the software installation. Once the InstallShield Wizard is complete, click *Finish* to restart the computer.



< Back Finish

Cancel

Realtek LAN Controller Drivers Installation

Follow the steps below to install the Realtek LAN Drivers.

1. Insert the CD that comes with the board. Click *Intel*, then *LAN Card*, and then *Realtek Lan Controller Drivers*.



2. Click Realtek RTL8111E LAN Drivers.



3.When the welcome screen to InstallShield Wizard appears, click *Next* to start the installation



4. When the InstallShieldWizard has finished installing the Realtek LAN drivers, click *Finish*.

REALTEK GDE & FE Ethernet	PCI-E NIC Driver - InstallShield Wizard InstallShield Wizard Complete The InstallShield Wizard has successfully installed REALTEK GBE & FE Ethernet PCI-E NIC Driver. Click Finish to eait the wizard.
InstallShield	Cigack Finish Cancel

Appendix

A. I/O Port Address Map

Each peripheral device in the system is assigned a set of I/O port addresses which also becomes the identity of the device. The following table lists the I/O port addresses used.

Address	Device Description
000h - 01Fh	DMA Controller #1
020h - 03Fh	Interrupt Controller #1
040h - 05Fh	Timer
060h - 06Fh	Keyboard Controller
070h - 07Fh	Real Time Clock, NMI
080h - 09Fh	DMA Page Register
0A0h - 0BFh	Interrupt Controller #2
0C0h - 0DFh	DMA Controller #2
0F0h	Clear Math Coprocessor Busy Signal
0F1h	Reset Math Coprocessor
1F0h - 1F7h	IDE Interface
278h - 27Fh	Parallel Port #2(LPT2)
2E8h - 2EFh	Serial Port #4(COM4)
2F8h - 2FFh	Serial Port #2(COM2)
2B0h- 2DFh	Graphics adapter Controller
360h - 36Fh	Network Ports
3B0h - 3BFh	Monochrome & Printer adapter
3C0h - 3CFh	EGA adapter
3D0h - 3DFh	CGA adapter
3E8h - 3EFh	Serial Port #3(COM3)
3F8h - 3FFh	Serial Port #1(COM1)

B. Interrupt Request Lines (IRQ)

Peripheral devices use interrupt request lines to notify CPU for the service required. The following table shows the IRQ used by the devices on board.

Level	Function
IRQ0	System Timer Output
IRQ1	Keyboard
IRQ2	Interrupt Cascade
IRQ3	Serial Port #2
IRQ4	Serial Port #1
IRQ5	Reserved
IRQ6	Reserved
IRQ7	Reserved
IRQ8	Real Time Clock
IRQ9	Reserved
IRQ10	Serial Port #3
IRQ11	Serial Port #4
IRQ12	PS/2 Mouse
IRQ13	80287
IRQ14	Primary IDE
IRQ15	Secondary IDE

C. 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:

```
11
// 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.
11
#include <dos h>
#include <conio.h>
#include <stdio.h>
#include <stdlib.h>
#include "F81865.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 81865 watch dog program\n");
      SIO = Init_F81865();
      if (SIO == 0)
             printf("Can not detect Fintek 81865, program abort.\n");
             return(1);
       \frac{1}{100} = 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;
```

```
}
```

DRIVERS INSTALLATIONS

//			
void E	nableWDT(int interval)		
۱	unsigned char bBuf;		
	bBuf = Get_F81865_Reg(0x2B); bBuf &= (~0x20);		
	Set_F81865_Reg(0x2B, bBuf);		//Enable WDTO
	Set_F81865_LD(0x07); Set_F81865_Reg(0x30, 0x01);		//switch to logic device 7 //enable timer
	bBuf = Get_F81865_Reg(0xF5); bBuf &= (~0x0F); bBuf = 0x52;		
	Set_F81865_Reg(0xF5, bBuf);		//count mode is second
	Set_F81865_Reg(0xF6, interval);	//set ti	mer
	$bBuf = Get_F81865_Reg(0xFA);$ bBuf = 0x01;		
	Set_F81865_Reg(0xFA, bBuf);		//enable WDTO output
	bBuf = Get_F81865_Reg(0xF5); bBuf = 0x20;		
}	Set_F81865_Reg(0xF5, bBuf);		//start counting
// void D	isableWDT(void)		
۱	unsigned char bBuf;		
	Set_F81865_LD(0x07);		//switch to logic device 7
	bBuf = Get_F81865_Reg(0xFA); bBuf &= ~0x01;		
	Set_F81865_Reg(0xFA, bBuf);		//disable WDTO output
	bBuf = Get_F81865_Reg(0xF5); bBuf &= \sim 0x20; bBuf $\mid = 0x40$:		
}	Set_F81865_Reg(0xF5, bBuf);		//disable WDT
,,			

```
Appendix
```

```
//
// 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.
11
//--
#include "F81865.H"
#include <dos.h>
//___
unsigned int F81865_BASE;
void Unlock F81865 (void);
void Lock_F81865 (void);
//-
unsigned int Init_F81865(void)
{
      unsigned int result;
      unsigned char ucDid;
      F81865_BASE = 0x4E;
      result = F81865_BASE;
      ucDid = Get_F81865_Reg(0x20);
      if (ucDid == 0x07)
                                                         //Fintek 81865
            goto Init_Finish;
      {
                                }
      F81865 BASE = 0x2E:
      result = F81865_BASE;
      ucDid = Get_F81865_Reg(0x20);
      if (ucDid == 0x07)
                                                         //Fintek 81865
      {
            goto Init_Finish;
                                }
      F81865_BASE = 0x00;
      result = F81865_BASE;
Init Finish:
      return (result);
}
//--
void Unlock_F81865 (void)
{
      outportb(F81865_INDEX_PORT, F81865_UNLOCK);
      outportb(F81865_INDEX_PORT, F81865_UNLOCK);
//--
void Lock_F81865 (void)
{
      outportb(F81865_INDEX_PORT, F81865_LOCK);
//_.
void Set_F81865_LD( unsigned char LD)
      Unlock_F81865();
      outportb(F81865_INDEX_PORT, F81865_REG_LD);
      outportb(F81865_DATA_PORT, LD);
      Lock_F81865();
//-
void Set_F81865_Reg( unsigned char REG, unsigned char DATA)
{
      Unlock_F81865();
      outportb(F81865_INDEX_PORT, REG);
      outportb(F81865_DATA_PORT, DATA);
      Lock_F81865();
unsigned char Get_F81865_Reg(unsigned char REG)
      unsigned char Result;
      Unlock F81865();
```

DRIVERS INSTALLATIONS

outportb(F81865_INDEX_PORT, REG); Result = inportb(F81865_DATA_PORT); Lock_F81865(); 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 __F81865_H #define ______F81865___H 1 //-----#define F81865_INDEX_PORT #define F81865_DATA_PORT (F81865_BASE) (F81865_BASE+1) //-----#define F81865_REG_LD 0x07 //-----#define F81865_UNLOCK 0x87 #define F81865_LOCK 0xAA //----unsigned int Init_F81865(void); void Set_F81865_LD(unsigned char); void Set_F81865_Reg(unsigned char, unsigned char); unsigned char Get_F81865_Reg(unsigned char); //--

#endif //__F81865_H