CEB94000 Series

ATX Form Factor COM Express™ Development Baseboard User's Manual

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CAUTION

If you replace wrong batteries, it causes the danger of explosion. It is recommended by the manufacturer that you follow the manufacturer's instructions to only replace the same or equivalent type of battery, and dispose of used ones.

September 2013, Version A4
Printed in Taiwan

ESD Precautions

Computer boards have integrated circuits sensitive to static electricity. To prevent chipsets from electrostatic discharge damage, please take care of the following jobs with precautions:

- Do not remove boards or integrated circuits from their anti-static packaging until you are ready to install them.
- Before holding the board or integrated circuit, touch an unpainted portion of the system unit chassis for a few seconds. It discharges static electricity from your body.
- Wear a wrist-grounding strap, available from most electronic component stores, when handling boards and components.

Trademarks Acknowledgments

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CHAPTER 1
INTRODUCTION

CBE94000 is a new ATX form factor Baseboard equipped with an embedded COM Express™ CPU and extended type module and fully compliant with the PCI Industrial Computer Manufactures PICMG COM Express™ standard. The COM Express™ is an open industry standard for Computer-on-Modules, designed to be future proof and to provide a smooth transition path from legacy parallel interfaces to LVDS interfaces. In addition to the standard output signals for converting, CEB94000 provides one PCI Express x16 slot for graphics and SDVO, one PCI Express x4 slot or four PCI Express x1 slots, two 32-bit/33MHz PCI slots for expansion purpose, and the Serial ATA interface.

This board supports various I/O features: CRT, LVDS LCD, TV-out, Fast/Gigabit Ethernet, HD Audio Codec, one PATA IDE, four SATA IDE, eight USB 2.0 (four ports at rear I/O; two ports on Box Header with USB DiskOnModule support; one port at Express Card slot ;one port at min Card slot), Digital I/O, CompactFlash™ type-II socket, Watchdog timer and two COM ports.

With CBE94000, customers can develop more their own applications and upgrade the system configuration in advance to meet faster time-to-market.

1.1 Specifications

- CPU: COM Express™ Module and Extended Module Space Reserved
- System Chipset: COM Express™ Module
- BIOS
  - On the COM Express™ Module
- System Memory
  - COM Express™ Module
- Onboard IDE
  - One 40-pin box-header
  - Four SATA connectors
- Compact Flash Socket
  - One Compact Flash Type II Socket (optional)
- Onboard Multi-I/O
  - OneSuper I/O W83627 HG
    (Base Address = 2E)
  - One 26-pin box-header for FDD
  - One Parallel Port
  - 4 x RS-232
  - 1 x IrDA (Pin header) for wireless communication
- USB Interface
  - Eight USB ports with over current protection and complies with USB Spec. Rev. 2.0
- Watchdog Timer:
  - 1~255 seconds; up to 255 levels

- **Expansion Slot:**
  - One PCI Express x16 slot for discrete graphics card or SDVO ADD2+ Card or PCIe x1/x4/x8 general purpose I/O card (dedicated BIOS is required for this configuration)
  - One PCI Express x4 slot or four PCI Express x1 slots
  - (Configurated from Module lane number 0~3)

    * (JP15 must match COM Module's configuration)
  - Two 32-bit/33MHz PCI slots
  - One 32-bit/33MHz MINI PCI slots
  - One ExpressCard slot
  - One Mini PCI Express socket

    PCI-E signal from RECS1 (PCIE4)
  - One Mini PCI type-II socket
- **BaseBoard Ethernet:**
  - Onboard Intel® 82551QM Fast Ethernet
  - Equipped with RJ-45 interface
- **Audio:**
  - Realtek HD (ALC886) codec audio (Line-in/Line-out/MIC-in/ Surround/Center Bass/Side Surround)
- **7-Segment LEDDebug Port:**
  - For debug used. (Decode from LPC Bus and BIOS must porting)
- **Form Factor:**
  - ATX form factor

NOTE *All specifications and images are subject to change without notice.*

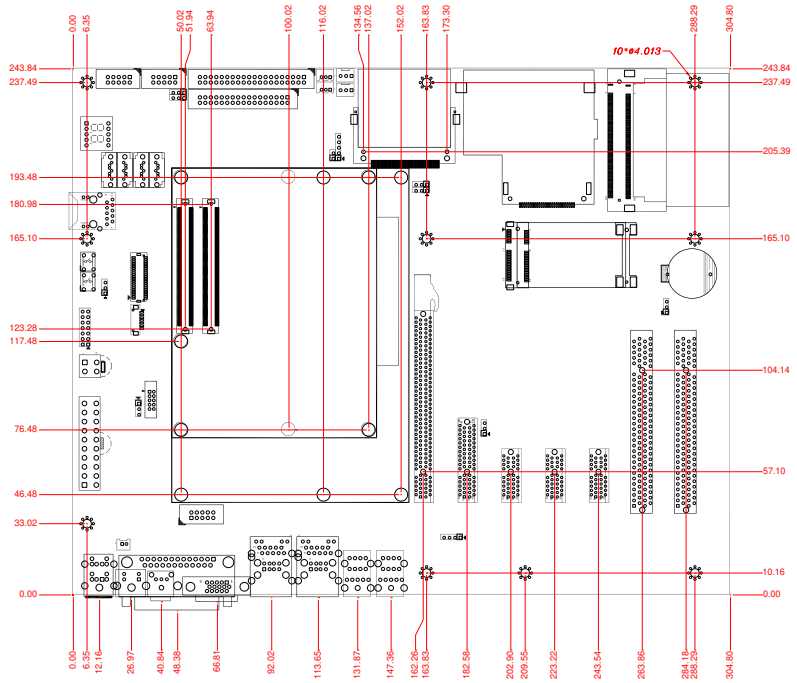
1.2 Utilities Supported

- Ethernet Driver
- Audio Driver

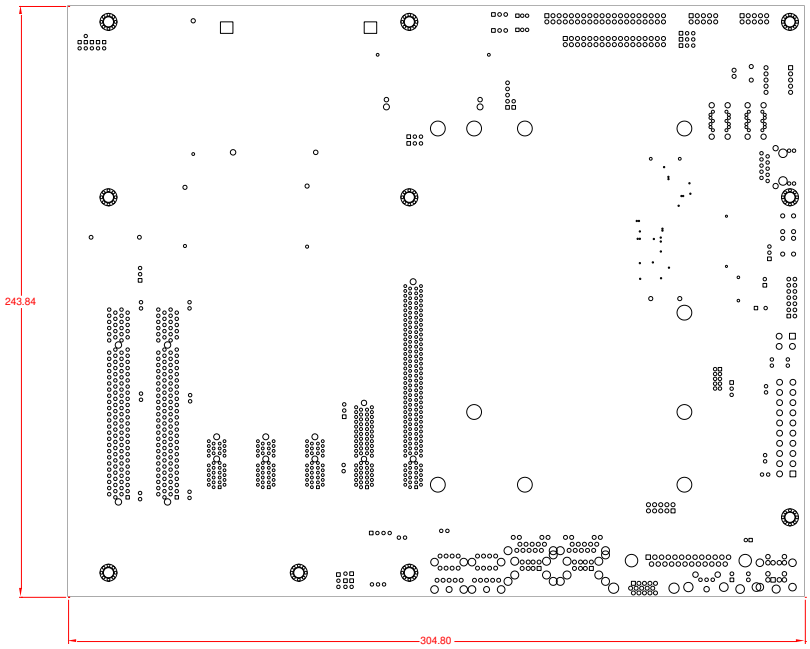
MEMO

CHAPTER 2
JUMPERS AND CONNECTORS

2.1 Board Layout and Fixing Holes

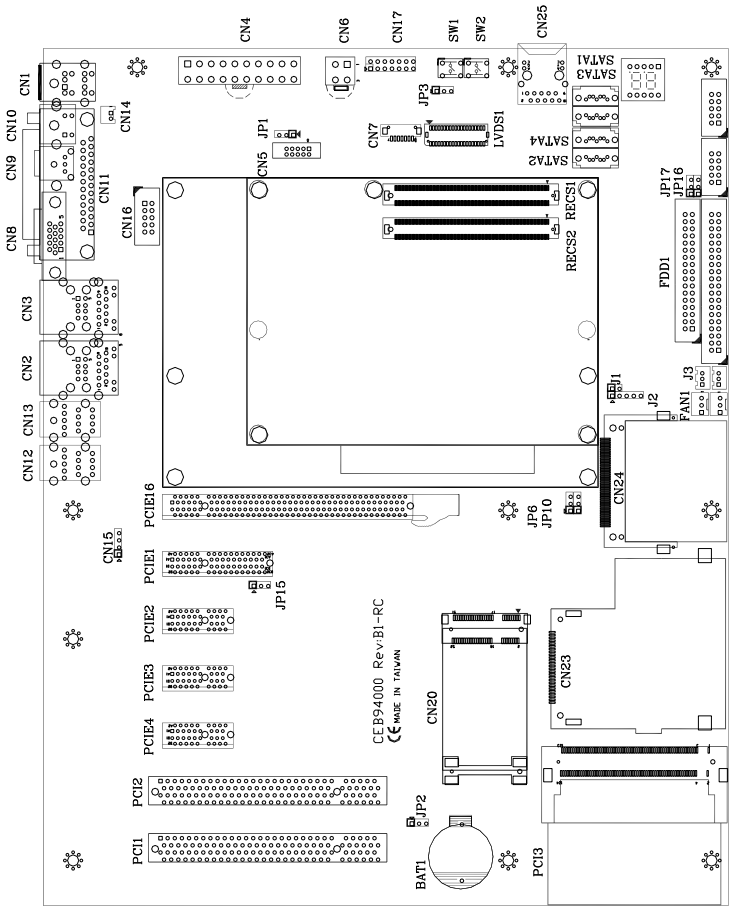


Component Side



Solder Side

2.2 Placement



Component Side

2.3 Jumper Settings

Proper jumer settings configure the CEB94000 to meet your application purpose. We are herewith listing a summary table of all jumpers and default settings for onboard devices, respectively.

Here is a list of jumper settings：

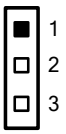
Jumper	Default Setting	Jumper Setting
JP1	CN5 Pin9 Voltage Select: 3.3V	Short 1-2
JP2	Clear CMOS Setting : Normal	Short 1-2
JP3	LCD Voltage Select : 3.3V	Short 1-2
JP6	Compact Flash Voltage Select : 3.3V	Short 1-2
JP10	Compact Flash Select : Slave	Short 1-2
JP15	PCIE1 slot Function = PCIEx1	Short 1-2
JP16	Enable Super I/O on LPC	Short 1-2
JP17	Disable Auto Power ON Function	Short 1-2
JP22	ATX Mode Support (C0 only)	Short 3-4

2.3.1 CN5 (GPIO Port) Pin 9 Voltage Select Jumper (JP1)

Voltage	Settings	
5V	Short 2-3	
3.3V	Short 1-2 (default)	

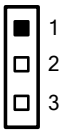
2.3.2 CMOS Clear Jumper (JP2)

You may need to use this jumper is to clear the CMOS memory if incorrect settings in the Setup Utility.

Voltage	Settings	
Normal	Short 1-2 (default)	
Clear CMOS	Short 2-3	

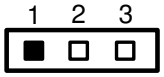
2.3.3 LCD Voltage Select Jumper (JP3)

This jumper is to select the voltage for LCD interface.

Voltage	Settings	
5V	Short 2-3	
3.3V	Short 1-2 (default)	

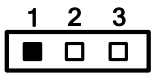
2.3.4 Compact Flash Power Jumper (JP6)

Connect the device's power cable to this jumper and correctly set it for the Compact Flash Card.

Voltage	Settings	
3.3V	Short 1-2 (default)	
5V	Short 2-3	

2.3.5 Compact Flash Setting Jumper (JP10)

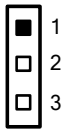
Voltage	Settings
Master	Short 2-3
Slave	Short 1-2 (default)



2.3.6 PCIE1 slot Function Select Jumper (JP15)

This jumper is to select the PCI Exprss configuration for PCIE1 slot.

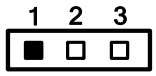
PCIE1 slot Function	Settings
PCIE x1 (PCIE Lane configuration from CEM Module)	Short 1-2 default)
PCIE x4 (PCIE Lane configuration from CEM Module)	Short 2-3



2.3.7 Enable Super I/O on LPC Bus Select Jumper (JP16)

This jumper is to select the Super I/O on LPC Bus.

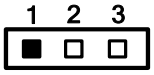
Function	Settings
Enable	Short 1-2 (default)
Disable	Short 2-3



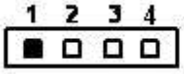
2.3.8 Auto Power On Jumper (JP17)

When Jumper JP17 is set OPEN for AC power input, the system will be automatically power ON without pressing soft power button; when JP17 is SHORT for AC power input, it is necessary to manually press soft power button to make the system power ON.

NOTE:This function is similar to the feature of Power On after Power Failed, which is controlled by hardware circuitry instead of BIOS.

Function	Settings	
Disable	Short 1-2 (default)	
Enable	Short 2-3	

2.3.9 ATX ,AT & Singnal 12V Select (JP22)

Function	Settings	
Singnal 12V Mode	Short 1-2 (default)	
AT Mode	Short 2-3	
ATX Mode	Short 3-4	

2.4 Connectors

Connectors connect the CPU card with other parts of the system. Loose or improper connection might cause problems. Make sure all connectors are properly and firmly connected. Here is a summary table shows you all connectors on the CEB94000 Series.

Connectors	Label	Connectors	Label
RTC Battery	BAT1	Parallel IDE Connector	IDE1
Serial Port1 Connector	COM1	Serial Port2 Connector	COM2
6-PinMiniDim Keyboard/Mouse	CN1	Audio Connector	CN12, CN13
CEB On Board LAN with 2USB Connector	CN2	Express card	CN23
2USB Connector	CN3	Compact Flash Connector	CN24
ATX Power Connector	CN4	External Thermal Sensor	J1
Digital I/O Connector	CN5	IR Connector	J2
+12V Power Connector	CN6	I2C BUS Connector	J3
LCD Inverter Connector	CN7	SMBUS Connector	J4
VGA Connector	CN8	FDD Connector	FDD1
S/PDIF OUT	CN9	PCI Slot1	PCI1
S-Video (TV-OUT)	CN10	PCI Slot2	PCI2
Parallel Port Connector	CN11	MINIPCI Connector	PCI3

-- End of Connectors Table --

Connectors	Label	Connectors	Label
TV-OUT	CN14	PCI Express x1 or PCI Express x4 (Select by JP15)	PCIE1
Audio (CD-ROM input)	CN15	PCI Express x1 or N.C (Select by JP15)	PCIE2
USB Port4 &Port5 Connector	CN16	PCI Express x1 or N.C (Select by JP15)	PCIE3
Front Panel Bezel Connector	CN17	PCI Express x1 or N.C (Select by JP15)	PCIE4
COM-Express Connector	RECS1 RECS2	PCI Express x16	PCIE16
MINI Card	CN20	LCD Connector (LVDS)	LVDS1
Power Button	SW1	SATA Port 1	SATA1
Reset Button	SW2	SATA Port 2	SATA2
FAN Connector	FAN1	SATA Port 3	SATA3
FAN Connector	FAN2	SATA Port 4	SATA4
LAN Connector (From CEM Module)	CN25		

2.4.1 IDE Interface Connectors (IDE1, SATA1, SATA2, SATA3, SATA4)

The built-in 5-channel IDE (one parallel ATA-100 and four serial ATA) can support up to six IDE devices, master/slave mode for parallel ATA-100, post write transaction mechanisms with 64-byte buffer, and master data transaction.

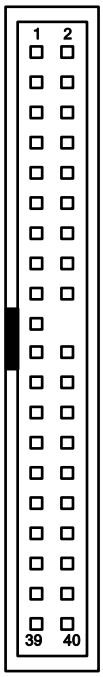
IDE1 is a 40-pin IDE interface connector for standard 3.5" IDE device. SATA1, SATA2, SATA3 and SATA4 are serial ATA IDE interface connectors to support current hard disk drives.

*The maximum IDE devices are dependent on the supported chipset on COM-Express Module.

Please refer to 40-pin IDE Connector pin assignment next page.

IDE1: 40-pin IDE Connector Pin Assignment

Pin	Signal	Pin	Signal
1	Reset #	2	GND
3	Data 7	4	Data 8
5	Data 6	6	Data 9
7	Data 5	8	Data 10
9	Data 4	10	Data 11
11	Data 3	12	Data 12
13	Data 2	14	Data 13
15	Data 1	16	Data 14
17	Data 0	18	Data 15
19	GND	20	No
21	DREQ	22	GND
23	IOW #	24	GND
25	IOR #	26	GND
27	IOCHRDY	28	No
29	DACK	30	GND
35	SA0	36	SA2
37	HDC CS0 #	38	HDC CSI #
39	HDD Active #	40	GND

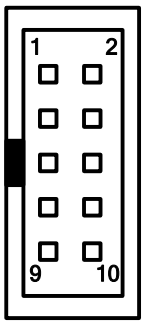


2.4.2 Serial Port Interface Connectors (COM1, COM2)

There are two onboard serial ports COM1 and COM2 for RS-232.

Please refer to the RS-232 pin assignment as listed below:

COM1	COM2	Signal
1	1	Data Carrier Detect (DCD)
2	2	Data Set Ready (DSR)
3	3	Receive Data (RXD)
4	4	Request to Send (RTS)
5	5	Transmit Data (TXD)
6	6	Clear to Send (CTS)
7	7	Data Terminal Ready (DTR)
8	8	Ring Indicator (RI)
9	9	Ground (GND)
10	10	N.C

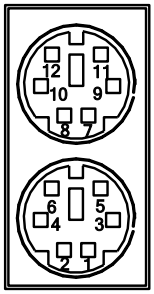


NOTE: *The COM1~COM2 ports of CEB94000 are Box header type connectors.*

2.4.3 Keyboard and PS/2 Mouse Connector (CN1)

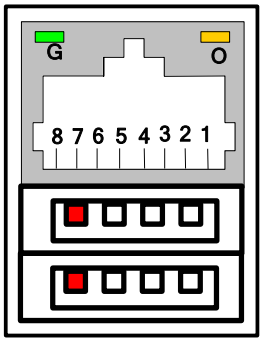
CN1 is a DIN connector for PS/2 keyboard & Mouse connection.

Pin	Signal	Pin	Signal
1	K/B Data	7	M/S Data
2	NC	8	NC
3	GND	9	GND
4	VCC	10	VCC
5	K/B CLK	11	M/S CLK
6	NC	12	NC



2.4.4 Ethernet With USB Connector (CN2)

Pin	Signal
1	Tx+ (Data transmission positive)
2	Tx- (Data transmission negative)
3	Rx+(Data reception positive)
6	Rx- (Data reception negative)
G	Green LED, light when 100M link
O	Orange LED, flash when active

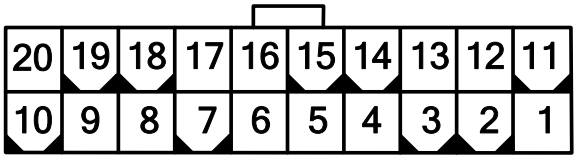


2.4.5 Power Connectors (CN4, CN6)

CN4 is 20-pin ATX Power connector of the CEB94000.

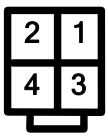
Pin	Signal	Pin	Signal
1	3.3V	11	3.3V
2	3.3V	12	-12V
3	GND	13	GND
4	5V	14	PSON-
5	GND	15	GND
6	5V	16	GND
7	GND	17	GND
8	PWROK	18	-5V
9	5VSB	19	5V
10	12V	20	5V

ATX Power Connector: CN4



CN6 is 4-pin extend 12V connector of the CEB94000.

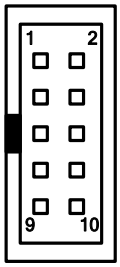
Pin	Signal	Pin	Signal
1	GND	3	12V
2	GND	4	12V



2.4.6 Digital I/O Connector (CN5)

The board is equipped a digital I/O connector CN5 that meets requirements for a system customary automation control. The digital I/O can be configured to control cash drawers, sense warning signals from an Uninterrupted Power System (UPS), or perform store security control. The digital I/O is controlled via software programming.

Pin	Signal	Pin	Signal
1	GPI0	2	GPO0
3	GPI1	4	GPO1
5	GPI2	6	GPO2
7	GPI3	8	GPO3
9	Voltage	10	GND



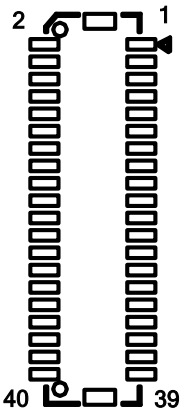
2.4.7 VGA/LCD Connectors

There are several connectors to support CRT VGA and flat panel displays. CN8 is a standard 15-pin connector commonly used for the CRT VGA display.

LVDS1 is a 40-pin connector.The matching connector is strongly recommended to use GLA1001WV-S-2x20P.

2.4.7.1 LVDS Connector: LVDS1

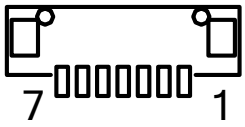
Pin	Signal	Pin	Signal
1	VCCM	2	VCCM
3	VCCM	4	VCCM
5	VCCM	6	VCCM
7	N.C.	8	N.C.
9	GND	10	GND
11	Channel B D3-	12	Channel B D0-
13	Channel B D3+	14	Channel B D0+
15	GND	16	GND
17	Channel B CLK-	18	Channel B D1-
19	Channel B LK+	20	Channel B D1+
21	GND	22	GND
23	Channel A D0-	24	Channel B D2-
25	Channel A D0+	26	Channel B D2+
27	GND	28	GND
29	Channel A D1-	30	Channel A D3-
31	Channel A D1+	32	Channel A D3+
33	GND	34	GND
35	Channel A D2-	36	Channel A CLK-
37	Channel A D2+	38	Channel A CLK+
39	GND	40	GND



2.4.7.2 LVDS Inverter Connector: CN7

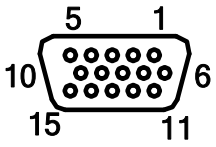
CN7 is a 7-pin inverter connector. The matching connector is strongly recommended to use Hirose DF13-7S-1.25C

Pin	Signal	Pin	Signal
1	VCC12M1	2	VCC12M1
3	VCC	4	BLEN
5	GND	6	GND
7	GND		



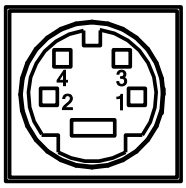
2.4.7.3 VGA DB15 Connector: CN8

Pin	Signal	Pin	Signal	Pin	Signal
1	Red	2	Green	3	Blue
4	N/A	5	GND	6	AGND
7	AGND	8	AGND	9	NC
10	GND	11	NC	12	DDC DATA
13	Horizontal Sync	14	VerticalSync	15	DDC CLK



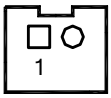
2.4.8 S-Video Connector (CN10)

Pin	Signal
1	GND
2	GND
3	Luminance(Y)
4	Chrominance (Pr)



2.4.9 TV-Out Connector (CN14)

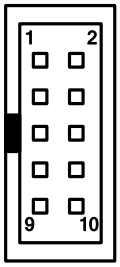
Pin	Signal
1	COMPOSITE
2	GND



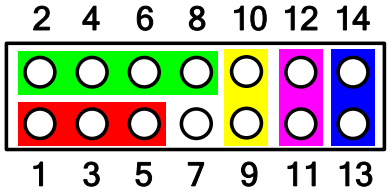
2.4.10 USB [4, 5] Connector (CN16)

This Universal Serial Bus (USB) connector on this board is for installing versatile USB interface peripherals. It is a 10-pin standard USB connector.

Pin	Signal	Pin	Signal
1	VCC	2	VCC
3	USB4-	4	USB5-
5	USB4+	6	USB5+
7	GND	8	GND
9	GND	10	GND



2.4.11 Flat Panel Bezel Connector (CN17)



- **Power LED**

  This 3-pin connector named as Pin 1 and Pin 5 connect the system power LED indicator to such a switch on the case. Pin 1 is assigned as +, and Pin 5 as -. The Power LED lights up when the system is powered ON.

- **External Speaker and Internal Buzzer Connector**

  Pin 2, 4, 6 and 8 can be connected to the case-mounted speaker unit or internal buzzer. While connecting the COM-EXPRESS CPU card to an internal buzzer, please short pins 2-4; while connecting to an external speaker, you need to set pins 2-4 to Open and connect the speaker cable to pin 8 (+) and pin 2 (-).

- **ATX Power On/Off Button**

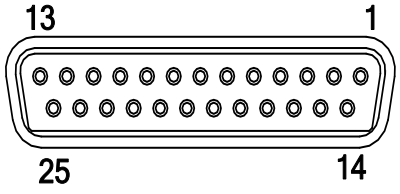
  This 2-pin connector named as Pin 9 and 10 connect the front panel's ATX power button to the CPU card, which allows users to control ATX power supply to be power on/off.

- **System Reset Switch**
  Pin 11 and 12 can be connected to the case-mounted reset switch that reboots your computer, not turns OFF the power switch. It is a better way to reboot your system for a longer life of the system's power supply.

- **HDD Activity LED**
  This connection is linked to hard drive activity LED on the control panel. LED flashes when HDD is being accessed. Pin 13 and 14 connect the hard disk drive to the front panel HDD LED, Pin 13 assigned as -, and Pin 14 as +.

2.4.12 Parallel Port DB25 Connector (CN11)

Pin	Signal	Pin	Signal
1	Strobe#	14	Auto Form Feed#
2	Data 0	15	Error#
3	Data 1	16	Initialize#
4	Data 2	17	Printer Select In#
5	Data 3	18	GND
6	Data 4	19	GND
7	Data 5	20	GND
8	Data 6	21	GND
9	Data 7	22	GND
10	Acknowledge#	23	GND
11	Busy	24	GND
12	Paper Empty#	25	GND
13	Printer Select		

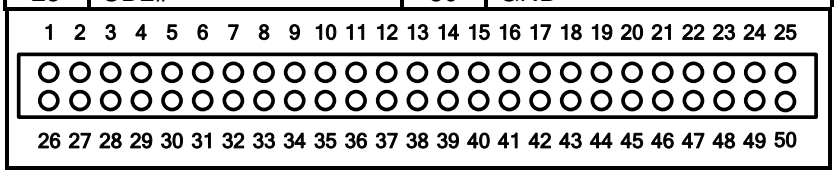


2.4.13 Compact Flash Connector (CN24)

The board is equipped with a CompactFlash disk socket on the solder side to support the IDE interface CompactFlash disk card. This socket is specially designed to prevent any incorrect installation of the CompactFlash disk card. When installing or removing the CompactFlash disk card, make sure the system power off.

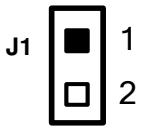
Please refer to the Compact Flash Connector (CN24) Pin Assignment next page.

Pin	Signal	Pin	Signal
1	GND	26	CD1-
2	Data 3	27	Data 11
3	Data 4	28	Data 12
4	Data 5	29	Data 13
5	Data 6	30	Data 14
6	Data 7	31	Data 15
7	CS0#	32	CS1#
8	Address 10	33	VS1#
9	ATASEL	34	IORD#
10	Address 9	35	IOWR#
11	Address 8	36	WE#
12	Address 7	37	INTR
13	VCC	38	VCC
14	Address 6	39	CSEL#
15	Address 5	40	VS2#
16	Address 4	41	RESET#
17	Address 3	42	IORDY#
18	Address 2	43	DMAREQ
19	Address 1	44	DMAACK-
20	Address 0	45	DASP#
21	Data 0	46	PDIAG#
22	Data 1	47	Data 8
23	Data 2	48	Data 9
24	IOCS16#	49	Data 10
25	CD2#	50	GND



2.4.14 External Thermal Sensor (J1)

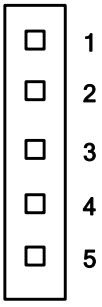
J1 is a 2 pin-header for connecting a thermal resistor 10KΩ to detect external thermal.



2.4.15 IrDA Sensor (J2)

The board supports the Infrared data port that allows wireless exchange of information between your system and related devices. Infrared sensor can be used to transfer data to and from your computer and similarly equipped devices.

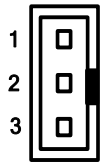
Pin	Signal
1	+5V
2	N.C.
3	IRRX
4	GND
5	IRTX



2.4.16 I2C BUS Connector (J3)

This I2C bus connector is for users to connect System Management Bus (SMBus) interface.

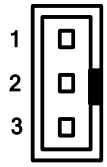
Pin	Signal
1	CLOCK
2	DATA
3	GND



2.4.17 SM BUS Connector (J4)

This SM Bus connector is for users to connect System Management Bus (SMBus) interface.

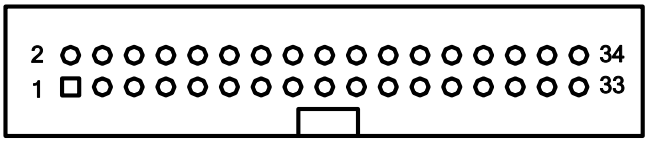
Pin	Signal
1	CLOCK
2	DATA
3	GND



2.4.18 34Pin Floppy Disk Connector (FDD1)

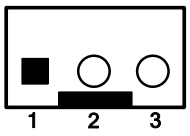
Connect the single end of the cable to the onboard floppy disk connector, next, plug the other end to floppy drives.

Pin	Signal	Pin	Signal	Pin	Signal
1	GND	2	Reduce write urrent	3	GND
4	No connector	5	GND	6	No connector
7	GND	8	Index#	9	GND
10	Motor enable A#	11	GND	12	Drive select B#
13	GND	14	Drive select A#	15	GND
16	Motor enable B#	17	GND	18	Direction#
19	GND	20	STEP#	21	GND
22	Write data#	23	GND	24	Write gate#
25	GND	26	Track 0 #	27	GND
28	Write protect#	29	GND	30	Read data#
31	GND	32	Side 1 select#	33	GND
34	Disk change#				



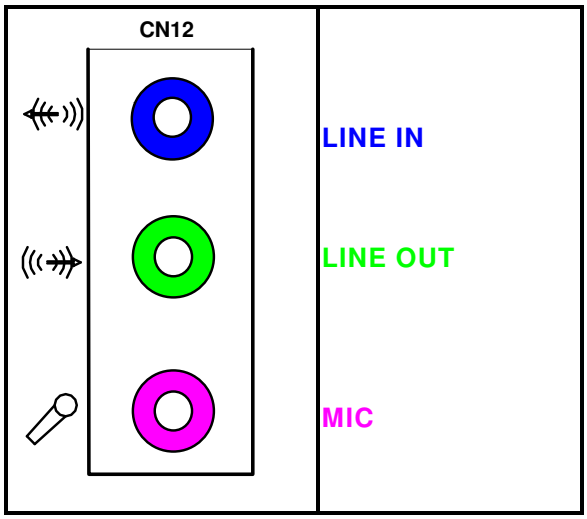
2.4.19 3Pin FAN Connectors (FAN1, FAN2)

Pin	Signal
1	GND
2	+12V
3	Sensor

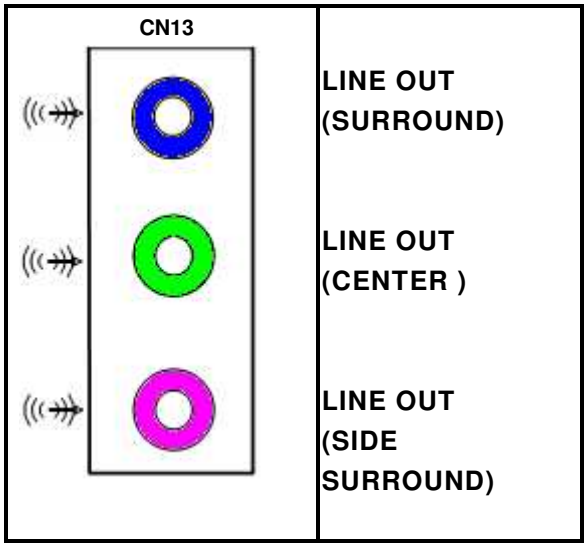


2.4.20 Audio Connectors (CN12, CN13)

You can use CN12 and CN13 to connect audio devices. As illustrated from top to bottom, the first jack of CN12 is for stereo line-in signal, the second for stereo line-out and the third for microphone.

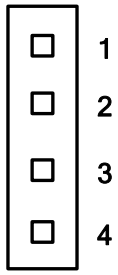


From top to bottom, the first jack of CN13 is for stereo line-out signal (Surround), the second for stereo line-out (Center) and he third for line-out (Side Surround).



2.4.21 Audio CD-ROM Input Connector (CN15)

Pin	Signal
1	CD_L
2	CD_GND
3	CD_GND
4	CD_R



2.4.22 COM Express Connectors (RECS1, RECS2)

Pin	Signal	Pin	Signal	Pin	Signal	Pin	Signal
A1	GND (FIXED)	B1	GND (FIXED)	C1	GND (FIXED)	D1	GND (FIXED)
A2	GBE0_MDI3-	B2	GBE0_ACT#	C2	IDE_D7	D2	IDE_D5
A3	GBE0_MDI3+	B3	LPC_FRAME#	C3	IDE_D6	D3	IDE_D10
A4	GBE0_LINK100#	B4	LPC_AD0	C4	IDE_D3	D4	IDE_D11
A5	GBE0_LINK1000#	B5	LPC_AD1	C5	IDE_D15	D5	IDE_D12
A6	GBE0_MDI2-	B6	LPC_AD2	C6	IDE_D8	D6	IDE_D4
A7	GBE0_MDI2+	B7	LPC_AD3	C7	IDE_D9	D7	IDE_D0
A8	GBE0_LINK#	B8	LPC_DRQ0#	C8	IDE_D2	D8	IDE_REQ
A9	GBE0_MDI1-	B9	LPC_DRQ1#	C9	IDE_D13	D9	IDE_IOW#
A10	GBE0_MDI1+	B10	LPC_CLK	C10	IDE_D1	D10	IDE_ACK#
A11	GND (FIXED)	B11	GND (FIXED)	C11	GND (FIXED)	D11	GND (FIXED)
A12	GBE0_MDI0-	B12	PWRBTN#	C12	IDE_D14	D12	IDE_IRQ
A13	GBE0_MDI0+	B13	SMB_CK	C13	IDE_IORDY	D13	IDE_A0
A14	GBE0_CTREF	B14	SMB_DAT	C14	IDE_IOR#	D14	IDE_A1
A15	SUS_S3#	B15	N.C	C15	PCI_PME#	D15	IDE_A2
A16	SATA0_TX+	B16	SATA1_TX+	C16	PCI_GNT2#	D16	IDE_CS1#
A17	SATA0_TX-	B17	SATA1_TX-	C17	PCI_REQ2#	D17	IDE_CS3#
A18	N.C	B18	N.C	C18	PCI_GNT1#	D18	IDE_RESET#
A19	SATA0_RX+	B19	SATA1_RX+	C19	PCI_REQ1#	D19	PCI_GNT3#
A20	SATA0_RX-	B20	SATA1_RX-	C20	PCI_GNT0#	D20	PCI_REQ3#
A21	GND (FIXED)	B21	GND (FIXED)	C21	GND (FIXED)	D21	GND (FIXED)
A22	SATA2_TX+	B22	SATA3_TX+	C22	PCI_REQ0#	D22	PCI_AD1
A23	SATA2_TX-	B23	SATA3_TX-	C23	PCI_RESET#	D23	PCI_AD3
A24	SUS_S5#	B24	PWR_OK	C24	PCI_AD0	D24	PCI_AD5
A25	SATA2_RX+	B25	SATA3_RX+	C25	PCI_AD2	D25	PCI_AD7
A26	SATA2_RX-	B26	SATA3_RX-	C26	PCI_AD4	D26	PCI_C/BE0#
A27	N.C	B27	WDT	C27	PCI_AD6	D27	PCI_AD9
A28	ATA_ACT#	B28	N.C	C28	PCI_AD8	D28	PCI_AD11
A29	AC_SYNC	B29	AC_SDIN1	C29	PCI_AD10	D29	PCI_AD13
A30	AC_RST#	B30	AC_SDIN0	C30	PCI_AD12	D30	PCI_AD15

Pin	Signal	Pin	Signal	Pin	Signal	Pin	Signal
A31	GND (FIXED)	B31	GND (FIXED)	C31	GND (FIXED)	D31	GND (FIXED)
A32	AC_BITCLK	B32	SPKR	C32	PCI_AD14	D32	PCI_PAR
A33	AC_SDOUT	B33	I2C_CK	C33	PCI_C/BE1#	D33	PCI_SERR#
A34	N.C	B34	I2C_DAT	C34	PCI_PERR#	D34	PCI_STOP#
A35	THRMTRIP#	B35	THRM#	C35	PCI_LOCK#	D35	PCI_TRDY#
A36	USB6-	B36	USB7-	C36	PCI_DEVSEL#	D36	PCI_FRAME#
A37	USB6+	B37	USB7+	C37	PCI_IRDY#	D37	PCI_AD16
A38	USB_6_7_OC#	B38	USB_4_5_OC#	C38	PCI_C/BE2#	D38	PCI_AD18
A39	USB4-	B39	USB5-	C39	PCI_AD17	D39	PCI_AD20
A40	USB4+	B40	USB5+	C40	PCI_AD19	D40	PCI_AD22
A41	GND (FIXED)	B41	GND (FIXED)	C41	GND (FIXED)	D41	GND (FIXED)
A42	USB2-	B42	USB3-	C42	PCI_AD21	D42	PCI_AD24
A43	USB2+	B43	USB3+	C43	PCI_AD23	D43	PCI_AD26
A44	USB_2_3_OC#	B44	USB_0_1_OC#	C44	PCI_C/BE3#	D44	PCI_AD28
A45	USB0-	B45	USB1-	C45	PCI_AD25	D45	PCI_AD30
A46	USB0+	B46	USB1+	C46	PCI_AD27	D46	PCI_IRQC#
A47	VCC_RTC	B47	N.C	C47	PCI_AD29	D47	PCI_IRQD#
A48	EXCD0_PERST#	B48	N.C	C48	PCI_AD31	D48	N.C
A49	EXCD0_CPPE#	B49	SYS_RESET#	C49	PCI_IRQA#	D49	N.C
A50	LPC_SERIRQ	B50	N.C	C50	PCI_IRQB#	D50	PCI_CLK
A51	GND (FIXED)	B51	GND (FIXED)	C51	GND (FIXED)	D51	GND (FIXED)
A52	PCIE_TX5+	B52	PCIE_RX5+	C52	PEG_RX0+	D52	PEG_TX0+
A53	PCIE_TX5-	B53	PCIE_RX5-	C53	PEG_RX0-	D53	PEG_TX0-
A54	GPI0	B54	GPO1	C54	N.C	D54	PEG_LANE_RV
A55	PCIE_TX4+	B55	PCIE_RX4+	C55	PEG_RX1+	D55	PEG_TX1+
A56	PCIE_TX4-	B56	PCIE_RX4-	C56	PEG_RX1-	D56	PEG_TX1-
A57	GND	B57	GPO2	C57	N.C	D57	N.C
A58	PCIE_TX3+	B58	PCIE_RX3+	C58	PEG_RX2+	D58	PEG_TX2+
A59	PCIE_TX3-	B59	PCIE_RX3-	C59	PEG_RX2-	D59	PEG_TX2-
A60	GND (FIXED)	B60	GND (FIXED)	C60	GND (FIXED)	D60	GND (FIXED)

Pin	Signal	Pin	Signal	Pin	Signal	Pin	Signal
A61	PCIE_TX2+	B61	PCIE_RX2+	C61	PEG_RX3+	D61	PEG_TX3+
A62	PCIE_TX2-	B62	PCIE_RX2-	C62	PEG_RX3-	D62	PEG_TX3-
A63	GPI1	B63	GPO3	C63	RSVD	D63	RSVD
A64	PCIE_TX1+	B64	PCIE_RX1+	C64	RSVD	D64	RSVD
A65	PCIE_TX1-	B65	PCIE_RX1-	C65	PEG_RX4+	D65	PEG_TX4+
A66	GND	B66	WAKE0#	C66	PEG_RE4-	D66	PEG_TX4-
A67	GPI2	B67	WAKE1#	C67	RSVD	D67	GND
A68	PCIE_TX0+	B68	PCIE_RX0+	C68	PEG_RX5+	D68	PEG_TX5+
A69	PCIE_TX0-	B69	PCIE_RX0-	C69	PEG_RX5-	D69	PEG_TX5-
A70	GND(FIXED)	B70	GND(FIXED)	C70	GND(FIXED)	D70	GND(FIXED)
A71	LVDS_A0+	B71	LVDS_B0+	C71	PEG_RX6+	D71	PEG_TX6+
A72	LVDS_A0-	B72	LVDS_B0-	C72	PEG_RX6-	D72	PEG_TX6-
A73	LVDS_A1+	B73	LVDS_B1+	C73	SDVO_DATA	D73	SDVO_CLK
A74	LVDS_A1-	B74	LVDS_B1-	C74	PEG_RX7+	D74	PEG_TX7+
A75	LVDS_A2+	B75	LVDS_B2+	C75	PEG_RX7-	D75	PEG_TX7-
A76	LVDS_A2-	B76	LVDS_B2-	C76	GND	D76	GND
A77	LVDS_VDD_EN	B77	LVDS_B3+	C77	RSVD	D77	IDE_CBLID#
A78	LVDS_A3+	B78	LVDS_B3-	C78	PEG_RX8+	D78	PEG_TX8+
A79	LVDS_A3-	B79	LVDS_BKLT_EN	C79	PEG_RX8-	D79	PEG_TX8-
A80	GND(FIXED)	B80	GND(FIXED)	C80	GND(FIXED)	D80	GND(FIXED)
A81	LVDS_A_CK+	B81	LVDS_B_CK+	C81	PEG_RX9+	D81	PEG_TX9+
A82	LVDS_A_CK-	B82	LVDS_B_CK-	C82	PEG_RX9-	D82	PEG_TX9-
A83	LVDS_I2C_CK	B83	LVDS_BKLT_CTRL	C83	RSVD	D83	RSVD
A84	LVDS_I2C_DAT	B84	VCC_5V_SBY	C84	GND	D84	GND
A85	GPI3	B85	VCC_5V_SBY	C85	PEG_RX10+	D85	PEG_TX10+
A86	KBD_RST#	B86	VCC_5V_SBY	C86	PEG_RX10-	D86	PEG_TX10-
A87	KBD_A20GATE	B87	VCC_5V_SBY	C87	GND	D87	GND
A88	PCIE0_CK_REF+	B88	RSVD	C88	PEG_RX11+	D88	PEG_TX11+
A89	PCIE0_CK_REF-	B89	VGA_RED	C89	PEG_RX11-	D89	PEG_TX11-
A90	GND (FIXED)	B90	GND (FIXED)	C90	GND (FIXED)	D90	GND (FIXED)

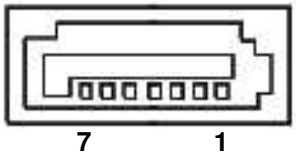
Pin	Signal	Pin	Signal	Pin	Signal	Pin	Signal
A91	RSVD	B91	VGA_GRN	C91	PEG_RX12+	D91	PEG_TX12+
A92	RSVD	B92	VGA_BLU	C92	PEG_RX12-	D92	PEG_TX12-
A93	GPO0	B93	VGA_HSYNC	C93	GND	D93	GND
A94	RSVD	B94	VGA_VSYNC	C94	PEG_RX13+	D94	PEG_TX13+
A95	RSVD	B95	VGA_I2C_CK	C95	PEG_RX13-	D95	PEG_TX13-
A96	GND	B96	VGA_I2C_DAT	C96	GND	D96	GND
A97	VCC_12V	B97	TV_DAC_A	C97	RSVD	D97	N.C
A98	VCC_12V	B98	TV_DAC_B	C98	PEG_RX14+	D98	PEG_TX14+
A99	VCC_12V	B99	TV_DAC_C	C99	PEG_RX14-	D99	PEG_TX14-
A100	GND (FIXED)	B100	GND (FIXED)	C100	GND (FIXED)	D100	GND (FIXED)
A101	VCC_12V	B101	VCC_12V	C101	PEG_RX15+	D101	PEG_TX15+
A102	VCC_12V	B102	VCC_12V	C102	PEG_RX15-	D102	PEG_TX15-
A103	VCC_12V	B103	VCC_12V	C103	GND	D103	GND
A104	VCC_12V	B104	VCC_12V	C104	VCC_12V	D104	VCC_12V
A105	VCC_12V	B105	VCC_12V	C105	VCC_12V	D105	VCC_12V
A106	VCC_12V	B106	VCC_12V	C106	VCC_12V	D106	VCC_12V
A107	VCC_12V	B107	VCC_12V	C107	VCC_12V	D107	VCC_12V
A108	VCC_12V	B108	VCC_12V	C108	VCC_12V	D108	VCC_12V
A109	VCC_12V	B109	VCC_12V	C109	VCC_12V	D109	VCC_12V
A110	GND (FIXED)	B110	GND (FIXED)	C110	GND (FIXED)	D110	GND (FIXED)

-- End of COM Express Connector Table --

2.4.23 7-pin SATA Connectors (SATA1, SATA2, SATA3, SATA4)

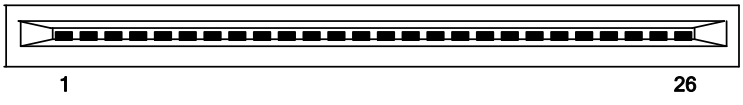
These SATA connectors are for high-speed SATA interface ports and they can be connected to hard disk devices.

Pin	Signal
1	GND
2	TX+
3	TX-
4	GND
5	RX-
6	RX+
7	GND



2.4.24 Express Card Connector (CN23)

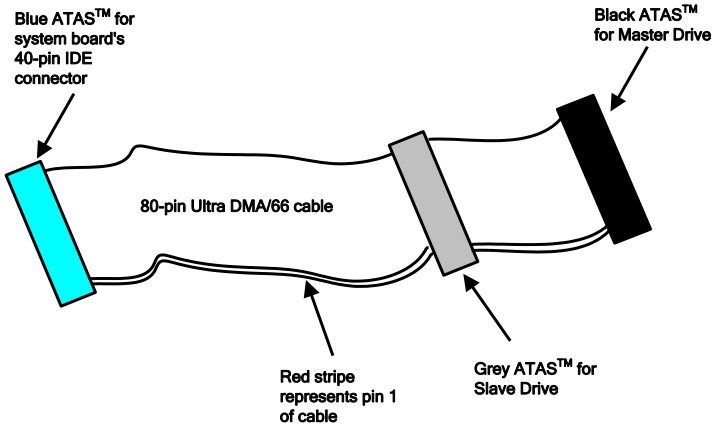
Pin	Signal	Pin	Signal
1	GND	14	3.3V_CARD
2	USB_D-	15	3.3V_CARD
3	USB_D+	16	CLKREQ-
4	CP_USB-	17	CP_PE-
5	N.C	18	REF_CLK-
6	N.C	19	REF_CLK+
7	SMB_CLK	20	GND
8	SMB_DATA	21	PCIE_RX-
9	1.5V_CARD	22	PCIE_RX+
10	1.5V_CARD	23	GND
11	WAKE-	24	PCIE_TX-
12	3.3VAUX_CARD	25	PCIE_TX+
13	PERESET-	26	GND

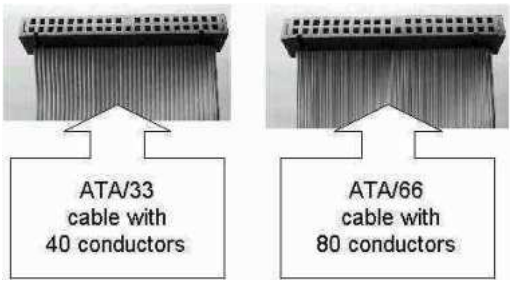


CHAPTER 3
INSTALLATION

3.1 Ultra DMA33/66/100 Drive Installation

To accommodate the fast transfer rate of Ultra DMA33//66/100, an 80-conductor cable (with 40 pin connectors on both ends) is necessary when installing maximum two Ultra DMA33/66/100 drives. It can be done through connecting the cables to the Secondary IDE Connector. The diagram below shows you the proper installation procedure, color coding for connectors and the 80-conductor cable.





3.2 Completing Installation

Please follow the steps as below to complete the installation:

1. Make sure the power is OFF.
2. Set the configuration jumpers according to the jumper settings on Chapter 2.
3. Install the COM Express™ Moudle into the CEB94000 base board.
4. Connect the I/O cables and peripherals, i.e. floppy disk, hard disk, monitor, keyboard, power supply and etc. to the CEB94000 base board.

NOTE *The color of pin 1 is usually red or blue, while others are gray.*

5. Turn ON the system power.

APPENDIX
WATCHDOG TIMER

Watchdog Timer Setting

After the system stops working for a while, it can be auto-reset by the Watchdog Timer. The integrated Watchdog Timer can be set up in the system reset mode by program.

Using the Watchdog Function

Start
↓
Un-Lock WDT:
O 2E 87 ; Un-lock super I/O
O 2E 87 ; Un-lock super I/O
↓
Select Logic device:
O 2E 07
O 2F 08
↓
Activate WDT:
O 2E 30
O 2F 01
↓
Set Second or Minute:
O 2E F5
O 2F N N=00 or 08(See below table)
↓
Set base timer:
O 2E F6
O 2F M=00,01,02,…FF(Hex) ,Value=0 to 255
↓

WDT counting re-set timer:
O 2E F6
O 2F M ; M=00,01,02,…FF(See below table)

; IF to disable WDT:

O 2E 30
O 2F 00 ; Can be disable at any time

- Timeout Value Range
  - 1 to 255
  - Minute / Second
- Program Sample

  Watchdog Timer can be set to system reset after 5-second timeout.

2E, 87	
2E, 87	
2E, 07	
2F, 08	Logical Device 8
2E, 30	Activate
2F, 01	
2E, F5	
2F, N	Set Minute or Second N=08 (Min),00(Sec)
2E, F6	
2F, M	Set Value M = 00 ~ FF